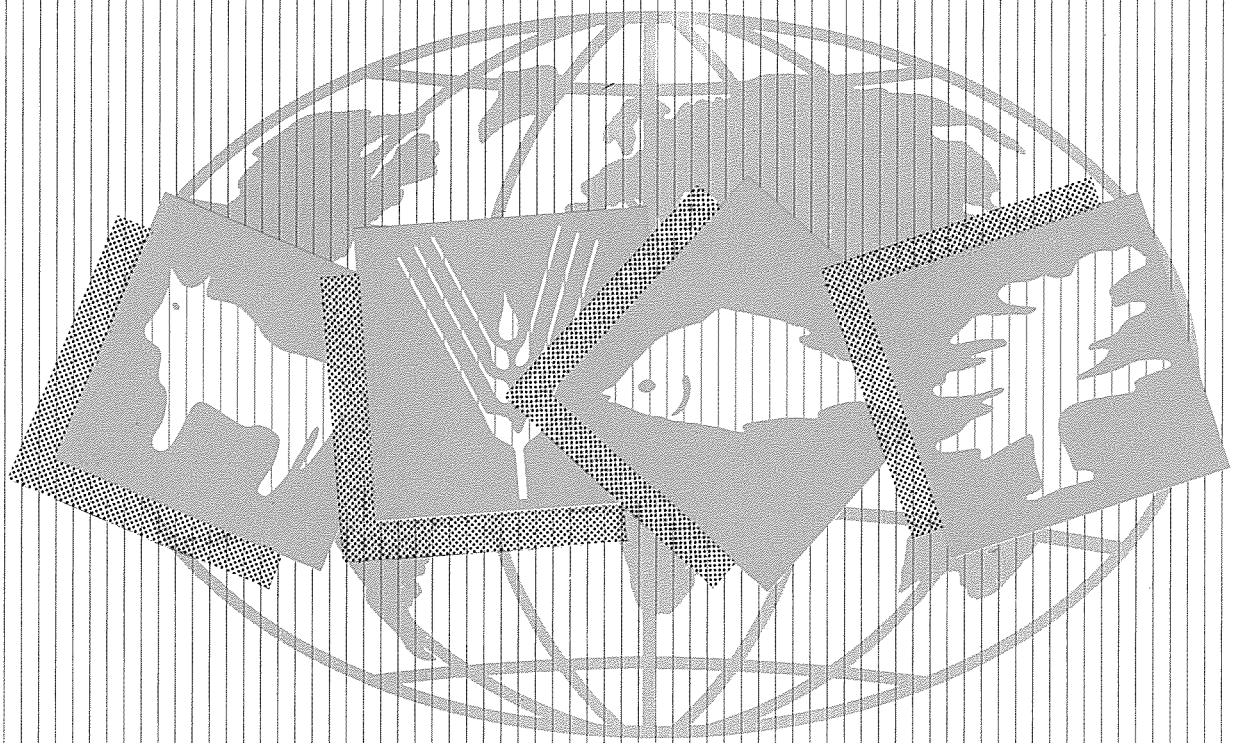
1987-88

THE STATE OF FOOD AND AGRICULTURE

World and regional reviews
Changing priorities for agricultural science and technology in developing countries



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Special Chapters

In addition to the usual review of the recent world food and agriculture situation, each issue of this report from 1957 has included one or more special studies of problems of longer-term interest. Special chapters in earlier issues have covered the following subjects:

1957
Factors influencing the trend of food consumption
Postwar changes in some institutional factors affecting agriculture

1958
Food and agricultural developments in Africa south of the Sahara
The growth of forest industries and their impact on the world's forests

1959
Agricultural incomes and levels of living in countries at different stages of economic development
Some general problems of agricultural development in less-developed countries in the light of postwar experience

1960
Programming for agricultural development

1961
Land reform and institutional change
Agricultural extension, education and research in Africa, Asia and Latin America

1962
The role of forest industries in the attack on economic underdevelopment
The livestock industry in less developed countries

1963
Basic factors affecting the growth of productivity in agriculture
Fertilizer use: spearhead of agricultural development

1964
Protein nutrition: needs and prospects
Synthetics and their effects on agricultural trade

1966
Agriculture and industrialization
Rice in the world food economy

1967
Incentives and disincentives for farmers in developing countries
The management of fishery resources

1968
Raising agricultural productivity in developing countries through technological improvement
Improved storage and its contribution to world food supplies

1969
Agricultural marketing improvement programmes: some lessons from recent experience
Modernizing of institutions to promote forestry development

1970
Agriculture at the threshold of the Second Development Decade

1971
Water pollution and its effects on living aquatic resources and fisheries

1972
Education and training for development
Accelerating agricultural research in the developing countries

1973
Agricultural employment in developing countries

1974
Population, food supply and agricultural development

1975
The Second United Nations Development Decade: mid-term review and appraisal

1976
Energy and agriculture

1977
The state of natural resources and the human environment for food and agriculture

1978
Problems and strategies in developing regions

1979
Forestry and rural development

1980
Marine fisheries in the new era of national jurisdiction

1981
Rural poverty in developing countries and means of poverty alleviation

1982
Livestock production: a world perspective

1983
Women in developing agriculture

1984
Urbanization, agriculture and food systems

1985
Energy use in agricultural production
Environmental trends in food and agriculture
Agricultural marketing and development

1986
Financing agricultural development

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 1988

The statistical material in this publication has been prepared from the information available to FAO up to March 1988.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries. In some tables, the designations "developed" and "developing" economies are intended for statistical convenience and do not necessarily express a judgement about the stage reached by a particular country or area in the development process.

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Foreword

Two major preoccupying features emerge from a review of the current world food and agricultural situation. The paramount feature is that hunger and malnutrition continue to be widespread despite the global abundance of food supplies: possibly 500 million people suffer from severe undernutrition and these are joined by millions more who are unable to acquire enough food to enjoy an active and productive life. At the same time, some developed countries have been striving to reduce food production in order to bring stocks down to more manageable levels.

The second preoccupying feature is that world stocks of food have fallen so fast. Growth in food output slowed in 1986 and became negative in 1987. For the first time in more than 40 years, the negative growth in global cereal output is projected to be repeated in 1988 mainly because of the recent severe drought in North America. Fortunately there was an active monsoon in Asia, indeed a destructive excess of rain in some countries, following the widespread droughts of recent years. Nevertheless, cereal stocks have been rapidly drawn down and the world will enter the 1989 season with cereal stocks below the desirable minimum level. Therefore, in the past two years, the world food sector has lurched from a situation of superabundance to one of potential scarcity.

As documented in the world review chapter of this publication, the macro-economic situation remained unfavourable to agriculture in 1987 although there were signs that international agricultural markets were becoming more balanced. The rate of economic growth in 1987 was lower than in any year since 1983 and was inadequate to maintain the growth of output and exports in the developing world. Growth in the volume of world merchandise exports accelerated only a little, despite the stimulating effect of low oil prices and exchange rate realignments, and remained significantly below the average rate of the 1970s. Nevertheless, while the gains from trade were unevenly spread among developing countries, the agricultural exporting countries experienced a rather better trading year than in 1986.

Other factors that make the current economic situation and outlook particularly uncertain are the persistence of large imbalances in trade and international payments; conflicts over trade policies, fierce market competition and the adoption of protectionist trade policies; and low export prices of some agricultural commodities. The stock market crash of 19 October 1987 was an alarming sign of the uncertainty and volatility that continue to affect the world economy.

It became widely recognized in 1987 and underlined in this review, that the burden of debt had emerged as the greatest single impediment to the resumption of growth, particularly in Africa and in Latin America and the Caribbean. Many weak developing countries are struggling to adjust their economies to this burden, often involving serious compression of imports, including food, or reductions in social programmes and investment in human capital, vital for development in the future. Furthermore, the indebted developing countries have been having to adjust and to service their debt in the face of an extended period of the weakest real prices in 50 years for many primary commodities on which they depend for export earnings. A turning-point may have been reached in 1987 with regard to commodity prices, but the experience so far of 1988 has underlined their volatility and uncertainty.

Against this background, declines in food and agricultural production in 1987 were widespread among developed countries, reflecting both the weather and those policy measures designed to curb excess supply. Food output also declined in many developing countries in 1987, which is a particular cause for concern. Extremely unfavourable monsoon conditions in some countries of Asia and the Pacific in 1987 contributed to serious and widespread falls in per caput food production, expected to be around 2% for the region as a whole. After two successive years of encouraging performance, Africa's per caput food output is estimated to have declined nearly 5% in 1987, bringing several countries of the region, once again, to the forefront of the international community's concern. The age-old spectre of locusts and grasshoppers loomed over vast areas of the continent, although kept at bay by prompt national and international efforts coordinated by FAO. The situation is extremely disquieting. A large area in the Sudano-Sahelian zone is being infested, and it is now obvious that continued efforts will be required in the years to come. On a more encouraging note, Latin America and the Caribbean as a whole achieved a good recovery in 1987 in food and agricultural production, especially cereals. In spite of this, the region faces serious difficulties in maintaining any momentum of economic development as it grapples with its burden of external debt.

There was an increase in the value of world exports of crops, livestock and forest products, and a continuing dynamic trading activity in fishery products. However, as was the case for merchandise trade as a whole, this increase in value was largely due to the depreciation of the US dollar and was mainly confined to developed countries. In volume terms, world crop and livestock exports actually declined, and developing countries as a whole experienced a sluggish trading year and their agricultural terms of trade remained extremely unfavourable, having declined by nearly 30% since

1980. Developing countries need to trade in order to grow, generate employment and income, and service their debt. Their food imports also declined. Although improved domestic supply conditions explained some of this reduction in food imports by developing countries, an equally important factor curtailing imports in many cases was the need to service external debt.

On a more positive note, however, there was also an emerging consensus on a variety of interrelated issues in 1987 that carried through into 1988. First among these was the perceived need for the major industrialized countries and groups of countries to coordinate their economic policies in an attempt to maintain non-inflationary growth, stabilize exchange rates and correct some persisting imbalances, such as the US trade deficit.

The second area of consensus, linked to the first, was that something needed to be done about international debt. Some developing countries could be expected to be able to adjust their economies and grow away from their debt problem, given a sufficiently rapid growth in world economic activity, particularly trade, and a reasonably enlightened attitude toward the various options of debt restructuring. However, other countries, particularly the low income countries, could not share in that expectation. The realistic and humane option for them was debt relief.

The third area of consensus was the need for the industrial market economies to adjust their agricultural support policies to bring supply more in line with demand. Excess agricultural supplies, even in situations of remaining need in many developing countries, as already described, were wasting scarce resources, distorting markets and poisoning trade relations. Hence the importance of the Uruguay Round of multilateral trade negotiations (MTN) which was launched in 1986 and got fully under way in 1987. Agriculture and some related areas, such as tropical products and natural resource based products, have rightly been given individual attention in these negotiations. Expression of political support to maintain their momentum is important, so leading to a successful mid-term review at the end of 1988.

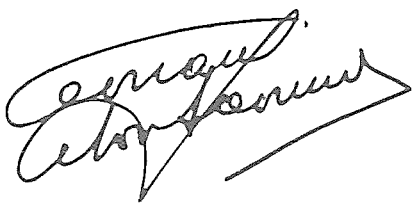
The other area where a consensus has slowly evolved is a greater concern for the environment. Perhaps it was the alerts given against global risks such as the greenhouse effect of increased emissions of carbon dioxide and other gases on raising global temperatures, or the long-term damage being done by some industrial gases to the world's protective ozone layer, that have mobilized public concern. Nevertheless, 1987 marked an important step in the publication of two reports: the *Report of the World Commission on the Environment and Development*, and UNEP's *Environmental perspective to the year 2000 and beyond*. These reports have drawn widespread attention and have highlighted the concept of sustainable development, a mode of development that improves human welfare without damaging or ultimately destroying the environmental base on which man's life system depends.

Many of FAO's actions are in tune with and support the concept of sustainable development but, from a natural resource perspective, the need now is to turn what could become an empty slogan into an operational concept, to become a core component of agricultural and rural development projects and programmes. FAO is addressing this issue, first to evolve a comprehensive set of policies and second, to move toward evolving operational guidelines as a guide to member countries.

It also became more evident in 1987 that many countries, and not only developing ones, have to adjust the structure of their economies to changing economic circumstances. Yet in so doing, we should not forget that the ultimate goal of development is to allow people, above all, the world's children, to live a better and fuller life. It is vitally important to keep such a goal in mind in order to redress the possible heedless rush for economic adjustment, whatever the consequences for the welfare of the more economically weak and exposed people.

As is customary, this edition of *The State of Food and Agriculture* devotes one of its chapters to a special topic. This year it is a concise review of the changing priorities for agricultural science and technology in developing countries. The difference between the food situations of developed and developing countries is very striking. On the one side there is an abundance, even an excess, of food; and all too often on the other side, want and penury. Much that explains this difference is the vast gulf in the level of science and technology employed by the modern commercial farm operator in the industrialized world, and the subsistence farmer in many developing countries. Yet, by and large, the scientific knowledge is there and the technology has been developed. But it may be inappropriate for small-scale farmers and beyond the reach of most of them. It follows that the agricultural scientific research community has to be alert for required shifts in research priorities. At the international level, this community is alert, working through the Consultative Group on International Agricultural Research (CGIAR).

Among the many lessons that may be drawn from the events surrounding food and agriculture as they unfolded in 1987, there is one overall conclusion that these events have underlined. In this increasingly complex, interdependent and competitive world, there is a compelling urgency to raise the priority ranking of the needs of the poor and deprived on the national and international agenda for cooperation and development.



Edouard Saouma
DIRECTOR-GENERAL

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Other factors that make the current economic situation and outlook particularly uncertain are the persistence of large imbalances in trade and international payments; conflicts over trade policies, fierce market competition and the adoption of protectionist trade policies; and low export prices of some agricultural commodities. The stock market crash of 19 October 1987 was an alarming sign of the uncertainty and volatility that continue to affect the world economy.

It became widely recognized in 1987 and underlined in this review, that the burden of debt had emerged as the greatest single impediment to the resumption of growth, particularly in Africa and in Latin America and the Caribbean. Many weak developing countries are struggling to adjust their economies to this burden, often involving serious compression of imports, including food, or reductions in social programmes and investment in human capital, vital for development in the future. Furthermore, the indebted developing countries have been having to adjust and to service their debt in the face of an extended period of the weakest real prices in 50 years for many primary commodities on which they depend for export earnings. A turning-point may have been reached in 1987 with regard to commodity prices, but the experience so far of 1988 has underlined their volatility and uncertainty.

Against this background, declines in food and agricultural production in 1987 were widespread among developed countries, reflecting both the weather and those policy measures designed to curb excess supply. Food output also declined in many developing countries in 1987, which is a particular cause for concern. Extremely unfavourable monsoon conditions in some countries of Asia and the Pacific in 1987 contributed to serious and widespread falls in per caput food production, expected to be around 2% for the region as a whole. After two successive years of encouraging performance, Africa's per caput food output is estimated to have declined nearly 5% in 1987, bringing several countries of the region, once again, to the forefront of the international community's concern. The age-old spectre of locusts and grasshoppers loomed over vast areas of the continent, although kept at bay by prompt national and international efforts coordinated by FAO. The situation is extremely disquieting. A large area in the Sudano-Sahelian zone is being infested, and it is now obvious that continued efforts will be required in the years to come. On a more encouraging note, Latin America and the Caribbean as a whole achieved a good recovery in 1987 in food and agricultural production, especially cereals. In spite of this, the region faces serious difficulties in maintaining any momentum of economic development as it grapples with its burden of external debt.

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CHANGING PRIORITIES FOR AGRICULTURAL SCIENCE AND TECHNOLOGY IN DEVELOPING COUNTRIES

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Glossary

ACP	African, Caribbean and Pacific States
ACPE	Asian centrally planned economies
ADB	African Development Bank
ADF	African Development Fund
APPER	Africa's Priority Programme for Economic Recovery (OAU)
ARPA	Agricultural Rehabilitation Programme for Africa (FAO)
AVRDC	Asian Vegetable Research and Development Centre (Taiwan Province, China)
BMR	Basal metabolic rate
BWC	Bangladesh white C grade
CAP	Common Agricultural Policy
CCP	Committee on Commodity Problems (FAO)
CGIAR	Consultative Group on International Agricultural Research (FAO/UNDP/World Bank)
CIAT	International Centre for Tropical Agriculture (Cali, Colombia)
CIMMYT	International Centre for Maize and Wheat Improvement (Mexico City, Mexico)
CIP	International Potato Centre (Lima, Peru)
COAG	Committee on Agriculture (FAO)
COFI	Committee on Fisheries (FAO)
DAC	Development Assistance Committee (OECD)
DES	Dietary-energy supplies
DNA	Deoxyribonucleic acid
ECA	Economic Commission for Africa (UN)
ECDC	Economic Cooperation Among Developing Countries (UN)
ECU	European Currency Unit
EEC	European Economic Community
EEP	Export Enhancement Programme
EEZ	Exclusive Economic Zone
ESAF	Enhanced Structural Adjustment Facility
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
GIEWS	Global Information and Early Warning System for Food and Agriculture (FAO)
GNP	Gross national product
IAEA	International Atomic Energy Agency
IARCs	International Agricultural Research Centres (CGIAR)
IBPGR	International Board for Plant Genetic Resources (FAO)
IBRD	International Bank for Reconstruction and Development
IBSRAM	International Board for Soil Research and Management (Thailand)
ICA	International Coffee Agreement
ICARA	International Conference on Assistance to Refugees in Africa
ICARDA	International Centre for Agricultural Research in the Dry Areas (Aleppo, Syrian Arab Republic)
ICIMOD	International Centre for Integrated Mountain Development (Nepal)
ICIPE	International Centre of Insect Physiology and Ecology (Kenya)
ICLARM	International Centre for Living Aquatic Resources Management (Philippines)
ICRAF	International Council for Research in Agroforestry (Kenya)
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics (Hyderabad, India)

IDA	International Development Association
IEFR	International Emergency Food Reserve (WFP)
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
IFDC	International Fertilizer Development Centre (USA)
IFPRI	International Food Policy Research Institute (USA)
IIMI	International Irrigation Management Institute (Sri Lanka)
IITA	International Institute of Tropical Agriculture (Ibadan, Nigeria)
ILCA	International Livestock Centre for Africa (Addis Ababa, Ethiopia)
ILRAD	International Laboratory for Research on Animal Diseases (Nairobi, Kenya)
IMF	International Monetary Fund
INIBAP	International Network for the Improvement of Banana and Plantain (France)
IRRI	International Rice Research Institute (Manila, Philippines)
ISA	International Sugar Agreement
ISNAR	International Service for National Agricultural Research (The Hague, the Netherlands)
ITC	International Trypanotolerant Centre (the Gambia)
ITTO	International Tropical Timber Organization
IUFRO	International Union of Forestry Research Organizations
LDCs	Least-developed countries
MCA	Monetary compensatory amounts
MTN	Multilateral Trade Negotiations (GATT)
NGOs	Non-governmental organizations (FAO)
NMP	Net material product (close approximation in socialist countries to GNP)
OAU	Organization of African Unity
OCA	Official commitments to agriculture
ODA	Official development assistance (OECD)
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
PAAERD	UN Programme of Action for African Economic Recovery and Development
PIK	Payment-in-Kind Programme
RMBY	Renminbi-yuan (Chinese currency)
SAF	Structural Adjustment Facility
SDR	Special drawing rights
SIT	Sterile male technique
TCP	Technical Cooperation Programme (FAO)
TFAP	Tropical Forestry Action Plan (FAO)
TNCs	Transnational corporations
UAE	United Arab Emirates
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WARDA	West Africa Rice Development Association (Monrovia, Liberia)
WCARRD	World Conference on Agrarian Reform and Rural Development (FAO)
WCED	World Commission on Environment and Development (UNEP)
WFP	World Food Programme

Explanatory note

The following *symbols* are used in the statistical tables:

— = none or negligible
... = not available

"1986/87" signifies a crop, marketing or fiscal year running from one calendar year to the next; "1985-87" signifies the average for three calendar years.

Figures in statistical tables may not add up because of rounding. Annual changes and rates of change have been calculated from unrounded figures. Unless otherwise indicated, the metric system is used throughout. The dollar sign ($) refers to US dollars.

Production Index Numbers

The FAO index numbers have *1979-81* as the base period. The production data refer to primary commodities (e.g. sugar cane and sugar beet instead of sugar) and national average producer prices are used as weights. The indices for food products exclude tobacco, coffee, tea, inedible oilseeds, animal and vegetable fibres and rubber. They are based on production data presented on a calendar-year basis.[1]

Trade Index Numbers

The indices of trade in agricultural products are also based on 1979-81. They include all the commodities and countries shown in the *FAO Trade Yearbook 1986*. Indices of total food products include those edible products generally classified as "food".

All indices represent changes in current values of exports (f.o.b.) and imports (c.i.f.), all expressed in US dollars. If some countries report imports valued at f.o.b. (free on board), these are adjusted to approximate c.i.f. (cost, insurance, freight) values. This method of estimation shows a discrepancy whenever the trend of insurance and freight diverges from that of the commodity unit values.

Volume and unit value indices represent the changes in the price-weighted sum of quantities and of the quantity-weighted unit values of products traded between countries. The weights are respectively the price and quantity averages of 1979-81, which is the base reference period used for all the index number series currently computed by FAO. The Laspeyres formula is used in the construction of the index numbers.[2]

Definitions of "Narrow" and "Broad"

The OECD definitions of agriculture are generally used in reporting on external assistance to agriculture. The *narrow* definition of agriculture, now referred to as "directly to the sector" includes the following items:

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
Agriculture (subsector unallocated)

The *broad* definition includes, in addition to the above items, activities that are defined as "indirectly to the sector". These activities are:

Forestry
Manufacturing of inputs
Agro-industries
Rural infrastructure
Rural development
Regional development
River development

Regional Coverage

"Developing countries" include: (i) Developing market economies (Africa, Latin America, Near East,[3] Far East and Other) and (ii) Asian centrally planned economies or ACPE (China, Democratic Kampuchea, Democratic People's Republic of Korea, Mongolia and Viet Nam).

"Developed countries" include:[4] (i) Developed market economies (North America, western Europe including Yugoslavia, Oceania, Israel, Japan and South Africa) and (ii) centrally planned economies of Eastern Europe and the USSR (Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania and USSR).[5]

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[1] For full details, see *FAO Production Yearbook 1986*, Rome, 1987.

[2] For full details, see *FAO Trade Yearbook 1986*, Rome, 1987.

[3] The *Near East* includes: Egypt, Libyan Arab Jamahiriya, the Sudan, Afghanistan, Bahrain, Cyprus, Islamic Republic of Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Kingdom of Saudi Arabia, Syrian Arab Republic, Turkey, United Arab Emirates, Yemen Arab Republic and Democratic Yemen.

[4] Note that "industrial countries", as defined by the International Monetary Fund (IMF) (see Table 1.1), include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany (Fed. Rep. of), Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, United Kingdom and United States. (They do not include Yugoslavia, Greece, Israel, South Africa, the centrally planned economies and some smaller other countries.)

[5] Albania is omitted in this report for lack of sufficient data.

PART ONE
WORLD REVIEW

WORLD ECONOMIC ENVIRONMENT

Overview

The world economic environment during 1987 remained unfavourable to strong economic and trade growth (Table 1.1). The highly indebted developing countries continued to make large net transfers of capital to formerly capital-exporting countries, and countries with debt-servicing problems were unable to increase savings and investment rates from the abnormally low levels of recent years. Capital from official sources was available at slightly lower rates of interest, while dollar rates on private loans were higher. A rising share of long-term external debt was guaranteed by governments or owed to official creditors, and there was a decline in net borrowings of unguaranteed private capital for countries with debt-servicing problems.

There continued to be a basic dichotomy of views on how to resolve the chronic problem of debt faced by many developing countries. One view, held mainly by the major creditor countries, was that the rescheduling of debt would allow time for the debtor countries to implement structural adjustment measures designed to spur economic growth and enable them to repay debt. On the other hand, the developing countries represented by the Group of 24, prior to the annual meetings of the International Monetary Fund (IMF) and World Bank, held in late September/early October 1987, called for new innovative mechanisms that would lead to debt restructuring rather than debt rescheduling. They believed that the existing debt strategy was unworkable because of the prevailing high real interest rates, the reluctance by commercial banks to continue "voluntary" lending and a deterioration in the current account balances of debtor countries, despite a widespread compression of imports as part of adjustment programmes. Continued slow economic growth in developed countries, and hence, slow growth in import demand, together with rising trade protectionism and import substitution, were negating attempts of indebted countries to service their external debts. The plea of developing countries included a significant increase in flows of development assistance to achieve a level of 0.7% of GNP of donor countries (current levels are, on average, about half this proportion), and increases in the World Bank's capital resources and in the IMF's structural adjustment facility (SAF). Indeed, a proposed threefold increase in the SAF to SDR 9 000 million was welcomed by the seven major industrial countries at the Venice Summit in June 1987.[1]

Compared with 1986, exchange rates of the major currencies of industrial countries were relatively stable, although the US dollar was sharply depreciated, in particular against the yen and the Deutsche mark. Currency markets continued to be affected by central bank intervention or the threat of such intervention. Consumer prices continued to climb at a much faster pace in developing countries and were rising faster in Latin America than in 1986. As a consequence, currency devaluations in developing countries were widespread. Inflation accelerated in the industrial countries, but remained in the low range of 3.0% to 3.5%. OPEC agreement on crude oil production helped support energy prices. The price of crude oil was sharply above its low level of mid-1986 and tended to stabilize from about May 1987, but then weakened towards the end of the year. While fears of interruptions to oil supplies arising from tensions in a few major producing countries tended to support prices, OPEC producers subsequently tried to stabilize their output to support a crude oil price of about $18 a barrel. International interest rates tended to edge up since May 1987, having fallen early in the year, but declined again in the late months of 1987. Significant reductions in discount rates were made by some industrial countries, in particular the Federal Republic of Germany and Japan in late 1987, in an attempt to boost domestic demand and reduce trade imbalances, following the very sharp falls in world stock markets in October.

While major trade imbalances among the developed market economies peaked in 1986 and have begun to decline, the US trade deficit and surpluses in Japan and the Federal Republic of Germany remain large. The expected persistence of large current account imbalances in these three largest industrial market economies in the coming years are a major factor of uncertainty for the world economic outlook.

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[1] The SAF provides assistance on concessional terms to low-income countries (those eligible for IDA loans) that face protracted balance-of-payment problems. The IMF announced the establishment of a $8 400 million fund which, together with the existing SAF, will provide under the enhanced structural adjustment facility $11 400 million of concessional financing to eligible countries.

TABLE 1.1. **Annual changes in selected economic and financial indicators, 1980-87**

(Percentages)

Item	1980	1981	1982	1983	1984	1985	1986	1987[a]
OUTPUT								
Industrial countries	1.3	1.5	−0.3	2.7	5.0	3.1	2.7	2.4
Developing countries	3.4	1.6	1.6	1.6	4.1	3.3	4.0	3.3
Africa	3.8	2.0	1.0	−1.6	1.4	2.1	0.8	1.5
Asia	5.4	5.5	5.2	7.6	8.0	6.4	6.3	6.0
Near East	−2.5	−2.1	0.3	0.1	0.2	−1.1	1.2	−1.5
Western Hemisphere	6.1	0.1	−1.0	−2.8	3.6	3.5	4.4	3.6
World	2.1	1.8	0.7	2.6	4.5	3.3	3.2	2.8
CONSUMER PRICES								
Industrial countries	11.8	10.0	7.5	5.0	4.7	4.1	2.3	3.0
Developing countries	26.6	26.0	26.0	33.2	38.0	39.4	29.0	35.7
Africa	16.4	21.9	11.4	19.4	20.3	12.8	13.7	13.8
Asia	13.1	10.7	6.3	6.6	7.2	7.6	7.8	7.9
Near East	16.8	15.2	12.7	12.3	14.0	12.2	11.7	13.2
Western Hemisphere	54.4	59.2	68.0	105.5	128.2	149.0	86.5	117.7
EXPORT VOLUMES								
Industrial countries	3.9	3.6	−2.1	3.0	9.9	4.3	2.6	2.5
Developing countries	−4.2	−6.0	−7.6	3.2	7.1	0.9	8.5	5.9
Africa	−1.4	−15.0	−4.9	3.7	5.6	7.5	5.2	−0.1
Asia	8.8	8.8	1.0	10.6	13.4	5.1	17.2	13.4
Near East	−15.2	−17.6	−19.7	−9.3	−4.4	−9.2	15.2	−4.7
Western Hemisphere	1.2	5.9	−2.2	8.1	8.4	0.1	−7.0	3.0
IMPORT VOLUMES								
Industrial countries	−1.6	−2.0	−0.6	4.7	12.6	4.6	8.4	3.5
Developing countries	7.4	7.9	−3.9	−2.2	2.3	−0.3	−2.8	1.9
Africa	8.7	11.2	−8.0	−9.8	0.6	−8.3	−6.7	−3.2
Asia	9.6	7.5	1.0	8.5	5.9	7.7	4.8	7.7
Near East	8.8	16.6	5.6	−2.1	−6.1	−14.8	−19.3	−10.5
Western Hemisphere	9.8	3.6	−17.5	−22.6	3.0	1.7	−1.5	−0.6
TERMS OF TRADE								
Industrial countries	−7.1	−1.8	1.9	1.4	0.3	0.8	9.0	−0.3
Developing countries	16.4	3.6	−0.9	−3.5	1.3	−1.4	−16.7	0.6
Africa	16.4	1.5	−5.3	−3.0	1.9	−4.1	−23.3	−0.6
Asia	−1.6	−2.7	0.1	−	1.6	−1.8	−4.5	−1.1
Near East	41.1	13.4	2.2	−8.4	0.1	−0.1	−46.9	9.9
Western Hemisphere	7.2	−4.1	−5.4	−2.7	3.5	−1.9	−12.2	−2.5
DEBT-SERVICE RATIO[b]								
Capital-importing countries	18.2	22.2	25.7	24.0	23.9	25.0	27.3	25.4
Africa	15.2	18.0	22.3	24.5	26.9	28.3	34.8	33.2
Asia	8.9	10.2	12.1	11.7	12.1	13.1	13.8	12.1
Non-oil Near East	17.3	21.1	26.4	27.4	29.6	31.2	36.1	29.2
Western Hemisphere	33.7	42.2	51.3	45.3	42.2	42.8	51.3	55.4

NOTE: IMF regions shown above are broadly similar to FAO regions used elsewhere in this document.

[a] Preliminary.

[b] Payments (interests, amortization or both) as percentage of exports of goods and services.

Source: IMF, *World Economic Outlook*, October 1987.

TABLE 1.2. **UN world export price indices, by quarter, 1985-87**

(1980 = 100)

Item	1985			1986				1987		
	II	III	IV	I	II	III	IV	I	II	III
Food [a]	64	66	71	77	77	72	71	73	75	73
Agric. non-food	76	73	72	76	75	73	76	80	85	88
Minerals, excl. crude petroleum	121	121	111	107	96	84	75	75	81	82
Crude petroleum	91	91	91	80	42	42	51	56	56	56
Manufactured goods [b]	84	88	93	99	102	106	108	114	117	115

[a] Including coffee, tea and animal feed (i.e. oilseed cake and fishmeal).
[b] Export unit value index of developed market economies.
Source: UN, *Monthly Bulletin of Statistics*, 1987.

The expectation that *(i)* the decline in US imports would be larger than increases in the imports of Japan and the Federal Republic of Germany for 1987 as a whole; *(ii)* oil exporters would reduce imports again in 1987 in response to the extreme deterioration in their terms of trade in 1986; and *(iii)* developing countries with debt-servicing problems would be unable to increase imports, all led to the conclusion that there would be sharp deceleration in the growth of volume of world imports and developing country exports in 1987 (see Table 1.1). The continued threat of stronger protectionist measures also affected the trade outlook, despite the promise of greater trade liberalization in the future.[2] Excess exportable supplies of many agricultural products, US and EEC (European Economic Community) export subsidies and low world market prices also affected trade flows and returns.

Limited evidence suggests that although fiscal deficits in a large number of developed and developing countries remained high in 1987 relative to GDP, they were being gradually reduced.

World non-oil commodity prices in US dollars rose during 1987 from their third-quarter lows of 1986, when they were about 30% below the average for 1980 (Table 1.2). Export prices of *agricultural raw materials* were the most buoyant, rising 46% between the third quarter of 1986 and the third quarter of 1987, particularly prices of cotton and wool. These rises stemmed mainly from increased demand. Export prices of *metals* such as aluminium and copper, important to some low-income countries with large agricultural sectors, also rose by about 24% overall since their lows of mid-1986. These rises were based less firmly on rising demand than on expectations of supply: prices had fallen to such low levels that production capacity was being cut back. On the other hand, export prices of *beverages* that had shown some strength in early 1986, particularly coffee, continued to fall back, and supplies were ample. Prices of *food products* began to firm as the market took account of the likely reductions in availabilities of cereals, particularly rice, as a result of policy-induced lower plantings and adverse weather. Major food commodity market futures remained low and stable, however, an indication of the large stocks that overhung these markets.

Against this varying commodity price picture, prices of *manufactured goods* in US dollars were above the 1986 average. The net effect for developing countries' terms of trade in 1987 was expected to be at a virtual standstill, after the sharp deterioration of the previous year.

Economic Performance

The generally unfavourable world economic environment in 1987 was also reflected in slow growth in world production and trade. During 1980-86, world output of goods and services increased at a rate only three-fifths that of the 1969-79 average; the smallest increase was in 1982. The growth rate exceeded the 1969-79 average in 1984, however, before declining in 1985 and then again in 1986. The IMF expected a 2.8% growth of world output in 1987, the worst performance since 1983. Subsequent developments, in particular the stock market crash in October, and the continuing fall of the

[2] A discussion on progress of liberalization efforts under the Uruguay Round can be found in *Commodity Review and Outlook 1987-88*, Chapter I, "International Policy Responses to Trade Problems, Particularly of Developing Countries". FAO, 1988.

US dollar, may have resulted in a deceleration in world output in 1987 more pronounced than previously estimated. Also, the IMF's outlook for economic growth in 1988, at 2.6% for developed and 4.2% for developing countries, appeared particularly clouded with uncertainty.

The deceleration in output growth from the 1970s to the 1980s was most pronounced for the *developing countries*, and especially for the oil exporters and those with recent debt-servicing problems. According to the IMF, about half the developing countries have been having debt-servicing problems in recent years. Output growth during 1980-86 for this group of countries was less than a third of the 1969-79 average, and was negative in 1982 and 1983. Since then, these economies have managed to grow, but still at a much slower pace than during the 1970s, and growth in 1987 may have slipped back slightly from the rate achieved in 1986. Those without recent debt-servicing problems increased output during 1980-86 at a rate near the average for the 1970s, but below average growth was in prospect for 1987, largely because of weaker growth in world trade. The poor production performance of the countries with debt-servicing problems also extended to agriculture, a major "engine for growth" for many of them. The increase in their agricultural production decelerated from 4% in 1985 to barely above 1% in 1986. Agricultural growth during the 1980s was consistently higher in countries with low debt burdens than in the heavily indebted countries in every year except 1985.

In addition to the marked differences in GDP growth during 1980-86, and even greater differences in per caput GDP growth, there were extreme differences in trade values. For countries with debt-servicing problems, the value of their merchandise exports in 1986 was $43 000 million below that of 1980, and the value of their imports $64 000 million lower. In contrast, the value of merchandise exports by countries without such problems in 1986 was $66 000 million above the 1980 level, and their imports were $44 000 million higher. Thus, the difference between the two groups of countries in the value of their exports was $14 500 million in 1980, but $124 000 million in 1986; and the difference in the value of their imports was $49 000 million in 1980, but nearly $157 000 million in 1986. These gaps were expected to widen further in 1987. From the perspective of the world economy, if the imports of the countries with debt-servicing problems had increased in line with imports of countries without such problems, instead of falling more than 30%, they would have been about 50% or $100 000 million higher. This sum is equivalent to about 5% of the current annual value of world imports, a useful potential but lost actual source of economic growth.

Agricultural export earnings fluctuated widely in the two groups of countries but, again, were generally more depressed in seriously debt-burdened countries during the critical years 1981-83 and 1985. Between 1981 and 1985, debt-burdened countries were forced to reduce the volume of their agricultural and food imports by nearly 1% a year, while countries without debt problems increased theirs by nearly 2% a year, a difference during the six-year period of nearly 15%. As a consequence of the differences in food production and trade between countries with and without debt problems, there were contrasting trends in per caput calorie consumption (or dietary-energy supplies, DES), which during 1980-85 rose 2.7% in the former compared with 3.7% in the latter countries.

While both groups of countries reduced net external borrowing, the 1986 amounts were $76 000 million lower for those with debt problems than in 1981, but only $24 000 million lower for those without such problems. Those with debt problems also had higher interest and debt-service payments relative to export earnings and were expected to have to increase net borrowings in 1987. In addition, they had much larger negative current account balances, sharply lower investment rates and higher rates of inflation.

Turning to the other group of countries affected by the contrasting economic environment of the 1970s and early 1980s, there was essentially zero growth in production of goods and services in *oil-exporting countries* during 1980-86, a marked contrast to the 1970s when their growth was the highest among any country group. Output increased moderately mainly in response to lower prices of crude oil, but fell back again in 1987 as oil prices slightly recovered. Their export volumes also reflected these changes, increasing by 13% in 1986, but declining by an estimated 1-2% in 1987.

From a regional perspective, the Near East was the most seriously affected by deceleration in economic growth and the region's total output actually declined during 1980-86. However, growth in Africa and Latin America and the Caribbean also decelerated sharply. In contrast, output growth in Asia was maintained,

but declined slightly in 1987, due mainly to slower growth of exports to the developed countries. Another decline was observed in the Near East in 1987, with the decline in oil production more than offsetting increased production in other sectors. In Latin America and the Caribbean, 1986 was the best year since 1980, but still well below the average for the 1970s, and growth slowed again in 1987. Output growth in Africa was slow in 1987, a little better than 1986, a year of disappointingly slow economic growth mainly because of low prices of primary commodities, including oil.

The widespread deceleration in economic growth during 1980-86 was most pronounced in western Europe among the *developed market economies*. In 1986, growth slowed markedly in these economies, with an abnormally large gap between past and present performance for Japan. However, import volumes increased sharply, while export volumes slowed. A consequence was the surge in exports from the developing countries, especially those in Asia and the Near East, but not in exports from Latin America and the Caribbean. As discussed above, 1987 was another year of slow economic growth for the developed market economies, and import volumes rose much more slowly while export volumes rose at about the same rate as in 1986. Thus, exports from developing countries increased at a much slower rate than in 1986, and for those in the Near East there was a resumption of the declining trend of 1980-85. The year 1987 was also marked by slower economic growth in the *developed centrally planned economies*, where 1986 had been the best year of the 1980s.

FOOD AND AGRICULTURAL PRODUCTION

While the following review focuses on recent performances in food and agriculture, a note of warning should first be voiced on the long-term implications on the agricultural resource base, and more generally on the global ecosystem, of current policies and practices of resource exploitation. The recent publication of the report *Our Common Future* by the World Commission on Environment and Development deserves a particular mention in this context (see Box 1.1).

According to preliminary estimates, world food production marginally declined in 1987, the worst performance since 1983 and well below the 1980-87 average rate of growth (2.4%) (Table 1.3). Unlike 1983, however, non-food production in 1987 was expected to increase strongly, by more than 6%, so that agricultural output—food and non-food combined—could have risen by 0.5%.

Production by Region and Country Groups

Among the developing country regions, the Far East suffered the worst setback with the widespread failure or late arrival of the southeast monsoon, accompanied by catastrophic floods in some countries such as Bangladesh. Per caput food production in this region was likely to fall 4-5% in 1987. Africa and the Near East regions also had a disappointing agricultural year, with changes in food production of about −1% and +1% respectively. Non-food production growth was reasonably buoyant in 1987, however. It should be recalled that both regions experienced fairly rapid growth in agricultural output in 1985 and 1986. Nevertheless, for Africa the record for the 1980s remains one of declining per caput food and agricultural output. The worsening food situation in Ethiopia at the end of 1987 again gave rise to serious concern. On a more positive note, food and agricultural production recovered strongly in Latin America and the Caribbean in 1987, and the region recorded its best production performance in cereals since 1981. Growth of non-food production was particularly strong. Also, food and agricultural output growth in the Asian centrally planned economies (ACPE) was better than had been expected earlier in the year, although below the high average obtained in the early 1980s. However, apart from China, the region's all-important cereal crop did not increase

TABLE 1.3. **Food and non-food production, 1985-87**

Item	Index (1979-81 = 100)			Change		Annual rate of change 1980-87
	1985	1986	1987	1985-86	1986-87	
				(%)		(%)
FOOD PRODUCTION						
Developing market economies	117	118	118	1.6	0.1	2.6
Africa	114	119	118	4.5	−0.9	2.6
Far East	121	122	119	1.6	−2.8	2.9
Latin America	113	112	117	−1.1	4.7	2.1
Near East	113	118	119	5.0	0.9	2.4
Asian centrally planned economies	128	134	137	4.7	2.9	5.0
Total, developing countries	120	123	124	2.5	1.0	3.3
Developed market economies	107	106	104	−1.4	−1.8	0.8
North America	109	104	100	−4.2	−4.2	0.5
Oceania	107	107	106	0.2	−1.0	1.8
Western Europe	107	107	107	0.6	−0.1	1.0
Eastern Europe and the USSR	110	118	118	7.7	−0.4	2.8
Total, developed countries	108	109	108	1.1	−1.4	1.4
WORLD	114	116	116	1.9	−0.2	2.4
NON-FOOD PRODUCTION						
Developing market economies	115	105	110	−8.9	5.0	1.7
Africa	115	118	127	2.3	7.7	3.2
Far East	122	114	114	−6.3	−0.7	2.7
Latin America	110	91	102	−17.2	11.8	0.4
Near East	107	102	105	−4.3	3.0	0.8
Asian centrally planned economies	168	135	150	−19.4	10.9	5.5
Total, developing countries	127	111	119	−12.0	6.6	2.7
Developed market economies	105	93	102	−11.5	10.0	0.4
North America	96	73	93	−23.5	26.9	−1.3
Oceania	119	119	120	0.1	0.8	2.9
Western Europe	125	128	118	2.6	−8.2	3.7
Eastern Europe and USSR	106	103	103	−2.8	−0.4	0.2
Total, developed countries	105	97	102	−8.2	5.7	0.3
WORLD	119	106	113	−10.8	6.3	1.9

Source: FAO, Statistics Division.

BOX 1.1

Report of the World Commission on Environment and Development

The World Commission on Environment and Development (WCED) published its report *Our Common Future* in April 1987. The report is also known as the Brundtland Report, named after the Prime Minister of Norway who headed the Commission. In establishing the WCED, the UN General Assembly had asked it to formulate a global agenda for change.[1] The agenda included:

— proposals on long-term environmental strategies for achieving sustainable development by the year 2000 and beyond;

— recommendations on ways to improve the environment and how these could be translated into greater cooperation among countries at different stages of socio-economic development;

— definition of long-term environmental goals, issues and the appropriate efforts needed to protect and enhance the environment within a long-term agenda for action.

The Commission first met in October 1984 and during the 900 days between then and the publication of its report, a series of events further underlined the environmental hazards of the modern world. These were:

— the peaking of the environment-development crisis in Africa, triggered by drought, which put 35 million people at risk, and killed perhaps a million;

— a leak from a pesticide factory in Bhopal, India, which killed more than 2 000 people and injured over 200 000 more;

— an explosion of a nuclear reactor at Chernobyl, USSR that sent nuclear fallout across Europe, increasing the risks of future human cancers;

— a warehouse fire in Switzerland resulting in the release of agricultural chemicals, solvents and mercury into the River Rhine, killing millions of fish and other aquatic species and threatening water supplies; and

— the death of an estimated 60 million people, most of them children, from diarrhoeal disease related to contaminated drinking water and malnutrition.

There are also environmental trends that threaten to alter radically the planet and jeopardize living species, including human species. It is estimated that each year 6 million hectares of productive dryland turns into worthless desert, and that more than 11 million hectares of forests are destroyed. In Europe, acid rain kills forests, acidifies lakes and damages buildings and monuments. The burning of fossil fuels increases the carbon dioxide content of the atmosphere causing gradual global warming through a "greenhouse effect". Other industrial products threaten to deplete the Earth's ozone layer increasing the risk of human and animal cancers and possibly disrupting the ocean's food chains.

Structured around three major problem areas (common concerns, challenges and endeavours) the Commission's report addressed a wide range of issues that are at the centre of FAO's areas of work and interest. Among the major challenges stood food security and the strategies for its sustained achievement. It was emphasized in particular that food strategies should not be intended as the mere addition of an environmental component to programmes. Public intervention has often presented three basic defects: they are dominated by short-term considerations and thus lack an ecological orientation; they operate within a national framework, while what is needed is a differentiated set of policies that take into account ecologically sound practices in the various areas; and, in the case of industrial countries, policies have overprotected farmers and caused overproduction without due regard for conservation considerations.

In developing the concept of sustainable growth the report referred to the need for conserving and enhancing the resource base. The conservation of agricultural resources was a pressing task in the many parts of the world where cultivation has already been extended to marginal lands, and fishery and forestry resources were overexploited.

Environmental problems being greater than the sum of those in each country, the report presented a number of proposals for institutional and legal changes, in particular through global institutions and programmes. The UN system is viewed as the obvious instrument for such institutional initiatives. While the UN Secretary-General should provide leadership in assessing, advising, assisting and reporting on progress made and needed for sustainable development, a strengthened UN Environment Programme should continue to work with the other UN agencies in identifying new initiatives and programmes and monitoring performance.

FAO concurs with the main thrust of the report and the analysis it contains, which reinforces ongoing and planned FAO activities aimed at integrating environmental issues into agricultural and rural development processes. Recent examples of FAO initiatives relating to the environment, conservation of natural resources and development include: the World Soil Charter; the WCARRD Programme of Action; the International Code of Conduct on the Distribution and Use of Pesticides; the International Undertaking on Plant Genetic Resources; the Strategy for Fisheries Management and Development; and the Tropical Forestry Action Plan. Such initiatives provide internationally accepted frameworks for tackling environmental problems. FAO therefore considers the Commission's report useful in its efforts to consolidate and further expand environmentally conscious programmes promoting sustainable development.

[1] The report was the latest in a series of such reports commissioned by the UN, following the Brandt Commission's *Common Crisis North-South: Cooperation for World Recovery* (1983); Gibbon Ruark's *Programme for Survival;* and the Independent Commission on Disarmament and Security Issues' *Common Security: A Blueprint for Survival* (1982).

TABLE 1.4. **Percentage rate of change in per caput food production, 1986-87**

Percentage rate of change	Developing countries	Developed countries
More than 10	Bhutan, Tunisia	
5.01 to 10	Bolivia, Brazil, Solomon Islands, Jordan, Lebanon, Mexico, Paraguay	Spain
3.01 to 5	Burma, Colombia, Cyprus, Dominican Republic, Uruguay	Belgium, Luxembourg, Italy, Malta, New Zealand
1.01 to 3	Algeria, Botswana, China, Egypt, Guadeloupe, Honduras, Democratic People's Republic of Korea, Lesotho, Libyan Arab Jamahiriya, Madagascar, Malaysia, Mongolia, Singapore	Austria, Bulgaria, Czechoslovakia, France, Denmark, Israel, Portugal
0.01 to 1	Chile, Cuba, Guinea-Bissau, Haiti, Martinique, Nepal, Nicaragua, Peru, Reunion, Somalia	German Democratic Republic, Hungary, Norway, South Africa
−0.01 to −1	Costa Rica, El Salvador, Gabon, Indonesia, Iraq, Jamaica, Mauritius, Pakistan, Papua New Guinea, Puerto Rico, Suriname, Tanzania, Togo, Turkey, Zaire	Iceland, USSR
−1.01 to −3	Angola, Argentina, Burundi, Cameroon, Central African Republic, Congo, Ghana, Guinea, Islamic Republic of Iran, Côte d'Ivoire, Republic of Korea, Mauritania, Mozambique, Namibia, Nigeria, Rwanda, Senegal, Sierra Leone, Trinidad and Tobago, Viet Nam, Yemen Arab Republic	Japan, Netherlands, Poland, Romania, Switzerland, Yugoslavia
−3.01 to −5	Afghanistan, Benin, Guatemala, Guyana, Liberia, Malawi, Mali, Vanuatu, Panama, Thailand, Uganda, People's Democratic Republic of Yemen	Canada, Federal Republic of Germany, United Kingdom, United States
−5.01 to −10	Bangladesh, Burkina Faso, Chad, Ecuador, Ethiopia, India, Kenya, Democratic Kampuchea, Laos, Philippines, Sri Lanka, Sudan, Syrian Arab Republic, Venezuela, Zambia	Australia, Finland, Greece, Ireland, Sweden
Below −10	Barbados, Fiji, Gambia, Morocco, Niger, Saudi Arabia, Swaziland, Zimbabwe	

Source: FAO, Policy Analysis Division.

overall because of the poor monsoon rains in Asia in 1987.

Reflecting this overall disappointing performance, per caput food production declined in 71 out of 108 developing countries, including such populous ones as India, Bangladesh, Pakistan, Nigeria and Ethiopia (Table 1.4). On the other hand, per caput food production rose in most of the larger countries of Latin America and the Caribbean. More details of performance at regional levels are given in Part Two, "Regional Review".

Among the *developed country regions*, declines in food and agricultural production were widespread in 1987, as a consequence of less favourable weather conditions, policy measures such as land set-aside programmes or production quotas designed to curb output, and the effects of low world prices for agricultural commodities.

Food production declined more than 4% in North America, mostly because of a reduction of about 10% in the harvested area of cereals and soybeans, as average yields remained high. Non-food production, mainly cotton and tobacco, recovered very strongly from the decline registered in 1986. In Oceania, crop production, especially cereals, declined sharply, but this situation was offset by increased livestock production so that food and agricultural growth was reduced by only 1%. Food production in western Europe was virtually unchanged in 1987, with gains in crop production offsetting a small decline in livestock output. But the cereal harvest in the EEC was smaller than expected earlier in the year and significantly less than in the record year 1984. Food and agricultural production in eastern Europe and the USSR in 1987 remained virtually unchanged following the more favourable production levels in 1986, with poor weather conditions at harvest setting back the more optimistic outlook earlier in the growing season.

Production of Food and Non-Food Commodities

Among the main food and non-food commodities, the widespread decline in world cereal production in 1987 of about 4% was the most notable, the result of a reduction of 6% and 2% in developed and developing countries respectively (Table 1.5). Production of all the major cereals was affected but coarse grains relatively more in developed countries, especially North America, and paddy in developing countries, mainly because of the poor performance of the southwest monsoon in Asia in 1987. As a consequence, world utilization of cereals was expected to exceed production for the first time in years and world cereal stocks were expected to fall 14% by the end of the 1987/88 seasons, compared with the previous year, although they would remain at a high level of 22% of estimated annual consumption. Nevertheless, stocks of rice were expected to fall 37% to a level equivalent to about 10% of annual consumption compared with an average figure of 15-20% during the past decade. Rice prices rose strongly from August 1987 and by the end of the year were about 40% higher than a year previously. Export prices of other cereals also began to recover in the latter half of 1987, although they remained close to historical low levels.

A reduced cocoa crop was also expected, although this prospect did not help to raise market prices. Very little increase in world sugar production was expected in 1987, which should result in a better balance between demand and supply. But world sugar prices remained low, although showing signs of recovery since September 1987. Production of root crops also stagnated at the global level; declines in developed countries offsetting increases in developing regions. There was only a modest increase in production of oil crops. There were more substantial increases in production of coffee (nearly 19%), recovering from the low production level of 1986; cotton lint (7%); tobacco (5-6%); and tea (3%); such increases contributing to the overall increase of about 6% in non-food production.

Growth of world livestock production slowed in 1987 compared with 1986, although like 1986, it outpaced the crop subsector at the global level. Milk production was held down in developed countries, mainly by policy measures, while it suffered from the effects of drought in India. In the meat sector, poultry output continued to grow virtually world-wide.

A note of caution must also be sounded, as aggregate carry-overs of cereals in developing countries were expected to fall nearly 20% in 1987/88, to their lowest level in a decade. Global stocks of rice were expected to fall more than one-third, as already noted. Cereal stocks in India could be halved. Food production in Africa has once again failed to match population growth and a famine and drought situation once again threatened parts of Ethiopia's population; the food situation in Mozambique and Angola also remained extremely precarious. While some major developed countries strive to adjust their production to world market demand, it would

TABLE 1.5. Agricultural production, by commodity, 1986-87

	Developed countries			Developing countries			World		
	1986	1987[a]	Change 1986 to 1987 (%)	1986	1987[a]	Change 1986 to 1987 (%)	1986	1987[a]	Change 1986 to 1987 (%)
	(Million tons)			(Million tons)			(Million tons)		
Total cereals [b]	913.3	861.6	−5.7	947.2	928.4	−2.0	1 860.4	1 790.0	−3.8
Wheat	315.5	299.9	−4.9	220.7	215.2	−2.5	536.2	515.1	−3.9
Rice, paddy	26.2	25.4	−3.3	447.7	432.7	−3.3	474.0	458.1	−3.3
Coarse grains	571.5	536.3	−6.2	278.7	280.4	0.6	850.3	816.7	−3.9
Root crops	225.9	220.3	−2.5	364.3	374.5	2.8	590.3	594.8	0.8
Pulses	16.1	18.4	14.3	36.4	36.3	−0.3	52.5	54.7	4.2
Oil-bearing crops [c]									
Oil content	23.6	24.8	4.9	40.9	40.5	−1.1	64.6	65.3	1.1
Oilcake content	64.7	67.5	4.3	65.3	66.5	1.9	130.0	134.0	3.1
Sugar, centrifugal (raw)	42.8	41.3	−3.4	58.4	60.8	4.0	101.2	102.1	0.9
Cocoa beans	–	–	–	2.1	2.0	−4.5	2.1	2.0	−4.5
Coffee	–	–	–	5.1	6.0	18.7	5.1	6.0	18.7
Tea	0.2	0.3	2.0	2.0	2.1	3.4	2.3	2.4	3.2
Cotton lint	5.4	6.2	14.8	9.7	10.1	3.3	15.2	16.3	7.4
Tobacco	1.9	1.9	−1.4	4.0	4.4	8.9	5.9	6.2	5.6
Total meat	97.7	100.4	2.8	57.5	59.3	3.2	155.1	159.7	2.9
Total milk	391.2	385.9	−1.4	130.5	135.4	3.7	521.7	521.3	−0.1
Hen eggs	18.9	19.1	1.0	14.7	16.0	9.3	33.6	35.2	4.6

[a] Preliminary.
[b] Including rice as paddy.
[c] Total harvested production.
Source: FAO, Statistics Division.

TABLE 1.6. **Fertilizer consumption, by major nutrients, 1983-86**

Item	Consumption			Change		Annual rate of change
	1983-84	1984-85	1985-86	1983-84 to 1984-85	1984-85 to 1985-86	1981-82 to 1985-86
		(Million tons)		*(%)*		*(%)*
DEVELOPED COUNTRIES						
Nitrogen	38.09	38.73	38.61	1.7	−0.3	3.0
Phosphate	22.24	22.11	22.20	−0.6	0.4	1.2
Potash	21.48	21.29	21.18	−0.9	−0.5	2.3
TOTAL NUTRIENTS	81.80	82.12	81.98	0.4	−0.2	2.3
Developed market economies	48.02	48.39	45.96	0.8	−5.0	−0.3
Eastern Europe and USSR	33.78	33.73	36.02	−0.2	6.8	3.6
DEVELOPING COUNTRIES						
Nitrogen	29.03	31.79	31.37	9.5	−1.3	6.5
Phosphate	10.47	11.84	10.87	13.1	−8.2	5.4
Potash	3.93	4.61	4.45	17.3	−3.5	5.4
TOTAL NUTRIENTS	43.43	48.24	46.69	11.1	−3.2	6.2
of which:						
Africa	1.47	1.48	1.82	0.7	22.7	4.7
Far East	12.40	14.20	15.02	14.5	5.7	6.9
Latin America	5.72	7.30	7.39	27.5	1.3	3.0
Near East	4.37	4.26	4.32	−2.5	1.4	5.8
Asian centrally planned economies	19.45	20.97	18.12	7.8	−13.6	2.3
WORLD						
Nitrogen	67.11	70.51	69.98	5.1	−0.8	3.0
Phosphate	32.71	33.94	33.07	3.8	−2.6	1.4
Potash	25.41	25.90	25.62	1.9	−1.1	1.5
TOTAL NUTRIENTS	125.24	130.36	128.67	4.1	−1.3	2.3

Source: FAO, Land and Water Division.

be reassuring in 1988 if food production in a wider range of developing countries could be more in line with expanding domestic demand, let alone nutritional requirements.

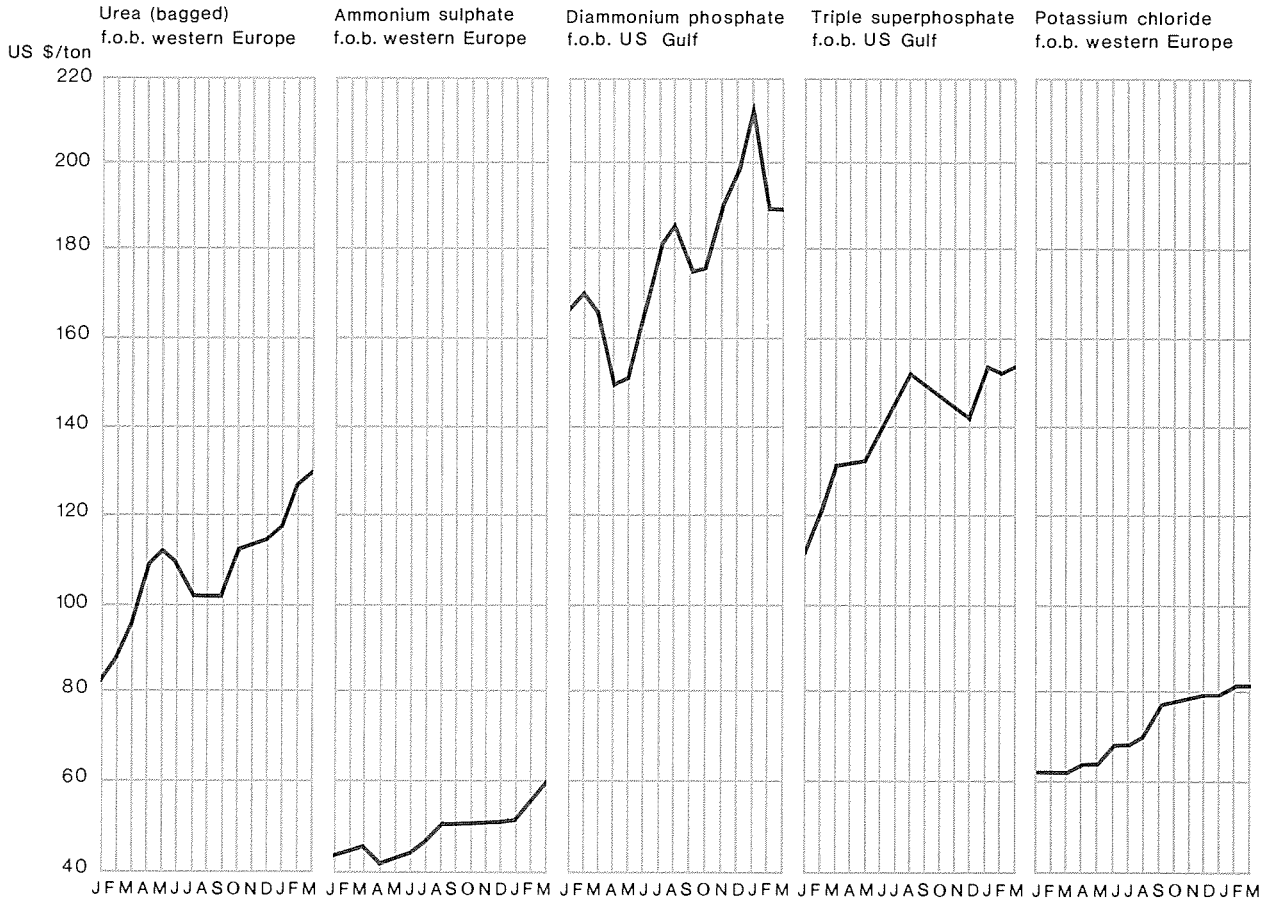
Fertilizers

World consumption of the three primary nutrients (nitrogen, phosphate and potash) combined decreased 1.3% in 1985/86, having risen about 4% in the previous year (Table 1.6). Most of this decline was because of reduced consumption of phosphatic fertilizers, but use of other nutrients also fell back marginally. Within these totals, there were wide regional differences in changes in consumption in 1985/86. In the developed countries, consumption in 1985/86 was virtually unchanged compared with the previous year, but this was the result of a significant (5%) fall in the developed market economies, whose fertilizer consumption has stagnated during the 1980s, more or less offset by a 7% rise in consumption in eastern Europe and the USSR. Consumption also fell back in developing countries, having grown strongly in the previous year. Here again, this was the result of increases in the developing market economies, with a particularly sharp recovery in Africa following a three-year period of very slow growth in fertilizer consumption, continued rapid growth in the Far East and more modest gains in Latin America and the Caribbean and the Near East. There was a sharp fall, however, of nearly 14% in consumption in the Asian centrally planned economies. This relatively large decline was mainly because of the situation in China where a combination of adverse weather, short-term changes in cropping patterns and reduced imports resulted in a decline in total nutrient use of 15%.

Comprehensive information on fertilizer consumption in 1986/87 will not be available until later in 1988. Based on earlier estimates, it was expected that the mature fertilizer markets of the developed market economies would register little or no growth again in 1986/87 under the impact of production constraints and depressed prices. Continued growth in fertilizer consumption was expected in eastern Europe and the USSR, however. In the developing country regions, the widespread failure of the monsoon in Asia was likely to have affected that region's fertilizer consumption in 1986/87, particularly in India. On the other hand, efforts were being made in China to restore fertilizer supplies so as to regain previous consumption levels. In the Near East, fertilizer was expected to have increased in 1986/87 following the return of better weather conditions and changes in fertilizer import and distribution policies in Turkey, a major user of fertilizers in that region. On the other hand, the agricultural recovery in Africa was less vigorous than hoped, so the relatively large increase in fertilizer use recorded in 1985/86 was not expected again in 1986/87. In Latin America, government policies favouring agricultural production for domestic and export markets were likely to result in increased fertilizer use in 1986/87, although low international commodity prices, variable weather conditions and widespread economic difficulties may have negated the consumption-promoting influences.

After a period of about two years during which international prices for fertilizers, in terms of US dollars, generally continued to drift downwards to low levels, some signs of tightness of supply relative to demand began to be apparent for some materials in *1987*, particularly as the Northern Hemisphere's 1987 autumn planting season got under way. Thus between January and December 1987, average

Figure 1.1 **EXPORT PRICES OF FERTILIZERS, 1987-1988**



Source: FAO, Land and Water Development Division

prices of urea rose by some 30% and those of triple superphosphate by about 25%. Price increases for ammonium sulphate and diammonium phosphate during this period, at around 20%, were more moderate and tended to level-off late in 1987. Prices of Canadian potassium chloride rose nearly 30% during the year, but prices of West European material, which started the year at a higher level, rose by 15% or less. Overall, the most notable increases in relation to prices in earlier years, were those of phosphatic materials, which by the end of the year had regained their levels of the early 1980s, a period when they were relatively high, but falling (Fig.1.1). It must be recalled, however, that the value of the US dollar in which these prices are quoted had gained and then lost about 30% during this period, so that import prices of fertilizers, in terms of the domestic currencies of importing countries, will have followed different trends.

Factors existing in late 1987 that were tending to weaken fertilizer prices included the poor performance of the southwest monsoon in Asia, which reduced consumption of urea and diammonium phosphate. In India, for example, large stocks of materials for the Kharif season were expected to cause a withdrawal from fertilizer markets for some time. The imposition of dumping duties or minimum import prices on urea in the United States, the EEC and Canada, also was exerting some downward pressure on prices. On the other hand, the idling of phosphatic plants in the United States, the announcement of a potash production rationing policy in Saskatchewan, Canada because of oversupply, and the financial difficulties faced by many Canadian potash-producing companies, together with the application of preliminary dumping margins on Canadian potash in the United States, continued to contribute to price rises for these materials.

FISHERIES

Production

A further substantial increase in total world fishery production was recorded in 1986. Output of aquatic organisms, excluding seaweeds and whales, rose by almost 6 million tons to reach a new record of 91.5 million tons (Table 1.7).[3] Over the last decade, total ouput has grown steadily and is now some 21 million tons (34%) greater than in 1977. The harvest of fish and shellfish from aquaculture is estimated to have contributed about 10% to the 1986 total. Although data for world aquaculture production is not available on a systematic basis prior to 1983, the evidence available suggests that the growth in production from this sector has been greater than that from capture fisheries.

Approximately 80% of total world fishery production arises from the operation of 20 countries. Almost all these major fishing nations reported significant increases in production in 1986; output by the majority of the other countries showed little change.

Japan, the world's largest fish producer, succeeded in expanding its output by nearly 5% to almost 12 million tons, equalling its previous record of 1984; the great majority of its catches arose from operations in the Northwest Pacific Ocean. The USSR was again the world's second largest producer with a total output of 11.3 million tons. Compared with 1985, the USSR increased its fish production by some 7%, mainly as a result of higher catches in the East-Central Atlantic, Southeast Atlantic and, above all, in the Southwest Atlantic Ocean where output by USSR vessels more than doubled; the majority of the USSR catch, however, continued to be taken in the North Pacific. These increases more than offset a 20% decline in the catches of capelin in Northeast Atlantic waters, a situation experienced by other countries exploiting that species.

In China, a further substantial growth in fish production was recorded, output rising by 18% to reach 8 million tons, a level double that of 1979. Chinese production consisted almost

[3] Because of the different treatment by the parties involved of catches obtained through joint-venture arrangements, especially those concerning at-sea trans-shipments, the total net world catch may, on receipt of fuller information, require a modest downward adjustment.

TABLE 1.7. **Catch of fish, crustaceans and molluscs, including all aquatic organisms except whales and seaweeds, country groups and world, 1984-86**

Country/Region	Catch			Change	Annual rate of change
	1984	1985	1986	1985-86	1980-86
		(Million tons)		*(%)*	*(%)*
DEVELOPING COUNTRIES					
Developing market economies	32.3	34.3	37.6	9.5	4.5
Africa	3.4	3.4	3.6	5.7	1.1
Far East	15.5	15.9	16.5	4.2	3.3
Latin America	11.9	13.5	15.8	17.2	7.8
Near East	1.2	1.2	1.3	3.1	5.3
Asian centrally planned economies	8.4	9.3	10.6	13.3	8.4
Total, developing countries	40.7	43.6	48.1	10.3	5.3
DEVELOPED COUNTRIES					
Developed market economies	30.8	30.2	30.8	2.0	1.9
North America	6.1	6.2	6.4	3.7	3.9
Oceania	0.5	0.5	0.5	6.7	9.4
Western Europe	11.6	11.5	11.2	−2.2	0.1
Other [a]	12.6	12.0	12.6	4.9	2.5
Eastern Europe and USSR	12.0	11.8	12.6	6.3	3.1
Total, developed countries	42.7	42.0	43.3	3.2	2.2
WORLD	83.5	85.6	91.5	6.8	3.7

NOTE: Changes based on thousand tons.
[a] Japan, South Africa and Israel.
Source: FAO, Fisheries Department.

equally of marine and freshwater species, with aquaculture playing a very important role. Other major Asian producers reported higher catches, notably Indonesia (21% increase), the Republic of Korea (17%), India (4%) and the Philippines (3%).

As in 1985, further notable rises in the catches off the Pacific coast of South America accounted for a significant part in the growth of the total world output. Higher catches by Peru (36%) and Chile (16%), consisting mainly of sardines, anchoveta and jack mackerel, resulted in a combined production by these two neighbouring countries which exceeded 11 million tons; a substantial part of these catches was reduced into fishmeal, but supplies for direct human consumption also rose.

The United States after a minor decline in ouput in 1985, experienced further growth in 1986 to reach a new record of nearly 5 million tons. Better fishing in the Pacific Ocean, especially for Alaska pollack (47% increase), other finfish species such as halibut, sole and hake and also crabs and shrimps (48% increase), more than counterbalanced a decline of 10% in production from Atlantic fisheries and in the fishmeal operations for menhaden in the Gulf of Mexico. A notable feature of US fisheries has been the development of joint-venture operations with the USSR, Japan and the Republic of Korea, within the Exclusive Economic Zone (EEZ) of the United States; these operations, carried out mainly in the Pacific, started modestly in 1979, but have expanded steadily and substantially and accounted for 1.3 million tons of fish in 1986.

A small but welcome growth in fish production in Africa was observed in 1986, especially by countries bordering the eastern Atlantic Ocean. Higher catches by Morocco (26% increase), Ghana (13%), Nigeria (11%) and Namibia (9%) contributed to the reversal of the recent trend of declining output by coastal states of this region.

Total fish production by European countries showed little change from the results experienced throughout the present decade. Quota controls over many species exploited in the North Atlantic were among the factors responsible for modest declines in total catches by countries such as Norway, the Federal Republic of Germany, the United Kingdom, Spain and Poland.

Among other developed countries, both

BOX 1.2

World strategy for fisheries: guidelines for developing and managing the sector

One of the major outcomes of the 1984 FAO World Conference on Fisheries Management and Development was the endorsement of a strategy embodying the prevailing consensus on the best course for the further development and better management and utilization of the world's fish resources. Described by the Director-General of FAO as a "World Charter for Fisheries", the strategy represents a distillation of experiences regarding the directions to be sought, the considerations to be taken into account and the activities and policies that should be fostered when planning the future of the sector.

Although non-mandatory and not involving any binding commitments, the strategy provides principles and guidelines for consideration by governments and international organizations as they work together to increase fish production and improve individual and collective self-reliance in fisheries management and development.

In response to a request by the 1984 World Fisheries Conference, FAO undertook in 1987 a review of the progress so far achieved in implementing the strategy and the five associated programmes of action which provide an integrated basis for technical assistance in fisheries by FAO and other international agencies. A report, summarizing national and international experiences since 1984 in using the strategy, was submitted to the 1987 Sessions of the FAO Committee on Fisheries and the FAO Council and to the FAO Conference itself.

On the evidence of national studies and other materials provided for the preparation of this first progress report, the strategy has clearly been found by both governments and international organizations to be an important source of guidance as they endeavour individually and jointly to improve the contribution of fisheries to national socio-economic and nutritional goals. In particular, fisheries administrations have found the text of the strategy to be a most valuable advocate and point of reference when seeking the allocation of higher priorities and greater financial support to the fisheries sector.

The review also underlined the actions taken by many governments, following the 1984 Conference, to strengthen their fisheries institutions and reformulate their plans for the fisheries sector in the light of the strategy's recommendations. The report presented by FAO further illustrated the important steps being taken throughout the world to design and implement systems for the better management and more efficient utilization of fish resources. Further reviews of progress will be prepared by the Organization at four-year intervals.

With regard to the special programmes of action, FAO reported that the annual target of $15 million in support, from bilateral and multilateral donor agencies for FAO's activities in implementing these programmes, had been reached in 1987.

TABLE 1.8. **FAO index numbers of volume, value and unit value of exports of fish and fishery products, 1984-86**

Item	Index numbers (1979-81 = 100)			Change		Annual rate of change
	1984	1985	1986[a]	1984 to 1985 (%)	1985 to 1986 (%)	1980 to 1986 (%)
VOLUME						
World	122.0	132.6	147.2	8.7	11.0	6.7
Total, developing countries	123.8	139.4	152.0	12.6	9.0	7.5
Total, developed countries	120.2	127.8	137.0	6.3	7.2	5.4
VALUE						
World	105.6	113.0	142.7	7.0	26.3	6.3
Total, developing countries	114.5	122.6	146.9	7.1	19.8	6.9
Total, developed countries	99.9	106.5	139.9	6.6	31.4	6.0
UNIT VALUE						
World	87.0	85.8	100.5	−1.4	17.1	0.1
Total, developing countries	93.1	89.1	98.3	−4.3	10.3	−0.3
Total, developed countries	83.5	83.8	103.3	0.4	23.3	0.6

[a] Preliminary.
Source: FAO, Fisheries Department.

Canada (1.5 million tons) and New Zealand (340 000 tons) achieved new record levels of production; catches by Iceland (1.7 million tons) showed little change from 1985.

Trade

After the stagnation of the early 1980s and the moderate growth experienced in 1985, the value of world trade in fish and fishery products expanded 26% in 1986, reaching a total exceeding $22 000 million (Table 1.8). Canada, the world's largest exporter, increased the value of its exports by a further 30%. A very substantial growth (40% by value) in exports was also achieved by the United States. Many other developed countries, including such traditional exporters as Denmark, Norway, Japan, and Iceland, participated in this expansion. Among the developing fishing nations, particularly notable increases in exports of fish products were experienced by the Republic of Korea, Thailand and China.

This growth in trade was stimulated by high demand for food-fish products in the major consuming markets which remain concentrated in the developed countries. Japan's imports, which account for more than one-quarter of the entire world trade in fish, grew by 39% in dollar terms. The United States, the world's second largest importer, increased its fish purchases from abroad by 17% in value.

In the major European markets, in particular France, Italy, the United Kingdom, the Federal Republic of Germany and Spain, substantial increases in the value of imports were recorded.

The growth in demand for imported fish and fishery products was much more moderate in the developing countries, purchases increasing on average by 12% in value. Notable features were, however, the 2½-fold increase in imports by Brazil and the doubling in the value of imports of fish by Thailand, principally of tuna to supply the country's expanding domestic canning industry whose products dominate Thailand's rapidly rising export trade.

International trade in fishmeal stagnated in 1986, after the excellent results of 1984 and 1985. Prices, however, recovered modestly from the low levels of 1985, notwithstanding conditions of market oversupply.

Trends in 1987

The partial evidence at present available suggests that the world catch in 1987 did not significantly exceed the record level achieved in 1986. A number of important fisheries continued to be restricted by quota controls; perhaps more significantly, unfavourable "El Niño" conditions affected the Chilean and Peruvian pelagic fisheries, whose output over the first eight months of the year suffered a decline, compared with 1986, of around one million tons. Meanwhile, demand for fish products remained high in 1987, acting as a basic stimulant to fish production and, above

all, to the continuance of high prices, especially for most demersal species, shrimp and cephalopods. Trade in fish products in 1987 appears to have remained strong; Canada's exports, for example, are expected to have risen in value by a further 20%. Fishmeal production in 1987 appears to have fallen by some 15% and stocks at the end of the year were estimated to be less than half of those at the close of 1986.

Outlook and Policy Issues

The consistent and substantial increase achieved in the world output of fish during the 1980s has confounded earlier predictions regarding the possibilities of sustained further expansion of fish supplies; in the course of the first seven years of the decade, the total annual production of fish rose by some 20 million tons. This has been achieved by the return to high levels of productivity of the world's major fishery—that off the western coast of South America for pelagic species, mostly destined for fishmeal; the success of the United States and Canada in developing their domestic fisheries within their EEZs; the sustained expansion of certain national fishing industries in Asia, notably that of China; and the continued development, notwithstanding problems of access to traditional fishing zones, of the production by the two major fishing nations, Japan and the USSR. The steady growth in aquaculture production has also contributed importantly to this upward trend in total output.

Particularly in recent years, international fish trade has expanded notably, both in terms of volume and value. This underlying growth in demand, primarily from the major consuming markets of the developed countries, has not only sustained general fisheries development, but has also provoked significant rises in prices for the most preferred species and products.

The major issues confronting those responsible for or engaged in fisheries, faced by the prospect of further strengthening in the demand for fish, involve policy, institutional and technical factors. In the case of capture of fisheries, with the natural resources under mounting pressure, the need for the further introduction and effective implementation of fisheries management measures is becoming acute. The continued development of aquaculture will require long-term government assistance in the promotion of adaptive technologies, marketing programmes and appropriate institutional structures. A significant contribution to the task of increasing supplies could result from making better use of the fish already caught by reducing post-harvest losses and better utilizing small pelagic and other less favoured species as food. Increased attention must also be given to reducing costs of production.

FORESTRY

Production and Trade in 1986

The steady recovery of world production of forest products that started in 1983, continued through 1986 (Table 1.9). High levels of production were reached in mechanically processed wood products, reflecting a substantial expansion of the housing sector, the main outlet for these products. The pulp and paper sector benefited from the relatively strong growth of the developed market economies and marked its fourth year of increase since the recession of 1981-82. Trade in world forest products increased 16% and 10% in terms of value and volume respectively (Table 1.10).

The expansion of the construction industry was particularly strong in North America, where it recorded its highest level since 1978, as well as in Japan which registered a marked increase in wood-based house building after years of stagnation. Construction activity also increased in the USSR. In western Europe new dwelling construction remained at low levels, but renovation and maintenance activity partly offset this feature, leading to increased consumption of sawnwood and wood-based panels. Production of coniferous sawnwood, which accounts for some 75% of world sawnwood production, grew about 7% in the United States, while in Canada and in the main European producing countries, the increases were marginal.

Exports of coniferous logs from the USSR to Japan rose 20%, but other trade flows in this commodity diminished. Exports of sawnwood from the United States grew 24%, benefiting from the fall in the value of the US dollar, Japan and western Europe being its major trading partners. The appreciation of the Japanese yen against the US dollar and increased housing activity in Japan may offer American producers greater access to that important market. Canadian exports to the United States fell slightly in 1986, but recovered in 1987.

The wood-based panel industry reflected the different pace of activity in the housing sector, with a sustained growth in North America and a modest recovery in western Europe. European plywood producers are facing increased competition from Southeast Asian and American producers in particular. In 1986, for the first time, European imports of plywood exceeded domestic production.

The pulp and paper sector continued the strong expansion that began in 1983. Consumption grew rapidly in major markets and capacity utilization reached very high levels in most countries. Currency changes favoured increased exports from major producers such as the United States, Canada and Brazil. In western Europe, there were major increases in paper production, particularly in France, Sweden and the United Kingdom. Exports of bleached eucalyptus pulp, particularly to the EEC, continued their strong growth, with Spain, Portugal and Brazil being major suppliers. This grade of pulp has become particularly sought after for the production of fine paper. Trade in pulpwood increased by 4%.

Production of tropical timber displayed some contrasting features in 1986. Total production increased 5%, but while log production for domestic use continued to increase, exports of tropical logs continued to decline with the enforcement of a ban on exports by Indonesia. For the third consecutive year, a larger volume of tropical sawnwood and plywood than of logs was traded. This trend reflected a deliberate policy on the part of exporting countries to reduce log exports, capture value added and meet domestic needs. Thus, the total volume of tropical timber traded has significantly declined from its peak reached in 1979. The decline has been particularly evident in the western European market and in Japan, where there are indications that tropical timber is facing increased competition from timber of temperate origin and from non-wood materials. In 1986, this downward trend in the volume of trade was partly halted due to the high level of demand for tropical plywood of Asian origin in the major consuming countries. Exports of plywood by Indonesia increased 23% to account for 50% of total world trade in plywood.

Conservation Initiatives

In March 1987, the Second Session and in November the Third Session of the Council of the 31-member International Tropical Timber Organization (ITTO) were held at its headquarters in Yokohama, Japan. At these meetings, ITTO's future programme of work on increasing transparency in timber trade and promoting investment in renewal of tropical forests and industry was shaped, agreement reached on the Headquarters Agreement and the Organization's establishment, an initial pipeline of 12 projects created, including pilot schemes for sustained utilization and conservation of forests in the western Amazon

TABLE 1.9. **Output of main forest products, developing and developed countries, 1984-86**

Item	Output			Change 1985 to 1986	Annual rate of change 1980 to 1986
	1984	1985	1986		
		(Million m^3)		*(%)*	*(%)*
ROUNDWOOD	3 126	3 164	3 252	2.8	1.8
Total, developing countries	1 716	1 743	1 777	2.0	2.1
Total, developed countries	1 410	1 422	1 475	3.7	1.4
Fuelwood and charcoal	1 614	1 646	1 678	2.0	2.4
Total, developing countries	1 356	1 384	1 415	2.3	2.3
Total, developed countries	257	262	263	0.5	3.5
Industrial roundwood	1 512	1 518	1 574	3.6	1.1
Total, developing countries	360	358	362	1.0	1.6
Total, developed countries	1 152	1 160	1 212	4.5	1.0
PROCESSED WOOD PRODUCTS					
Sawnwood and sleepers	461	465	475	2.0	0.5
Total, developing countries	102	105	106	0.1	3.2
Total, developed countries	359	360	369	2.5	−0.2
Wood-based panels	109	112	119	6.2	1.8
Total, developing countries	18	19	21	10.1	6.4
Total, developed countries	91	93	98	5.4	1.0
Wood pulp	136	135	140	3.7	1.9
Total, developing countries	9	10	10	4.0	6.4
Total, developed countries	127	126	130	3.7	1.6
		(Million tons)		*(%)*	*(%)*
Paper and paperboard	190	192	202	4.8	2.6
Total, developing countries	25	27	29	8.8	7.4
Total, developed countries	165	165	172	4.2	2.0
Pulp for paper	140	141	147	3.8	2.2
Total, developing countries	16	18	19	3.7	7.0
Total, developed countries	124	123	128	3.8	0.1

Source: FAO, Forestry Department.

region of Brazil, and the rehabilitation of forests in East Kalimantan, Indonesia, which were severely affected by recent fires.

Governments and the international community are giving more attention to the conservation of forest resources and to the environmental aspects of forestry. In developing countries, a major concern is the rapid loss of tropical forests. Each year some 11 to 12 million hectares are being lost and forest degradation covers an even wider area. In tropical regions the consequences of this destruction often causes floods, soil and water degradation and reduced agricultural production. Fuelwood shortages are also widespread.

Perceiving the urgency of these problems, the international community joined FAO in launching the Tropical Forestry Action Plan (TFAP) directed at stimulating a much higher level of commitment and action in tropical countries to slow down uncontrolled deforestation and to increase the contribution of forestry to economic development in a country's approach to conservation and development. The Plan is also aimed at harmonizing and increasing the support of the international community in tropical forestry development. Under the TFAP, discussion is at different stages with governments of 30 tropical countries on developing national plans of action.

TABLE 1.10. **Volume of exports of main forest products, developing and developed countries, 1984-86**

Item	Exports			Change		Annual rate of change
	1984	1985	1986	1984 to 1985	1985 to 1986	1980 to 1986
		(Million m^3)		*(%)*		*(%)*
Industrial roundwood	103	106	106	2.7	−0.2	−1.6
All developing countries	30	30	28	1.5	−6.9	−6.8
All developed countries	74	76	78	3.2	2.5	1.1
Sawnwood and sleepers	86	86	87	−0.1	1.1	0.9
All developing countries	10	9	10	−3.6	3.4	−2.3
All developed countries	76	76	77	0.3	0.8	1.3
Wood-based panels	18	19	21	4.9	7.5	3.2
All developing countries	7	7	8	7.8	11.4	7.9
All developed countries	11	12	12	3.1	5.1	0.9
		(Million tons)		*(%)*		*(%)*
Pulp	22	22	23	1.2	6.8	2.3
All developing countries	2	2	2	1.0	1.1	5.8
All developed countries	20	20	21	1.2	7.3	2.0
Paper and paperboard	40	41	43	2.4	6.2	4.0
All developing countries	1	1	2	−0.8	30.8	19.2
All developed countries	38	39	41	2.5	5.3	3.6

Source: FAO, Forestry Department.

A related initiative was the Bellagio Strategy Meeting held in early July 1987, sponsored jointly by FAO, the UNDP, the World Bank, the World Resources Institute and the Rockefeller Foundation. The meeting's manifesto called on world leaders to support concerted global action to conserve and manage the tropical forests for sustainable development, before it is too late!

The importance of forests in the conservation of soil and the prevention of desertification is well recognized, but action to increase forest cover does not keep pace with exploitation. Nevertheless, there have been some notable efforts. For example, a programme in the arid north, northeast and northwest of China in the past decade has established 7 million hectares of plantations to provide shelter and 1 500 million trees have been planted around villages and homesteads, and along roads and canals. Nearly 10 million hectares of farmland and pasture have been brought under protection with obvious benefits for the environment and crop production. An important component in China's national strategy is the encouragement of people to involve themselves in forestry. Each year more than 200 million people have been involved in planting up to 1 000 million trees.

As another example, the pre-Saharian zones of Algeria include areas that are much affected by desertification. These zones lie between isohyets of 400 mm of rainfall to the north and 100 mm to the south. They represent 60% of the productive agricultural land in Algeria, provide grazing grounds for some 7 million sheep and support the livelihood systems for nearly 3 million inhabitants. To arrest the process of desertification, Algeria embarked in 1972 on the implementation of a vast rehabilitation programme, covering 3 million hectares and known as the *barrage vert* or greenbelt. Initially designed as a mere tree planting activity in the pre-Saharian zones, the concept of the greenbelt has evolved over the years into agrosilvopastoral management of these zones. Activities include the regeneration of natural vegetation, protection and management of existing woody vegetation, silvopastoral management, sand-dune stabilization and afforestation, surface water development, and construction of access roads.

So far, these activities have covered some 100 000 hectares. Other activities implemented consisted of an inventory of soil resources and forest cover and in the preparation of an agrosilvopastoral management plan for four pilot zones in the greenbelt, each covering 100 000 hectares.

Current Issues and Concerns

In the temperate zone, particularly in Europe and North America, there has been a growing concern about widespread damage and destruction of forests attributed to airborne pollution and forest fires. Although the cause-effect relationship of air pollutants on vegetation is complex and not completely understood, an estimate made in 1985 identified damage attributable to air pollution in forests of ten European countries amounting to some 6 million hectares.

From time to time markets are disrupted by storm damage to forests. An exceptional cyclonic storm in northern France and southern England resulted in trees equivalent to about 6 million m^3 of timber being blown down in each country, a volume many times the normal annual production of timber in the region affected. As well as causing considerable short-term disruption to communications and power supplies, such a storm does considerable long-term damage to the amenity value of tree cover.

In recent years, forests of temperate areas also have been subject to serious destruction caused by fires. In 1981, a year of severe incidence, the area of forest burnt in North America amounted to 7 million hectares and in western Europe, to some 770 000 hectares. In May 1987, China suffered a serious forest fire that destroyed some 2 million hectares of forest land in its northeastern province (Heilongjiang), killed nearly 200 people and left 50 000 homeless. Serious fire damage also occurred in nearby regions of Mongolia and the USSR. The average annual loss in China, which has about 133 million hectares of forest and woodlands, exceeds 1 million hectares.

The broader implications of the degradation of forest resources, both in temperate and tropical countries, were emphasized in the 1987 report by the World Commission on Environment and Development, *Our Common Future*, referred to earlier, which analysed the effects of environmental stresses on the prospects for sustainable development (see Box 1.1). The report also called for closer attention to intersectoral links between forestry and other sectors, the effects on the sector of policies external to it, and the contribution of forestry to the objectives of sustained national development.

AGRICULTURAL TRADE

The value of world merchandise exports in 1986 was estimated by the UN at $2 122 000 million. The increase over the level of 1985, $189 000 million or 10%, was the largest so far in the 1980s, a period of slow growth in trade. The relatively large increase in the value of world trade in 1986 resulted mainly from the depreciation of the US dollar (the gain in volume was only 3.5%, the same rate of increase as 1985) and from much greater trading activity among industrial countries. In developed countries as a group, export earnings rose more than 15% while outlays on imports were 12% higher.

In contrast, the US dollar value of total merchandise exports of developing countries declined nearly 6%, while that of their imports increased only 2.7%. Thus, the share of developing countries in world trade continued to decline, from 34% of total exports in 1980 to 29% in 1985 and only 25% in 1986. Much of this was due to lower oil exports. Although all developing regions except Latin America and the Caribbean recorded increases in export volumes in 1986, these were largely offset by declining export unit values. Only the Far East achieved substantial gains in the value of its total merchandise exports, mainly of manufactured goods.

Trade in agricultural products in 1986 broadly followed the pattern of overall merchandise trade, in that most of the gain was due to increased exports of developed countries, particularly developed market economies (Table 1.11). These economies expanded their agricultural (crop and livestock) exports 11-12%, and their imports 15-16% (Table 1.12). In contrast, developing countries expanded their agricultural exports only 3-4%, while the value of their agricultural imports declined 5%. This performance nevertheless was an improvement compared with 1985. Overall, in terms of US dollars, 1986 was particularly buoyant for agricultural trade compared with the early 1980s. The increase of 8.6% in the value of world exports of agricultural, fishery and forestry products in 1986 was the largest annual gain since the boom period of 1977-80, and brought the nominal value of exports of these products back close to the levels of 1980-81.

While exports of agricultural (crops and livestock) and forest products recovered from the decline of 1985, fisheries continued to be the most dynamic agricultural market, thanks to strong demand for shellfish and other fish and fishery products, in particular in industrialized countries, and to shortages of several major traded species of fish.

Preliminary 1986 statistics on world trade in forest products indicated an increase of 5% in world export value and a 4% increase for the developing countries. (Details on fishery and forestry trade can be found in the respective sections of this document.)

The imbalance between trade performances of developed and developing countries in 1986 led to the latter's share of world exports of crops and livestock products falling to 32% from 34% in 1985, and their share of imports of these products falling to 23.5% compared with 27% in 1985 and about 30% in the early 1980s. On the side of exports, this deteriorating situation was due mainly to weak commodity prices, notwithstanding the brief boom in coffee prices in early 1986.

Imports

As regards imports, a number of positive and negative factors contributed to an overall stagnation in the volume of food imports by developing countries in 1986 and, for the second consecutive year, a sharp decline in their value. On the positive side, in a majority of countries the decline in food imports appeared to coincide with improved domestic supplies. In a sample of 56 developing countries, nearly two-thirds significantly reduced the volume of their food imports in 1986. For several of these countries (e.g. Sudan, Syria, Chad, Kenya and Ecuador), where food imports normally account for a large share of total food supply (10% or more), the reduction in imports was associated with a significant improvement in crop conditions in 1985-86. In a number of other countries, however, food imports were reduced despite unfavourable domestic production performances and a relatively high dependence on food imports. Such situations affected Ghana, Liberia, Mozambique, Haiti, and even higher income countries like Gabon and Mexico, underlining the severity and extent of their current account and external debt constraints, which caused imports of even subsistence food items to be reduced.

Thus, from a temporary position of being net agricultural importers in 1981-82, developing countries moved to an increasing net surplus in trade in crops and livestock products in subsequent years, a situation that was consolidated in 1986. In that year, the export/import ratio was 124%, following the reduction in food imports of almost 16% in

TABLE 1.11 **Value of world exports of agricultural (crops and livestock), fishery and forest products, at current prices, 1984-86**

Exports	Value			Change		Average annual rate of change
	1984	1985	1986	1984 to 1985	1985 to 1986	1980 to 1986
	(US$ '000 million)			(%)		(%)
Agricultural products	220.8	208.6	226.5	−5.5	8.6	1.7
Total, developing countries	74.3	70.3	72.8	−5.4	3.5	1.7
Total, developed countries	146.5	138.3	153.7	−5.6	11.2	1.8
Fishery products	15.8	16.9	20.1[a]	6.9	18.9	5.3
Total, developing countries	7.0	7.4	8.1	6.7	9.8	5.3
Total, developed countries	8.8	9.5	12.0	7.1	26.0	5.4
Forest products	50.2	50.1	52.6	−0.2	4.9	1.2
Total, developing countries	6.9	6.7	7.0	−3.7	4.3	−2.5
Total, developed countries	43.3	43.4	45.6	0.4	5.0	1.9
TOTAL	286.8	275.6	299.2	−3.9	8.6	1.8
Total, developing countries	88.2	84.4	87.9	−4.3	4.1	1.6
Total, developed countries	198.7	191.2	211.3	−3.8	10.5	2.0
		%				
Share of developing countries	31	31	29			

NOTE: Figures may not add up because of rounding. Annual changes and their averages have been calculated from unrounded figures.
[a] Preliminary 1985/86. Change in fishery products differs from that in Table 1.8 because of data discrepancies in some major reporting countries.
Source: FAO.

value in 1985 and 1986. In this respect, agriculture contributed to reducing current account deficits. On the other hand, imports tended to represent a growing share of developed countries' net agricultural trade; their export/import ratio steadily declined from 90% in the early 1980s to around 80% in 1985 and 1986.

Exports

Most developing countries increased their US dollar earnings from agricultural exports in 1986 compared with 1985. Out of 73 countries accounting for the bulk of total agricultural exports by developing countries, 42 (or 57% of the total) achieved some increase in export earnings from agriculture. In comparison, nearly two-thirds of this group of 73 countries had experienced declining agricultural earnings in 1985. The increase in export earnings in 1986 was generally achieved from higher unit values rather than from expanded volumes of exports. All developing regions except the Far East gained in this respect. Only 38% of the countries reviewed expanded the volume of their shipments.

Such increases in unit values, taking place during a period of very depressed export markets for most agricultural commodities, mainly reflected increases in the prices of a narrow range of products. In particular, export prices of coffee, a major source of export receipts for a large number of developing countries, strengthened considerably during early 1986 (Table 1.13). Thus, the gains in unit value of African and Latin American and Caribbean exports were largely due to the strong increase in coffee prices and, to a lesser extent, the overall firming of sugar and banana quotations in US dollar terms during the year. On the other hand, the collapse in prices of palm oil and coconut oil, tea and to a lesser extent, rice, more than offset higher prices for rubber and wood products in the Far East.

While the value of agricultural exports was higher for most *Latin American and Caribbean* countries in 1986, the overall disappointing regional performance was largely due to a sharp fall in both the volume and value of exports of Argentina and Brazil, the latter country sharply reducing its coffee shipments. However, Mexico and Colombia obtained excellent foreign exchange receipts from agricultural exports compared with 1985.

TABLE 1.12 **Value of world agricultural trade (crops and livestock), at current prices, by region, 1984-86**

Country/Region	Value			Change		Average annual rate of change	
	1984	1985	1986	1984 to 1985	1985 to 1986	1980 to 1986 Current prices	Volume[a]
	(US$ '000 million)			(%)		(%)	
DEVELOPING MARKET ECONOMIES							
Export	68.4	63.7	65.4	−6.8	2.6	1.1	3.1
Import	62.3	56.5	52.8	−9.3	−6.6	2.6	4.4
Africa							
Export	8.8	8.7	10.2	−1.1	16.8	0.3	−0.2
Import	9.1	9.2	8.6	1.0	−6.1	1.8	3.9
Far East							
Export	21.1	18.6	18.9	−12.1	1.9	2.2	6.8
Import	18.4	16.8	16.2	−8.6	−3.6	3.2	4.9
Latin America							
Export	32.1	31.1	30.9	−3.3	−0.5	1.3	2.2
Import	11.1	9.9	9.3	−10.5	−6.1	−0.1	2.0
Near East							
Export	5.6	4.8	4.8	−14.4	1.2	1.0	4.4
Import	23.0	20.0	17.9	−13.4	−10.1	4.7	6.3
ASIAN CENTRALLY PLANNED ECONOMIES							
Export	5.9	6.6	7.4	11.4	12.2	8.6	13.3
Import	6.1	5.1	5.7	−16.9	12.0	−1.8	−1.8
TOTAL, DEVELOPING COUNTRIES							
Export	74.3	70.3	72.8	−5.4	3.5	1.7	4.0
Import	68.4	61.6	58.5	−9.9	−5.1	2.0	3.4
DEVELOPED MARKET ECONOMIES							
Export	138.2	129.8	144.7	−6.0	11.5	2.0	1.9
Import	144.5	144.4	166.9	−0.1	15.6	2.1	1.8
EASTERN EUROPE AND USSR							
Export	8.4	8.4	9.0	0.8	6.7	−1.6	−0.1
Import	27.0	25.3	23.2	−6.3	−8.6	0.1	−0.9
TOTAL, DEVELOPED COUNTRIES							
Export	146.5	138.3	153.7	−5.6	11.2	1.8	1.7
Import	171.5	169.7	190.0	−1.1	12.0	1.7	1.1
WORLD							
Export	220.8	208.6	226.5	−5.5	8.6	1.7	2.4
Import	239.9	231.3	248.5	−3.6	7.5	1.7	1.9
Share of developing countries in world agricultural trade							
		(%)					
Export	33.6	33.7	32.1				
Import	28.5	26.6	23.5				

NOTE: Figures may not add up because of rounding. Annual changes and their averages have been calculated from unrounded figures.
[a] Obtained by deflating current values of trade with the indices (1979-81 = 100) of export and import unit values of agricultural products.
Source: FAO.

TABLE 1.13 **FAO index numbers of volume, value and unit value of world exports of crop and livestock products, by major commodity groups, 1984-86[a]**

Item	Index (1979-81 = 100)			Change		Average annual rate of change
	1984	1985	1986[b]	1984 to 1985	1985 to 1986	1980 to 1986
				(%)		(%)
VOLUME						
CROPS AND LIVESTOCK, TOTAL	109	107	106	−1.3	−1.2	2.0
Food	108	106	103	−2.3	−2.4	1.7
Cereals	108	103	93	−4.9	−9.5	0.7
Feed	116	123	133	6.3	8.3	5.9
Raw materials	102	102	107	−0.2	4.8	0.9
Beverages[c]	110	116	108	4.7	−6.3	1.2
VALUE						
CROPS AND LIVESTOCK, TOTAL	98	92	98	−6.8	7.3	1.4
Food	97	90	94	−7.8	5.1	1.3
Cereals	98	84	73	−14.7	−12.7	−0.1
Feed	100	83	100	−17.4	20.4	3.1
Raw materials	99	94	95	−5.6	1.4	−0.2
Beverages[c]	103	106	133	2.5	25.9	4.4
UNIT VALUE						
CROPS AND LIVESTOCK, TOTAL	90	85	93	−5.6	8.6	−0.7
Food	90	85	92	−5.6	7.6	−0.5
Cereals	91	82	79	−10.2	−3.5	−1.3
Feed	87	67	75	−22.3	11.2	−2.8
Raw materials	97	92	89	−5.5	−3.2	−1.1
Beverages[c]	93	91	123	−2.1	34.4	3.7

NOTE: Figures may not add up because of rounding. Annual changes and their averages have been calculated from unrounded figures.
[a] Based on a sample covering 96% of food trade and 90% of agricultural trade.
[b] Preliminary.
[c] Coffee and tea. Cocoa is included under food.
Source: FAO, Statistics Division.

Africa recorded one of its best agricultural trade performances in the recent past, both with regard to the overall increase—nearly 17%—in export earnings from the sector and by the extent of the improvement in the region—in that 25 out of 35 countries expanded their agricultural exports. Among the largest exporters, Côte d'Ivoire, Cameroon and Ethiopia achieved particularly significant gains from exports of coffee. Nigeria's earnings, however, were much reduced, largely because the value of its cocoa exports fell nearly 40%.

Only a minor recovery in agricultural exports was achieved in the *Near East* in 1986 after the setback of the previous year. All the major exporters in the region, except Turkey, faced stagnation, or even a decline in the value of their exports, mainly because of low cotton prices.

Despite a 16% volume increase in 1986, the value of agricultural exports from the *Far East* remained virtually unchanged from the levels of the previous year. The main exceptions to an otherwise depressed regional picture in 1986 were Pakistan and India, both of which recorded sharp increases in exports after four years of steady decline from the high levels of 1981.

Terms of Trade

The export prices of the main traded agricultural commodities fell significantly from the second quarter of 1986 (Fig. 1.2). Prices of food products as a whole (excluding beverage crops) were estimated to have declined 12% between the first and fourth quarter of 1986, while those of non-food products stagnated. Against the unstable and generally depressed international prices for agricultural products, those of manufactured goods rose 19%, while

those of fuels were, on average, 40% lower than in 1985.

Taking as a comparative reference a composite index of export prices of both manufactured goods and crude petroleum, the price relationship between agricultural and other tradables (net barter terms of trade) remained stable in developed countries as a whole, but fell considerably in developing countries in 1986 (Table 1.14). Among industrialized countries, changes in price relationships were adverse to agricultural exports in North America but more favourable in western Europe, partly due to the terms-of-trade effect of the depreciation of the US dollar. Agricultural net barter terms of trade also deteriorated in eastern Europe and the USSR and were lower for Oceania than for any developed or developing region. Among developing countries, agricultural net barter terms of trade improved slightly in Africa and to a greater extent in Latin America compared with 1985, but deteriorated in all other developing regions, with the Far East enduring the sharpest loss.

The weakening in prices of agricultural exports of developing countries of 5-6% relative to prices of manufactures and fuels was compounded by a slight fall in agricultural export volumes in 1986. As a result, the purchasing power of agricultural exports (income terms of trade) fell 6% below the levels of 1985, notwithstanding the modest increase of 3-4% in the dollar value of crop and livestock exports shown in Table 1.11. A welcome development, however, was the 5% improvement in Africa, where agricultural exports still represent about 20% of total exports. In contrast, income terms of trade for Latin America and the Caribbean fell 10-11% in 1986, the worst year-to-year performance of the decade, as the improvement in agricultural prices relative to other products was more than offset by sharply reduced volumes of exports. The Far East and Near East also suffered sharp deterioration in the purchasing power of their agricultural exports, mainly because of lower prices.

Changes in the purchasing power of agricultural exports in 1987 cannot yet be fully assessed due to incomplete trade data. However, export prices in 1987 were, on average, higher than in 1986 for most agricultural commodities, including rice, cotton, several vegetable oils, rubber, hides and skins, jute and sugar. However, prices for some important traded commodities tended to

TABLE 1.14 **Net barter and income terms of trade of agricultural exports for manufactured goods and crude petroleum, 1982-86**

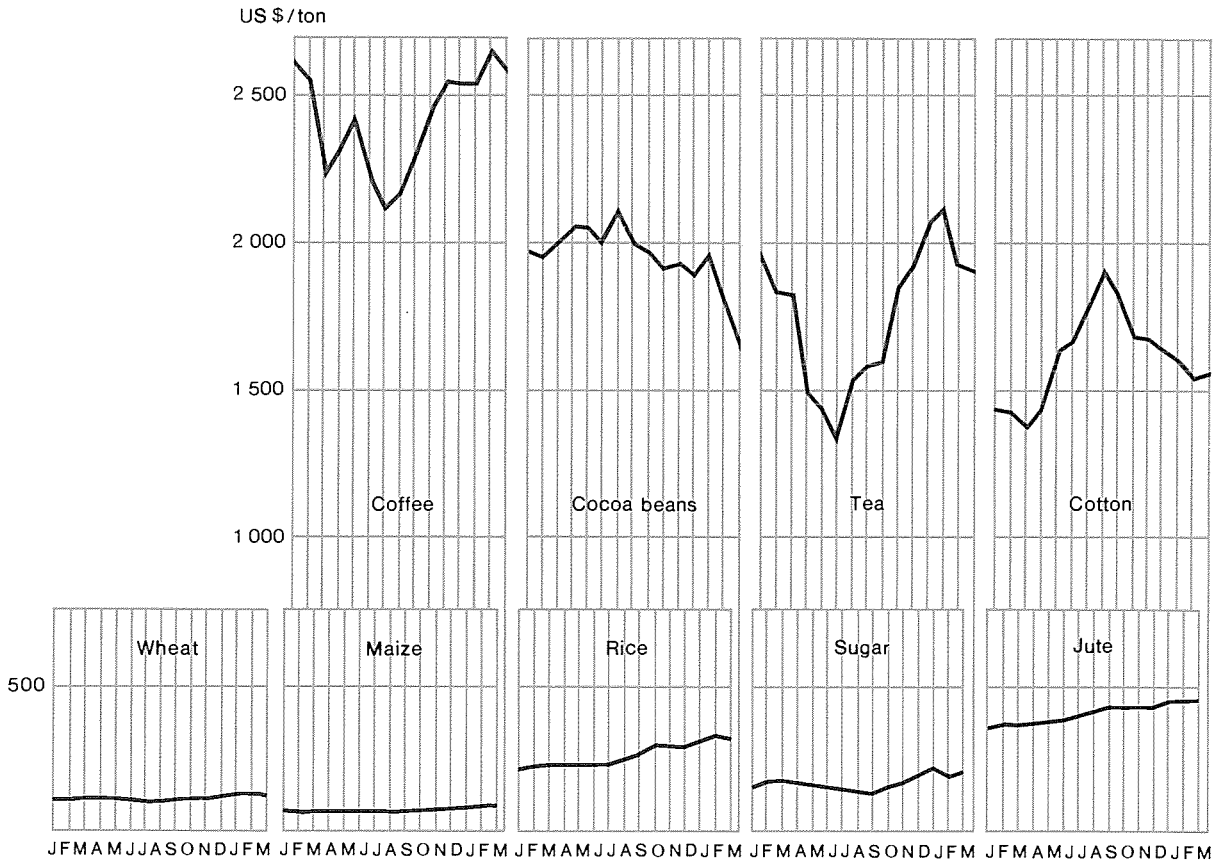
(1979-81 = 100)

Item	1982	1983	1984	1985	1986
NET BARTER TERMS OF TRADE					
Developed market economies	98	101	102	100	100
North America	100	107	114	109	94
Oceania	100	103	95	76	68
Western Europe	94	90	87	84	89
Eastern Europe and USSR	98	99	97	91	88
TOTAL, DEVELOPED COUNTRIES	98	101	102	99	99
Developing market economies	86	90	102	92	87
Africa	86	91	115	107	108
Far East	80	97	105	92	71
Latin America	91	89	102	90	94
Near East	83	84	91	94	84
Asian centrally planned economies	106	104	109	83	79
TOTAL, DEVELOPING COUNTRIES	87	91	103	90	85
INCOME TERMS OF TRADE					
Developed market economies	101	103	108	101	99
North America	100	105	113	87	70
Oceania	105	97	102	106	95
Western Europe	102	103	108	110	120
Eastern Europe and USSR	98	94	92	90	86
TOTAL, DEVELOPED COUNTRIES	101	103	108	99	98
Developing market economies	95	103	118	109	102
Africa	87	87	102	101	106
Far East	94	104	126	109	99
Latin America	95	108	118	114	102
Near East	114	114	121	103	93
Asian centrally planned economies	103	119	140	159	164
TOTAL, DEVELOPING COUNTRIES	95	105	121	112	105

Source: FAO, Policy Analysis Division.

decline: in particular, coffee prices weakened markedly, which in 1986 were a major source of strength for many developing countries' export earnings. On the other hand, export prices of manufactured goods continued to increase steadily. By the first quarter of 1987, the unit value of developed market economy exports of manufactured goods, in terms of US dollars, was 10% higher than the average for 1986, and world export prices of crude petroleum were 17% higher. While the net terms-of-trade impact of such changes is bound to have asymmetric effects on different countries according to their trade structure, a further deterioration was expected in the overall terms of trade and purchasing power of agricultural exports in 1987.

Figure 1.2 **EXPORT PRICES OF SELECTED COMMODITIES, 1987-1988**



WHEAT: Hard winter No. 2, ordinary protein, f.o.b. Gulf, USA.
MAIZE: No 2. yellow, f.o.b. Gulf, USA.
RICE: milled, Thailand 100%, II grade
SUGAR: raw, ISO Daily, f.o.b. and stowed Caribbean ports, bulk
COFFEE: green 1979 International Coffee Agreement, composite price.
COCOA: UK export, London Spot.
TEA: London Auction, weighted average, all origins. .
COTTON: lint, Memphis Territory MI-3/32.
JUTE: Bangladesh Chittagong, f.o.b BWC

Source: FAO, Statistics Division

EXTERNAL RESOURCE FLOWS TO AGRICULTURE

Official Flows to Agriculture

Complete information on external assistance to agriculture, including bilateral commitments, is available only up to 1985. Even after allowing for the increased value of the US dollar which peaked in early 1985, and lower rates of inflation, total commitments in 1980 prices fell back during 1983-85 (Table 1.15). Concessional commitments were better maintained. Although it seems unlikely that the momentum of concessional flows was sustained in 1986, it may have picked up again in 1987.

Multilateral commitment figures for 1986 are now firm, and preliminary figures on commitments from multilateral sources made during January through July 1987 are also available (see Box 1.3). These data indicate an increase in multilateral commitments for sub-Saharan Africa. The preliminary figures also indicate that the unusually high level of IBRD non-concessional lending to agriculture in 1986, of $4 600 million, will not be equalled in 1987,

BOX 1.3

Resources of major multilateral concessional funds during the 1980s

Fund	Period covered	Resources (US$ million)	Remarks
International Development Association			
IDA 6	1980-84[1]	12 000	Reductions in US appropriations resulted in
IDA 7	1984-87[1]	9 000	substantial reduction in operational programme for FY 1982-84
Special Facility[2]	1985-88	1 900	Provides quick disbursing assistance
IDA 8	1987-90[1]	12 400	IDA 8 terms are slightly less concessional
African Adjustment Facility	1988-	6 400 (pledged)	Quick-disbursing funds for heavily indebted, low-income African countries pursuing economic policy reforms
Asian Development Fund			
ADF III	1979-82	2 200	Delays in US instalments resulted in shortages of
ADF IV	1983-86	3 200	resources in 1980 and 1984
ADF V	1987-90	3 600	$72 million of 5th replenishment resources will be allocated to the Technical Assistance Special Fund
African Development Fund			
ADF II	1979-81	600	5% of resources under 3rd and 4th replenishment
ADF III	1982-84	1 100	allocated to a Technical Assistance Account
ADF IV	1985-87	1 700	Poorer countries in Africa will be given increased
ADF V	1988-90	2 700	funds; more emphasis on food self-sufficiency
Inter-American Development Bank/Fund for Special Operations			
FSO 5	1979-82	1 800	
FSO 6	1983-86	700	
Intermediate Facility[3]	1983-	61 + 15 annually	
FSO 7	1987-90	...	Delay in reaching decision due to disagreement over voting system for loan approvals

while IDA's concessional credits reached $1 200 million in the first half of 1987, compared with less than $900 million for the whole of 1986. The larger IDA figure much improved the overall level of multilateral concessional lending during the first half of 1987.

Actual receipts of agricultural assistance to developing countries can be assessed by the level of annual disbursements of lending, estimated at slightly over $10 000 million a year, in current prices, in 1984 and 1985, two-thirds of which were on concessional terms (Table 1.16). The relatively high disbursement figures for 1984 and 1985 reflect the higher commitments made in 1982 and 1983. Similarly, the increased multilateral commitments in 1986 should result in increased disbursements in 1987 and 1988. The buoyant growth of multilateral disbursements between 1980 and 1985, in current dollars, was halted, however, by the weakening of the US dollar, and such disbursements in 1986 were 7% lower, in real terms, than in 1985.

While lending terms of major multilateral financing agencies continue to improve, and interest rates on 1987 loans have been further

Fund	Period covered	Resources (US$ million)	Remarks
International Fund for Agricultural Development			
IFAD I	1981-84	1 100	
IFAD II	1985-87	500	
Special Programme[2]	1986-88	300	Aims to assist 22 drought-stricken countries linking emergency operations with rehabilitation and development
International Monetary Fund			
SAF[4]	1986-	3 300 approx.	Provides loans to low-income member countries, many in sub-Saharan Africa, facing balance of payments problems.
ESAF[5]	1988-	8 400 (pledged)	The major donors include the Group of Seven industrial countries, except the United States
OPEC Fund for International Development			
	1980-	3 400 at end 1986 (pledged)	In 1980 the OPEC Special Fund (an international special account) was transformed into a multilateral agency for financial cooperation and assistance
Regional Project Facility[2]			
	Established December 1987	10	To be managed by the World Bank, it will provide initial resources needed for social costs of adjustment. Resources provided by UNDP, World Bank and African Development Bank

[1] 1 July-30 June.
[2] For sub-Saharan Africa.
[3] Used to defray 5% p.a. of interest charges paid by borrowers.
[4] Structural Adjustment Facility.
[5] Enhanced Structural Adjustment Facility.

TABLE 1.15 Commitments of external assistance to agriculture (broad definition), 1983-87

(US$ million)

Donors	Total commitments					Concessional commitments					Non-concessional commitments				
	1983	1984	1985	1986	1987[a]	1983	1984	1985	1986	1987[a]	1983	1984	1985	1986	1987[a]
AT CURRENT PRICES															
TOTAL COMMITMENTS	12 095	11 075	11 371	...	...	7 344	7 604	7 570	...	...	4 751	3 471	3 800	...	...
of which grants	3 324	3 744	3 606	...	...	3 324	3 744	3 606	...	...	–	–	–	–	–
Bilateral	4 517	4 984	4 446	...	...	4 364	4 840	4 320	...	...	153	144	126	...	...
of which grants	2 825	3 223	3 073	...	...	2 825	3 223	3 073	...	...	–	–	–	–	–
Multilateral	7 578	6 091	6 925	8 681	5 733	2 980	2 764	3 250	2 437	2 884	4 598	3 327	3 674	6 244	2 848
of which grants	499	521	533	(530)	...	499	521	533	(530)	...	–	–	–	–	–
World Bank	5 280	3 261	4 244	5 520	2 933	1 334	1 487	1 871	884	1 174	3 946	1 774	2 373	4 636	1 759
IBRD	3 946	1 774	2 373	4 636	1 759	–	–	–	–	–	3 946	1 774	2 373	4 636	1 739
IDA	1 334	1 487	1 871	884	1 174	1 334	1 487	1 871	884	1 174	–	–	–	–	–
IFAD	258	188	182	129	147	258	159	159	105	140	0	29	23	23	7
Regional development banks	1 339	1 911	1 737	2 094	2 039	786	477	566	716	979	553	1 434	1 170	1 378	1 059
OPEC multilateral	224	253	267	428	(114)	125	163	159	222	(91)	99	90	108	207	(23)
UNDP/FAO/CGIAR	477	478	495	(510)	(500)	477	478	495	(510)	(500)	–	–	–	–	–
AT CONSTANT 1980 PRICES[b]															
TOTAL COMMITMENTS	13 590	12 878	13 070	...	...	8 252	8 842	8 701	...	...	5 338	4 036	4 368	...	...
of which grants	3 735	4 353	4 145	...	...	3 735	4 353	4 145	...	...	–	–	–	–	–
Bilateral	5 075	5 795	5 110	...	...	4 903	5 628	4 966	...	...	172	167	145	...	...
of which grants	3 174	3 748	3 532	...	...	3 174	3 748	3 532	...	...	–	–	–	–	–
Multilateral	8 515	7 083	7 960	8 347	(4 985)	3 348	3 214	3 735	2 343	(2 508)	5 166	3 869	4 223	6 004	(2 477)
of which grants	561	606	613	(510)	...	561	606	603	(510)	...	–	–	–	–	–

NOTE: ... Data not available.
( ) Including partial estimates.
[a] Preliminary data for commitments made from January to end July 1987.
[b] Deflated by UN index of unit value of exports of manufactured goods, 1980 = 100.
Sources: FAO, Policy Analysis Division and OECD.

TABLE 1.16 **Annual disbursements of assistance to agriculture (broad definition), 1983-86**

(US$ million)

Donors	Total disbursements				Concessional disbursements				Non-concessional disbursements			
	1983	1984	1985	1986	1983	1984	1985	1986	1983	1984	1985	1986
AT CURRENT PRICES												
TOTAL	8 985	10 324	10 445	...	6 314	6 853	6 882	...	2 670	3 470	3 564	...
Bilateral	4 093	(4 440)	(4 410)	...	4 007	(4 320)	(4 320)	...	85	(120)	(90)	...
Multilateral	4 892	5 884	6 035	(6 675)	2 307	2 533	2 562	(2 698)	2 586	3 350	3 474	(3 977)
of which												
World Bank	3 223	3 939	3 782	4 171	1 144	1 295	1 243	1 379	2 080	2 643	2 539	2 792
IBRD	2 108	2 677	2 568	2 795	28	34	28	3	2 080	2 643	2 539	2 792
IDA	1 116	1 262	1 215	1 376	1 116	1 262	1 215	1 376	–	–	–	–
IFAD	149	196	226	246	135	189	218	235	14	6	8	11
Regional development banks	966	1 204	1 469	1 698	488	534	569	544	478	670	901	1 154
OPEC multilateral	77	67	(63)	(50)	63	37	(37)	(30)	14	31	26	(20)
FAO/UNDP/CGIAR	477	478	495	(510)	477	478	495	(510)	–	–	–	–
AT CONSTANT 1980 PRICES[a]												
TOTAL	10 096	12 005	12 006	...	7 094	7 968	7 911	...	3 002	4 035	4 096	...
Bilateral	4 599	5 163	5 069	...	4 502	5 023	4 966	...	96	140	103	...
Multilateral	5 497	6 842	6 937	6 418	2 592	2 945	2 945	2 594	2 906	3 895	3 993	3 824

NOTE: UNDP figures are expenditure figures. All technical assistance commitments have been taken as fully disbursed in the year of commitment.
... Data not available.
( ) Including partial estimates.
[a] Deflated by UN index of unit values of exports of manufactured goods, 1980 = 100.
Source: FAO, Policy Analysis Division and OECD.

TABLE 1.17 **External private lending to agriculture (broad definition), by type of creditor, 1980-85**

(US$ million)

Item	1980	1981	1982	1983	1984	1985
DEVELOPING COUNTRIES[a]						
Commitments	2 101	3 185	1 257	1 187	1 027	861
Suppliers' credits	156	514	516	273	545	303
Financial institutions	1 945	2 671	741	913	482	558
Disbursements (gross)	1 849	1 825	1 579	1 496	846	998
Suppliers' credits	140	151	152	437	459	633
Financial institutions	1 709	1 675	1 427	1 060	387	365
TOTAL DEBT-SERVICE PAYMENTS	1 713	1 508	1 592	1 669	1 295	1 238
NET DISBURSEMENTS	136	317	−13	−173	−450	−239

[a] 86 reporting countries.

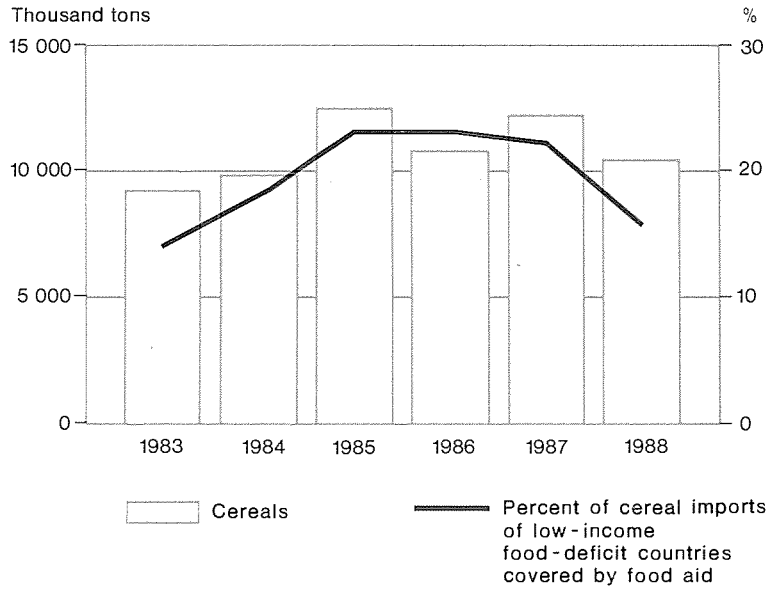
Sources: World Bank, Debtor Reporting System; and FAO, Policy Analysis Division.

lowered, world interest rates began to edge up again in the third quarter of 1987. However, subsequent to the stock market crash they have fallen back.

External Private Lending to Agriculture

To complement the above information on financial flows to agriculture from external official sources, private lending to the sector has been compiled from World Bank data (Table 1.17). While Tables 1.15, 1.16 and 1.17 are not directly comparable, because the latter covers only 86 countries, they do provide comparable orders of magnitude. Currently, official flows are about ten times those from private lending, although this ratio was considerably lower in the early 1980s. While official commitments to agriculture have failed to increase since their peak in 1982-83, private lending has halved since the early 1980s. Furthermore, disbursements of private loans have fallen faster than payments on servicing previous debts, so that net disbursements of external private loans have become negative since 1982. The main decline in private lending to agriculture occurred in Latin America and the Caribbean, where by 1985 commitments were about one-tenth their level of 1980.

Figure 1.3 **SHIPMENTS OF FOOD AID, CEREALS, 1982/83 TO 1987/88**



Source: FAO, Commodities and Trade Division

BOX 1.4

Abnormal food shortages and WFP emergency food aid

By the end of 1987, FAO's Global Information and Early Warning System (GIEWS) on food and agriculture reported that 13 countries were experiencing abnormal shortfalls in food supplies requiring exceptional and/or emergency assistance. Of the affected countries, eight were in Africa (Angola, Benin, Botswana, Chad, Ethiopia, Malawi, Mozambique and Niger) and five in Asia (Bangladesh, Lebanon, Nepal, Sri Lanka and Viet Nam). In addition, ten African countries (Burkina Faso, Cameroon, Chad, Mali, Senegal, Somalia, Sudan, Tanzania, Uganda and Zimbabwe) were reported as requiring assistance for distribution of local surpluses in deficit areas.

The situation deteriorated somewhat compared with 1986 (mainly because of adverse weather and reduced harvests in sub-Saharan Africa and Asia) when the total was nine countries, five in Africa and four in Asia. Eight African countries were identified by the GIEWS in 1986 as requiring assistance for distribution of local surplus in deficit areas.

The volume of total WFP emergency food aid in recent years is shown in the table below. As of 31 December 1987, 79 new FAO/WFP emergency operations had been approved in 1987 (48 in Africa, 15 in Asia, 5 in the Near East and 11 in Latin America) at a total cost of $271 million. This included $220.4 million from the International Emergency Food Reserve (IEFR), and $50.9 million from the annual allocation of $45 million, from WFP's regular resources, which supplements resources for emergency assistance. Almost 69% of the total FAO/WFP emergency assistance in 1987 was for refugees, returnees and displaced persons (28% for victims of drought and the balance for victims of sudden natural disasters such as floods, earthquakes, cyclones, etc.).

As of end-December 1987, total contributions from 23 donors to the 1987 IEFR were 642 959 tons of cereals and 58 276 tons of other food commodities. Of these, 615 500 tons of cereals and the entire contribution of non-cereals had been pledged for multilateral channelling through the WFP, of which 269 000 tons of cereals and 4 519 tons of other foods had been donated specifically for Afghan refugees. Contributions in cereals to the IEFR for 1987 are more than the total contributions pledged for 1986 and represent the second largest level on record since the inception of the Reserve in 1975.

WFP emergency operations approved annually, 1982-87[a]
(US$ million)

Year	No. of operations	No. of countries	WFP regular resources	ICARA[b]	IEFR	Total
1982	**68**	**37**	**19.7**	**1.3**	**172.2**	**193.2**
1983	**68**	**36**	**45.0**	**—**	**155.3**	**200.3**
1984	**63**	**40**	**54.2**	**—**	**178.2**	**232.4**
1985	**44**	**32**	**43.9**	**—**	**181.0**	**224.9**
1986	**50**	**24**	**34.5**	**—**	**144.2**	**178.7**
1987	**79**	**35**	**50.9**	**—**	**220.4**	**271.3**

[a] Commitments as approved at the end of each year, including insurance funds.
[b] International Conference on Assistance to Refugees in Africa.
Source: WFP, Resources Management Division.

Food Aid

Total shipments of food aid in cereals during 1986/87 were estimated at 12.2 million tons, nearly 13% more than in 1985/86 (10.8 million tons), but less than the level of 1984-85 (Fig. 1.3). This increase was mainly the result of significantly larger shipments by the United States—the largest made by this country since 1971/72—as well as larger shipments by the EEC and individually by its member countries, coupled with continued high levels of shipments by Canada. FAO estimated that cereal food aid shipments in 1987-88 will amount to 11.2 million tons.

Food aid in commodities other than cereals, such as dried skimmed milk powder, vegetable and butter oil, pulses and sugar, amounted to nearly 950 000 tons in 1986, compared with 1 022 000 tons in 1985.

Total contributions to the International Emergency Food Reserve (IEFR) for 1987, as of end December, amounted to 642 959 tons of cereals and 58 276 tons of other food commodities. Such quantities are significantly greater than contributions in the previous year, with 32% more cereals and 85% more non-cereals commodities.

As of end December 1987, information regarding the regular resources of the World Food Programme (WFP) for the 1987-88 biennium was that pledges from 73 donors amounted to nearly $1 057.9 million, or 76% of the target of $1 400 million. (Pledges for the 1985-86 biennium had amounted to $1 100 million, or 82% of the pledging target of $1 350 million; see Box 1.4.)

ANNEX 1.1. **Recent Economic, Financial and Institutional Events Related to Agriculture**

December 1986

1-5 — The FAO Expert Consultation on *Recommended Limits for Radionuclide Contamination of Foods* proposed the introduction of conservative interim action levels for contamination by radioactivity as a result of the Chernobyl accident of April 1986, below which there would be no reason on health grounds to restrict the movement of foods for trade or food aid purposes.

15 — OECD's *Economic Outlook* projected that economic activity would grow between 2.5-3% annually over the next 18 months in OECD countries.

15 — Thirty-one donor countries of the World Bank agreed to provide $12 400 million under the *8th replenishment of resources of IDA* over a three-year period to end June 1990 ($3 400 million more than under IDA-7).

16 — EEC adopted a series of Common Agricultural Policy Reforms (e.g. a 9.5% cut in milk output over the next two years; an average 13% cut in guaranteed support prices for beef; "green currency" devaluations; and a structural programme, including encouragement of early retirement and less-intensive farming). The net savings on the 1987 budget was provisionally put at ECU 1 000 million.

January 1987

5 — The US budget of $1 000 000 million for fiscal year 1988 proposed: *(i)* to reduce the deficit to 2.3% of GNP (compared with each of the past four years when the deficit equalled or exceeded 5% of GNP); *(ii) cuts in farm aid,* education and welfare; and *(iii)* a 3% real increase in defence spending.

February

10 — The EEC, while unable to agree on guidelines to implement its decision to cut milk output, adopted a plan to sell more than 1 million tons of *surplus butter* on world markets by end-1988, at an estimated gross cost of ECU 3 200 million.

22 — Group of seven major industrial countries (Italy abstaining) held a meeting in Paris, which ended in the *Louvre Accord.* They agreed that the exchange rates of currencies were within ranges broadly consistent with underlying economic fundamentals and that further substantial exchange rate shifts could damage growth and adjustment prospects; to cooperate closely to stabilize exchange rates around current levels; and to refine the use of economic indicators for multilateral surveillance.

— — The EEC proposed a *1987-88 freeze on farm prices* with cuts for cereals and citrus fruits, and introduction of stabilizing measures on vegetable oils and fats.

March

9-20 — Producing and consuming countries agreed on a new price stabilization accord for natural rubber. The new *International Natural Rubber Agreement* retains the main features of the old agreement, with some modifications, such as more frequent price reviews and a semi-automatic price adjustment mechanism.

13/3-3/4 — FAO's *Asia-Pacific Forestry Commission* reported at its 13th session, held in Beijing, that 2 million hectares of valuable tropical forests were being cut down yearly within the region. It called for widespread adoption of the Tropical Forestry Action Plan, systematic identification of critical watersheds and revision of curricula in forestry schools.

23/3-1/4	FAO's *Committee on Agriculture (COAG)* held its 9th session in Rome. Discussions included the role of food quality and standards in food security, trade and health; improving productivity of dryland areas; effect of land tenure and fragmentation of farm holdings on agricultural development; and strategies to improve production of roots, tubers and plantains.
27	Rules on the operation of a buffer cocoa stock by the *International Cocoa Organization* were agreed to at a conference in London, but purchases were suspended in June when they reached the agreed limit.
—	Estimates for the *USSR's cereal imports* for 1986-87 rose by 3 million tons because of a bad winter. Its needs were, however, still put at half the 55 million tons it imported in 1984/85.
April	
6-10	Spring meetings in Washington of the *IMF's Interim Committee* (9-10 April) and the joint World Bank/IMF *Development Committee* (10 April), preceded by meetings of the Group of 7, *Group of 10 and Group of 24*. They welcomed the recent agreement by major industrial countries to stabilize exchange rates; expressed concern for the weak global economic performance in 1986; and stressed the need for policies conducive to non-inflationary growth, stable exchange markets, and gradual reductions in payment imbalances of the largest industrial countries.
8-15	The *FAO Committee on World Food Security* held its 12th session in Rome from 8 to 15 April 1987. It considered the impact on world food security of agricultural policies in industrialized countries; the role of roots, tubers and plantains in food security in *(i)* Latin America and the Caribbean and *(ii)* the Pacific; evaluated administrative procedures and timing of the response of donors to food emergencies; and discussed the role of transnational corporations in food and agriculture, forestry and fishery sectors of developing countries.
14-27	*Turkey* formally applied for membership to the EEC, and the Council agreed that the application should go forward for consideration by the European Commission.
20-25	The 6th ministerial meeting of the *Group of 77* was held in Havana, Cuba and negotiated a common position in preparation for UNCTAD VII.
27	The Report of the World Commission on Environment and Development (also known as the *Brundtland Report* or *Our Common Future*) was released by submission to the UN General Assembly through the Governing Council of the United Nations Environment Programme (UNEP). It aims at integrating environmental issues into agricultural and rural development processes.
29	GATT's *MTN Group on Natural Resource-Based Products* debated a number of issues related to problems of trade (e.g. officially encouraged price fixing, dual pricing practices and resulting subsidies, government support, tariff escalation, etc.).
—	The *Paris Club* agreed on a plan to reschedule the debt of the poorest African countries for 15 to 20 years on easier terms.
—	The IMF's April 1987 *World Economic Outlook* projected slower world growth in 1987 (2.7%) compared with 1986 (2.9%), with some pickup in 1988 (3.1%).
May	
5-6	GATT's *MTN Group on Agriculture* identified major problems affecting agricultural trade and their causes and began consideration of basic principles to govern world agricultural trade.

11 — GATT's *MTN Group on Tropical Products* discussed data which would form their talks and the scope of negotiations on tropical products.

12-13 — Paris meeting of *OECD ministers* outlined requirements for stronger global growth and employment (i.e. improved macroeconomic and structural adjustment policies for stronger output and employment growth), as well as agreed on principles for agricultural policy reform.

15 — The *EEC* and the *ACP* (African, Caribbean and Pacific) developing countries agreed that from 1 July, Portugal and Spain would become signatories to the Lomé Convention and would grant access to a wide range of goods from ACP countries over a seven-year period.

18-22 — FAO's *Committee on Fisheries (COFI)* held its 17th session in Rome. Discussions included the world fisheries situation; follow-up to the 1984 FAO World Conference on Fisheries Management and Development; marking and identification of fishing vessels; and protection of living resources from entanglements in fishing nets and debris.

— — Official farm price of *rice* cut in Japan, the first reduction in 31 years.

— — FAO's crash programme for agricultural rehabilitation in 25 African countries *(ARPA)* ended in May 1987. Launched on 29 March 1985, ARPA attracted $194 million to fund projects.

June

10 — Leaders of the Group of 7 and EEC representatives attending their 13th annual *economic summit, in Venice*, agreed to rely more on objective economic performance indicators in coordinating their policies; reaffirmed policy undertakings made at earlier meetings; that further substantial exchange rate shifts could prove counterproductive; and reaffirmed their commitment to a concerted reform of agricultural policies, as agreed by OECD ministers in May.

14-16 — The 8th *International Monetary and Trade Conference*, in Philadelphia, explored implications of the globalization of capital markets and the United States as the world's largest net debtor.

15-19 — The UN Economic Commission for Africa (ECA) and the Government of Nigeria, with cooperation from the OAU and the African Development Bank, hosted a conference in *Abuja, Nigeria*, on "Africa; The Challenge of Economic Recovery and Accelerated Development". They agreed, *inter alia*, that African countries must continue to implement comprehensive adjustment programmes to help surmount the serious internal and external problems facing their economies.

19 — OECD's *Economic Outlook* revised growth projections downward from its earlier December 1986 figures, as investment spending plans were reduced (GNP in OECD countries = 2% to 2.5% in 1987 and 1988 compared with 2.5% to 3% projected six months earlier).

July

1 — EEC agreed on a 1987/88 cereal regime which included measures to discourage sales of surplus cereals to intervention agencies. The main development was the introduction of a "buying in" price, set at 94% of the intervention price, which effectively reduced the level of support prices for cereals.

1 — Proposals put forward at the *MTN Group on Natural Resource-Based Products* identified tariff and non-tariff barriers affecting raw materials trade. One proposal suggested that these barriers should be discussed as part of a comprehensive approach in other groups dealing with these barriers.

1 — The EEC's *Single European Act* came into effect, providing for the establishment by end-1992 of an internal market for the free circulation of persons, goods, services and capital, for closer cooperation in economic, monetary and social policy, and for recognition of EEC authority in environmental matters.

1-2 — Twenty-five government and international agency leaders held a *conference in Bellagio*, Italy, to consult on policy reforms needed to save the world's disappearing forests. The group called for immediate action to halt tropical deforestation and recommended worldwide support for the Tropical Forestry Action Plan.

3 — At a meeting of GATT's *MTN Group on Tropical Products* lists of specific products for liberalization were proposed and alternative negotiating approaches discussed.

6-7 — At a meeting of GATT's *MTN Group on Agriculture*, a US proposal suggested a ten-year phase-out of all agricultural subsidies, export subsidies and import barriers (except for bona fide food aid and direct income support unrelated to production), as well as action on health and sanitary regulations.

9/7-3/8 — The 7th session of the UN Conference on Trade and Development *(UNCTAD VII)* was held in Geneva. In the four subject areas of the conference (resources for development, commodities, international trade and problems of LDCs), the 141 member countries agreed to a strategy for ameliorating the debt crisis of developing countries; to support the Uruguay Round on trade liberalization within the GATT; to increase financial assistance to LDCs; and to revive aspects of UNCTAD's Integrated Programme on Commodities. Also, more countries (including the USSR) agreed to sign the *Common Fund for Commodities*, thus increasing chances of making the Fund operative in the near future.

10 — The FAO/WHO Codex Alimentarius Commission, at the conclusion of its 16th session in Rome, reported that the FAO interim action levels for radioactive contamination of food remained the only international recommendation available for use by governments (see 1-5 December 1986). The Commission created a new committee to develop *international standards for fresh tropical fruits and vegetables*, which will hold its first meeting in Mexico City in June 1988.

August

— Despite a sharp decline in acreage, the US *maize* harvest was expected to fall only 12% in 1987 because of good yields.

— The *southwest monsoon* was the weakest in many years. Heavy rains in late August were too late to allow full recovery of drought-stressed crops in northern and central India. Crops were also affected by drought in Indonesia, Kampuchea, Laos, the Philippines, Sri Lanka, Thailand and Viet Nam, and by floods in Bangladesh.

September

2-11 — The *International Cocoa Organization* failed to restore the Agreement's price support mechanism, although prices had fallen to a 4 1/2 year low.

10-11 — A new *International Sugar Agreement*, adopted at a UN conference in London, will come into force 1 January 1988. Like the agreement it replaces, it contains no regulatory provisions.

14-17 — The FAO Committee on Forest Development in the Tropics recommended that governments intensify their efforts to secure increased priority for forestry in external aid and that the *Tropical Forestry Action Plan* be used to support this priority and to strengthen and harmonize international cooperation in the field of forestry.

21/9-5/10 — The *International Coffee Organization* agreed to reintroduce export quotas at a meeting in London.

24-26 — Meetings in Washington of the IMF's *Interim Committee* (27 September), the joint World Bank/IMF *Development Committee* (28 September), and the *Groups of 7, 10 and 24* (24-26 September). Topics discussed included the debt crisis and how to correct huge fiscal and current account imbalances (US trade deficit was estimated at between $150 000 million and $160 000 million).

29/9-1/10 — *IMF* and *World Bank annual meetings*, in Washington. Discussions included world economy prospects, recent progress towards improved policy coordination among industrial countries, the debt crisis, review of IMF lending mechanisms, and a possible new IMF external contingency facility. The meetings yielded no new financial help, nor was it agreed to increase IMF's structural adjustment facility (a scheme run jointly with the Bank providing low-interest lending mainly to Africa).

— — IMF's October 1987 *World Economic Outlook* estimated that the major industrial countries would have only a very limited scope of achieving faster growth over the medium term without rekindling inflation. (Estimates of growth for 1986-88 and 1989-95 respectively were: Japan 3.6%, 3.1%; Canada 3%, 2.7%; France 2.8%, 2.6%; USA 2.7%, 2.6%; Italy 2.6%, 2.5%; FRG 2.6%, 2.2%; and UK 2.2%, 2%.)

— — The EEC Commission proposed a package of *agricultural reforms* that, if implemented, would cut EEC subsidies and price supports for a wide range of farm products when budgetary targets were exceeded; a continuation of the milk quota regime beyond the end of 1989; tough new production limits for cereal farmers; and changes in the support system for sheep-meat producers. (The *EEC farm budget* rose from ECU 18 400 million ($21 000 million) in 1984 to around ECU 27 300 million in 1987).

— — The *USSR's 1987 grain harvest* was expected to exceed 200 million tons for the second year running, owing in part to improved incentives for farmers, better management and new technology. However, recent abnormally heavy rains and cold weather could lead to lower production.

October

3 — United States and Canada forged a *free trade agreement*, which included a gradual elimination of tariffs between the two countries; but differences remained to be worked out regarding subsidy definition, etc.

7-13 — FAO's *Committee on Commodity Problems (CCP)* held its 56th session in Rome. Discussions included review of the world commodity situation and outlook; activities of intergovernmental commodity groups; protectionism; and ECDC in agricultural trade.

12-16 — The *Joint Session of the FAO European Forestry Commission and the Timber Committee of the Economic Commission for Europe* identified four issues for priority concern in the region: the protection of forests against damage due to fire, air pollution and other causes; the increasing importance of non-wood benefits of the forest; development of products and markets; and conversion of agricultural land to forestry.

14 — At a meeting of the *MTN Group on Tropical Products*, the EEC offered to reduce or eliminate tariffs and quantitative restrictions on a broad range of tropical products. It also expressed its intention to take into special account the interests of least developed countries.

16 — *World Food Day* in 1987 was dedicated to "small farmers" who produce much of the food eaten in the world but who, paradoxically, are those most directly affected by famine.

19 — *World stock markets crash;* Dow Jones industrial average in New York plummeted 508 points (22.6%), the worst single-day drop in its history (blame was put mostly on the US budget deficit). Prices of food commodities reacted less dramatically to the crash than did metal prices. Grain prices actually rose (mainly because of Soviet buying of US maize), but cotton prices fell more steeply and faster than did other soft commodities.

21 — The *MTN Group on Natural Resource-Based Products* continued discussions on the proposals introduced at its July meeting and considered the scope and definition of the issues to be addressed in the next phase of negotiations.

26-27 — At a meeting of the *MTN Group on Agriculture*, the EEC put forth a cautious approach which excluded the complete elimination of subsidies and proposed short-term actions, including agreements on minimum export prices of farm products, step-by-step reduction in farm support levels and the retention of the EEC's double-pricing regime for external and internal markets.

28 — EEC failed to agree on *safety levels for radioactivity in food products* (following the Chernobyl nuclear accident), to replace regulations due to lapse 31 October 1987.

— — EEC farm ministers discussed in late October controversial new *cutbacks in farm support.*

November

7-26 — *Twenty-fourth Session of FAO Conference* held in Rome. Discussions included, *inter alia*, a review of key global food issues; the Second Progress Report on WCARRD Programme of Action and the role of women in rural development; international agricultural adjustment; FAO activities and programmes; and constitutional and administrative matters, including the re-election of Director-General Edouard Saouma for a third six-year term.

16-20 — The *International Tropical Timber Organization* held the 3rd session of its Council at the Organization's headquarters in Yokohama: the Headquarters Agreement was adopted and a pipeline of projects to be carried out under the special account established.

30/11-4/12 — The *International Cocoa Organization* failed a second time to restore the International Cocoa Agreement's price support mechanism; cocoa prices reached a five-year low.

December

4-5 — Leaders of *EEC* countries met in Copenhagen, but failed to reach agreement on financial reforms and on a 1988 budget. Agriculture debate focused on limiting farm surpluses, particularly of cereals, and on a proposal for strictly limiting farm spending. The plan would force cuts in guaranteed payments to farmers once production of products like grain and oilseeds topped a fixed level.

8 — The USSR ratified the *Common Fund for Commodities agreement*, bringing the percentage of directly contributed capital to 66% of the 66.66% required for the Fund to become operational.

PART TWO
REGIONAL REVIEW

AFRICA: the First Year of the UN-PAAERD

By the end of 1987, the UN Programme of Action for African Economic Recovery and Development 1986-90 (UN-PAAERD) was just one and a half years old, and the Organization of African Unity's (OAU) Africa's Priority Programme for Economic Recovery 1986-90 (APPER), on which the UN-PAAERD was based, was two and a half years old.[1] These programmes commit African governments to carry out economic and agricultural policy reforms, and the international community to contribute about one-third of the financial resources needed for the UN-PAAERD, their total being estimated at $128 billion during 1986-90. The programme's focus is the food and agriculture sector as a move towards evolving an "African strategy" for socio-economic development.

An international conference on Africa, "The Challenge of Economic Recovery and Accelerated Development", was held from 15 to 19 June 1987 in Nigeria, to monitor the implementation of the UN-PAAERD and assess its progress. FAO assisted in the preparation of the background documentation and in the conference itself.[2]

It is too early to appraise the impact of the UN-PAAERD on the region's overall economic and agricultural performances, but data are available showing the setback sustained during 1980-84, prior to the programme. During this period Africa's GDP grew by only 0.2% a year, and growth was negative in many subregions. In per caput terms, the cumulative loss in income during the first five years of the decade was more than 12%; per caput agricultural GDP also fell. During 1980-86, the value of total merchandise exports declined, while the value of total imports increased only 1% a year. The volume of agricultural imports, mainly food, which typically constitute 15-20% of total imports, grew 4% a year during the same period, while their value only rose 1.7%. The dollar value of agricultural exports barely increased 0.5% a year (Table 2.1).

Food production was at its worst in 1983 and 1984, when it declined by 0.8% and 0.4% respectively. The setbacks suffered by some subregions were more dramatic than those shown for the whole region.[3] For example, food production declined in southern Africa and the Sahel by 10-11% in 1983-84 combined, a per caput decline of some 15-16%. Central Africa, however, maintained positive, if low, growth rates of food production, of about 1.6-1.7% a year during 1983-85. There was a strong recovery in food production of 10% in 1985, followed by a further increase of 4% in 1986. Thus, annual average growth in per caput food production was −0.3% during 1980-85 (but −1.6% during 1980-84) and 0.8% in 1986.

Africa's agricultural sector, therefore, showed a good recovery in 1985 and 1986 from the scourge of drought that had afflicted it in the early 1980s. This recovery was more mixed in 1987, but as a consequence, by end-1987, five African countries had exportable surpluses of coarse grains from their 1985/86 harvests and ten countries had exceptional local surpluses and needed assistance to move these to deficit areas in 1988.[4] This surplus situation also reflected the low prices prevailing in world markets, indeed the difficulty in obtaining any markets at all, the lack of purchasing power in food-deficit communities and the inadequacy of infrastructure to move supplies to deficit areas. At the same time, however, eight African countries were facing abnormal food shortages.[5] Despite a marked overall improvement, serious food problems remain in Africa. The region's annual growth rate in food production during 1980-86 was only 2.9% compared with

[1] The UN-PAAERD arose from the UN General Assembly's Special Session on Africa, held from 27 May to 1 June 1986; the OAU's APPER was adopted in July 1985.

[2] The conference report was entitled *Abuja Statement on Recovery and Long-Term Development in Africa*, Economic Commission for Africa (ECA/CERAD/87/1.1), 19 June 1987.

[3] The subregional groups shown in Table 2.1 follow OAU/ECA groupings, except that western and southern Africa groups have been split into low and middle income (Sudan is included in the Near East region). See OAU/ECA, *Africa's Submission to the Special Session of the United Nations' General Assembly on Africa's Economic and Social Crisis* (OAU/ECM/2XV and E/ECA/ECM/1/1), 27 March 1986.

[4] Exportable surpluses: Côte d'Ivoire, Gambia, Kenya, Tanzania and Zimbabwe.

Exceptional localized surpluses: Burkina Faso, Cameroon, Chad, Mali, Senegal, Somalia, Sudan, Tanzania, Uganda and Zimbabwe.

[5] Abnormal food shortages: Angola, Benin, Botswana, Chad, Ethiopia, Malawi, Mozambique and Niger.

TABLE 2.1. **Africa: annual changes in selected indicators**[a]

(Percentages)

Country, country group and region	Population	Agricultural labour	Agricultural production		Total $ value of exports	$ value of agricultural exports	Total $ value of imports	Agricultural import volume	$ value of agricultural imports
	1980-87	1980-87	1980-87	1986-87	1980-86	1980-86	1980-86	1980-86	1980-86
AFRICA	3.1	1.8	3.2	−0.4	−0.7	0.5	1.0	4.0	1.7
NORTHWEST	2.7	0.7	3.9	−4.8	0.2	−2.5	2.2	4.8	2.6
Tunisia	2.2	−0.2	5.7	12.9	0.8	3.1	1.0	6.6	1.9
Algeria	3.1	0.4	4.5	4.8	−0.5	−3.3	3.2	7.3	4.9
Morocco	2.4	1.1	2.6	−19.5	3.8	−1.2	0.9	2.2	−0.3
SAHEL	2.7	1.7	3.2	−3.2	1.9	−3.1	−0.8	7.2	3.5
Senegal	2.7	1.8	5.4	0.1	2.8	7.1	−0.8	2.7	1.6
Niger	2.9	1.9	0.7	−9.0	−3.0	4.2	−3.8	23.2	8.5
Gambia	2.0	1.0	7.3	−10.5	1.6	−4.4	0.6	15.9	10.8
Mauritania	3.0	1.7	2.1	0.5	14.7	−	−2.3	7.6	4.8
Burkina Faso	2.4	1.7	4.3	−5.9	2.6	−2.5	−3.6	5.4	0.9
Guinea-Bissau	2.2	1.1	6.6	2.2	4.0	6.5	−7.8	2.4	−2.8
Mali	2.8	1.9	3.2	−0.3	2.3	−0.1	3.6	26.8	26.4
Chad	2.3	0.8	2.4	−2.1	2.4	3.6	13.6	30.5	25.3
WEST, LOW INCOME	2.9	1.1	3.4	1.3	1.9	0.3	1.6	3.7	2.1
Togo	3.0	1.8	1.7	2.8	1.5	7.4	−5.7	10.3	6.6
Benin	3.0	0.8	4.3	0.4	25.8	22.1	21.1	5.8	7.1
Sierra Leone	1.8	0.1	2.0	0.8	−3.5	1.0	−6.4	0.7	−2.6
Guinea	2.4	0.9	2.0	0.9	6.0	4.0	10.1	9.4	10.6
Ghana	3.3	1.7	4.4	1.5	1.0	−0.7	2.2	5.5	1.4
WEST, MID INCOME	3.5	2.1	4.2	1.5	−2.5	1.7	−1.0	0.8	−3.1
Côte d'Ivoire	3.7	1.0	3.8	3.2	4.1	6.4	−2.7	2.9	2.4
Liberia	3.3	1.7	2.2	−0.2	−3.6	−1.0	−10.0	3.1	1.8
Nigeria	3.5	2.2	4.4	1.0	−3.6	−11.9	0.1	0.3	−4.7

TABLE 2.1. (cont.) **Africa: annual changes in selected indicators[a]**

(Percentages)

Country, country group and region	Population	Agricultural labour	Agricultural production		Total $ value of exports	$ value of agricultural exports	Total $ value of imports	Agricultural import volume	$ value of agricultural imports
	1980-87	1980-87	1980-87	1986-87	1980-86	1980-86	1980-86	1980-86	1980-86
CENTRAL	2.9	1.0	2.4	2.2	2.5	3.9	5.4	4.7	4.1
Congo	2.6	1.4	1.7	1.6	17.9	2.9	14.1	9.3	5.6
Gabon	1.6	−0.3	1.4	1.8	1.6	−2.8	8.7	9.1	4.3
Zaire	3.0	1.4	2.9	2.6	4.0	11.7	11.9	6.5	7.6
Cameroon	2.6	0.4	1.8	1.8	0.1	1.6	1.3	3.8	3.9
Central African Republic	2.3	−	1.5	1.1	10.3	8.4	11.8	1.3	5.8
EAST	3.2	2.0	2.8	−0.2	1.3	2.2	3.5	22.3	14.9
Tanzania	3.6	2.3	2.0	3.5	−4.3	−2.1	−1.5	45.1	26.0
Uganda	3.4	2.2	8.1	−1.1	4.6	3.2	13.6	1.5	2.3
Burundi	2.7	1.8	3.0	1.6	10.4	10.2	5.4	4.9	1.9
Kenya	4.2	3.0	3.1	−2.8	2.1	4.9	2.4	55.8	15.1
Somalia	2.9	1.4	3.4	2.2	4.6	8.9	9.1	18.0	11.8
Rwanda	3.4	2.7	1.6	2.3	5.7	5.8	9.0	10.8	4.7
Ethiopia	2.6	1.2	0.2	−2.4	5.1	3.1	10.2	35.9	36.3
SOUTH, LOW INCOME	3.1	1.9	0.9	−0.1	−1.5	−1.1	−1.1	4.8	6.3
Malawi	3.2	1.6	1.4	−0.9	3.2	3.7	−5.3	6.2	−5.0
Mozambique	3.0	2.0	0.4	0.6	−7.7	−14.7	3.9	5.7	9.5
SOUTH, MID INCOME	3.2	1.9	2.3	−5.9	1.6	1.0	2.0	1.8	4.0
Swaziland	3.1	1.2	4.7	−7.5	2.2	6.9	−3.4	4.3	10.4
Lesotho	2.6	1.3	−0.3	4.9	−7.5	4.0	0.4	2.7	5.1
Botswana	3.9	2.1	−0.3	5.3	12.0	4.5	5.4	6.9	5.8
Zambia	3.4	2.6	3.0	0.3	−12.3	39.6	0.1	0.8	−0.9
Zimbabwe	3.6	2.1	3.3	−15.7	0.9	5.8	5.4	128.9	46.7
Angola	2.7	1.3	0.6	2.2	9.1	−10.0	3.5	−2.5	3.4
ISLANDS	2.8	1.5	2.8	3.9	4.8	2.1	−1.3	1.3	−4.0
Mauritius	1.9	1.0	1.8	1.5	10.7	3.8	3.2	1.2	−2.3
Madagascar	2.9	1.5	2.9	4.2	−2.2	1.6	−5.3	10.3	−1.7
Comoros	3.2	2.1	2.5	2.4	8.2	135.6	5.4	15.6	4.3

NOTE: Countries within groups are ranked according to dietary-energy supply (DES) levels in 1985.

[a] Annual changes are the simple average of yearly percentage changes. For subregional country groups, averages are computed on the sum of country data within the respective groups, expressed in constant US dollars.

population growth of just over 3%. Between 1975-77 and 1983-85, dietary-energy supplies (DES) declined or remained unchanged in 21 out of 38 sub-Saharan countries reviewed.

The relatively abundant rains of the last two years brought in their wake another age-old threat to African food supplies, that of locusts and grasshoppers, a menace that threatened to assume disastrous proportions in some areas. Beginning October 1985, FAO increased its efforts to counter the locust threat, and an Emergency Centre for Locust Operations was established in August 1986 to help mobilize funds and equipment and coordinate action. Over 1 million hectares of ripening crops in the Sahelian countries of West Africa were protected by an aerial spraying campaign in 1986. In these same countries, the threat to crops by these pests was potentially as grave in late 1987 as in 1986. Developments in 1988 will depend on the extent and timing of the seasonal rains.

Development Assistance and Resource Flows to Agriculture

In June 1987, the OECD announced that, according to preliminary estimates, official development assistance (ODA) to *all sectors* in sub-Saharan African countries reached $11 billion in 1986, an increase of 16% compared with 1985. In constant prices and exchange rates, however, this may represent a decline. Multilateral concession aid flows increased about $800 million or 25% compared with 1985 levels. However, the volume of bilateral aid to sub-Saharan Africa may have declined in 1986, primarily because of reduced emergency aid.

In line with this rather ambiguous picture of official aid flows to all sectors, there does not seem yet to be a significant and broad pick-up in external resource flows to African agriculture. Concessional multilateral commitments declined in 1986, although data on bilateral commitments are incomplete. On the other hand, non-concessional multilateral commitments have shown a welcome increase, but mainly to a few middle-income countries. Private capital flows to Africa virtually ceased in the early 1980s and net flows turned negative by 1983-84. Later data on private capital flows are not available, but are not expected to reflect any improvement.

There have been several new funding initiatives in recent years, however, that can be expected to have a positive impact on resource flows to agriculture. Some initiatives already may be having a beneficial effect on these flows, while for others, the impact will be felt in the next few years. For *concessional loans*, recent initiatives or proposals likely to have a high African agricultural content include the following:

— IDA's Special Facility for sub-Saharan Africa (of $1.2 billion), operational as of July 1985;

— IFAD's Special Programme for sub-Saharan Africa (of $300 million), operational as of May 1986 aiming to link emergency operations with rehabilitation and development efforts;

— IDA's 8th replenishment (of $12.4 billion) for July 1987 to June 1990, approved in February 1987;

— the 5th replenishment of the African Development Fund (ADF) for 1988-90 (of $2.7 billion compared with its 1985-87 4th replenishment of $1.7 billion). The resources of the ADF will be directed primarily to low-income African countries, particularly to the agricultural sector in support of food self-sufficiency objectives.

Note should also be taken of the greatly increased resources for the African Development Bank's (ADB) *non-concessional lending*. The ADB's 4th General Capital Increase has been finalized and will raise ADB's capital 200%, from $6.3 billion to about $19 billion to support a 1987-91 lending programme equivalent to $6 billion to $7.2 billion for the whole period. The increase in ADB's resources was a major achievement. About 30% of ADB's lending is for agriculture.

For *private financing*, a new initiative has been the establishment in June 1987 of the Africa Project Development Facility, set up under the auspices of the International Finance Corporation (IFC), ADB and the UNDP. It is an advisory body to help African entrepreneurs develop private investment proposals acceptable to internal or external financing.

African countries will also benefit from the package of emergency measures announced by Japan on 29 May 1987, to expand Japan's domestic demand and increase its development assistance programme. The package includes expansion of grant assistance for sub-Saharan and other low-income countries, including non-project grant assistance of about $500 million during 1988-90, including possible debt relief.

The UN-PAAERD mobilizes external and domestic resources to recover and sustain economic growth and development, with agriculture, as mentioned, receiving high priority in the allocation of funds. The UN-PAAERD

envisages about $45.6 billion from external sources (35.6% of the total resources needed during 1986-90), or about $9 billion annually.

Recent data on official commitments to agriculture (OCA), multilateral, bilateral and private, in Africa indicate a rather unfavourable trend in the future flow of funds to this sector, except for the non-concessional multilateral component. The increase in multilateral commitments in 1986 was due to the rise in non-concessional assistance, with concessional commitments continuing to suffer from its decline in the 1980s. While multilateral disbursements reflecting earlier commitments increased over the same period, external private net disbursements drastically declined. Data on DAC/EEC disbursements to agriculture are not available beyond 1984.[6]

Commitments. Total multilateral commitments to agriculture increased 30% in 1986 (to $1.7 billion) compared with the 1984-85 average, as a result of a more than doubling of non-concessional commitments. The increase in the latter, from $529 million to $1.2 billion, was mostly accounted for by the large amounts of IBRD lending in 1986, particularly to Nigeria, Morocco and Tunisia. Concessional multilateral commitments, on the other hand, declined by about 30% (from $737 million to $500 million). World Bank data on external private commitments to agriculture indicate that after the 1981 peak of $1 500 million, such commitments collapsed to a mere $167 million in 1984.

Disbursements. Total multilateral disbursements in 1986 were around $1.3 billion, indicating a 30% increase over the 1984-85 average. Multilateral concessional disbursements increased 50%, to $750 million, while the non-concessional component increased only slightly. External private net disbursements (World Bank data) showed an outflow of funds in 1984, thus continuing the declining trend since 1981.

The Implementation of the APPER and UN-PAAERD: Some Preliminary Conclusions

There was definitely a recovery in African food and agricultural production in 1985, sustained in 1986. The combined two-year increase in net production was about 13%. This was almost entirely due to improved weather conditions, helped in some cases by higher producer prices. On the external side, production in 1986 benefited from higher coffee prices in early 1986, although these soon collapsed.

It appears that 1987 was, on the whole, a year of stagnating agricultural production. It must be recalled, however, that several countries where production in 1987 declined (e.g. Zimbabwe, Kenya and some Sahelian countries) were carrying large stocks of grain from previous harvests and, hence, production may have been reduced somewhat as a result of either a deliberate policy (as in Zimbabwe) or because local prices had been depressed.

Agricultural policy changes have been made in recent years, often in conjunction with economic adjustment measures. The World Bank estimates that 25 countries are currently undertaking some form of adjustment programme. Some of these policy changes were reported in *The State of Food and Agriculture 1986.* More recent information is given in the Economic Commission for Africa's (ECA) latest survey.[7] According to this survey, these changes centre on improvements in producer price incentives and radical reforms in agricultural marketing institutions. A majority of countries have introduced measures for food security emergency preparedness and early warning systems. Many countries have also encouraged the use of modern imports and production methods.

Devaluations have been a notable feature of economic policy changes. Between 1980 and early 1987, the average rate of devaluation was 45% against the SDR (Special Drawing Right). In 1986 alone, according to IMF data, 20 countries devalued their currencies 10% on average against the SDR. It seems unlikely that the UN-PAAERD itself will have a major impact on the momentum of policy changes arising from structural adjustment programmes. Concern was expressed at the Abuja Conference that unless structural adjustment programmes are closely related to the wider objectives of the UN-PAAERD, and are supported by a greater mobilization of resources, the process of adjustment will have a negative impact on investment, economic growth, living standards, employment, social development and even political stability.

The capacity of most African countries to mobilize financial resources *domestically* is questionable, unless *(a)* economic growth picks

[6] DAC/EEC = Development Assistance Committee (OECD)/European Economic Community.

[7] ECA, *Survey of Economic and Social Conditions in Africa, 1985-86* (E/ECA/CM.13/3/1987).

up, depending largely on agricultural performance; and *(b)* there is a shift in focus of domestic policy towards actively mobilizing domestic savings. Therefore, a key issue arising from this monitoring of the early stages of the UN-PAAERD is whether sufficient resources are indeed being mobilized from external and domestic sources to enhance levels of investment and recurrent expenditures in economic activities, including agriculture, but also those sectors directly sustaining agriculture.

Another threat to the success of the UN-PAAERD arises from the continuing weakness in primary commodity markets. The ECA *Survey 1985-86* mentioned earlier, and the ECA/ADB *Economic Report on Africa 1987*, highlight the importance of the oil sector in supporting the region's economic activity. These reports also note the recent poor performance of the external trade sector of non-oil exporting countries, based mainly on agricultural commodities. As a consequence, Africa's terms of trade deteriorated 23% in 1986. Weaknesses in external trade, leading to worsening trade balances and worsening debt situations, have not allowed the UN-PAAERD to gain any momentum derived from the improved levels of agricultural production since 1984.

LATIN AMERICA AND THE CARIBBEAN: External Debt, Economic Adjustment and Effects on Agriculture

Most countries in Latin America and the Caribbean continue to suffer from the effects of the most protracted and profound crisis in the past 50 years. Recent economic performances confirm the fears that, from a developmental point of view, the 1980s will be a "lost decade" for the region. In recent years, for many countries per caput incomes were below those in 1980 and were expected to remain so for the rest of the decade.

Internal factors were, to a certain extent, responsible for the crisis, or at least precipitated its outbreak: economic and financial policies that, in hindsight, proved conducive to potentially explosive payment situations; political instability; an unfortunate sequence of natural disasters particularly affecting agriculture; and, in a longer perspective, a loss of momentum in "rapid-growth" development models based on urban-centred industrialization, export promotion and import substitution.

However, external factors were the immediate causes of the crisis and of the subsequent difficulties in overcoming it. These factors are well known: the sharp fall in net capital inflows since 1982; soaring net external payments that rendered the region a net exporter of capital; high real interest rates aggravating an unprecedented debt problem; and falling prices of primary commodities crippling some of the region's main sources of income and foreign exchange and reducing its import capacity.

By 1982, the worst year of the crisis, the region faced a current account deficit that exceeded $40 billion, a debt service that absorbed over half of its total export receipts and a sharp deterioration in its terms of trade. Total net private lending, which had stood at $55 billion in 1981, plunged to less than $1 billion in 1983. Unable to continue financing its external payment obligations through new loans and investment from abroad, the region began a period of economic adjustment. Thus, an economic crisis largely generated outside the region had to be resolved mainly through internal measures restricting domestic demand and promoting exports.

The Process of Adjustment

The wide range of adjustment measures applied in the region evolved around the overall

objectives of reducing aggregate demand (by fiscal, monetary and wage restraints) and increasing the competitiveness of exports (by currency realignments and tax incentives). These measures were complemented, in some countries, by direct support to production of tradable goods through public investment programmes and measures to substitute for and/or reduce imports.

Adjustment measures were often carried out within the framework of credit agreements with the IMF, which typically involved a conditionality package: restrictive monetary policies; reduction in government budget deficits through higher taxes and public service fees, together with lower expenditures; realignments in currency rates; and control of real income growth.

The severity, length and mix of adjustment measures varied widely among countries, as did the results achieved. However, the major positive outcome obtained at the regional level in the short term included a turnaround in the net trade balance and a corresponding improvement in current accounts. In 1982, the region had a combined current account deficit equivalent to 35% of its exports; by 1985, this ratio was reduced to less than 4%, although it rose again to over 16% in 1986 and was estimated to remain above 10% in 1987 and 1988. Also, while non-debt creating flows financed only about one-sixth of the current account deficit in 1982, they covered nearly one-third of it in 1986 and 38% in 1987.

Reduction in inflation rates was another area of relative improvement in the case of countries afflicted by hyper-inflation, through radical and comprehensive corrective actions. The region's average inflation rate declined from a peak 149% in 1985 to less than 90% in 1986, but was estimated to have accelerated again in 1987 to nearly 120%.

Such improvements were achieved at a heavy cost, however. The sheer size of the initial disequilibria, the suddenness of the external financing cuts and the compelling debt-service obligations required adjustments to be made in a very short period of time. Export-promotion and import-substitution measures, involving changes in the structure of production, would have been of little avail in the short run, particularly given the unfavourable climate for exports. Therefore, the full burden of adjustment had to be initially borne by imports. Between 1982 and 1983, these fell in volume by a cumulative 40% and only rose on average 0.6% per year during 1984-87. Such massive reduction, associated with depressed domestic demand, was the most visible feature of the adjustment process and underlined its essentially recessive character.

Despite the severity and cost of the adjustment measures, external indebtedness remains at the centre of the region's economic problems. External debts have continued to accumulate to a total $391.4 billion in 1986 and an estimated $421 billion in 1987. The collapse in private bank lending left official lenders as the sole source of new credit. Although interest rate payments were reduced in 1986, the region's ability to finance them through its trade surplus fell significantly.[8] In 1987, the regions's external debt was equivalent to over 55% of its total exports, compared with 51% in 1986 and 43% in 1985.

The Impact of Macroeconomic Policies on Agriculture

The most important instrument for adjustment in Latin America and the Caribbean was the recourse to *exchange rate realignments*. Although periodic devaluations had been common instruments of economic policy in the region prior to the crisis, currencies had tended to appreciate. There have been major devaluations since 1981-82, resulting in a depreciation of over one-third in the average real effective exchange rates of the region between 1982 and 1986. Such depreciations, together with complementary monetary and fiscal adjustments, have affected in varying ways price relationships of tradable and non-tradable goods, external competitiveness and production patterns.

The cost of imported inputs and intermediate goods for agricultural production rose considerably, affecting more particularly countries where input prices had been more insulated from international price influences. The impact of this cost increase on agricultural output cannot be underestimated, given the importance of increasing input use in expanding output and the large imported component of inputs.[9]

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[8] Lower interest rates saved Latin America about $5 billion in 1986 with respect to the total interest bill of $37 billion in 1985.

[9] Estimates based on comparative studies for some countries in the region suggest that, overall, agrochemical inputs contributed as much as 40% to agricultural growth during the 1970s, land and labour 15%; technological improvement, the remaining 45%.

The increase in costs of imported inputs, together with higher credit costs, lower subsidies and reduced public investment in agriculture rendered the financial position of many farmers precarious. In some cases their losses were partially offset by a reduction in the cost of agricultural labour, and by upward pressures on producer prices, stemming in part from the increase in the costs of imported food following currency devaluations.

It does not appear that price relationships between exportable and non-tradable agricultural products have been substantially modified by currency devaluations, except in some cases and for short periods of time. This is explained by the fall in international prices of agricultural commodities that counterbalanced the potential beneficial effects of devaluations on producer prices.

Similarly, profit margins of export-oriented agriculture tended to remain relatively constant, as the impulse provided by currency devaluations was offset by depressed international demand and prices and higher production costs.

As regards *monetary and credit* policies, the process of adjustment often involved reductions in official credit to agriculture and, in many cases, a parallel reduction in preferential interest rates to investment in the sector. Agriculture previously had benefited from fairly liberal lines of official credit that had resulted in rapidly growing rates of farmer indebtedness, 50-100% in constant terms between 1975 and 1982. The reduction in credit supply since 1983 resulted in major financial difficulties, particularly for many large-scale enterprises that had become highly dependent on this source of financing. Although the volume of agricultural credit in constant terms has tended to increase again in some countries since 1984-85, it has remained below pre-crisis levels.

Indebtedness in agriculture was aggravated by the increase in interest rates. Although agriculture continued to benefit from preferential and increasingly negative interest rates in some countries, (e.g. Brazil, Colombia, El Salvador, Ecuador and Peru), in other countries where rates for agricultural lending were close to commercial levels, interest rates rose sharply to over 30% in real terms in 1982, then more recently stabilized at about 12%.

The adjustment measures also affected the levels of *public expenditure on agriculture.* By 1985, a large reduction in public expenditure and lower interest rates contributed to a fall in the public sector deficit, to an equivalent 0.2% of GDP from 2.2% in 1983. Available data indicate that, while the share of agriculture in total public expenditure remained relatively stable, a reduction in agricultural expenditure has taken place since 1983. Infrastructural investment, extension programmes, training and research, and integrated rural development appear to have been most affected by budgetary cuts. This reduction in public expenditure also restricted private agricultural investment, which in many cases was only profitable when benefiting from public support.

Effects on Agricultural Performance

During the 1970s, agricultural production in Latin America and the Caribbean increased 3.5% yearly compared with nearly 6% for the economy as a whole. This trend was reversed during the 1980s. While all productive sectors suffered a marked slowdown (total GDP economic growth declined on average 0.6% per year during 1980-84), agricultural GDP increased 2.8% a year. As a result, the share of agriculture in GDP increased slightly, interrupting a secular downward trend. With the fall in agricultural output in 1986, the relative position of the sector within the regional economy temporarily returned to pre-crisis levels. However, agricultural growth in 1987 was again expected to outpace that of the economy as a whole.

Other than factors inherent to agriculture that make it comparatively more resilient to external economic shocks, the relative dynamism of some major export crops has been a source of strength. Yearly growth rates in sugar cane and cereal production accelerated in 1980-87 compared with 1971-80. Oil crop output also rose significantly overall, despite a sharp fall in 1986. Production of tropical beverages was more varied. On the other hand, roots and tuber production continued to stagnate and growth in livestock products decelerated markedly from the 1970s' average. As regards recent performance, while the 6% increase in output of roots and tubers had been among the few bright spots in the disappointing 1986 crop year, 1987 was on the whole a year of recovery. Agricultural production rose nearly 6%, reflecting generally favourable conditions for food crops (cereals, fruits and livestock products each rose about 5%) and more significantly for export crops. In particular, stimulants rose 20% in 1987 after the setback of the previous year and sugar output also recovered. However, most of the agricultural gains in 1987 were concentrated in

TABLE 2.2. **Latin America and the Caribbean: annual changes in selected indicators[a]**

(Percentages)

Country, country group and region	Population	Agricultural labour	Agricultural production		Total $ value of exports	$ value of agricultural exports	Total $ value of imports	Agricultural import volume	$ value of agricultural imports
	1980-87	1980-87	1980-87	1986-87	1980-86	1980-86	1980-86	1980-86	1980-86
LATIN AMERICA	2.3	0.6	2.8	5.7	2.3	1.1	0.2	1.5	−0.2
Mexico	2.6	1.4	3.0	6.9	12.9	6.0	5.4	13.3	16.2
Brazil	2.2	−0.3	4.0	11.2	6.9	2.9	−4.0	1.6	−1.7
CENTRAL AND CARIBBEAN	2.3	1.3	0.6	1.4	0.5	0.3	3.0	3.3	1.2
Cuba	0.7	0.3	1.6	1.7	4.6	2.6	7.5	4.0	2.3
Trinidad and Tobago	1.6	−1.2	0.2	−1.0	−1.3	−7.4	−3.1	4.1	2.3
Costa Rica	2.7	0.5	1.4	0.6	2.5	1.6	−1.4	−1.6	−4.4
Jamaica	1.5	1.6	1.1	0.9	−3.5	1.4	1.0	10.0	4.0
Dominican Republic	2.3	1.0	1.7	7.4	−1.1	1.1	3.0	11.6	6.2
Nicaragua	3.4	1.8	−2.9	5.2	−11.7	−16.2	21.5	28.6	23.2
Guyana	1.9	1.2	−1.3	−1.7	−3.8	−3.6	0.9	−18.3	−13.1
Panama	2.2	0.4	1.5	−0.8	2.4	2.8	3.7	7.0	6.3
Guatemala	2.9	1.8	0.3	−0.8	−0.6	1.3	−3.3	1.2	−1.2
Honduras	3.4	2.9	1.7	0.9	0.7	2.6	3.2	−8.2	−8.7
El Salvador	3.0	1.4	−3.1	−5.4	−2.7	−4.2	2.1	3.8	−0.2
Haiti	2.6	1.0	1.4	2.8	7.7	15.1	8.8	2.1	2.1
ANDEAN	2.6	1.0	1.8	1.8	−2.1	6.4	1.5	3.0	0.1
Colombia	2.1	0.6	1.6	3.8	8.4	8.9	6.3	16.0	5.6
Venezuela	2.9	−0.5	1.6	−2.8	−4.6	11.8	−2.0	−0.5	−3.7
Peru	2.6	1.5	1.2	3.4	−3.0	2.7	12.2	12.9	16.0
Bolivia	2.7	1.5	3.0	10.5	−2.4	−7.8	3.9	8.9	6.9
Ecuador	2.9	0.5	3.0	−5.4	1.5	3.7	3.9	0.8	1.8
SOUTHERN CONE	1.6	−0.2	1.2	1.4	−1.2	−0.4	−1.0	−10.7	−10.5
Argentina	1.6	−1.2	0.7	0.3	−1.2	−1.5	−0.5	−3.4	−6.1
Chile	1.6	−0.4	2.6	2.4	0.4	12.9	−0.6	−13.5	−11.6
Paraguay	3.0	2.5	4.6	10.8	−2.6	−1.0	4.8	21.8	−7.4
Uruguay	0.7	−0.8	2.8	5.0	−2.0	9.3	−1.5	1.3	−11.0

NOTE: Countries within groups are ranked according to dietary-energy supply (DES) levels in 1985.

[a] Annual changes are the simple average of yearly percentage changes. For subregional country groups, averages are computed on the sum of country data within the respective groups, expressed in constant US dollars.

Brazil and Mexico, the other subregions showing mediocre or average performances (Table 2.2).

The factors involved—particularly weather—are too complex for a conclusive assessment of the impact of preferential policy incentives in favour of export crops. However, a review of the changes in harvested area and average yields suggests that during 1980-85, land productivity for cereals, coffee and sugar increased at a faster rate than the average of the 1970s, continued to improve substantially for soybeans, albeit at a lower pace than during the 1970s, remained virtually stagnant for roots and tubers, and declined markedly for maize.

Agricultural trade flows and patterns were greatly influenced by the overall decline in international prices of primary commodities that occurred during most of the adjustment period. Obviously, these had asymmetric effects on different countries, according to the commodity structure of their exports and imports. For the region as a whole, the unit value index of agricultural imports declined 18% in 1986 from 1979-81 levels, slightly more than export unit values (15%). The fall in unit values resulted in a 24% reduction in the value of agricultural imports, compared with a decline of only 9% in their volume. Conversely, the 18% rise in the volume of agricultural exports during the same period did not yield any major increase in terms of value.

During the process of adjustment, only a few net agricultural exporters—Argentina, Brazil, Paraguay and, to a lesser extent, Costa Rica and Honduras—improved their agricultural trade balances. Among the deficit countries, Bolivia and Haiti suffered a deterioration in their net balances, but Mexico and Venezuela reduced their deficits. Chile and Peru reversed their deficit situation and became net exporters due to a sharp cut in food imports and, more particularly in the case of Chile, an expansion in agricultural exports.

Developments in recent years underline the growing difficulties in maintaining high levels of agricultural exports from the region. The major problems arise from the current depressed international demand and prices for agricultural commodities and fears of continued, and even increased, protectionism in agricultural markets. Uncertainties also surround the future value of the US dollar and consequently the competitive position of the region's agricultural exports. On the side of supply, signs are apparent of a slackening in the momentum of growth generated by investments and technological change of the 1970s. The incentives provided by macroeconomic and *ad hoc* export-promotion measures also may not be sustainable in the medium term. In particular, currency devaluations have tended to be less pronounced since 1986. These factors may have already played a role in the crop shortfalls that affected the main exportable products in 1986 although, as previously noted, a substantial recovery was achieved the following year. If fears of reductions in agricultural export availability materialize and depressed international demand and prices persist, many countries will have to postpone their economic recovery and debt reabsorption.

FAR EAST: Prospects for Maintaining Progress in Food and Agriculture

Economic Situation

The following review covers the Far East region, including China, but excluding other Asian centrally planned economies. Given the widespread interest in recent developments in China's policies towards food and agriculture, these developments are also explored in more detail, in a following section.

With some exceptions, regional economic growth was well maintained during 1980-84, a time of global economic recession, followed by only a modest recovery. Growth of regional GDP averaged 5.5%, and although this was sustained by the remarkable growth in China's economy of almost 9% a year, annual growth in the other subregions was around 5%. As population growth was relatively modest at about 2% a year, real per caput income grew at a respectable annual average of about 3.5%. The main exceptions to this generally favourable performance were the Pacific Island countries and the Philippines. Nepal and Bangladesh, which are among the least-developed countries (LDC) in the region, also recorded only modest growth rates in per caput income.

Some of this relatively good economic performance of the early 1980s was based on trade, with the regional value of total merchandise exports expanding by more than 7% a year during 1980-86; the Republic of Korea, Nepal and China were notable performers (Table 2.3). The expansion in trade mainly accrued to manufactured products and oil, because non-oil commodity prices fell in 1981 and 1982, contributing to a fall in the region's agricultural exports during these years.

The deterioration in the world economic environment from 1984 to 1986 had a negative impact on the region, mainly through its effect on export markets and commodity prices. The effects of the decline in the price of oil fell with varying impact on the oil-exporting and non-oil economies of the region. The major oil exporters—Brunei, China, Indonesia and Malaysia—are estimated to have suffered a loss of about 50% in oil export earnings in 1986. On the other hand, oil-importing countries, particularly the Republic of Korea, the Philippines, Thailand, India and Pakistan, gained about $8-9 billion. This sum was significantly less than the loss of the oil-exporting countries, but eased balance-of-payments problems in a number of the oil importers. Declining oil revenues in Near Eastern countries also adversely affected the flow of workers' remittances to such countries as Pakistan, India and Bangladesh.

Other changes in economic variables have had a diverse impact on the region's indebted countries. Declining interest rates benefited more those countries with a higher proportion of commercial debt. The depreciating dollar worked against those countries with a high proportion of their debt in yen and other currencies that had appreciated, particularly if their exports were based on products or commodities whose prices were denominated in dollars, such as oil. On the other hand, the appreciating yen was to the advantage of those countries able to exploit their resulting increased competitiveness in manufactured goods *vis-à-vis* Japan, notably the Republic of Korea, but also Thailand in most recent years.

Agricultural Performance

Against this complex picture, the recent performance of the region's food and agricultural sector can best be assessed within a long-term perspective. The 1970s had been a period of significant gain in agriculture. During *1971-80*, both food and agricultural output recorded annual growth rates approaching 4%. With population growth at about 2.3% a year excluding China, but nearer 2% including China, the gain in per caput output was 1.5-2% a year, a satisfactory accomplishment when extended over a decade. The region's agricultural exports grew 3% a year in real terms, the best performance of all the developing regions. The volume of food imports, including grains for livestock feed, also grew relatively rapidly by nearly 6% a year, excluding China whose food imports grew even faster at nearly 13%, boosted by rising export earnings and demand for larger food intakes and improved diets. During 1971-80, average dietary-energy supplies (DES) in the region grew nearly 1% a year, although the average was raised by China whose increase in DES was nearly 1.5% a year.

The main forces driving such agricultural progress were the following:

— the uptake of improved technology, notably improved varieties of rice and wheat;

TABLE 2.3. **Far East: annual changes in selected indicators**[a]

(Percentages)

Country, country group and region	Population	Agricultural labour	Agricultural production		Total $ value of exports	$ value of agricultural exports	Total $ value of imports	Agricultural import volume	$ value of agricultural imports
	1980-87	1980-87	1980-87	1986-87	1980-86	1980-86	1980-86	1980-86	1980-86
FAR EAST AND CHINA	1.7	1.4	3.7	0.2	7.1	2.6	7.5	2.4	0.2
China (excluding Taiwan)	1.3	1.4	4.6	3.4	12.9	10.9	17.0	−3.4	−4.8
India	1.9	1.5	2.7	−4.6	2.0	1.6	6.2	12.8	3.3
EAST AND SOUTHEAST	2.0	0.8	3.1	−0.4	6.4	0.5	5.5	4.7	2.4
Fiji	1.8	0.6	1.6	−15.2	2.3	−6.1	−0.4	2.0	0.7
Korea Republic	1.6	−1.3	−0.2	−1.3	12.9	−0.2	6.8	8.3	3.8
Singapore	1.2	−3.2	1.4	2.6	7.5	8.8	6.2	4.0	5.0
Malaysia	2.4	0.4	4.9	3.9	3.8	−0.7	5.7	6.2	3.5
Indonesia	1.9	0.7	4.6	1.6	1.5	2.8	8.6	−0.2	−2.9
Thailand	2.0	1.4	2.8	−2.8	8.1	3.7	4.7	10.9	5.5
Philippines	2.4	1.5	1.4	−3.0	1.2	−5.1	−1.4	6.0	3.5
Papua New Guinea	2.6	0.9	2.2	2.3	2.6	1.0	4.0	3.8	–
Brunei	4.3	3.3	7.4	8.4	4.5	2.6	7.5	7.0	8.5
SOUTH	2.6	1.8	3.1	−0.4	6.5	3.8	6.7	4.7	3.7
Burma	2.0	0.8	5.9	4.8	−1.4	0.5	0.3	6.8	−1.2
Sri Lanka	1.7	1.4	−0.8	−6.4	3.7	−0.8	4.5	2.9	−0.1
Pakistan	2.9	2.1	4.1	1.3	10.3	16.4	6.8	8.6	4.8
Nepal	2.4	2.1	2.7	2.4	14.3	−1.3	8.9	9.1	16.0
Bangladesh	2.8	1.9	1.0	−5.4	5.4	−1.3	10.4	20.1	10.6
Bhutan	2.1	1.8	4.8	14.8	–	0.7	–	18.1	11.1

NOTE: Countries within groups are ranked according to dietary-energy supply (DES) levels in 1985.

[a] Annual changes are the simple average of yearly percentage changes. For subregional country groups, averages are computed on the sum of country data within the respective groups, expressed in constant US dollars.

— the associated greater use of fertilizers, other inputs such as pesticides and, in some countries, irrigation. (For example, fertilizer use in the region nearly doubled between the early 1970s and 1980, particularly in China, India, Pakistan and Thailand); irrigated area increased 15-20% in the Philippines and Thailand during this period. The few countries with land still available for cultivation, greatly expanded their arable area. For example, Thailand increased its arable area by nearly a third during the 1970s, although at the cost of accelerating its rate of deforestation;

— the opening up of export markets, coupled with periods of sharply rising prices that encouraged the development of the export crop sector—Thailand's cassava chips and rice and Malaysia's palm oil are examples—as well as import substitution; and

— the introduction of policies aimed at providing incentives to increase production. These were based more on the provision of input subsidies, particularly on fertilizers and irrigation water, and the provision of institutional credit rather than on maintaining high levels of producer prices. Nevertheless, an important part of price policies has been to stabilize prices and reduce farmers' risk. The most far-reaching policy reform took place in China, which in 1978 introduced the "responsibility system" that significantly raised farmgate prices, on average by 29% in 1979 alone.

The overall momentum of agricultural progress was largely maintained during the first half of the 1980s, and even accelerated in a number of countries. Agricultural production growth for the region (including China) during *1980-87* was approximately 4% a year, and that of China approached 5%. Nevertheless, in 1987 agricultural production growth in the region fell to 0.2% owing to negative growth in all subregions excluding China. Growth in regional agricultural exports, a leading sector in the 1970s as noted, fell back to an average of less than 3% a year during 1980-86, largely due to an 8% decline in 1985. Among the region's major agricultural exporters, only China, Pakistan and Thailand recorded significant gains during 1980-86. On the other hand, several countries, including the Philippines, Bangladesh and Nepal, experienced significant losses in agricultural export earnings.

Such unfavourable developments supported expressions of doubt on the ability of the region's agricultural sector to continue its impressive performance throughout the late 1980s. Such doubts were based on the following set of issues.

The increase in food production had been based primarily on cereal production, which recorded annual average increases of nearly 3% during 1975-80 and nearly 4% during 1980-87. Mounting stocks of cereals in some countries indicated slack domestic and export demand.

Improved technology, the main engine of agricultural growth since the 1960s, had reached already the most progressive regions in the major producing countries in the Far East and could only be taken up with increased difficulty elsewhere.

Prices of agricultural commodities of interest to the region's exporters had declined drastically, notably those of cereals, sugar, fibres and vegetable oils. Indeed, the Far East (excluding China) suffered a 12% decline in agricultural terms of trade in 1985 and an even sharper deterioration (23%) in 1986, the worst of all developing country regions. As a result, agricultural terms of trade in 1986 were at a level nearly 30% below that during 1979-81.

The region's export markets were affected by increased protectionism and restricted access, as well as by depressed import demand from indebted countries. These developments had combined, in some cases, with expanded output (e.g. vegetable oils and rice), and resulted in the buildup of surplus stocks, depressing producer prices. The producer price of rice in Thailand was particularly exposed to such forces.

The need to reduce budgetary deficits in response to declining oil revenues and remittances, and the rising cost of servicing external debt, led to cutbacks in input subsidies or credit programmes which, it was feared, would adversely affect growth in fertilizer consumption and hence, output. For example, in Bangladesh fertilizer subsidies were reduced from 33% of the average selling price in 1980/81 to 13% in 1984/85. In 1984/85, Pakistan removed its fertilizer subsidies, while Indonesia raised fertilizer retail prices by 25%.

The 1970s' surge in output, particularly of cereals, continuing into the 1980s, exposed serious deficiencies in marketing and transport infrastructure. Crop storage space was inadequate and transport systems incapable of moving surpluses to deficit areas. The latter problem was particularly marked in China.

Such a litany of problems, deficiencies and

uncertainties besetting the region's agricultural sector, needs to be countered, however, by the mood of cautious optimism held by agricultural policy-makers in the region. The basis for such optimism is as follows.

Although there still remains a large gap between the technology available and that actually practised, the more backward regions in countries where improved agricultural technology is widely practised, such as in India, are beginning to show some signs of adopting these "last-generation" innovations.

New technology is becoming available that will raise yields still further, particularly of cereals in technologically advanced and well-irrigated subregions. Hybrid rice is an example of such technology compared with technology based on improved cereal varieties. Hybrid cereals require well-developed seed production and distribution systems, because seeds cannot be "regrown", but have to be produced afresh each year. Advances in dryland research also offer great potential in marginal areas.

Although export market opportunities are far more circumscribed than formerly, they still remain. Examples are shellfish, cut flowers and tropical fruits and vegetables. Such opportunities are being pursued with a characteristic thoroughness by some countries.

Despite significant and widespread increases in average dietary-energy supplies (DES) in the region, there remain several countries, including some of the most populous ones, where nutritional sufficiency has not been reached. Furthermore, there are still large numbers of undernourished people in the region. FAO's *The Fifth World Food Survey* estimated their number in the early 1980s at 313 million, or 25% of the population (excluding China and the other Asian centrally planned economies).[10] Clearly, in these situations the drive for increased cereal production has to be maintained. In more favoured situations, the focus may be shifted from food self-sufficiency, which broadly has been achieved, to nutritional adequacy, implying the production of a broader range of products based on livestock, vegetable oils, vegetables and fruit, leading to improved diets. More livestock production, however, would lead to greater demand for feed, mainly cereals.

The challenge lies less on the supply side, it is thought, than on generating sufficient income growth to sustain a changing pattern of demand for a higher quality diet. Increasing rural off-farm employment has been recognized by several countries, such as Bangladesh, India and Pakistan, as the key to promoting such a rise in per caput rural income as a precursor to greater agricultural output, but has met with financial and institutional constraints. Hence, the wide interest in China's rural industrialization programme and its sideline activities based on food and agriculture that show possible ways of overcoming such problems.

[10] Based on a cut-off of 1.4 BMR (basal metabolic rate) for adults and adolescents. The figure rises to about 400 million if China is included.

CHINA: Recent Policy Developments and Prospects

The rural sector policy reforms introduced in China in 1978/79, which were built on very substantial investment in agricultural land improvement and infrastructure during the previous three decades, have continued to achieve significant increases in agricultural output and rural incomes. Between 1980 and 1987, the average annual increase in agricultural production was 4.6%, and the average per caput rural net income more than doubled, to reach RMBY 450 a year (approximately $120).[11] It is estimated that since the late 1970s per caput rural consumption has more than tripled, and the incidence of rural poverty has been reduced significantly.

There have also been continued improvements in the structure of the rural economy. The share of total rural output attributed to rural industry, including construction, transport, commerce catering, and other services reached just over 50% in 1987, surpassing that of agriculture for the first time ever. Within agriculture, the main change between 1980 and 1987 was a declining share of crop production, but a more than doubling of the share attributed to sideline activities (Table 2.4).

The spectacular growth in rural industry has been a particularly notable feature of China's recent rural development. The number of rural enterprises at the *Xiang* (formerly the commune) and village levels have increased more than tenfold since 1980, to reach 15 million, employing 85 million people in 1987, or more than 20% of the rural labour force. These enterprises accounted for more than 50% of the increase in rural income during 1980-87, 45% of the increase in GDP and 57% of the increase in gross value of rural output. Rural industry also has made a significant and rising contribution to the government budget, attaining a sizeable share of total state revenue.

Another feature of China's recent rural development has been the steady increase in the share of marketed production of total output. The marketed proportion of agricultural products and sideline activities increased from 34% to 54% during the sixth Five-Year Plan (1981-85). Marketed output increased another 18% in 1986 alone. This progress was accompanied by a rapid development in the number of specialized and wholesale rural markets, which rose to 3 000 and 2 000 respectively by the end of 1986.

TABLE 2.4. **China: share of gross value of rural production, 1980 and 1986**

(Percentages)

Item	1980	1986
Crops	64	45
Livestock	15	14
Forestry	4	3
Fisheries	2	2
Sideline activities[a]	15	35
	100	100

[a] Including such activities as basket weaving, sewing, and other small cottage industries.

These changes have been reflected in China's external trade. Agriculture's share of merchandise exports has fallen with the further increase in industrialization of China's economy and the increase in oil exports, but between 1975 and 1985, the value of agricultural exports more than doubled and the agricultural trade balance improved. Given the large size of China's domestic market, it is unlikely that in the near future its agricultural exports will grow to account for a significant share of world commodity markets.

Agricultural Policy Reforms

The agricultural policy reforms that are largely credited for the impressive performance of China's rural economy up to 1983/84 include the following:

— the introduction of a family farming system with contractual responsibility between the farmer and the state, linking remuneration to delivery of produce;

— a series of price increases for agricultural products; and

— a new marketing system replacing the exclusive procurement of most farm products by the state.

Although these basic policies are expected to remain in place, some aspects appear to require periodic adjustment and reorientation.

Problem Areas in Agricultural Development

i) Problems in agricultural and food pricing. The widespread dismantling of state control over marketing of agricultural products, with a retention of contract buying for only a relatively small share of grain production, was accompanied by an increase in state

[11] Since the third quarter of 1986, the value of the Chinese currency Renminbi-Yuan (RMBY) has stabilized *vis-à-vis* the US dollar at about US$1 = RMBY 3.7. Its average value in 1986 was US$1 = RMBY 3.5.

procurement prices for grains, which rose over 40% between 1979 and 1986. However, higher costs of inputs and other industrial products purchased by farmers, the prices of which were also liberalized, reduced the real value of higher producer prices, particularly for grains. Thus, grains became the least profitable of all crops causing shifts particularly towards cotton, livestock and sideline activities involving various types of industries. At the same time, the state government was under pressure to continue to subsidize the prices of inputs and consumer goods, which in 1986 totalled about RMBY 25.7 billion or 12% of total domestic revenue. Such diversion of funds from more productive purposes, coupled with recently reduced incentives for increased grain production and the failure to ensure supplies of some agricultural inputs such as fertilizers, have contributed to disappointing levels of grain production since 1984.

ii) Farmers' lack of land security. The contract "responsibility system", whereby farmers are allowed temporary right to farm state-owned land, has been a major incentive to increase production, but has provided only transitory security to farmers. Farmers are given security of land use for 15 years (50 years for orchards), but this 15-year period is now half over and, as a consequence, agricultural investment and management practices to improve productivity have fallen back. For example, the area annually planted to green manure, needed to maintain the organic content of soil, about halved between the 1970s' average and that in 1987. A reduction in such management practices, leading to a declining productivity of land, is of considerable concern.

iii) Declining agricultural investment by the state. In recent years, the lack of investment by individual farmers was accompanied by falling investment in the sector by state and local authorities. During the sixth Five-Year Plan (1981-85), agricultural investment's share of total investment fell to under 5% compared with a long-term average of over 10%. Annual increases in irrigated land, area ploughed by tractors, and fertilizer production—regular features in the past—have diminished or actually been reversed. In addition, the dismantling of communes has considerably reduced agricultural public works, such as the maintenance of water conservation and irrigation works, formerly carried out collectively during the winter slack season.

iv) The lack of a marketing tradition. Abolishing the state monopoly system of buying most agricultural products was a centrepiece of the policy reforms introduced in the late 1970s. Although contractual purchase by the state remains for grains, the amount so traded in 1986 was only 60 million tons out of an approximate total of 390 million tons produced. A marketing infrastructure, however, was not present at the time to replace the former system. The widespread introduction of a market-oriented system had to begin from a low level, having been essentially ignored for more than 30 years. The rural population's interest in the opportunities thus created for commerce, including agricultural marketing, has been notable, with a reported 14 million people already involved in marketing. The opening up of the economy to market forces and the opportunities this has created, nevertheless has tended to deprive the production side of agriculture of the more entrepreneurial and skilled people.

v) Land fragmentation. While providing a much needed incentive to greater output, the family farming system has worsened the problem of land fragmentation. The average size of a family holding in China is only about 0.5 hectare, often broken into several minute plots. Such a situation inhibits mechanization and other means of exploiting economies of scale.

vi) Diversion of land for non-agricultural uses. China has scarce arable land, with currently about 0.1 hectare per caput and only about 12 million hectares economically reclaimable for agricultural use. Cultivated land per caput has almost halved since the late 1940s, and land lost for agricultural use averaged 0.5 million hectares a year during 1981-85. Furthermore, it is usually the more productive land closer to urban centres that is lost.

As a result of these problems, production of grains, including tubers and soybeans in grain equivalent, reached 407 million tons in 1984, but fell nearly 30 million tons in the following year, one reason being that 4 million hectares were withdrawn from grain production. Production of other major crops, such as cotton, has been erratic. As a result of four successive price increases and other incentive measures, China's cotton production increased almost threefold between 1978 and 1984, turning the country from being a major importer to the world's largest cotton producer (6.25 million tons in the latter year) as well as, since 1985, a major net exporter. Since then, producer incentives have been reduced, however, and producers have experienced difficulties in marketing their crop, with the

result that cotton production fell 34% in 1985 and a further 15% in 1986. In 1987, grain output recovered to 400 million tons while cotton output reached only 4 million tons.

The government has emphatically stressed the strategic importance of agriculture to the national economy and has underlined that the agricultural policy framework now in place will continue for the foreseeable future. It is recognized that a major role of agricultural policy is to ensure an adequately steady increase in the supply of essential food grains and key cash crops such as cotton. What is required, however, are adjustments in existing policies as well as higher levels of agricultural investment and wider adoption of improved technology.

Future Policy Orientation

Market forces will continue to play an increasingly important role in determining agricultural prices, although some controls will be maintained to avoid overly disruptive changes in prices. The development of an integrated market system will be encouraged, covering not only agricultural and other commodities, but also capital, labour, information, etc. The overall aim is to provide incentives for farmers to increase production of those commodities they are most efficient in, and also to encourage them to engage in non-farming activities, as well as to promote the development of a diversified rural economy.

The legal and contractual status of farmers and government authorities are to be more clearly defined, because it is believed that the absence of a sound legal framework has led to many problems and disputes and has hindered development. The contractual period may be extended to far longer than the 15 years originally stated, to restore confidence in the system and promote on-farm investment.

Economic associations or alliances of rural inhabitants in farming or other activities will be encouraged, in order to facilitate the undertaking of activities beyond the capability of a single family unit, such as irrigation and water conservation works and setting up agricultural processing and marketing services. Such associations of producers should also serve as links among individual farmers, enterprises and local authorities. Risk sharing, which is becoming a more important aspect of production with the opening up of markets and the establishment of various farming service and processing activities, will be promoted. The aim is to help farmers organize themselves without losing individual incentive and initiative. So far, about half a million such rural associations have been set up.

Parallel to the above, the collective component of the present farming system, a residual of the former communes and cooperatives, will be strengthened, but without encroaching on the basic family farming system. The objective is to increase agricultural investment and encourage a resumption of collective investment, by providing labour to build and maintain agricultural infrastructure.

The rapid expansion of rural industry—growth in output has been 28% a year since the late 1970s—will be further encouraged so that its share of rural output, which just exceeded that of agriculture in 1987, will attain 60% by the year 2000. Rural industry will also have to absorb about one-half of the rural labour force, projected to be 450 million by 2000, to avoid massive rural-urban migration. As already noted, the rapid advance in rural industrialization has been a notable result of the policy reforms made since the late 1970s, but a continuation of this trend will become more difficult to attain as the urban industrial sector also responds to economic reforms and becomes more efficient.

Land use is to be brought under strict control and within a nationwide land-use plan.[12] Indeed, the increased demand for land for non-agricultural purposes, such as construction of workshops, induced the Chinese Government in April 1987 to introduce a tax on land requisition (the Land Management Law). Such tax, ranging from RMBY 1-10 per square metre, is to be levied according to the amount of agricultural land per person in various areas, on conversion of that land which was used for growing crops in any of the previous three years. It was decreed also that the amount of land to be diverted away from farming in 1987 should be limited to around 200 000 hectares.

The concentration of land use under the control of the most efficient farmers will be encouraged to curb fragmentation and allow economies of scale. The interests of those who have invested in land improvements to raise productivity will be preserved in any resulting transfer of land.

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[12] A massive exercise for formulating a detailed regional plan for agricultural resource use, involving some 400 000 people, has been under way for over eight years.

Although the policy will continue of rewarding greater effort, investment and initiative with higher income, equity considerations will not be set aside, and special assistance will be given to promote incomes in underdeveloped areas. In 1986, it was estimated that 13-14% of the rural population, or about 100 million people, was below the poverty line, calculated at less than RMBY 200 per caput per year (about $54).

Major efforts will be made to ensure a steady increase in grain production. To achieve this objective the following policy measures have been adopted:

— the setting aside of a special agricultural fund from rural industry earnings, for investment in the grain sector;

— the continuation of current incentive measures for grain delivered to the state, consisting of 20% advance payment and guaranteed supplies of scarce inputs at subsidized prices (60 kg nitrogen fertilizer and 30 kg diesel fuel per ton of grain); and

— the gradual reduction in the quantity of grain procured under state contract and its replacement at negotiated price purchases to provide greater incentive. As mentioned, in 1986 contract purchases totalled 60 million tons, but the level for 1987 was reduced to 50 million tons. Negotiated purchases have risen from 3 million tons in 1986 to 33 million tons in 1987, demonstrating the development of multi-channel or "double track" marketing of grains.

Agricultural exports are also promoted although, as already noted, the sheer size of the domestic market for food and agricultural products makes it unlikely that China will become a major agricultural exporter in the near future. The main thrusts of these promotional efforts are the concentration of investment in selected production areas, such as maize in northeast China for export to Japan and other markets, and the emphasis on improving the quality of commodities and their further processing to obtain higher prices and increase value added.

Expanded agricultural investment and input use. The state budget's allocation to agriculture will be increased. As a result of an in-depth study on investment requirements to fulfil the targets set in the seventh Five-Year Plan (1986-90), in comparison with the sixth Plan, investment in agriculture will need to increase from 5% to 10% of the state budget. These funds will be used mainly to finance large-scale projects, while local projects will be financed mainly by local authorities whose share of government revenue has been increasing.

In 1987, revenue derived from the arable land-use tax (discussed earlier), will be shared equally between central and local government authorities, mainly to inject funds into so-called large-scale commodity production bases, selected areas of the country particularly well suited for producing grain. For example, between 1983 and 1985, 50 such areas were selected and drew RMBY 600 million in investment funds. These areas produced 83 million tons of grain during the past three years and their sales doubled to 824 kg per caput. It is planned to expand the number of these areas tenfold by the year 2000.

Despite these efforts to mobilize resources through the state budget, it is recognized that it is vital to create an economic environment favourable to investment by farmers themselves. It is believed that if farmers invested just 10% of their cash and bank savings, the sums involved would exceed the amount invested by the state several times over.

Guidelines on the use of investment funds will also be improved by: concentrating them in production areas of high priority; sharing the investment burden between central government and local authorities, and moving from government investment to bank lending; and linking the availability of funds to achieving certain economic targets.

The supply of agricultural inputs is also to be increased through more industrial and price reforms. Industries for agricultural processing, historically located in cities, will be located more in the countryside to strengthen their links with farmers and farming communities.

Science and technology. This area, which already has contributed much to China's agricultural progress, will receive increased emphasis. It is estimated that improved technology alone increased agricultural production 27% during 1972-80 and 35% during 1978-83. Looking to the future, greater and more efficient fertilizer use is expected to raise yields 16% and the use of improved seeds 4-8%; integrated pest control could reduce crop loss 10-20%; further output increases can be expected from raising the efficiency of irrigation water use from 35% to 40%, and that of agricultural machinery from 20% to 30%. There remains considerable potential, therefore, in soil improvement and raising yields by crop rotations, for example, and introducing

more new high-yielding crop strains. Major efforts have been made in these areas in recent years. Since state-regulated strain selections started in 1983, 65 high-yielding and adaptable wheat strains have been tested and grown on 13.3 million hectares. Average grain yields in China, at 3.5 tons per hectare, are relatively high by world standards, but high-yielding land still accounts for less than 33% of the arable land area. The aim is to transform part of the remaining two-thirds of medium- to low-yielding land to the same productive level as that of high-yielding land.

The exploitation of scientific and technological advances calls for an effective system of agricultural education and extension. There were 59 institutions of higher agricultural education in China in 1987, with 88 000 students, an increase of 80% since 1978. There were also 125 agricultural research institutes having about 1 000 contracts to disseminate advanced agrotechnology. However, much remains to be done to upgrade these institutions, retain skilled professionals in agriculture and strengthen the extension network.

Environmental measures. China's policy programme includes greater attention to environmental protection, an important consideration in China where more than 13% of the land area is desert and only 12% has forest cover. Serious warnings have been made by ecologists about the widespread deterioration of the environment in China, despite some local improvements.

One very large project, which has been under way since the late 1970s, is called the Great Green Wall. By 1985 about 6 million hectares had been planted with trees. The project's second phase began in 1986 and involves afforesting a further 6.37 million hectares within ten years.

An innovative way to improve the local ecology while using the farm family system, is to entrust the work of soil erosion control in a small area or valley to a family through a long-term contract. This has proved to be effective and is being popularized.

In summary, after eight years of policy reforms, the development of agriculture in China has now entered a crucial transitional stage. The accomplishment of this transition requires financial resources on the part of the state as well as reasonably developed markets. However, there are many calls on the state's financial resources, and in most rural areas of China, markets are still undeveloped. It is a period when conflicts of interest among the various social groupings and regions of differing degrees of development have emerged. Neither the old planning mechanisms nor the new market regulations alone could or can easily reconcile the interests of the state, local authorities and individual farmers.

In particular, policy-makers will have to deal with two basic issues:

— how to integrate and reconcile planning efforts with market forces, including combining macroeconomic control with microeconomic decentralization; and

— how to maintain the individual initiative of farmers within a family farming system, while guiding them to form associations or cooperatives in order to achieve economies of scale and overcome the problems resulting from fragmentation of landholdings.

While the general policy orientation has proved to be effective, policy measures need constant refinement to deal with ever-evolving situations. In a huge country like China, this is bound to be a difficult and long process.

NEAR EAST: Agricultural Policies in a Deteriorating Economic Environment

Economic Situation

For the majority of countries in the Near East, the 1980s has been a period of arduous testing of their economic resilience and ability to adjust to abrupt changes in the external economic environment. They face rates of economic growth markedly below historic levels, severe balance-of-payments constraints and major difficulties in expanding investment and production capacity. External shocks have led to internal economic and social imbalances and dislocations of increasing magnitude and complexity.

Developments in the *oil-exporting countries* have been dominated by the persistence of weak oil markets, declining export revenues, cutbacks in public spending, and a further slowdown in economic activity. For the first time in many years, their combined trade balance recorded a deficit of about $8 billion in 1986. The declining surplus of investment income resulting from a sharp contraction of foreign assets and recently falling interest rates, further contributed to balance-of-payments difficulties.

The adjustment for declining export revenues, that started in 1983, has forced many of these countries to reduce their current budgetary commitments and long-term development programmes. The macroeconomic policy stance has been quite restrictive. The emphasis has been on trimming the government sector's deficit and scaling down large investment projects, while encouraging a more active role for the private sector.

The *oil-importing countries* (mid- and low-income), which include several heavily indebted countries, continue to confront weak external demand for their exports, tight international financial markets, high interest rates in real terms and net outflow of resources.

Most of the debtor countries have managed, through stringent adjustment measures, to improve their balance of trade slightly. But the rise in interest payments has absorbed most of these gains. Total debt outstanding has continued to increase and debt-service burdens remain high. The contraction in imports of the indebted countries needed to improve their trade balances in order to cover interest payments on external debt, has adversely affected rates of capital investment, which threatens future economic growth. Between 1980 and 1986, merchandise imports in the low-income countries declined in per caput terms.

Export revenues have also declined considerably since 1981, and international prices of primary products exported by the region since 1984 have continued to be weak. Such price trends have had a debilitating effect on many of the oil-importing countries that depend for most of their foreign exchange earnings on exports of these commodities. For example, during 1980-86, merchandise exports of the low-income countries of the group only rose 0.7% a year and agricultural exports actually declined almost 7% a year (Table 2.5).

Macroeconomic policies in many of the oil-importing countries, and particularly the debtor countries, have been highly restrictive. There have been significant reductions in the rate of increase of public sector expenditures and in the size of government budget deficits.

Despite short-term progress in regard to external balances, the immediate costs of adjustment policies, in terms of lost output and employment, have been quite high. In addition, adjustment programmes have often entailed perverse changes in income distribution. Falling real wages, sharp rises in interest rates, removal of food subsidies and increases in taxes have caused abrupt declines in the levels of disposable income of the more vulnerable groups of the population. Investment rates have also fallen.

Agricultural Policies

Despite restrictive macroeconomic policies, the food and agriculture sector continues to receive the highest priority and support in almost all countries of the region. New policy measures are being instituted to attract private investment in agriculture, improve the intersectoral terms of trade and motivate farmers through highly favourable cost-price relationships. Problems such as drought and desertification, deficient technological packages for rain-fed agriculture, weak extension, credit and marketing systems and low living-standards in rural areas, are being addressed.

In the *oil-exporting countries*, the food and agriculture sector has benefited greatly from past infrastructural investments and extensive farm subsidies. In some cases, new price incentives have been introduced to increase agricultural production despite growing fiscal pressures.

TABLE 2.5. **Near East: annual changes in selected indicators**[a]

(Percentages)

Country, country group and region	Population	Agricultural labour	Agricultural production		Total $ value of exports	$ value of agricultural exports	Total $ value of imports	Agricultural import volume	$ value of agricultural imports
	1980-87	1980-87	1980-87	1986-87	1980-86	1980-86	1980-86	1980-86	1980-86
NEAR EAST	2.7	0.7	3.0	1.1	−7.3	0.7	2.6	6.7	4.9
HIGH-INCOME OIL EXPORTERS	5.3	2.4	–	–	−5.2	−2.9	3.5	8.3	3.8
United Arab Emirates	6.1	−1.4	–	–	0.1	−4.7	1.8	7.6	0.6
Kuwait	5.4	3.7	–	–	−10.8	4.0	2.5	7.6	5.4
Oman	4.4	3.5	–	–	9.5	2.9	14.5	15.8	10.9
OTHER OIL EXPORTERS	3.3	0.7	4.4	1.6	−10.7	−6.5	−0.7	5.9	3.4
Libya	3.9	−0.9	6.4	6.4	−8.7	–	0.8	5.1	6.3
Iran	2.9	0.5	3.1	1.7	−4.6	−4.4	2.9	1.6	2.1
Saudi Arabia	4.3	2.1	14.2	−7.6	−7.9	18.3	−1.6	9.7	3.5
Iraq	3.6	−0.1	5.2	3.1	−11.1	−4.8	3.1	6.6	5.3
MID-INCOME	2.4	0.5	2.7	1.7	10.7	3.7	9.4	8.7	9.1
Cyprus	1.1	−1.4	0.2	4.6	2.1	3.7	3.8	8.1	3.6
Egypt	2.5	1.3	2.6	3.7	11.6	1.5	16.7	8.5	11.7
Syria	3.6	0.2	5.5	−3.6	−3.1	−1.7	1.1	14.1	6.1
Turkey	2.1	0.2	2.2	1.3	20.0	7.8	14.0	76.0	42.1
Lebanon	0.4	−2.8	4.0	9.2	5.7	−4.5	9.3	−2.1	0.5
Jordan	3.7	−2.2	8.4	9.5	11.3	−2.0	4.4	0.6	3.9
LOW-INCOME	2.4	1.1	2.8	−1.7	0.7	−6.8	1.6	5.5	2.4
Yemen, People's Dem. Rep.	2.8	0.5	0.4	−0.4	8.7	2.9	9.2	7.7	6.2
Yemen Arab Republic	2.8	1.7	5.5	1.2	5.3	−2.2	0.5	5.2	−0.2
Afghanistan	1.7	0.7	0.5	0.4	2.5	−6.9	11.0	12.9	−0.1
Sudan	2.9	1.3	3.8	−3.3	−4.9	−5.5	−4.0	12.5	14.3

NOTE: Countries within groups are ranked according to dietary-energy supply (DES) levels is 1985

[a] Annual changes are the simple average of yearly percentage changes. For subregional country groups, averages are computed on the sum of country data within the respective groups, expressed in constant US dollars.

Saudi Arabia maintains a system of farm subsidies that has already led to an exportable surplus of wheat, eggs, melons and dates. In 1986, the procurement price of wheat was reduced to $553 a ton, remaining very high however compared with world market prices. The support price for barley was recently increased to $220 per ton, to switch part of the area under wheat to feedgrains.

Increasing investment in greenhouses is being encouraged through farm subsidies in the Gulf countries. There are also subsidies for production of fruit, poultry, meat and eggs. Producer subsidies in the United Arab Emirates (UAE), Qatar and Oman have promoted the financing of new orchards, vegetable farms and livestock projects. In Qatar, fertilizer is provided almost free to qualified producers.

In the Islamic Republic of Iran, support prices for cereals are above world levels and restrictions on internal as well as external trade in agricultural commodities by the private sector have been lifted. New policy measures were announced in 1986 for the upkeep and maintenance of orchards, which have provided a further boost to horticultural production.

Since 1984, agricultural policies have changed dramatically in Iraq. Producer prices for cereals, livestock products and horticultural items have been significantly increased and previous limits on the amount of produce that may be sold in farmers' markets have been lifted. A high procurement price of $400 a ton (at the official exchange rate) is offered for wheat and barley. Production of fruit and vegetables has benefited also from the deregulation of markets and input subsidies. Producer credit is easier to obtain and its terms are generous. Public lands, including abandoned state farms, are being increasingly leased to the private sector at favourable rates. Private investment in agribusiness is being encouraged through easy credit and subsidies.

In the *oil-importing countries* as well, new pragmatic policies have been mounted to improve producers' incentives and create a more favourable climate for private investment in agriculture.

In Jordan, at the end of 1985 and after 17 years, the retail market for fruit and vegetables was deregulated. Investment credit is now available at highly favourable rates for specialized livestock and horticultural producers. The government started also to lease state-owned land for up to 15 years to private companies and individuals for farming. In 1986, 25 000 hectare were leased in this manner.

In the Syrian Arab Republic, measures have been undertaken to establish large-scale joint ventures between the private sector (75%) and the Ministry of Agriculture. The new companies will be exempt from import regulations and have tax-free privileges. In addition, procurement prices for most crops increased in the past two years. Between 1984 and 1986, procurement prices for hard and soft wheat were increased 26% and 35% respectively, and those for barley, pulses and cotton, 15-22%. The market for high-quality bread was deregulated in early 1986.

In Turkey, though input subsidies have been reduced gradually in recent years in response to adjustment programmes, the output prices of most farm commodities have been raised to world market levels. The extension, credit, marketing and research systems have been streamlined through significant institutional reforms.

In Egypt, the government abolished the obligatory procurement of all field crops except cotton, sugar cane and rice, for which procurement prices are now higher. The market for fruit, vegetables and livestock products was deregulated. Input subsidies are to be gradually withdrawn, however, as part of the adjustment programme. Private investment in high-technology methods is being strongly encouraged. Land allocation policy in new land reclamation projects has been greatly liberalized to encourage private investment in orchards and livestock farms.

In most *low-income oil-importing countries* such as the Sudan, the Yemen Arab Republic and the People's Democratic Republic of Yemen, drought and desertification have caused widespread disruption to agricultural production, infrastructure and services to producers. Therefore, policy-makers are paying special attention to rehabilitation activities. Price policies have been changed in order to improve agricultural terms of trade, and government expenditure favours more rapid rural development.

Agricultural Performance

Regional agricultural production increased 3% a year during 1980-87, exceeding population growth (Table 2.5). While the early 1980s had been reasonably favourable, with annual growth rates above 3-4%, production declined in 1983 and 1984, affected by drought, particularly in the low-income countries. There was a good recovery in 1985 (5.7%), which continued in 1986 (4.3%), but the growth rate declined again

to 1.1% in 1987. There was a modest increase in the value of the region's agricultural exports during 1980-86, due entirely to the substantial gains achieved in 1980-81, which more than offset losses in subsequent years. The rate of increase in agricultural and food production barely exceeded that of population during 1980-87, so that food output growth failed to meet the growth in effective demand for food, particularly in mid-income countries. Indeed, this group of countries achieved substantial gains in per caput GDP during this period. Hence, growth in the volume of agricultural imports, particularly food imports, was approximately 7% a year during 1980-86, the increase being particularly marked during 1980-84, and in the particularly striking example of Turkey since 1984. Although the regional growth in import volumes of agricultural products slowed in 1985 and 1986, the dependency on external food supplies continues to be high, despite major efforts and investment in food and agriculture.

EASTERN EUROPE AND THE USSR[13]

Overall Economic Performance in 1986

Economic growth in eastern Europe and the USSR accelerated to 4.3% in 1986, the highest year-to-year increase so far in the 1980s (Table 2.6). Growth in output, however, varied widely among individual countries, ranging between 0.5% in Hungary to 7.3% in Romania.

In the USSR, an expansion of 4% in aggregate production of energy ensured adequate supplies to the economy. Production of inputs increased, alleviating the shortages that constrained output growth in previous years. In some East European countries, increases in domestic supplies of goods were also supported by rises in imports. Generally good climatic conditions favoured agricultural output in most countries of the region. Incentive measures introduced by several countries in the recent past became more widespread, and political support for economic reforms gathered momentum. Also, 1986 marked the common launching of Five-Year Plans for all countries in the region.

While the volume of exports in the region rose 3.7% in 1986, mainly due to the sharp increase in the USSR, import volumes fell nearly 1%. This small decline resulted from an 8% reduction in imports by the USSR more than offsetting increases in other countries of the region, particularly Romania. Although Romania does not publish any within-year foreign trade returns, trading partners' data for 1986 indicate a major upsurge in imports from the USSR and OECD countries.

Agricultural Production in 1986 and 1987

Regional agricultural production increased faster in 1986 than in any other year since 1980, except 1982. This favourable outcome was primarily because of the good output in the USSR, Poland and Bulgaria (Table 2.7). In general, measures and programmes at the country level have been aiming at improving the variety and quality of food and agricultural production, in line with domestic and export demand, and reduce output costs. Efforts have been focused on increasing and stabilizing grain production, but feed resources still constrain livestock production.

[13] Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, Romania and the USSR. In most instances, Albania is not included for lack of data.

TABLE 2.6. **Eastern Europe and USSR: annual changes in selected economic indicators, 1981-86**

(Percentages)

Item	1981	1982	1983	1984	1985	1986
NET MATERIAL PRODUCT[a]						
Bulgaria	5.0	4.2	3.0	4.6	1.8	5.5
Czechoslovakia	−0.1	0.2	2.3	3.5	3.0	3.2
German Dem. Rep.	4.8	2.6	4.6	5.5	5.2	4.3
Hungary	2.5	2.6	0.3	2.5	−1.4	0.5
Poland	−12.0	−5.5	6.0	5.6	3.4	5.0
Romania	2.2	2.7	3.7	7.7	5.9	7.3
USSR	3.3	3.9	4.2	2.9	3.5	4.1
Eastern Europe and USSR	1.7	2.8	4.1	3.6	3.5	4.3
CONSUMER PRICES						
Bulgaria	0.4	0.3	1.4	0.7	1.7	...
Czechoslovakia	0.9	4.7	1.1	0.9	1.3	0.4
German Dem. Rep.	0.2	–	–	–	–	...
Hungary	4.6	6.9	7.3	8.3	7.0	5.3
Poland	24.4	101.5	22.0	15.7	4.4	18.0
Romania	2.0	16.9	5.2	1.1	0.4	0.9
USSR	1.0	3.0	1.0	−1.0	1.0	–
Eastern Europe and USSR	...	...	...	...	...	...
EXPORT VOLUMES						
Bulgaria	8.4	11.3	4.4	11.6	2.2	−1.2
Czechoslovakia	0.5	6.1	5.7	8.5	2.6	2.0
German Dem. Rep.	8.4	5.4	10.6	3.7	1.7	−0.9
Hungary	2.6	7.3	9.4	5.8	−0.3	−2.0
Poland	−19.0	8.7	10.3	9.5	1.6	4.6
Romania	13.6	−7.6	0.9	15.0	1.6	1.6
USSR	1.9	4.5	3.3	2.5	−4.3	7.1
Eastern Europe and USSR	1.5	5.1	5.7	5.6	−1.1	3.7
IMPORT VOLUMES						
Bulgaria	9.3	3.2	5.2	5.6	10.9	0.2
Czechoslovakia	−6.9	2.9	2.0	4.8	4.6	4.2
German Dem. Rep.	−1.3	−4.7	5.3	5.7	2.3	3.0
Hungary	0.1	−0.1	3.9	0.1	1.1	2.5
Poland	−16.9	−13.7	5.2	8.6	7.2	3.6
Romania	−7.2	−22.8	−5.0	9.9	10.3	25.5
USSR	6.4	9.7	4.0	4.4	4.0	−8.0
Eastern Europe and USSR	−0.1	1.5	3.7	5.1	4.8	−0.8

[a] Net material product (NMP) is a close approximation in socialist countries to GNP.
Source: UN/ECE, *Economic Survey of Europe in 1986-87*, Geneva, 1987.

TABLE 2.7. **Eastern Europe and USSR: annual changes in agricultural and food production, 1985-87**

(Percentages)

Item	1985	1986	1987
AGRICULTURAL PRODUCTION			
Bulgaria	−12.7	6.7	2.3
Czechoslovakia	4.9	6.1	0.4
German Dem. Rep.	−4.9	6.2	−4.7
Hungary	−6.5	1.5	0.6
Poland	2.5	7.6	−2.4
Romania	−3.8	6.0	−0.9
USSR	0.5	7.1	0.6
Eastern Europe and USSR [a]	0.5	7.0	−0.4
FOOD PRODUCTION			
Bulgaria	−13.2	9.0	2.4
Czechoslovakia	5.1	5.1	−0.3
German Dem. Rep.	−5.0	6.2	−4.7
Hungary	−6.6	1.6	0.5
Poland	2.3	7.7	−2.2
Romania	−3.8	6.1	−1.0
USSR	−0.1	7.9	0.6
Eastern Europe and USSR [a]	−	7.7	−0.4

[a] Including Albania.
[b] Preliminary.

Source: FAO, Statistics Division.

In Bulgaria, agricultural output increased nearly 7% in 1986. The grain harvest was higher than in the previous year; nevertheless, it fell short of the 10 million ton yearly target in its Five-Year Plan (1986-90). A new economic management system was introduced in 1986 under which farms became self-managing and financially independent enterprises that operate without specific production targets.

In Czechoslovakia, total agricultural production declined by 1.3% in 1986, mainly due to drought which caused crop damages and prevented reaching the plan target. However, no grain was imported from western countries for the third consecutive year. Since January 1986, with the launching of the new Five-Year Plan, agricultural policies have focused on increasing producer incentives, strengthening economic independence, and stimulating more effective use of factors of production and inputs.

In the German Democratic Republic, agricultural production increased by 2.2% in 1986. The rise was caused by a remarkable increase in productivity, particularly in grains, where an average yield of 4.6 tons/hectare was obtained. A major objective of the country's agricultural policy—raising productivity—was therefore achieved in the first year of the new plan.

Agricultural output in Hungary increased only marginally (1.5%) in 1986, after the setback of 1985 (−6.5%). Drought reduced the overall grain harvest by 4% and that of wheat by 12%. In recent years, agricultural products have represented a quarter of total Hungarian exports and a third of hard currency exports. The poor results of 1986, combined with changes in the exchange rate and price movements in international markets, produced the largest foreign currency losses in Hungary since 1974. No major changes were introduced in 1986 in the country's agricultural policies, which continue to be based on a cereal programme targeted at an annual cereal production of 18 million tons, provision of incentives to the food-processing industry producing mainly for export, and extension of joint ventures with foreign capital participation.

Since 1982, agricultural production in Poland has increased almost 20%, with a rise of 7.6% in 1986 when grain production reached a record of 25 million tons. These results were obtained despite a continuing shortage of farm inputs. The principal targets of agricultural policy for 1986 were: a further increase in crop production and, consequently, the rebuilding of livestock numbers; balanced agricultural trade where imports are financed by revenues from agricultural exports; and an increase of productivity and efficiency in resource use. These targets were largely achieved.

Yearly fluctuations in the agricultural production of Romania have been particularly wide since 1981, with setbacks and recoveries occurring in alternate years. The recovery in 1986 was particularly marked, amounting to 6%, with a record grain harvest of 30 million tons, which contributed to the good overall performance of the economy. It appears that, contrary to some other countries in the region, the authorities are not contemplating changes in economic policy at this time.

In the USSR, 1986 was a successful year for agricultural output, which rose 7% after two years of stagnation. Grain output reached 210 million tons, 17% higher than the average harvest of 1981-85, but still below domestic requirements. Output is planned to reach 250-255 million tons a year by the end of the plan period (1990), compared with actual average annual production of 180 million tons during 1981-85. Production of cereals continues to be the key problem for the agricultural economy of the country. The economic reforms introduced at the end of 1985, and outlined in *The State of Food and Agriculture 1986*, helped to boost Soviet agricultural production.

Preliminary estimates for *1987* show a marginal fall in total agricultural production in the region (see Table 2.7). A decline of about 2% in crop output was partially offset by an increase of more than 3% in the livestock sector, mainly meat. Nevertheless, this slight setback in production followed the 7% gain in output in 1986, which was regarded as a good agricultural year in the region. Poland and to a lesser extent the German Democratic Republic and Romania suffered output declines in 1987. Only Bulgaria achieved some notable increase in agricultural production, for the second consecutive year. In this country, the overall gain over the two years was however insufficient to offset the heavy crop losses of 1985.

Regional cereal production fell about 1% to a level of 296 million tons in 1987, with wheat output decreasing almost 6%, but rice and coarse grains rising 5% and 3% respectively. However, the USSR cereal harvest, which represents two-thirds of the regional cereal output, reached 211.3 million tons in 1987, 1.2 million tons above the 1986 level. This was the first time that USSR cereal output exceeded 200 million tons in two consecutive years. The large 1987 harvest was achieved despite unfavourable climatic conditions (with a particularly harsh winter and a rainy summer), pointing to the effectiveness of recent policy efforts to increase agricultural efficiency. Indeed, cereal yields averaged 1.83 tons per hectare, close to the 1.85 tons per hectare record of 1978, when the cereal harvest had reached 237 million tons. Nevertheless, the Soviet Union is still likely to require grain imports of around 30 million tons in 1988, particularly maize and soybeans for livestock feed.

Despite wide differences in policies and performances in the seven countries reviewed, some similarities in the main agricultural policy issues can be recognized. The improvement of resource management is basic for all countries. Quantitative targets, although still important in national strategies (such as for grain output), are receiving relatively less priority than quality of output.

Agricultural producer prices are being increased to offset, at least to some extent, rising input prices resulting from reduced subsidies in particular, and to provide producer incentives. In some cases, consumer food prices are also being increased enabling food subsidies to be reduced.

New methods of production based on integrated mechanization and automation, fertilizer, pesticide and seed use are being increasingly introduced. Special integrated programmes, covering the whole production system from sowing to processing, are also being put into practice (e.g. in Hungary and Bulgaria).

A wider use is being made of management methods, allowing closer monitoring of farm costs. Production targets and wage levels are increasingly being fixed autonomously at the individual farm level (e.g. in the USSR and Bulgaria). Greater attention is also being paid to the transfer of new scientific technologies into farming practices, and the protection and management of the environment and water resources. Attempts at reducing production costs involve more efficient use of inputs and a more protected environment.

TABLE 2.8 **Developed market economies: annual rates of change in crops, livestock and total agricultural production, 1972-87**

(Percentages)

Region and country group	Crops			Livestock			Total agriculture		
	1972-87	1985-86	1986-87	1972-87	1985-86	1986-87	1972-87	1985-86	1986-87
DEVELOPED MARKET ECONOMIES	1.8	−3.2	−1.8	1.5	0.9	0.3	1.6	−1.8	−1.4
North America	2.1	−6.4	−3.9	1.1	0.9	−	1.6	−5.0	−3.1
Western Europe	1.6	0.3	1.0	1.9	0.9	−0.4	1.7	0.6	−0.2
EEC (12)	1.7	−0.8	2.1	1.9	1.3	−0.5	1.7	0.5	−
Other, western Europe	1.2	9.5	−7.6	1.7	−1.5	0.1	1.5	1.5	−2.2
Oceania	3.9	−2.2	−9.6	0.6	1.1	4.0	1.4	0.2	−0.7

DEVELOPED MARKET ECONOMIES

In 1986, a sharp drop in agricultural production in the United States (−6%) and, with the exception of Canada (+8%), declines or only minor gains in most other developed market economies, led to a small reduction in total agricultural production (−1.8%). A further 1.4% decline occurred in 1987, with North America's output falling 3% and all other industrial country groups showing declining or, in the case of the EEC, stagnating performances (Table 2.8). Supplies of most agricultural products remained well in excess of demand, however, and large stocks continued to depress markets. Budget expenditure on agriculture in the major exporting countries remained at very high levels, as world prices for most temperate agricultural products remained depressed and the cost of supporting farm income rose. Agricultural trade was extremely competitive, and world prices were bid down by major exporters in an attempt to maintain and secure markets. The need for policy adjustments in agricultural trade and production increasingly appeared on the agendas at various international fora.

North America

In 1986, agricultural production fell significantly in the United States, led by decreases in major commodities such as wheat, maize, soybeans, beef and pork. A further slight decline occurred in 1987, when cereal production was 10% below the previous years' level and that of livestock production stagnated. While wheat was slightly above its 1986 level, and soybeans slightly below, maize output was estimated to have declined 12%.

The farm crisis was alleviated somewhat, as the return on assets and equity increased, interest rates declined, net farm income rose and the fall in land prices slowed to 8% in 1986 and was estimated to have stabilized in 1987. Operating expenses fell 8% in 1986 and were estimated to have fallen 4-6% in 1987. Farm costs declined mainly due to falling interest rates, but smaller areas planted and less-intensive input use also reduced costs. As a result, net farm income in 1987 may have been the highest since 1973.

In 1987, government payments for farm prices and income support, which totalled $25.8 billion in 1986, were again expected to surpass $25 billion, including $13.1 billion for the feed grain sector. A significant part of government outlays were for land set-aside programmes, under which 8.3 million hectares (20.5 million acres) normally planted to wheat and 11.9 million hectares (29.5 million acres) to feed grains were forecast to be idled. Soybean plantings in 1987 also were lower by 7.5%.

The long-term goal of the US farm programme is to delink subsidy payments from production, rather than to control production by reducing price support. Ideas that are being discussed in the US Congress include whether or not to introduce mandatory production controls. Programmes such as the Payment-in-Kind Programme (PIK) and the Export Enhancement Programme (EEP) are likely to continue in force until international trade conditions improve.

The year 1987 ended a five-year period of declining agricultural export volumes. The United States' agricultural exports rose $1.3 billion in value and 20% in volume, largely as a result of more competitive prices favoured by the relative depreciation of the US dollar.

In the Uruguay Round of the GATT and in other international fora, the United States has attempted to accelerate negotiations towards the removal of export subsidies and lower barriers to agricultural trade. Within these fora the United States, along with other countries,

advocated a decoupling of farm production and farm income as a method for lowering world oversupply of agricultural commodities. The United States also proposed radical measures, leading to the phasing out of subsidies and the elimination of import barriers affecting agricultural trade over a ten-year period.

In 1986, farm income in Canada reached a record of $4.65 billion, largely due to increased government assistance and good returns on livestock production. Record crops of wheat, barley and rapeseed also added to higher income levels, although the quality of cereal crops was low. Government assistance to farmers increased, and lower input use and costs offset lower market prices, leading to higher net income. Fertilizer use also declined for the first time since the mid-1970s. The decline in the cost of inputs such as fuel and feed and depreciation charges was expected to continue in 1987 and, despite substantially reduced crops, would contribute to a record net farm income of approximately $4.75 billion.

Total agricultural production in 1987 declined nearly 5%, reflecting a substantial fall in crop output, particularly cereals and stagnating livestock production. Wheat production fell 16%, to 26.3 million tons in response to lower prices. Production of the other seven major grains, estimated at 55.85 million tons, fell 8%.

The government in 1987 announced further measures to support farmers. The programme is expected to cost C$2.8 billion by the end of 1991. Grain farmers will receive a cash grant, called the Special Canadian Grains Programme; debts totalling C$1 billion will be liquidated; and fuel tax rebates will be extended to the end of 1989. The Department of Agriculture estimates that the total value of cash grants in 1988 will approximate C$3.2 billion (or C$13 000 per farmer).

A bilateral free trade agreement with the United States was signed on 3 October 1987, containing a number of provisions relating specifically to agricultural products and others to wine and forestry products. If enacted, the agreement would provide for customs tariffs on agricultural products to be phased out over a ten-year period, from 1 January 1989.

Western Europe

Crop and livestock production growth in western Europe was less than 1% in 1986. Growth rates for nearly all commodities were below long-term trends, reflecting mainly drought in southern Europe that affected wheat and barley yields in particular. With stable production incentives, plantings for 1987 proceeded normally; however, rains at harvest time caused crop output to increase only slightly (1%) over 1986 levels. Production of a number of major crops including cereals, sugar beet and fruit as well as livestock products, in particular milk, declined in 1987. On the other hand, oilcrops strongly recovered from the previous years' setback and pulses continued to expand rapidly.

In 1986, The European Economic Community (EEC) had lower yields in cereals than the rest of western Europe because of the effects of the drought in its southern member countries. Although a 2% increase in total crop production was estimated for 1987, the wheat output (at about 72 million tons) was well below earlier projections, owing to the cold, wet harvest that both cut yield and reduced quality.

In 1987, the EEC sold to the USSR 700 000 tons of butter (cutting its butter mountain in half), and within the past 18 months, 8 million tons of wheat, nearly a third of total EEC exports.

EEC 1987/88 farm price negotiations were particularly difficult, and agreement on a package was reached only in early July 1987. The Commission's proposals centred around increasing contributions to the budget to cover its deficit, while limiting the intervention mechanisms for agricultural products to reduce expenditures and curb production. The compromise agreement, which was considerably less radical than the original proposals, includes the following:

— changes in the intervention system for cereals that will only be activated when the average EEC price falls below the intervention price, when the offer price will be only 94% of the intervention price, implying a 6% cut in prices (the Commission had proposed a 7% cut). An increase in the rate of maximum moisture content allowed will partially offset this reduction, however. There will be seven-monthly increases in the intervention price from November until May (the Commission had proposed only five-monthly increases);

— a progressive removal of the complex system of monetary compensatory amounts (MCA), under a formula offering compensation

to farmers in the Federal Republic of Germany up to the end of 1988;[14] and

— a decision regarding the proposed controversial stabilizing mechanism in the vegetable and marine fats and oils sector was deferred indefinitely. At current world and EEC prices, the proposal would have led to a tax of about ECU 330 ($375) per ton of these products for human consumption, and would have generated a sum forecast to be about $2.4 billion annually. The proposal will be the subject of an additional study and of consultations with the EEC's main trading partners. As a result of this decision, the intervention price for rapeseed was reduced only 3% (compared with a 6% cut proposed) and that for sunflower seed remained unchanged (compared with a 3% cut proposed).

It was estimated that the 1987/88 farm price package would reduce the Common Agricultural Policy (CAP) budget by $170 million in 1987, and perhaps four times this amount in 1988. Nevertheless, the CAP budget for 1987 of $27 billion, more than two-thirds of the EEC's total budget, was still in deficit by $4.6 billion.

At the February 1988 meeting in Brussels of EEC member leaders, proposals endorsed included an overall ceiling of ECU 27.5 billion on farm spending in 1988 and future spending increases restricted to 75% of the growth in GDP in the Community; an increase of approximately 70% over five years in aid for depressed regions; and automatic price cuts when production thresholds are attained for cereals (160 million metric tons during 1988-92) and oilseeds.

[14] When the value of the currency of an EEC member state is changed, the prices paid to farmers (i.e. the common price fixed in ECUs, but expressed in national currencies) will also change. To minimize the impact of such sudden changes on farm income and food prices, the changes are phased in using "representative rates" (also called "green rates"), which differ from official parities. The MCA, which covers these differences, are introduced to offset the resulting distortions in intra-Community trade. A country with an appreciated currency pays "compensatory amounts" on exports and charges them on imports; the opposite occurs for a country with a devalued currency. (See EEC, *The Common Agricultural Policy and its Reform*, European Documentation, Periodical 1/1987.)

Oceania

The agricultural financial crisis in Australia continued in 1986 and deepened in 1987, as interest rates in 1986 were at 20%, inflation at 10%, and because of the devaluation of the Australian dollar, costs for fuel, chemicals and farm equipment rose. While prices of production requisites rose 53% during 1980-86, prices received by farmers only increased 13% during this period. In 1986 alone, the cost/price differential deteriorated 8%. As a consequence, farmer income and land prices plummeted, while debts and bankruptcies multiplied. Australian agriculture is going through a period of structural adjustment, while facing tight fiscal policies and a balance-of-payments deficit. The government has attempted to implement policies that will lower costs by providing efficient services and has given assistance to farmers considered viable in the long run.

In 1987, the shift from crop to livestock production in Australia continued. Crop area, at 18.8 million hectares in 1983/84, fell to 16 million hectares in 1986/87, and is expected to fall further to 15.2 million hectares by 1989/90. Wool has overtaken wheat as the main source of income, and in 1987 accounted for over 17% of total agricultural production, a slightly higher share than that of wheat. Wool producer prices are at a high level in domestic currency because of strong demand and the devaluation of the Australian dollar. The government seems determined to continue with a series of adjustment measures that will ensure the viability of farming with less government support. Continued severe pressure on cereal prices will likely accelerate the move to livestock production.

In 1987, gross farm output was around $15 billion, of which exports accounted for $11 billion, double the value of a decade ago. However, exports of cereals, wheat and rice declined by A$253 million, but wool, horticultural and meat exports were good. Wheat production in 1987 was expected to decline for the fourth consecutive year, to 14 million tons, 20% less than in the peak year 1983/84, and the smallest since the drought of 1982/83, but barley was expected to increase 13%, to 3.6 million tons.

New Zealand farmers also have been facing a difficult financial situation. It is estimated that between 3 000 and 6 000 of the country's 40 000 farmers are at risk of bankruptcy, mainly because of measures to improve the efficiency and viability of the farm sector. In 1987, the government reduced the severity of the

liberalization policy of 1984/85 and introduced a farm package that eased farm debt problems. However, high interest rates, inflation (18% in 1987), an appreciated exchange rate and lower support prices created a poor environment for a better farming year. Furthermore, since 1987, the new government has drastically reduced subsidies and other farm incentives.

Drought conditions reduced dairy production 15% in 1986, the lowest level since 1982/83, and fertilizer production was two-thirds that of 1985, reflecting the reduction in input use, which was expected in 1987 to fall further. In 1987, dairy production fell again largely because of low world dairy prices and less use of fertilizer. Despite improved weather conditions in 1987, the grain sector also was depressed, and farmers turned to alternative horticultural crops such as fruit and potatoes, grass seed and improving pastures.

Japan

Agriculture production in 1986 was roughly the same as in 1985, largely due to slightly falling rice production, somewhat offset by greater beef production that responded to higher prices. Net farm income in 1986 remained broadly unchanged and off-farm income increased, leaving Japanese farmers, many of whom are part-time operators, with average earnings 30% higher than those of urban industrial workers.

In 1987, agricultural production fell nearly 1%, reflecting a decline in crops which more than offset an expansion in livestock production. Producer prices and subsidies for most crops were lower, and the Rice Land Diversion Programme increased to nearly 800 000 hectares from 620 000 hectares in 1986.

Decreased influence of the farm political lobby and external pressure to open Japan's domestic agricultural markets to world competition are likely to result in less budget support to agriculture. The government's farm subsidies, which had amounted to more than ¥ 1 000 billion annually in recent years, was cut to ¥ 560 billion in 1987.

PART THREE
CHANGING PRIORITIES FOR AGRICULTURAL SCIENCE AND TECHNOLOGY IN DEVELOPING COUNTRIES

INTRODUCTION

Modern, often called science-based, agriculture has evolved from major discoveries in the second part of the nineteenth century, associated with the names of Mendel, Liebig, Lenoir and Diesel. Its emergence meant a progressive decoupling of agriculture from the limits posed by on-farm inputs and know-how. Strains of crops, trees and animals improved by breeding, combined with an ever growing use of non-farm inputs, such as mineral fertilizers, controlled use of water, feeds, chemicals, vaccines, mechanical power and equipment, have made possible a manifold increase in agricultural production and productivity. These developments are not made redundant by the emerging biotechnologies such as cell and tissue culture, protoplast fusion, photosynthetic enhancement, nitrogen fixation, growth regulants and genetic engineering, and they will continue to play a major role in agricultural evolution for some time to come, particularly in the developing world.

However, the recent changes in world agriculture — accompanied by new social and environmental perceptions — have forced a reconsideration of research agendas, both in developed and developing countries. In most of the developed market economies, now facing structural surpluses, the emphasis is being shifted from production growth to food safety and environmental concerns. In developing countries as a whole, agricultural production and productivity growth remain a top research and technology priority. However, higher-yielding cultivars depending on large inputs of mineral fertilizers, other off-farm inputs and reliable water supplies, are unlikely to be all that is needed to provide the necessary increase in production. Priorities have to be extended to include development of stress-resistant, high-yielding cultivars, well suited to local, mostly rainfed, conditions, but less dependent on often unaffordable or unavailable off-farm inputs.

The developing countries are now placing more emphasis on basic food crops, including pulses and oilseeds. While export crops remain important, declining commodity prices in recent years have made many of them less profitable. At the same time, shortage of foreign exchange has forced most developing countries to promote self-sufficiency in staple crops, which have often become important cash crops as a consequence. As this shift progresses, the target consumer for new agricultural developments is also changing, from large, relatively modernized farms using water and prime quality land to smallholders, particularly women, with few resources, working on poor or even marginal land. This shift of emphasis is occurring in almost all fields of agriculture, from crop development to livestock management, and from in-shore fishing to small-scale community forestry. It has major policy implications for international, national and private sector research establishments.

A further major change concerns the environment. While soil degradation is a common problem in both developing and developed countries, it is less easy to control in the former because of extreme climatic conditions and often acute population pressure. Hence such manifestations of environmental degradation as desertification, salinity and uncontrolled deforestation are taking a heavy toll. Good, unused land resources in most developing countries are in short supply, and it is imperative that attempts to increase production there be sustainable far into the future. Practices that improve soil structure as well as productivity, such as nutrient recycling, are required almost as urgently as the increased use of mineral fertilizers that produce more temporary improvements.

The implications of these changing priorities for agricultural research and development and for the transfer of technology are the subject of this chapter. It focuses on three particular changes. First, the policy changes required to correct previous imbalances in the direction of research. Second, the shift in the content of research that is required if the major constraints are to be overcome or alleviated. Finally, the financial and institutional improvements that are needed if research is to be properly supported and the results effectively communicated to farmers.

PAST CONTRIBUTIONS OF SCIENCE AND TECHNOLOGY TO AGRICULTURAL DEVELOPMENT

The application of science to agricultural technology accelerated from the mid-nineteenth century onwards, although most of the new technologies generated were not adopted until after 1930. The major developments were in mineral fertilization, plant breeding and protection, livestock feeding and disease control, and mechanization. While each of these can be said to have contributed specific increases in crop or livestock yields, to do so is to miss a fundamental point: it is the interaction of these factors that has been the major determinant in boosting production in industrial countries. New equipment, improved strains and better fertilization interact with one another and several other production factors in myriad and complex ways. It is the overall result of this interaction that ultimately contributes to increased yield (Figure 3.1).

Naturally, a specific mix of technological ingredients had to be adapted to different agro-ecological and socio-economic conditions. The extreme examples among the now industrialized countries are Japan, where scarcity of land and relative abundance of labour led to intensive land use based on mineral fertilizers and improved plant varieties; and North America, where plentiful land and scarce labour imposed relatively low land but high labour productivity, leading to the rapid mechanization of farming.

The economic and social benefits of these technological changes in developed countries have been considerable. Widespread and sustained gains in productivity raised farm incomes and reduced the relative price of food and non-food agricultural commodities. Prices of many food commodities have fallen progressively, relative to those of other goods, thereby increasing the purchasing power and social well-being of consumers, particularly the low income groups which spend a greater share of their income on food.

Much of the basic research and the applied research of the developed countries is accessible to developing countries. Adoption and adaptation of this research has enabled some developing countries to leap-frog or greatly shorten the evolutionary process from traditional to science-based agriculture. Whereas the agricultural revolution stretched over 200 years or so in developed countries, some developing countries made the main transition in less than 20. For example, in the 1930s, Korea was able to adopt production technologies from the Japanese and quickly establish a modern rice production sector. More recently, India and other Asian countries have undergone their Green Revolution within a decade, and modernized wheat and rice production under controlled irrigation. Much of the technology they used was developed by CIMMYT and IRRI, which are among the International Agricultural Research Centres (IARCs) that are supported by more than 40 donors through the Consultative Group on International Agriculture Research (CGIAR; Box 3.1).

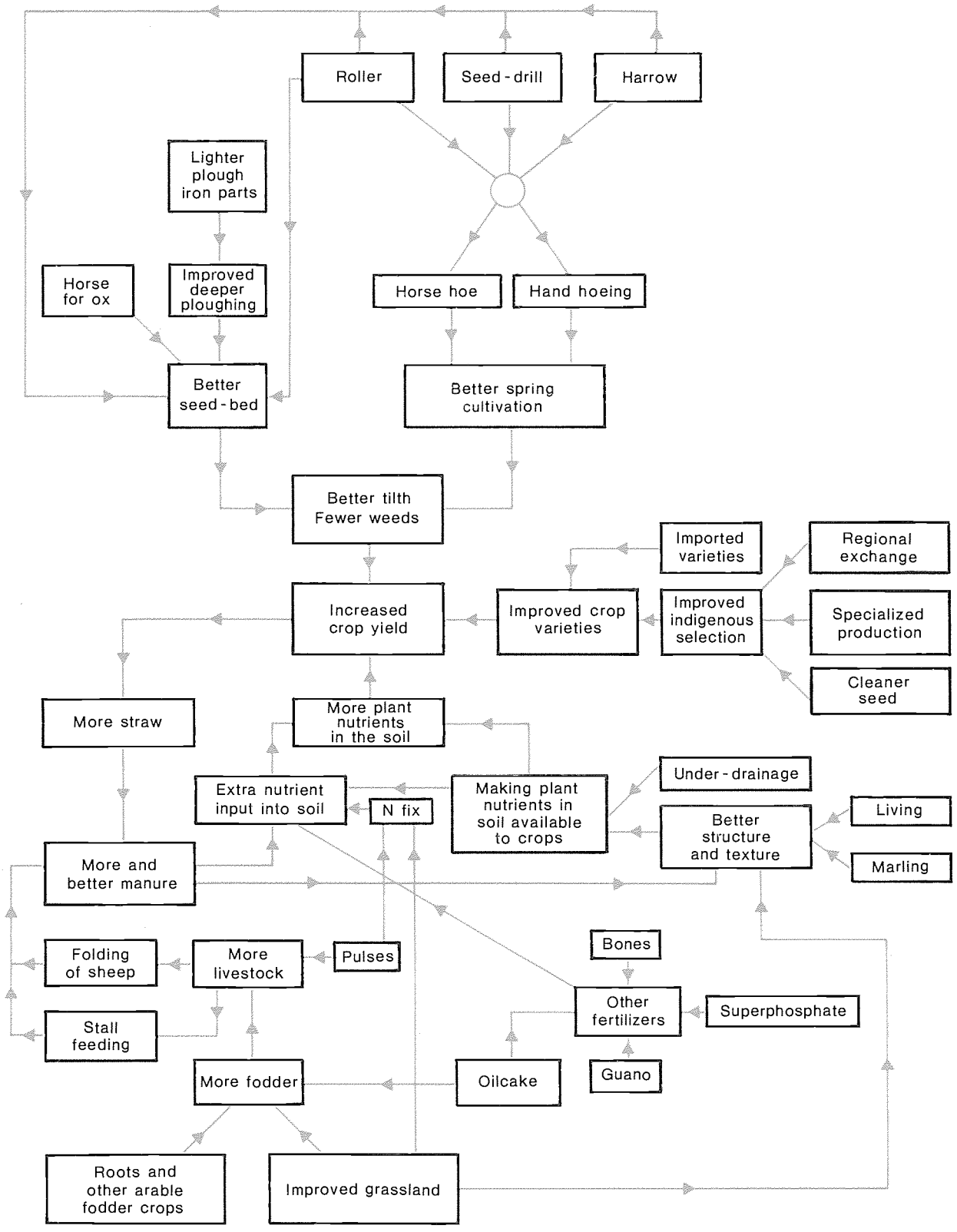
A notable difference between developed and developing countries is that most of the early benefits from science-based agriculture in the former were for food crops whereas in the latter they were commonly for non-food or beverage crops. The yields of cotton, rubber, tobacco and tea were significantly increased in a number of developing countries from the 1920s onwards, and well ahead of any significant improvements in their yields of staple foods.

The reasons are complex. In part the difference reflects the interests of the former colonial powers that wished to assure supplies of raw materials for their industries. But the difference also reflects the greater profitability of most non-food crops, which not only provided added urgency for research but also the funds with which to conduct it. Furthermore, this difference in emphasis also reflected demand. Until the 1960s, many developing countries had ample land resources and could meet their food needs from traditional agriculture, and hence high priority was not given to the development of increased food production per unit area of land.

The contribution of individual technologies in developing countries has closely followed the pattern that predominated in the developed countries. Thus a study of rice production in eight Asian countries (Burma, Bangladesh, China, India, Indonesia, the Philippines, Sri Lanka and Thailand) showed that the introduction of modern varieties and greater use of fertilizers accounted for almost two-thirds of incremental output in recent years.[1] Irrigation was the other main factor.

[1] R.W. Herdt and C. Gapule, *Adoption, spread and production impact of modern rice varieties in Asia*, Manila, IRRI, 1983.

Figure 3.1 TECHNICAL INTERACTIONS ON AGRICULTURAL SYSTEMS



Source: Tim Bayliss-Smith and Sudhir Wanmali, *Understanding Green Revolutions.* London and New York, Cambridge University Press, 1984

The economic and social benefits have also been similar, albeit on a more limited scale, although a number of analysts have argued that the technologies of the Green Revolution had low impact — or, in some instances, even a negative impact — on small farmers and the rural poor because they reduced food prices, raised costs of inputs and land rents, and reduced access of small-scale farmers to land.[2] More recent studies show that such conclusions are over hasty. Although exceptions exist, the Green Revolution had at least four major benefits for small-scale farmers and the rural poor:

— although the technologies were commonly adopted by large-scale farmers earlier than small-scale farmers, the latter quickly followed and often achieved higher returns per unit of land;
— the technologies increased labour productivity and labour demand, thereby benefiting landless labourers;
— higher output and productivity led to lower food prices, thereby benefiting poor consumers who were often landless labourers or farmers with very little land (Figure 3.2); and
— by stimulating the demand for farm inputs such as mineral fertilizers, and the demand for consumer goods as a result of the rise in rural incomes, the technologies have had indirect income and employment benefits in the non-farm sector in both urban and rural areas. Of the many studies that have demonstrated this, one has shown that a 1% increase in agricultural income in the Nueva Ecija Province of Central Luzon in the Philippines generated an increase of 1-2% in employment in most sectors of the local non-farm economy.[3]

THE NEW CHALLENGE

The past contributions of science and technology to agricultural development have not been trouble-free nor have they met all needs. The intensification of production that new technologies have permitted, coupled with the policies that have stimulated production growth, have led to large agricultural surpluses in North America and western Europe. Moreover, the cultivation of marginal land, the intensive production of livestock and, in some instances, the indiscriminate use of agricultural chemicals, have given rise to ecological change, soil degradation, and environmental pollution.

Soil degradation is particularly acute in developing countries where population pressure has led to a reduction in the period during which arable land is left fallow to recover from the cropping cycle. The consequences are serious, especially where agriculture has been extended into areas of tropical rain forest or on to land that is marginal for arable cropping because of unreliable rainfall or poor soils.

If science and technology are to have greater impact in developing countries, important policy changes are required. Past research has tended to favour exportable cash crops, superior grains such as wheat and rice, and, in general, the more favourable agro-ecological zones. Development plans and economic policies have rarely focused specifically on the problems of resource-poor farmers and of more marginal areas. Greater emphasis is now required on these problems, particularly in the context of sustainable development, on the links between research and social equity, and on the technological needs of women for their agricultural and household activities.[4] National development strategies are in many instances moving in the right direction but the institutional challenges involved are commonly as great as the technical ones. If the direction of science and technology is to be focused more specifically on these issues, it must be based on a thorough understanding of:

— the physical and biological production environments;

[2] For a detailed discussion of these issues, see T. Bayliss-Smith and S. Wanmali, *Understanding Green Revolutions: agrarian change and development planning in South Asia*, London, Cambridge University Press, 1984.

[3] Quoted in P. Pinstrup-Andersen and P.B.R. Hazell, The Impact of the Green Revolution and Prospects for the Future, *Food Reviews International*, 1(1), 1985.

[4] Marilyn Hoskins, *Household level appropriate technologies for women*. US Agency for International Development, Office of Women in Development, Washington DC, 1981.

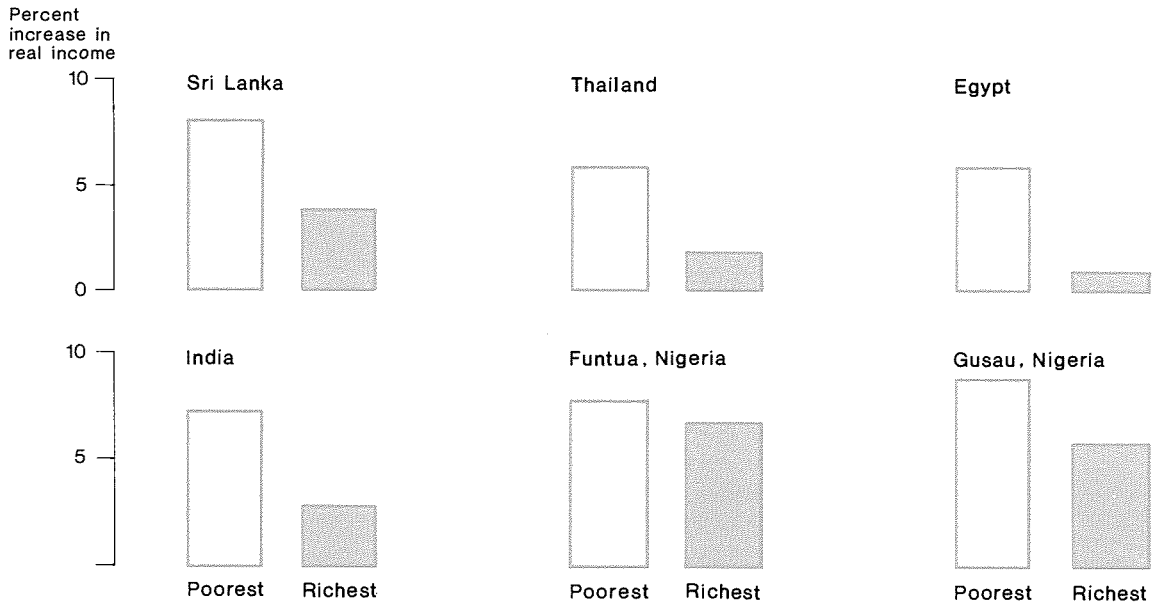
— the genetic potential for increased productivity; and
— prevailing socio-economic circumstances.

The implications of these for science and technology are examined in Table 3.1. In no case must it be assumed that the additional emphases are substitutes for past objectives; in all cases, existing technologies can be further developed, and will play an important role in agricultural production in the future. What the table illustrates, however, is the way in which the focal points of research and development have begun to shift, largely as a result of much broader changes that have occurred in society over the past two decades, and which have been reflected in a series of major international events.[5] The new goals can be succinctly summarized: they are to raise productivity in ways that do not aggravate fluctuations in production, do not reduce the potential of the environment to sustain production indefinitely into the future, and that contribute to increased rural incomes.

In addition, many aspects of food processing, storage and preparation currently lack suitable solutions. These require urgent attention. Given the increasing scarcity of fuelwood in many countries, perhaps the outstanding problems are to devise alternative cooking methods, such as improved stoves or means of solar heating, and expand the production of processed forms of foods from traditional staples to economize on food preparation in the home.

[5] Starting, for example, with the Stockholm Conference on the Human Environment (Stockholm, 1972). Other major turning-points have included the World Conference on Agrarian Reform and Rural Development (WCARRD), the 9th World Forestry Congress of 1986, the adoption of the UN New Law of the Sea in 1982 and the Report of the World Commission on Environment and Development (Brundtland) in 1987.

Figure 3.2 **IMPACT ON INCOMES OF A TEN PERCENT DROP IN FOOD PRICES**



Source: CGIAR, *Summary of International Agricultural Research Centers a study of achievements and potential.* Washington DC, 1985

IDENTIFYING THE ISSUES

Crops

In developing countries the gap between yields that could be obtained and those that are actually achieved at the farm level are high. The reasons for this are complex, embracing a diverse set of constraints that can be broadly divided into physical and biological, and socio-economic. The IARCs have developed methodologies for identifying the critical issues (Figure 3.3). Of the technical constraints, problems relating to climate and water account for about one-third of the yield gap, and problems relating to pests, weeds and diseases for another third.

Climate and Water. About four-fifths of the developing world's potential arable land is in areas with subhumid or semi-arid climates with erratic rainfall. Well-managed irrigation schemes can do much to improve reliability of production in these areas, but the economically available surface and groundwater resources can irrigate only a small fraction of the total

BOX 3.1

CGIAR and the IARCs

The Consultative Group on International Agricultural Research (CGIAR) is an informal consortium of governments, organizations and private foundations dedicated to promoting agricultural research and research-related training. It was founded in 1971 under the co-sponsorship of the World Bank, the United Nations Development Programme (UNDP) and FAO. The Group now includes 35 donors which currently contribute US$240 million annually to a network of 13 International Agricultural Research Centres (IARCs).

Originally, the CGIAR evolved from two applied research programmes. An FAO/UNDP/World Bank-sponsored maize and wheat programme in Mexico, supported by the Mexican government and the Rockefeller Foundation in the 1940s, later became the International Centre for Maize and Wheat Improvement (CIMMYT). As a result of this programme, a second centre, the International Rice Research Institute (IRRI), was set up in the Philippines with the support of the Ford Foundation to promote research on rice.

These two institutions, the forerunners of today's IARC, were immensely successful. Within the space of about ten years, nearly a third of Asia's rice was produced from varieties developed at IRRI and almost half of the wheat grown in developing countries was planted to CIMMYT wheats. The 13 current IARCs are:

- CIAT, International Centre for Tropical Agriculture, Cali, Colombia
- CIMMYT (International Centre for Maize and Wheat Improvement), Mexico City, Mexico
- CIP, International Potato Centre, Lima, Peru
- IBPGR, International Board for Plant Genetic Resources, Rome, Italy
- ICARDA, International Centre for Agricultural Research in the Dry Areas, Aleppo, Syrian Arab Republic
- ICRISAT, International Crops Research Institute for the Semi-Arid Tropics, Hyderabad, India
- IFPRI, International Food Policy Research Institute, Washington, DC, United States
- IITA, International Institute of Tropical Agriculture, Ibadan, Nigeria
- ILCA, International Livestock Centre for Africa, Addis Ababa, Ethiopia
- ILRAD, International Laboratory for Research on Animal Diseases, Nairobi, Kenya
- IRRI, International Rice Research Institute, Manila, the Philippines
- ISNAR, International Service for National Agricultural Research, The Hague, the Netherlands
- WARDA, West Africa Rice Development Association, Monrovia, Liberia.

area. Improving production in the rest therefore depends essentially on a better understanding of the relationship between plants, the soil and the climate.

In the absence of irrigation, tropical agriculture is dominated by the amount, distribution and reliability of rainfall. These parameters are the primary determinants of productivity. First, because they largely determine maturation periods for crops, soil management practices and optimum responses to soil nutrients. But, second, because they also have profound effects on soil micro-organisms that play an important role in organic recycling, and on the occurrence and severity of pests and diseases, all of which influence quantitatively and qualitatively biological production.

Knowledge of these rainfall parameters can be used to direct research. Early work in eastern Africa, for example, showed how rainfall patterns in the tropics varied over relatively small areas and that probability analysis could be used to give greater predictability to the results of field trials. In conjunction with knowledge of crop water requirements, this kind of analysis can also be used to define the desirable plant ideotype. These considerations were applied in the development of short-term maize varieties for the low-rainfall areas of Kenya. The Katumani composite varieties produced did much to improve the reliability of food supply in large areas of Kenya. This essentially agro-meteorological approach, together with the latest plant breeding techniques, must be adopted more widely in order to exploit the full production potential of areas with low and erratic rainfall and to reduce their vulnerability to drought. The development of drought-resistant varieties, tailored specifically to local climates, currently ranks high on the list of agricultural research priorities.

Altering the characteristics of crops grown is only part of the story, however. It is also possible and generally desirable to complement crop improvement by measures that alter the fertility of the soil and the cultivation practices that determine its ability to retain moisture. Water-use efficiency can be greatly improved through better run-off management and water harvesting, and by changing cropping patterns and rotations. Thus efforts in plant breeding need to be complemented by efforts to reap the maximum benefit from rainfall, the aim being to devise systems of soil management that prevent both erosion and excessive leaching. One of the problems with this approach is that it is often labour intensive. Finding methods of improving water management that do not compete with more immediate needs for labour is difficult, and constitutes a major challenge for the future. For example, tie-ridging on the sandy soils of the United Republic of Tanzania has proved unpopular for this reason even though substantial increases in yield had been demonstrated in addition to the long-term benefits of preventing soil erosion. The issue that arises is how to create incentives for the

TABLE 3.1 **The shifting focus of agricultural research and development**

Past objective	Additional emphasis
CROPS	
Non-food and cash crops	Upgrading subsistence food crops
Large-scale producers	Small-scale producers
Prime land	Marginal land
Increased productivity	Sustainable production
Higher-yielding cultivars	Stress-resistant cultivars
Mechanization	Animal traction
Monocultures	Intercropping
Irrigation	Rainfed agriculture
Mineral fertilizers	Nutrient recycling
Chemical pesticides	Integrated pest control
Limited number of crops	Crop diversification
LIVESTOCK	
Cattle	Small ruminants and other small livestock/poultry species
Large-scale producers	Small-scale producers
Traditional pastures	Improved dryland pastures
Capital-intensive production	Extensive production
	Improved food quantity and quality
FISH	
Off-shore fisheries	In-shore, inland fishing, aquaculture
Increased production	Replenishment of stocks
	Increased fishing efficiency
	Lower post-harvest losses
Development of boats and gear	Improved monitoring of resource stocks
	Enhancement of marine environment
	Alternative energy propulsion
TREES	
Single species plantations	Multipurpose tree crops
Industrial forestry	Community forestry, agroforestry
Harvest mechanization	Animal traction
	Trees for watershed management
	Trees for environmental improvement
	Management of protected areas
	Tree products for women

Source: FAO.

prevention of soil erosion before the forces of dire necessity take their toll. It is an issue for which there is no general solution but one with which researchers and policy-makers must continue to grapple.

There is, however, ground for the belief that communities can be motivated to do the necessary work. For example, the Wakara of Ukara Island on Lake Victoria in Tanzania were effectively prevented from migrating as their population increased because of hostility from the mainland. To increase their food supply, they constructed rock-faced terraces, and controlled run-off by digging a series of small basins.[6] More recently, similar motivation has been shown in Burkina Faso where village cooperatives have constructed microcatchment areas to concentrate rainfall round trees planted to provide fuelwood and protect sloping land from erosion. Sorghum and rice have also been grown in the catchment areas, and this development shows promise of returning what was formerly abandoned land to a productive state.[7]

[6] D. Thornton and N.V. Rounce, Ukara Island and the Agricultural Practices of the Wakara. In *Tanganyika Notes and Records*, 1(25-32), 1936.

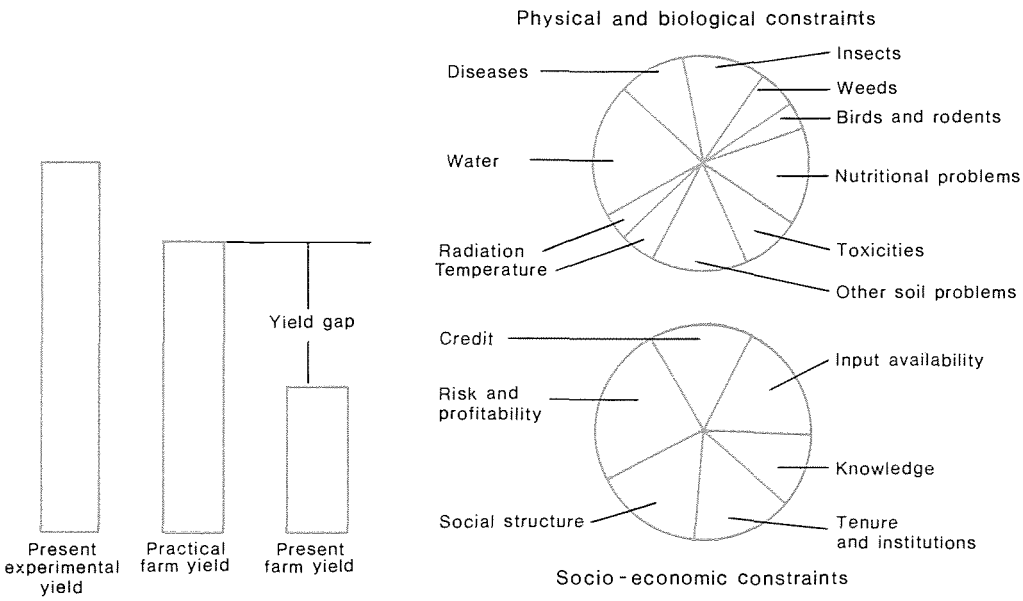
[7] FAO, *African agriculture: the next 25 years*. Rome, FAO, 1986.

Another approach which needs further development is minimum tillage systems for soil moisture conservation that are appropriate to developing countries. Minimum tillage has substantially boosted crop productivity and reduced soil erosion in North America, but the techniques used are unsuitable for peasant agriculture and for certain soil types. Cheaper and less toxic herbicides together with simple but reliable sprayers and seed planters are some possibilities. Work in Nigeria and the Gambia shows great promise but it needs to be extended to other environments.

Improved soil management practices to increase efficiency in the use of rainfall can help to alleviate the effects of unreliable rainfall, but they cannot entirely avert the dangers of drought, or prevent crop failure in exceptional seasons. The application of relatively small amounts of water at critical periods of crop growth, by reducing the effects of water stress, can have disproportionate effects on the yield of crops such as sorghum. Consequently, the use of simple techniques to build surface ponds or wells for supplementary irrigation must remain at the forefront of approaches to increase the stability of production in marginal areas.

Technologies to reduce the risk of water stress are complementary to those directed at increasing and sustaining the supply of nutrients

Figure 3.3 **FACTORS CONTRIBUTING TO THE GAP BETWEEN PRACTICAL AND PRESENT FARM YIELDS OF RICE**



Source: M.S. Swaminathan, Today's research and tomorrow's food production prospects. In *Impact of Science on Society*, 142: 105-116

and to overcoming problems of toxicity. In spite of the obvious futility of attempts to increase productivity without adding nutrients to the soil, plant breeders and agronomists are frequently urged to develop technologies for increasing yields with minimum use of fertilizers.

Where soils are already on the verge of degradation, technologies that use minimum inputs are unlikely either to increase yields significantly or to prevent further degradation in adverse seasons. In these circumstances, the primary requirement for restoring soil structure and fertility is to induce more vigorous crop growth through the use of mineral fertilizers or large dressings of organic manure.

Improved understanding of soil chemistry, microbiology and mycology can enable savings in and substitution for the use of mineral fertilizers. In Brazil and some other Latin American countries, small applications of calcium sulphate have been found as effective as much larger dressings of lime in treating problems of aluminium toxicity. From a knowledge of mycorrhizal mechanisms of plant uptake, it may prove feasible to substitute imported superphosphate with locally available rock phosphate in many African countries.

The development and use of improved varieties will continue to provide the farmer with one of the most easily adopted and cost-effective innovations. Although great strides have been made during the past 50 years in raising the potential yield of the world's most important staple food crops, there is no reason to suppose, even in the most advanced varieties of crops such as wheat, that the potential for further improvement has already been exhausted. Further contributions may be expected, not only in yield potential, but also in resistance to pests and diseases, the improvement of quality and the adaptation of the crop to more efficient production practices, such as mechanized seeding and harvesting.

Moreover, through breeding for resistance to crop hazards, such as water stress and pests and diseases, the breeder can help reduce fluctuations in production. However, his contribution in regions of unreliable rainfall will be relatively small compared to the overriding influence of rainfall distribution. Moreover, in all regions, stability is strongly influenced by economic policies and by such considerations as the distribution and timely availability of fertilizers and other inputs.

Similar considerations apply to breeding for resistance to adverse soil conditions, such as salinity and aluminium toxicity. Although significant advances have already been made in breeding for tolerance to both these conditions, it would be unwise to expect too much from plant breeding alone. An integrated approach is required, in which tolerant varieties constitute only one element in the attempted solution.

Nevertheless some new breeding practices have great potential value for agriculture. For example, techniques of wide crossing and embryo rescue have been successfully used to transfer genetic material carrying resistance to salinity from the wild grass *Agropyron junceum* to bread wheat. Once the transfer has been made, however, a great deal more work is required to breed this salinity resistance into locally adapted varieties. These themselves can be only one element in an integrated approach to the problem of salinity that must also include improved water management.

Pest and Disease Control. The second important cause of depressed yields in tropical environments arises from competition for water and nutrients from weeds. Attempting to maintain crops weed free is also one of the most frequent causes of labour bottlenecks. Solving the problems of weed control would make a major contribution to increasing productivity in tropical environments, partly because effective weed control demands well-grown crops which, in turn, contribute greatly to the prevention of soil erosion and, through vigorous root growth, to the maintenance of soil structure. Technologies that reduce competition from weeds and increase the productivity of labour in weed control deserve high priority in research.

There are three basic strategies to enhance weed control:

— grow crops, such as maize or sorghum, in crop rotations that establish quickly and smother weeds;
— encourage mechanization with the use of animal-drawn implements and simple machines; and
— use herbicides.

In addition, given new bio-engineering techniques for transferring genes between unrelated plant species (Box 3.2), there are interesting possibilities, in the long term, for the development of allelopathic plants.[8] These

[8] Plants that form secretions from the root system act as a biological herbicide.

BOX 3.2

Prospects from new developments in genetic engineering

The new advances are concerned largely with the techniques that plant and animal breeders use in the development of improved cultivars or breeds. The principal techniques are cell fusion, gene splicing, DNA transfer and tissue culture. They now offer the prospect of being able to transform plants and animals genetically in a more direct way than is possible with conventional breeding although the actual impact on agricultural production during the next 10-15 years is unlikely to be large. Genetic engineering provides the means both to widen the range of interspecific combinations that are possible so as to improve crops with desirable genes from even distantly related plants, and to shorten the time required to achieve the results desired. A gene transferred by recombinant DNA techniques need not carry with it any of the unwanted genes that are normally transferred in hybridization, and once the desired result is achieved, micropropagation of a single individual can give rise to progeny numerous enough to guard against mortality and so establish the clone.

There are certain inherent limitations to the improvement of crops by DNA transformation, however. Many of the most important plant traits, such as yield and quality, exhibit continuous variation and polygenic inheritance. Present methodology for identifying and isolating genes depends largely on being able to identify specific gene products, so that foreseeable opportunities are largely confined to genes that produce major effects: examples are genes for pest or disease resistance, and genes whose products are known, such as the glutenin subunits that contribute to baking quality in wheat. Transfer of genes by genetic engineering techniques will not necessarily confer more durable resistance against disease causing organisms or insect pests than that achieved by more conventional methods. The organisms and pests may mutate into new races capable of attacking varieties that were previously resistant. This continual biological challenge will remain, but genetic engineering techniques permit a faster and more directed response to it.

Broader opportunities for the application of recombinant DNA techniques also arise in the evaluation and selection phases of the breeding process. Exploiting the fact that complementary molecules of nucleic acids hybridize on contact, known fragments labelled by radioactivity or dye bonding can be used to identify the presence of any genes previously identified. One of the main advantages of this genetic "probing" is that the breeder does not have to wait for the expression of the character in the mature plant, but can eliminate unwanted material at the seed or seeding stages.

The rapid application of the benefits of new varieties continues to be hampered, however, by inadequate facilities in most developing countries for seed multiplication and distribution. These limitations are particularly apparent for cross-pollinating crops such as maize. Similar limitations apply in some countries to the dissemination of improved planting material for perennial crops.

Another limitation is the current concentration of efforts on temperate crops. Many of the crops of central interest to developing countries are not the subject of genetic engineering research. Wheat, maize and tobacco are receiving heavy investment but not the other important tropical food crops. The IARCs are doing some work but they lack the resources for a major effort in this direction.

strategies are clearly not mutually exclusive and are usually applied in a complementary or integrated approach, with the aim of reducing labour requirements where labour is scarce and achieving effective control of weeds.

Pest and disease problems will continue to become more serious in developing countries as agricultural production is intensified and the generally low-yielding but disease-resistant traditional cultivars are replaced by more susceptible modern varieties. Moreover, the use of pesticides is having two negative effects: "new" pests are appearing at an accelerating rate because the impact of pesticides on non-target species reduces the numbers of the pest's natural predators, and prolonged exposure to pesticides is leading to genetic adaptation or selection of pest strains resistant to pesticides. A relatively new development is the arrival of noxious weeds that are apparently resistant to most herbicides.

These problems require major research efforts, particularly on the ecology of crops and their pests, whether weeds, insects, mites or diseases. Strategies that combine the use of resistant varieties, changed cultural practices and limited use of pesticides, have demonstrated ways of reducing the rate of build-up of the pest problem, which in most circumstances may be all that is required to allow natural enemies of the pest to gain effective control. This integrated approach to pest management is increasingly recognized as the preferred alternative to the indiscriminate use of chemical pesticides. Furthermore, there is a growing body of successful experience on which to draw. In India, for example, it has proved possible to reduce the number of insecticidal sprays on rice from four to two, and on cotton from 17 to seven, while at least maintaining the yields of the fully sprayed crops.

Priorities in Crop Research. Priorities in crop research have been shifting over the past two decades. During the 1970s, for example, national research on cassava and sweet potatoes amounted to only 0.11 and 0.07% of their product value, compared with 1.18% — more than ten times as much — for coffee (Figure 3.4). As the figure shows, cash and feed crops received much the highest priority. Even as late as 1985, one well-qualified observer, commenting on Africa's crop production, alleged that the terrible irony was that wherever these crops were feed crops, they were improving, but in those places where they were food crops, they were stagnating.[9] The World Bank was more specific in claiming that no major breakthrough had been achieved in genetic improvement of rainfed millet and sorghum, which accounted for 80% of the cultivated land in the Sahel and other areas of low rainfall.[10]

Millet and sorghum are the staple food of about 200 million people in 13 countries. Cassava, which is relatively drought resistant, is also widely grown. In the wetter regions, other roots and tubers play an important role in many national diets, supplying up to 20% of calories consumed. ICRISAT has developed higher-yielding varieties of some of these crops: its African varieties of hybrid sorghum, for instance, can yield more than 7 tonnes/hectare. This research has yet to pay off, however. Average sorghum yields in the developing countries are only about 1 tonne/hectare and are as low as 0.7 tonne/hectare in sub-Saharan Africa.[11] Such figures indicate that, though research on many staple food crops is clearly still underfunded, this is not the only problem. Raising the productivity of smallholders has yet to become a national priority in many countries and facilitating technology transfer to smallholders is beset with problems.

Livestock

New priorities in livestock research are determined mainly by the increasing attention being given to smallholders and by the widespread lack of grazing. The productivity of small ruminants and other short-cycle, small livestock species such as pigs, poultry and rabbits, thus becomes a key issue in development, with increasing attention being given to the diseases of sheep and goats, and the provision of improved quality and quantity of animal feeds for both ruminant and non-ruminant species. Because milk, meat and hides are not the only object of livestock production in developing countries, more emphasis is also being placed on animal traction.

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[9] M.S. Swaminathan, Africa may one day feed us all. In *Development Forum*, April 1985. (Dr Swaminathan was formerly Director-General of IRRI).

[10] The World Bank. *Towards sustained development in sub-Saharan Africa: a joint program of action.* Washington, DC, World Bank, 1984.

[11] The Independent Commission on International Humanitarian Issues, *The Encroaching Desert*, Zed Books, London and New Jersey, 1986.

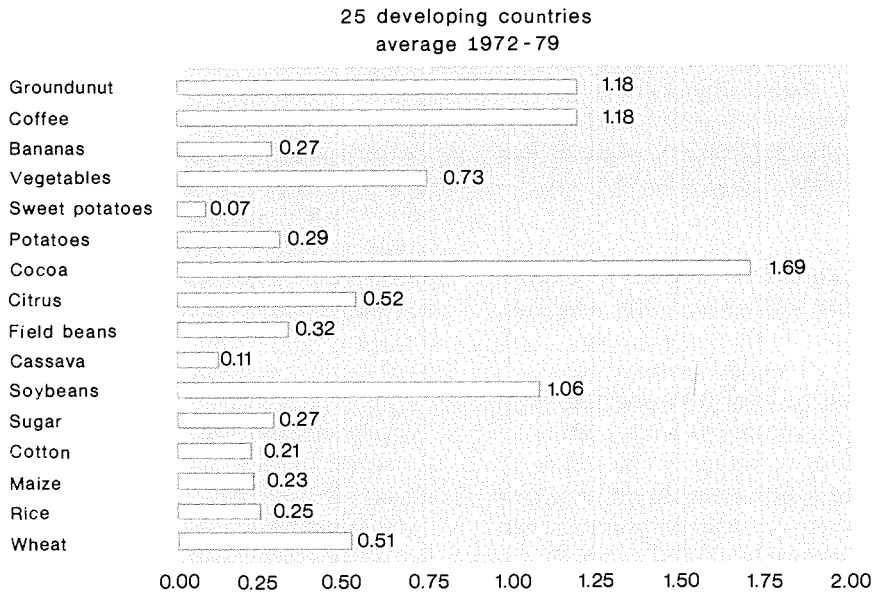
Small and Large Ruminants. Shifting the focus of research from large farms to smallholders has profound implications for livestock production. In many developing countries, large farms are concerned primarily with cattle, while smallholders also raise sheep and goats, together with pigs and poultry. However, the numbers of animals involved are large. The few data that are available on research investment in developing countries on different livestock groups suggest that beef, pork and poultry receive almost equal attention in terms of value of product but that other livestock, including sheep and goats, have been relatively ignored (Figure 3.5). As Table 3.2 shows, however, productivity is still low compared with that of developed countries. These figures are only rough approximations because of the difficulties of collecting and comparing data. They do show, nevertheless, how much more productive small ruminants are than cattle in developing countries. In terms of annual meat production per animal unit, cattle produce 25 kg, sheep and goats 37 kg, pigs 175 kg and poultry 225 kg. Quite apart from matters of social equity, there is evidence here of the need for more livestock research on small ruminants.

Causes of Low Productivity. The differences between low productivity per animal in developed and developing countries are large but more difficult to analyse. A substantial part of the difference can come from the particularly difficult environments in which livestock are raised. In general, however, there are more important explanatory factors: for example meat or milk production may not be the dominant motivation in developing countries, as it is in developed ones. In some countries, animal traction and animal manure are the more important products of livestock production. Recent studies in Ethiopia, for example, have shown a close association between livestock numbers and crop yields.[12] Not only did the livestock provide animal manure but their presence led to increased cash flow, resulting in more mineral fertilizer being used; and because the livestock provided both transport and draught traction, crops were produced more efficiently. For the smallholder, livestock are also a means of saving and investment as well as a source of food income and employment for the family, especially women and children.

One of the principal causes of low livestock

[12] G. Gryseels and Assamenev Getachew, Links between livestock and crop production in the Ethiopian Highlands, *ILCA Newsletter*, 4(2), 1985.

Figure 3.4 **RESEARCH INVESTMENT IN PRINCIPAL CROPS AS A PERCENTAGE OF PRODUCT VALUE**



Source: Robert E. Evenson, *The importance of agricultural research during a period of farm surpluses.* Prepared for the 1986 Forum of the Philadelphia Society for Promoting Agriculture

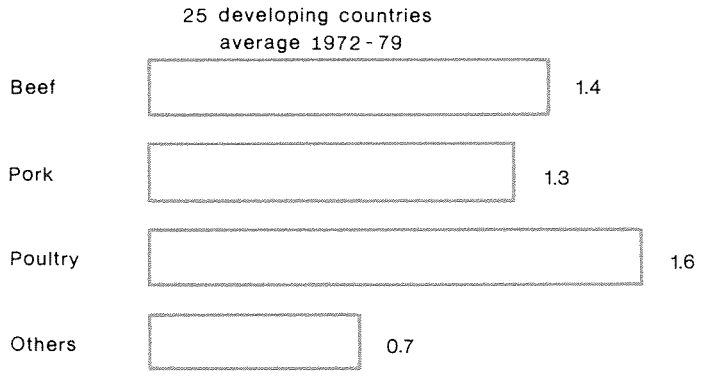
productivity in developing countries is the incidence of animal disease. Thus at the beginning of the 1980s, moderate to high incidence of foot-and-mouth disease was reported in 30 developing countries, rinderpest in five, trypanosomiasis in 36, theilariosis in 18, babesiosis in 34, swine fever in five, fowl pox in 43, Newcastle disease in 63 and chronic respiratory disease in 51. Although these figures are constantly changing, they do give some idea of where priorities should lie. Traditional forms of research into these diseases are likely to continue but genetic engineering is beginning to play a more prominent role. In particular, the development of diagnostic techniques using monoclonal antibodies is already proving useful for the early diagnosis of diseases such as foot-and-mouth and rinderpest, and will no doubt find progressively wider application. The technique is precise and sensitive, and can readily be automated. Recombinant DNA techniques also have applications in this area, as well as in the synthesis of antigens and the production of vaccines.

While there is only sporadic research into some of the diseases listed above, others have received or are receiving considerable attention. The most important of these is trypanosomiasis, which is prevalent throughout tropical and subtropical Africa, effectively limiting the keeping of domestic livestock. The area involved is about the same size as the United States, some 10 million km^2. Were it not for the disease, some 70% of this area would be suitable for livestock production and mixed agriculture, and 140 million more head of cattle — or the equivalent number of smaller ruminants — could be kept. Furthermore, crop productivity could be greatly increased in the area if animal traction and animal manure were available: hand-tilling is practised by most rural societies in tsetse-infected areas.

Small populations of partially-resistant cattle, sheep and goats are found in western and central Africa, including the N'Dama and the West African Shorthorn cattle, the Djallonke sheep and the Dwarf West African goat. These breeds are small and were formerly regarded as relatively non-productive. New research, however, has shown this not to be the case, and that their resistance is innate rather than acquired. The management and improvement of these breeds are being researched by the International Livestock Centre for Africa (ILCA) and the International Trypano-tolerant Centre (ITC) in the Gambia.

Prospects for developing a vaccine are remote, mainly because there are so many different strains of the three species of trypanosome responsible for the disease. However, the disease can be controlled through the efficient use of prophylactic and therapeutic

Figure 3.5 **RESEARCH AS A PERCENTAGE OF LIVESTOCK PRODUCT VALUE**



Source: Robert E. Evenson, *The importance of agricultural research during a period of farm surpluses.* Prepared for the 1986 Forum of the Philadelphia Society for Promoting Agriculture

drugs, as recent studies in the United Republic of Tanzania have shown.[13]

Meanwhile, work on the oldest technique of preventing the disease — eradication of the tsetse itself — continues. In the past, wildlife hosts were eliminated from specific areas and tsetse habitat destroyed. More recently insecticides have been widely used. Nearly 200 000 km^2 of Nigeria, for example, have been cleared of the pest by hand and by aerial spraying. To these weapons have recently been added more novel and environmentally acceptable techniques such as the introduction of biological control by the release of laboratory-bred sterile males into the wild populations. Work at the Joint FAO/IAEA Division in Vienna has shown that the sterile male technique (SIT) has much promise. Considerable advances have also been made in the development and use of efficient odour-baited traps and screens for the detection and control of particularly riverine and thicket species. A promising adaptation developed over the past two years has been the use of insecticide treated cattle as toxic live baits, recent trials in Zimbabwe and Zanzibar have demonstrated the efficiency of this simplified technique in drastically reducing tsetse populations.

Improving Animal Feed. Poor nutrition is one of the most important limiting factors for livestock productivity in many developing countries. Improving feed resources and feeding systems would have a dramatic effect on animal production in these countries.

Small-scale pastoralists in developing countries typically try to keep the size of their herds as large as possible, not only for sale of surplus products but also because of the risks of stock losses in adverse periods. Consequently, overgrazing of communal lands will not be easily arrested, and there is a growing need for supplementary feeds.

One effective means of supplying these is to establish forage and browse legumes in pastures. The problems are to find legumes adapted to local ecological conditions and to develop management systems that enable them to persist. A wide range of *Medicago* species has been evaluated for this purpose in the dryland areas of the eastern Mediterranean, and extensive on-farm trials have yielded promising results.[14]

Crop residues are gaining importance as a source of animal feed in developing countries. Consequently, the aims of plant breeders in these countries should be different from those in developed countries where the goal is almost always solely to maximize the yield of grain for human and/or animal consumption. Instead, the nutritional value of the straw may also be important for maintaining meat and milk yields of ruminants as well as the performance of draught animals, and this feature is likely to receive greater emphasis in the future.

In the meantime, simple methods for improving their nutritive value have been developed. The most simple one is urea treatment which is easily applicable at the small farmer level. Several TCP and UNDP projects are actively promoting this appropriate technology in various parts of the world.

In all cases supplementation is essential in order to make maximum use of the basal diet made of pastures and/or crop residues. The use of molasses and urea has been limited by difficulties of transport and storage. A new technology has been developed for the solidification of molasses and blocks are now manufactured in more than 20 developing countries for ruminant feeding.

TABLE 3.2 **Orders of magnitude of livestock productivity, about 1980**

Item	Cattle	Sheep and goats	Pigs	Poultry
Meat production (kg) per animal unit and year[a]				
Developed	110	73	400	714
Developing	25	37	175	225
Offtake (percent slaughtered/year)				
Developed	34	54	129	—
Developing	11	32	78	—
Carcass weight (kg)				
Developed	218	15	78	—
Developing	161	13	58	—
Milk yield (kg/cow/year)				
Developed	3 081	—	—	—
Developing	672	—	—	—

[a] Conversion factors: cattle 0.7, pigs 0.25, sheep/goats 0.1, poultry 0.1.

Source: FAO, *Quantitative indicators for priorities in international agricultural research*, p. 74. Rome, FAO, 1984.

[13] J.C.M. Trail, K. Sones, J.M.C. Jibbo, J. Durkin, D.E. Light and Max Murray, Productivity of Boran cattle maintained by chemoprophylaxis under trypanosomiasis risk. *ILCA Research Report*, No. 9, 1985. Addis Ababa, ILCA.

[14] ICARDA, *Annual Report 1985*, Aleppo, Syrian Arab Republic, 1986.

Regarding monogastric feeding, substitutes for imported grains are available (cassava, sugar-cane juice) in developing countries. There is an urgent need for more active extension of their use in order to increase self-reliance for pig and poultry meat production.

Improving Animal Traction. Animal traction is important in developing countries, not only in crop production but also in transport, milling, and lifting water. Both adaptation of existing traction technologies to local circumstances, and training in animal management are needed. The major research priorities, however, relate commonly to the environment in which animals are kept, to farm size, and to implements or harnesses rather than to the animals themselves. One of the most widespread constraints in Asia and Africa, and hence one of the highest priorities for research, is the lack of high-quality feed, particularly in areas with very seasonal rainfall. Research requirements include the selection of forage legumes, as well as the development of improved pastures and of low-cost supplementary feeds.

In many areas, especially in large parts of Africa, the above research will have to be complemented by further research on livestock disease control, particlarly trypanosomiasis, which limits the use by livestock of millions of hectares of land. Such research will have to include both vector control and animal breeding.

Finally, there is the need for further research on implements and harnesses, with emphasis on the improvement of traditional equipment rather than the introduction of developed country technologies.

The Promise of Biotechnology. Although there is currently minimum impact of biotechnology for animals in developing countries, the potential for change in the future is great. Among the areas of promise, such as animal breeding and genetics, disease diagnosis and vaccines, production related hormones and animal nutrition, the first two offer the prospect for most radical change. Animal reproduction and genetics have been a critical area in increasing livestock production in the tropics for decades. Traditional solutions to the low productivity of adapted indigenous breeds have been cross-breeding since pure-bred imported temperate breeds cannot survive in harsh environments. Cross-breeeding is slow. Biotechnology offers the promise of the right mix of temperate and tropical genes obtained by transgenic embryo production, which is then multiplied by embryo splitting. Further research is needed before this comes, but the promise is to overcome a longstanding bottleneck in livestock improvement in developing countries. Similarly the accurate, rapid, cheap diagnosis of animal disease and vaccine production clearly offer the promise of great steps forward in dealing with another age-old problem.

Although the main benefits from these advances will not be achieved without further basic research, the promise of success is so real that efforts are now being made to develop biotechnology competence in developing country laboratories and scientists so that they have the capacity to apply future results. Failure to do this will result in delay in applications of the latest advances in developing countries and increase the technological gap rather than decrease it.

Forestry

Two major issues have dominated forestry in developing countries during the past 15 years. First, the speed at which tropical forests are disappearing has become the subject of worldwide concern. Second, most national institutions and aid agencies have changed the focus of their approach: forestry development has been increasingly dominated by a new goal — forestry for development. These two concerns have been embodied in the Tropical Forestry Action Plan, first adopted in 1985. The plan provides a framework for action in five priority areas: forestry and land use, conservation of tropical forest ecosystems, fuelwood and energy, forest-based industrial development and institution building.

The destruction of tropical forests is, of course, largely a social and economic issue. However, science and technology offer many novel approaches to the problem. Indeed, our knowledge of its dimensions is due largely to advances in remote sensing, computer information processing and mapping techniques.[15]

However successful may be plans for slowing down the rate of degradation and destruction of tropical forests, only the plantation of new

[15] *Guidelines for Tropical Forest Cover Monitoring Based on Remote Sensing.* FAO field document GCP/RAS/106/JPN, Rome, FAO, 1985; and J.W. Roessel, *Guidelines for Forestry Information Processing.* FAO Forestry Paper No. 74. Rome, FAO, 1986.

forests can restore the balance. There has already been substantial progress in this area. Of the 11.5 million hectares of plantations existing in tropical America, Africa and Asia in 1980, 4.6 million ha were planted in the five-year period 1976-1980 alone. Nevertheless, the total area of new plantations in 1980 was still only equivalent to the area of tropical forests currently destroyed or degraded each year.

The accelerating pace of plantation has been due partly to a fundamental shift in emphasis in forestry.[16] The importance of forests and trees to villages, families and individuals (particularly rural women) has been increasingly recognized over the past decade. One result has been the emergence of social or community forestry programmes, in which villagers are trained to plant and nurture their own plantations for their own uses. Significant progress has been made, particularly in such places as the Republic of Korea, Nepal, India and Peru, with the result that village tree-planting programmes are now found in many areas of the world, particularly those where deforestation has caused fuelwood shortages, personal hardship and a deterioration in environmental conditions.

Most of these programmes have sought to grow multipurpose tree crops to provide benefits such as fuelwood, building materials, food, fodder, chemicals and environmental protection. Many also seek to integrate tree growing with crop and livestock production, thus reviving interest in agroforestry.

The environmental crisis that is occurring in many developing countries is closely linked with forestry. In many areas deforestation has led to accelerating soil erosion, the silting up of dams and more frequent downstream flooding. Much forestry plantation and protection is now undertaken primarily for environmental reasons and in order to protect land for food production. Concern for the conservation of genetic diversity has been made more effective through increased biological knowledge on species and ecosystems, with due concern to harmonizing conservation with the sustainable production of goods and services; and the protection of important wildlife habitats.

While community forestry programmes tend to concentrate on self-reliance, the importance of trees and forests as providers of employment, particularly in the forest-based small-scale industries, is also receiving closer attention. Efforts are being made to encourage rural people to form their own forestry cooperatives, rather than act simply as labourers. And to this end, appropriate technologies for forest industries are being developed that are less costly to run and buy than the mechanized devices used in large-scale commercial logging.

Improving Tree Productivity. The need to improve the environment, counteract the effects of past deforestation and provide rural people with the forest products they require is helping forge new research priorities in forestry. Paramount among these is the development of tree crops that will grow quickly under unfavourable environmental conditions, and provide the multitude of benefits that alone can justify the investment of effort and time that new plantations require.

Before tree breeding can begin, the range of natural variation in traits within the species must be known and tested in species and provenance trials, implying systematic sampling of seed sources of potential plantation species throughout the area of natural distribution, followed by evaluation of adaptation, production and acceptability to local populations at different sites. The practical gains that can be realized are substantial. For example, the yield of the Australian *Eucalyptus camaldulensis* has been found to vary by 300% in Nigeria and 800% in Israel, according to the seed source selected.

Much still remains to be accomplished especially in regard to species of local, rather than global importance. There are many species in the tropical rain forest that have not even been described as species; and in the arid zones, little is yet known of differences between species in either yield or product characteristics. On the other hand, the growing need for wood and other forest products has given rise to considerable research on genera of global importance such as the eucalypts, which can supply, in addition to wood, essential oils and other chemicals as well as, indirectly, honey. Many species of this genus are also fast growing and adapted to a range of climatic regimes where few other woody plants can thrive. Research at Pointe Noire in the Congo and Aracruz in Brazil has produced a number of promising eucalypt hybrids, based on a rich

[16] Between 1976 and 1980, more than 40% of plantations made in Asia were for non-industrial purposes, according to J.P. Lanly, *Tropical Forest Resources.* FAO Forestry Paper No. 30. Rome, FAO, 1982.

store of genetic diversity which remains available in clone banks as well as in managed forest preserves in the native ranges of the species.[17]

While these intensively managed clonal plantations have demonstrated that yields can be increased by several hundred percent over a few generations, they have also shown that relying on too narrow a genetic base can potentially be as dangerous in forestry as in agriculture. At Pointe Noire, pure stands — based on cloning a few specimens with outstanding growth and form characteristics — were used over a few subsequent years. In 1984 an insect pest appeared which quickly became epidemic in the genetically uniform plantations. With some assistance from FAO's Forestry Department, a strategy was drawn up to remedy the situation, consisting of the use of insecticides as a short-term, emergency measure; and an overall broadening of the genetic base of the plantations as a long-term solution to the problem. At Aracruz a more diversified planting programme — involving some 50 clones grown in a mosaic of single clone blocks — was pursued, a strategy of calculated risk which so far has been successful: one of Brazil's largest pulp mills is currently supplied by 70 000 hectares of eucalyptus plantations at Aracruz.

Agroforestry. The concept, although not the term, of agroforestry dates at least from 1856 in Burma, when young trees were first interplanted commercially with agricultural crops. Today, pressing needs for food and cash crops, fodder, fuelwood and other domestic tree products, coupled with deteriorating environmental conditions, have put agroforestry high on the priority list for research at the interface of forestry and agriculture. The aim is to devise systems that link conventional agriculture with the establishment of multipurpose tree crops in such a way that each complements the other.

There is a need to find and extend alternatives to shifting cultivation practices in the humid and subhumid tropics by combining perennial food, feed and cash crops, and timber and fuelwood trees to prevent soil degradation, recover degraded lands, improve watershed management and allow for sustainable farming systems. Successful examples exist in the homesteads of Kerala (India), Java (Indonesia) or Kandy gardens (Sri Lanka).

The effort required to establish trees in arid conditions explains the reluctance of farmers in these areas to undertake single-purpose plantings, even for an urgent need such as fuel: several products must be forthcoming to make the effort worthwhile.

The eucalypts and the acacias have received most attention as multipurpose tree crops, both in Asia and in Africa, together with legumes such as *Prosopis* and *Leucaena leucocephala*, once better known by the common name "ipil-ipil". Besides fuelwood, these species can provide animal fodder and, in some cases, edible seed pods, field shading, water erosion control and nitrogen fixation. They are not without drawbacks, however, because the leaves and pods of some species, though rich in protein, also contain a toxin that can be fatal to both livestock and humans.

The deep roots of arid land trees can extract both nutrients and water from strata beyond the reach of any grasses or agricultural crops that are planted with them. Furthermore, the accumulation of their organic matter makes nutrients available to the more shallow rooted plants and increases soil moisture. *Faidherbia albida* is a striking example of a species under scientific study for this purpose at present. Because of its curious habit of going dormant during the rainy season, the tree does not compete with crops for either water or light, and the organic matter from its fallen leaves is available at an optimum time for crop growth.

A modern variant of interplanting showing considerable promise is alley cropping, in which agricultural plants occupy lanes 2-3 m wide between lines of trees. An alternative, which has long been in practice with the gum arabic tree, *Acacia senegal*, is to alternate cropping with long periods of bush fallow.

In more arid areas, capable of sustaining only extensive animal husbandry, the same trees — together with others such as *Acacia tortilis* — may provide the primary sources of fodder during the annual dry season and especially during extended droughts. One tree improvement project proposes to identify clones which come into leaf earlier at the end of the dry season, before the onset of rains, or have higher leaf/stem ratios.[18]

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[17] M.R. Jacobs, *Eucalypts for Planting*, FAO Forestry Series. Rome, FAO, 1979.

[18] L.W. Carlson and K.R. Shea, *Increasing productivity of multi-purpose lands.* International Union of Forestry Research Organizations (IUFRO), Research Planning Workshop for Africa: Sahelian and north Sudanian zones. Nairobi, January 1986.

Technical choices offered to farmers have, up to now, been based on seedling production and transplantation. Vegetative propagation has been virtually ignored in projects even though naturally used in traditional tree multiplication, a situation which could soon change because major breakthroughs have been realized in vegetative propagation by cuttings and microcuttings.

Environmental Protection. Over the past two decades, trees and forests have been used to help stabilize and improve the environment especially in two quite different climatic regions: upland areas and arid zones.

Integrated watershed management is badly needed in developing countries because many people there still live on upland catchments. Until 25 years ago, expatriate experts were most likely to recommend resettlement of mountain peoples on more suitable land. These efforts largely foundered because there was little better land available, despite efforts at land reform and redistribution. The social and health costs of resettlement have now been more properly assessed with the result that financial institutions and government bodies have concluded that they must deal with the hill farmers on their own ground, making it possible for them both to farm and protect the environment at the same time.

Many upland programmes for protecting the environment have failed not only because farmers refused to participate, but also because they were actively resistant to projects, grazing their stock illegally, setting fire to plantations and stealing stakes and fencing materials. One solution is to find adequate incentives to ensure the participation of local people, but this presupposes a careful analysis of their often very complex farming systems.

For example, in Nepal, penning of livestock is advocated both to protect revegetated slopes and to conserve dung for fertilization, a resource so critical that when not available, cereal cultivation on terraces often has to be abandoned. Penning began to work when the women found that cutting fodder grass required less work than collecting dung scattered by the free-ranging herds. This programme has been a major success, allowing a second crop of winter wheat to follow the summer rice, and increasing the meat and milk yields of buffalo.

Much can be achieved by providing sufficient incentives to persuade upland people themselves to take action. Most of the successful community forestry programmes of recent years have taken place in upland areas where living conditions had deteriorated to such a point that people were already highly motivated to improve their lot. In Peru, for example, FAO has helped the Peruvian Forestry Service to establish 120 forestry committees in local communities which have been instrumental in training several thousand rural people in forestry and establishing 5-6 000 ha of plantations. Local research has identified 20 tree species particularly adapted to Andean conditions and has greatly improved seed quality. Similar programmes of social and biological research will be needed in upland areas throughout the developing countries over the next decade or so.

Trees have found more specific environmental uses in the world's arid lowlands. In the driest vegetated areas and around water-points and oases, trees can halt or divert sand encroachment which threatens neighbouring agricultural lands and other high-value areas. Research has shown that shelterbelts afford protection not only on their downwind side, but to a lesser degree upwind as well, and that a network of them will have an additional cumulative dampening effect on the wind. The most spectacular example is China's 6 000-km "Great Green Wall" around the Gobi desert but China has also grown many smaller protective shelters.[19]

In extremely arid areas several specific "high-technology" measures have also been tried with encouraging results, either to support or substitute for more conventional vegetative sheltering systems. For example, hedging is the traditional method of mobile dune fixation, and though effective this method is very labour-intensive, especially for protecting linear installations such as roadways. Highly successful results, for example in protecting the "Route de l'Espoir" in Mauritania, have been obtained by changing the method of control: rather than try to halt the sand in front of a road by slowing wind speed, the wind is accelerated over the road surface by aerodynamic design of embankments, so that the surface to be protected is continually swept clean of sand.

Wildlife Management. Forests and the fauna that inhabit them are closely related, and live in symbiotic association. While wildlife clearly

[19] FAO, *Forestry in China.* FAO Forestry Paper No. 35. Rome, FAO, 1982.

needs its forest habitat, it is also true that the existence of forests depends markedly on the habits of their animal populations.

It is a token of the scientific responsibility with which tree improvement programmes are carried out that some of their principal proponents are outspoken on the need to preserve genetic diversity. Over the past two decades, conservation experts have expanded their efforts to conserve individual species with attempts to conserve their habitats, largely because the most important factor underlying the decline of a species is often the disappearance of its habitat. At the same time, those concerned with the forest environment have expanded their interests to embrace both its flora and its fauna. As a result, wildlife conservation is now an important consideration in forest areas.

Although endangered species have been the subject of international interest for many decades, international wildlife authorities are now placing more emphasis on less dramatic cases. Furthermore, there is a broadening outlook to area studies. It is also becoming clear that success in species conservation depends critically on the social and economic dynamics of their interaction with humans, a subject that warrants much increased research.

For example, widespread publicity tends to be given to captive breeding of the last few individuals of some remnant populations such as whooping cranes or pandas, but little to the successful programmes to breed relatively more numerous crocodiles and deer, either to produce meat, hides and antlers in captivity or to return the animals to natural habitats.

These operations can be likened to a tropical version of the "mink ranching" of some northern countries. For example, deer musk used to be extracted by slaughtering the animal to obtain the aromatic substance from its glands. The Chinese have developed a technique of extracting it *in vivo*, answering humane concerns as well as greatly reducing production costs.

Many African game managers now concentrate on trying to find ecologically and economically viable combinations of several species under more or less free-ranging conditions. Cattle rearing can often be shown to be less profitable than game management options varying in intensity from traditional subsistence hunting, through systematic "cropping" of wild game populations, to game ranching proper.[20] The game management alternative is particularly worth examining now because of the current drying period in the long-term climatic cycle in Africa.

In some African countries wildlife contributes a substantial fraction of the population's total intake of animal protein. Studies show that traditional hunting is less competitive with the preservation of the dominant large animals than is commonly supposed, there being a high proportion of rodents in "bush meat" not only because they fall outside the game laws, but also because of the animals' high reproduction rates and availability close at hand. There is thus a need to develop and transfer improved methods of smoking, salting and drying meat to render these foods more sanitary and storable.

The great game parks in Africa have been regarded, with some justice, as reserves for elites. However, they do make an important contribution to employment creation and foreign exchange earnings. There is an urgent need for a better understanding of how to manage protected areas to sustain and widen these benefits, particularly for local populations. In Asia where many protected areas are candidates for revegetation programmes, research needs to focus on acceptable modes of allowing people and animals into protected plant communities, as well as on the dynamics of interspersed agricultural lands and natural areas.

Commercial Forestry. In comparison with field crops and livestock, converting standing trees to usable materials generally requires more specialized equipment. But logging is often an important forest industrial activity in which small farmers and the rural poor can participate, and during the past ten years much technical assistance has been aimed at helping these groups function as small contractors rather than only as labourers.

In some places tree trunks can be hauled from the forest with either animal or human power. Studies in the Philippines as well as in Chile have shown that logging suitable material with buffaloes or oxen can be commercially competitive with mechanized methods. Serious research and development effort is again being

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[20] V.J. Clarke, D.H.M. Cumming, R.B. Martin, and D.A. Peddle, The comparative economics of African wildlife and extensive cattle production. In *Seminars on wildlife utilization*, 7th and 8th Sessions of the Working Party on Wildlife Management and National Parks, African Forestry Commission, 1986.

devoted to topics such as animal handling and harness, which had been set aside since the 1950s. A new piece of basic equipment offering considerable promise is the manual two-wheel sulky designed to lever loads off the ground with minimal effort.

Where mechanized techniques are already in use, but have encountered difficulties, the decision to return to manual or animal-powered systems requires more careful study. For example, keeping a cross-cut saw properly set and sharpened is not necessarily less demanding in skill than keeping a chain-saw in running condition. Intermediate levels of technology are best represented by the winch truck and the agricultural tractor with specialized logging attachments.

There have been a number of recent innovations in forest-based industries, working towards broadening the range of species and sizes of material which can be utilized for panels or paper products, for example. These allow for more efficient and intensive use of the resources, as well as creating a market for materials the small operator can harvest either from his own lands or salvage in the wake of larger-scale logging operations.

Fisheries

Modern technology has had a profound effect on both fish harvesting and resource management in the developed countries. Fish can now be harvested to the limits of their sustainable yields with a relatively small fleet of well-equipped vessels. But these developments have created a number of problems. If no limits are placed on technological efficiency, then the fishing fleets must be reduced in size. This means that incentives must be found to decommission fishing vessels and fishermen must be found alternative employment.

Developing countries in which many people depend on fisheries for employment therefore need to take great care when introducing new technologies. If they are able to harvest their resources efficiently with existing boats and methods, there is little to be gained in purchasing more sophisticated technology to produce the same results.

There are, however, many areas in which science and technology can fruitfully combine with local knowledge and skills. For example, satellite data are now being used to locate areas of chlorophyll presence and surface temperature differences to determine phytoplankton abundance and regions of upwelling where fish are likely to congregate. Satellite imagery is also being used to update and expand maps and charts of coral reefs, atolls, oceanic islands and coastal areas. But the information obtained from the satellites must be checked at sea level. This ground level "truthing" can often be carried out with relatively simple vessels and equipment.

Newly developed computer-based geographic information systems are now being widely used in regional planning; and they are being adapted to help in preparing maps pinpointing those areas likely to be suitable for inland fisheries or for particular types of aquaculture.

One attractive way of maintaining fish stocks as fishing efforts increase and traditional fishing grounds are depleted is to improve the marine environment. This can be done by constructing artificial reefs and fish habitats, planting mangroves, seeding fisheries and controlling pollution. Further research is needed to determine the optimum designs and materials for underwater construction to attract and maintain fish populations.

More effort is also needed to develop equipment and techniques that are within the purchasing power and technical ability of small-scale fishermen and fish processors. Useful steps have already been taken to improve sail-assisted craft and produce hand-operated net looms. Although FAO has taken the lead in such innovations, sometimes in collaboration with NGOs, this kind of research and development requires greater support from the scientific community and its funding sources.

Fish Resources. Research into the size, location and nature of fish resources is a pre-condition for development and management. The major technological advances in this area have been in monitoring and surveying. There is considerable potential for the more extensive use of acoustic assessment techniques, particularly for small pelagic species, in both marine and inland waters. There is also scope for the wider application of satellite sensing. Here real-time recording of water temperature and estimates of primary productivity can assist tuna fisheries, records of flood patterns can help define the limits of flood plains, and large-scale geographic coverage can help in locating and classifying inland water bodies, and their sources of pollution. Remote sensing is also invaluable in developing and managing coastal areas and drainage basins. Recent developments in microcomputer technology have opened up new possibilities for stock assessment, elaboration of management schemes and

storage, and interpretation and dissemination of data. These technologies could greatly help developing countries to assess, monitor and manage their resources, provided that steps are taken to train the specialized manpower required.

Distant-Water Industrial Fleets. The world fish catch increased from 21 million tonnes in 1950 to nearly 90 million tonnes in 1986. Most of the advances in technology have been spawned by the distant-water fleets of the developed countries. Synthetic-fibre nets, improved hydraulics for net hauling, and sea-going processing and freezing facilities, together with both shipboard and remote sensing systems, have resulted in dramatic increases in the size, versatility and operational range of fishing craft.

Under the long-standing principle of "freedom of the seas" in maritime law, which held most oceanic fishery resources to be common property, there were many cases of wasteful overinvestment in these fleets. The consequences were outright collapse of some fish populations and worrying declines in abundance and economic performance in others. The new legal regime of the oceans, embodied in the 1982 UN Convention on the Law of the Sea, now provides for national jurisdiction and control over the majority of the world's marine fish resources. However, the concentration of fishing effort on stocks in decline or under catch quota restrictions has, in some instances, caused fishing seasons to be reduced to a matter of weeks. In a number of cases, fleets a fraction of the size of present ones, spreading their efforts over several months, could accomplish the harvest far more effectively.

High-technology fishing unquestionably makes the depletion of stocks easier, but in other cases the same devices may help to prevent unintentional damage to other species. For example, fish-finding sonar can be used to avoid disrupting shellfish beds or drowning pelagic whales in nets. Turtle-excluding devices can improve selectivity of nets and reduce discarding practices. Recent technical improvements and the adoption of more selective designs in shrimp trawls should dramatically reduce by-catch discards, the size of which have been a matter of concern and economic loss for many years.

Attractive opportunities for technology transfer may arise if surplus vessels are disposed of at bargain rates, but care must be taken that the matching on-shore infrastructure and managerial capacity is present to make such ventures viable.

Small-Scale, Artisanal Fisheries. The small-scale fisheries of the world produce about 25 million tonnes, or roughly 45%, of the catch for human consumption. They employ more than 10 million people full-time in the capture sector, and probably many more in the post-harvest sectors. While they may not always compare favourably with industrial fisheries in economic terms, they have considerable social and nutritional importance.

Few of the high technology advances of the large industrial fisheries are of much value to artisanal fleets, but the latter have benefited from the introduction of synthetic materials in fishing gear and (to a lesser extent) fishing boat hulls. Mechanization of small fishing craft has not always been successful, due to high fuel costs and the lack of adequate maintenance.

The research and technical development priorities for small-scale fisheries are quite different from those of large-scale fisheries, and as they present a more complex scattered market, they do not attract sufficient commercial support. Work is urgently required to develop simpler and cheaper systems of solar refrigeration and alternative fuel engines. Some advances have been made in improving traditional boat designs and sailing rigs.

In recent years academic institutions have given greater attention to social science and village technologies for fishing communities. Much more work is required to update and preserve the most useful artisanal tools and techniques, and to identify and develop technologies that are socially, economically and environmentally desirable.

Aquaculture

The production of food by aquaculture is much closer to farming on land than it is to capture fisheries. While the potential for increasing food production by existing fishing methods is already approaching its upper practical limit without depleting stocks, there is great potential for significantly increasing fish and shellfish production through fish farming. Further, while the yields from some land-based crop and livestock farming systems may be near their biological limits and the systems themselves not environmentally sustainable, so little science has been applied to aquaculture that it has impressive potential for greater yields and productivity.

Nevertheless, the potential for relatively

cheap large-scale aquaculture has been realized only in Asia, and to a lesser extent in Europe and North America, where farming of carp and trout has a long tradition. In the Philippines, for example, production has increased from 300-400 kg/ha/year to some 1 000-2 000 kg/ha/year over a five-year period; and in Taiwan, province of China, a net increase of 750% has been recorded through the use of new technologies, including the addition of nutrients to ponds, pest control and manipulation of fish populations. The rapid expansion of salmon, shrimp and catfish culture has been particularly encouraging. Driven by high profits which are, however, beginning to diminish as existing markets fill, the demand has boosted efforts to improve aquaculture technology and the sector's organization and regulation.

While earlier research efforts were aimed primarily at increasing productivity of commercial fish-farming enterprises, mainly in developed countries, future research emphasis in developing countries should be towards improving productivity of the small farmer at the village and household levels with the aim of increasing fish supplies for local consumption. The welfare of this large group of often poor people could be significantly improved by combining fish culture with ongoing crop and livestock farming.

This integrated farming is already carried out to a small degree, and has been shown to be technically and, in many places, economically feasible. The land and aquatic culture systems are synergetic, with the plant and animal wastes from the terrestrial farms being used to increase the fertility and productivity of fish ponds, and sludge from pond bottoms being used as fertilizers for crops.

This fusion of agriculture and aquaculture has social impacts of considerable significance. Even with modest improvements in the management of fish ponds, guided by research conducted by national and other laboratories, the productivity of ponds can exceed that of comparable land areas. Probably less than 1% of small-scale farmers have fish ponds on their land. If it can be demonstrated that fish culture can be a profitable operation for the small farmer, either on a part-time or full-time basis, the numbers of people gainfully employed could rise very significantly. With the amount of arable land per person declining in many developing countries, the widespread practice of pond culture by small farmers could increase the total yield of their farms greatly, providing them with additional food and income.

The improved productivity of fish ponds achieved in many parts of the world, notably in China, has largely been the result of trial and error. Only with a much better understanding of the underlying biological, chemical and physical phenomena can rational improvements in farming procedures be evolved in terms of the ecology of the complicated interactive system that includes land, water, fish and a great many groups of associated biota. This is a complex and little understood system which will require the concentrated efforts of a multidisciplinary group of biologists and chemists. The scientific challenges include an understanding of the contribution of naturally occurring foods, and the dynamics of fish pond systems.

Another area of high priority for research is that of the nutritional requirements of the various species under cultivation, as many of the problems with poor growth, disease, and reproduction are proving to be primarily ones of poor management and nutrition. There is a further need to improve knowledge of the nutritional characteristics of those feedstuffs which are available at economical cost in the different regions of the world. Only when these problems are better understood, will it be feasible to undertake effective genetic selection for improved performance of stocks.

The third research thrust would be to study the genetics of cultured fish, beginning with tilapias and carps. Pond fish farmers are using undomesticated stock of unknown genetic character, and their yields are far less than the theoretical limits. The results of this research in terms of increased productivity, efficiency and improved food products promise to be very impressive.

Culture-based fisheries in small- to medium-sized irrigation and hydroelectric reservoirs have been effective in increasing fish supplies locally. This technique deserves wider application. The establishment of fish hatcheries, a necessary component of such fisheries, also provides a natural bridge towards the eventual promotion of more intensive forms of rural-based aquaculture.

Fish Utilization and Marketing. In both developed and developing countries full utilization of the fish catch has been hampered by the lack of adequate facilities for handling, processing and distribution. This is particularly true for the developing countries and for the small pelagic species which could be diverted from fish meal and oil production to direct

human consumption, if the technology for handling and processing were available. Efforts to increase the use of these species also require product development and consumer education. The perceived health benefits of fish are already boosting demand in a number of countries.

The expansion of the traditional Japanese surimi, or fish paste, technology to the production of a range of seafood products for developed countries has had a major impact on the use of cheaper white fish resources.

Developing countries have suffered economically on export markets through failure to reach the statutory standards required by importers. There are encouraging signs that rejections and losses from these causes are falling as a result of improved quality control and inspection. At the same time developing countries have increased their share of the world's fish trade. The establishment of regional programmes of collaboration in fish technology research, linking institutions in developing countries, has assisted with the application of technology to the problems of fish handling and processing.

PREREQUISITES FOR PROGRESS

Policy-makers and science managers in developing countries now have particularly difficult decisions to make. They are faced with limited budgets for agricultural research, and find it hard to justify major investment in long-term basic biological research. Research in developed countries is not proceeding as fast as it was, and research priorities in the developing world are undergoing a major transformation — a transformation that is less likely to be answered by research elsewhere than used to be the case. Yet the long-term economic justification for investment in agricultural research is persuasive.

The Economic Justification for Research

Past experience indicates that returns from investment in agricultural research can be very high. As Figure 3.6 shows, internal rates of return from agricultural research can reach levels of nearly 100% per annum, and many are over 50%. In the 1980s, for example, CGIAR analysed the expected impact on production of six projects: improvement of upland rice for favoured areas in Latin America, biological control of cassava pests, aluminium tolerance in wheat, heat tolerance in wheat, downy mildew resistance in maize, and true potato seed. Expected annual rates of return ranged from 20 to 40%, even after making conservative estimates for production gains and attributing only a small share of them to work done at the IARCs.

Returns, of course, are far from immediate, and in agriculture there is typically a relatively long delay between research and its economic pay-off, due largely to the time taken for new technologies to be transferred and disseminated. This may in part explain the apparent reluctance of developing countries to invest in agricultural research, even though there is now abundant evidence that such investment produces high returns, and that returns in developing countries are typically higher than in developed ones.

Research Levels in Developing Countries

Prospects for the future are mixed. Agricultural research in the developed countries is no longer undergoing historic rates of expansion, mainly because the large agricultural surpluses of Europe, Japan and the United States provide little incentive to increase output. There is evidence, however, that investment in

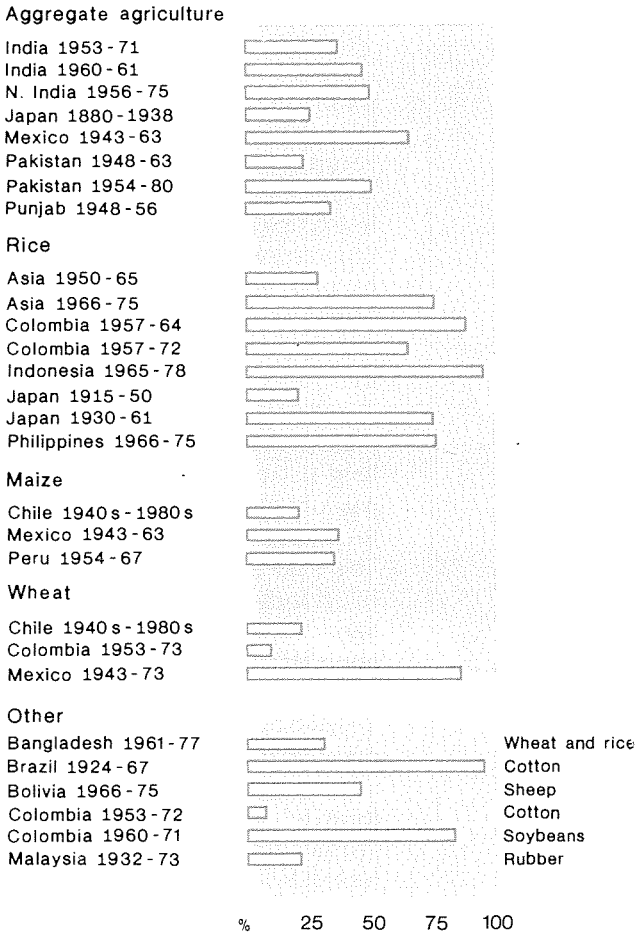
agricultural research in the developing countries expanded considerably during the 1960s and 1970s (Figure 3.7). During this period, research spending increased by a multiple of 5.8 in Latin America, 6.9 in Asia and 3.6 in Africa.[21] There was not the same rate of growth in the developed countries; spending in Canada and the United States, for example, increased by only 1.9 and 2.4 times over the same period.

The reasons for this rapid rise in research spending in the developing countries are complex. One factor was undoubtedly political pressure from consumers for reliable food supplies in Asia in the 1960s, and in Africa during the 1970s. Economic pressures also played their part as urban populations became more vociferous in expressing their need for foreign exchange for importing industrial and consumer goods; governments saw increased research as one means of answering this need since increased agricultural productivity would lead to reduced food imports and increased exports of agricultural commodities.

While growth in research investment has been rapid, actual research levels in developing countries still trail far behind those of the major agricultural nations in Europe, North America and Japan. According to a recent CGIAR survey, 20 developing countries still had

[21] Robert E. Evenson, *The importance of agricultural research during a period of farm surpluses*. Prepared for the programme "Critical Concerns of US Agriculture", 1986 Forum of the Philadelphia Society for Promoting Agriculture.

Figure 3.6 **ANNUAL RETURNS ON RESEARCH INVESTMENT**



Source: CGIAR, *Summary of International Agricultural Research Centers: a study of achievements and potential*. Washington DC, 1985

fewer than 50 agricultural researchers in 1985, and nine employed less than 25 researchers per million hectares of cropland. By comparison, western Europe employed 206 researchers and spent US$15.7 million per million hectares of cropland. The comparable figures for two relatively advanced developing countries were 14 researchers and US$730 000 for India, and 41 researchers and US$2.44 million for Brazil. And while North America spends some 3% of the value of its agricultural output on research, Africa, Asia and Latin America spend less than 1%.

Quantity is not the only measure of research capability. Where researchers and research funds are thin on the ground, the support mechanisms on which scientists rely to carry out their jobs are usually poor: inadequate libraries, laboratories and funds for travel are some of the main reasons why researchers in developing countries often fail to function as effectively as their counterparts in the developed countries.

High priority must therefore be given to the development of human resources to increase the number of experienced research workers who can identify the real problems facing agricultural development and generate appropriate technologies to solve them. Adequate infrastructure must be provided for research and the testing of the resulting technologies. This does not necessarily mean sophisticated research facilities; simple workshops and laboratories may be sufficient, particularly where basic research is not being carried out and where work is concentrated on adapting and testing existing technologies.

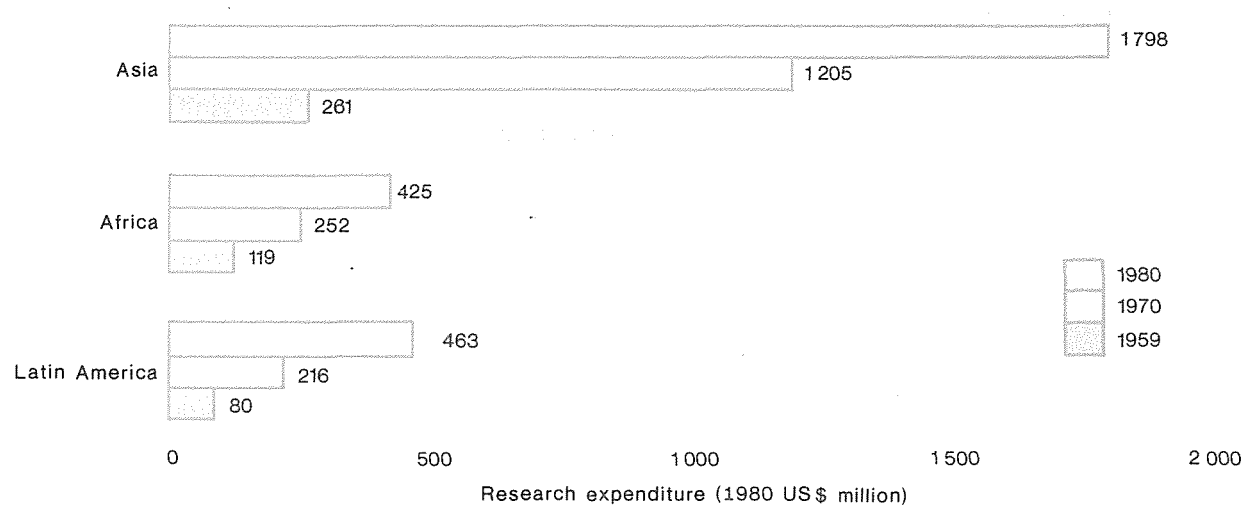
Last, but not least, there must be greater and more reliable funding of research systems from both public and private sources. Many research and extension systems are starved of funds particularly for the recurrent costs of vehicles, equipment and raw materials.

Types of Research

Data on research expenditure usually refer rather vaguely to agricultural research. A more detailed understanding of the problem can be gained by considering the four levels at which research is conducted, even though they represent arbitrary divisions of a continuum of activity. These four levels, as defined by CGIAR, are:

— basic research, or the quest for new knowledge;
— strategic research, research that relates to the solution of specific problems;
— applied research, the creation of new technology; and
— adaptive research, the fine adjustment of new technologies to local conditions and farming systems.

Figure 3.7 **RESEARCH EXPENDITURE BY REGION**



Source: Robert E. Evenson, *The importance of agricultural research during a period of farm surpluses.* Prepared for the 1986 Forum of the Philadelphia Society for Promoting Agriculture

Only the first of these is unaffected by the emergence of new agricultural research priorities in developing countries. Strategic, applied and adaptive research have always been closely linked with development plans and economic policy. In the past, therefore, they have not been focused specifically on agriculture which received relatively low priority in many developing nations at least until the early 1970s. What funds have been committed to agricultural research have certainly not been directed mainly at solving the problems of the resource-poor farmer, or the related issues of sustainable production and environmental improvement. On the contrary, most agricultural research was directed at issues connected with the generation of wealth such as irrigation, exportable cash crops, and the expansion of production on large commercial farms.

Fortunately, the existence of CGIAR's International Agricultural Research Centres and other international research institutions funded mostly by bilateral donors (Box 3.3) has been able to temper this trend. The IARCs' combined budget grew from some US$140 million a year in 1980 to $236 million in 1986, although remains small compared to that spent by all developing countries on agricultural research (only marginally more than 5%). Nevertheless, much of that spent by the IARCs has been in areas relatively neglected by both public and private institutions in developing countries. In 1980, for example, the IARCs were funding some 20% of total developing country research on potatoes, 15% on cassava and 11% on maize and field beans.[22]

CGIAR's role has also been much greater than simple financial statistics would suggest, largely because of its *modus operandi*. As well as conducting research, the IARCs are linked to national research programmes through training schemes, conferences and a series of research networks. By 1985, more than 20 000 research scientists from developing countries had participated in IARC training schemes and some 25 000 had participated in conferences, seminars and workshops. The research networks have encouraged countries to expand their research capacities and to cooperate in sharing results. One effect has been to end the isolation of scientists in many developing countries by putting them in touch with progress in other parts of the world.

[22] Evenson, op. cit.

Technology Transfer

For the reasons outlined above, access to basic research and to applied or adaptive research from countries with similar problems and conditions is essential for future agricultural development. This access is possible through technology transfer.

Three transfer processes govern the success of science and technology's contribution to agricultural development in developing countries:

— North-South transfers;
— South-South cooperation; and
— those between researchers, extensionists and farmers.

North-South transfers take two principal forms. First, the transfer of the results of basic and strategic research either directly or in the form of new research techniques which may be readily adopted provided the investment and other support costs are not too high. Second, the transfer of technologies embodied in intermediate goods or finished products which may be otherwise unavailable because of patent protection.

One of the most important technology transfers is germ-plasm. There is growing concern that the placing in developed countries of plant breeding and biotechnology increasingly under the control of the private sector, combined with stricter patents for genetic material, will be disadvantageous to developing countries. There are grounds for such concerns, although institutional mechanisms exist to assist developing countries to protect their interests, notably the FAO Commission on Plant Genetic Resources. It can also be argued that the interests of plant breeding transnational corporations (TNCs) are not so different from those of developing countries. They are facing limited opportunities to expand their traditional markets in developed countries, and look to developing countries for growth markets.

Most TNCs, of course, were originally created from parent companies in developed countries. Their contribution to agricultural development in developing countries has always been limited by the fact that few agricultural technologies are directly transferable to other regions where conditions may be very different. Most agricultural technology transfer is, in fact, indirect — and requires the existence of a research capability in the recipient country if it is to be successfully adapted. But just as research capabilities in developing countries have been built up, the rules have changed:

BOX 3.3

International research institutions not affiliated with CGIAR

Name, location and establishment date	Mandate
Asian Vegetable Research and Development Centre (AVRDC), Taiwan Province, China, 1971	Improve nutritional quality and production potential of vegetables in humid and subhumid tropics
International Board for Soil Research and Management (IBSRAM), Thailand, 1985	Promote improved and sustainable soil management technologies to reduce soil constraints to food and agriculture production
International Centre for Integrated Mountain Development (ICIMOD), Nepal, 1983	Promote progressive and effective development of highly vulnerable mountain ecosystems
International Centre of Insect Physiology, Kenya, 1970 (reconstituted in 1986)	Undertake research in aspects of insect life for the control of major crops and livestock pests and insect vectors responsible for tropical disease
International Centre for Living Aquatic Resources Management (ICLARM), Philippines, 1977	Conduct and stimulate research on fisheries and other living aquatic resources to assist developing countries' nutritive, economic and social needs
International Council for Research in Agroforestry (ICRAF), Kenya, 1978	Improve nutritional, economic and social well-being of people in developing countries by promoting agroforestry systems non-deterrent to environment
International Fertilizer Development Centre (IFDC), USA, 1977	Research, development, and transfer of appropriate fertilizer technology to developing countries at lowest possible cost
International Irrigation Management Institute (IIMI), Sri Lanka, 1984	Strengthen national efforts to improve and sustain irrigation system performance through development and dissemination of management innovations
International Network for the Improvement of Banana and Plantain (INIBAP), France, 1984	Coordinate and stimulate research on improvement of bananas and plantains
International Union of Forestry Research Organizations (IUFRO), Austria, 1973	Promote international cooperation in scientific studies related to forestry, including operations and products
International Trypanotolerance Centre (ITC), the Gambia, 1982	Research seeking to understand and utilize the natural resistance exhibited by West African livestock breeds to infection from trypanosomiasis

Source: Information provided by the institutions.

the new priorities for research outlined in this chapter are further removed from the interests of the TNCs than were the previous ones. This has a number of important implications. First, both the power and the ability of the TNCs to influence agricultural progress in developing countries are likely to be reduced. Second, developing countries will therefore have to rely more heavily on their own research, and on international research aimed at their specific problems, than was previously the case. And, third, South-South technology transfer therefore becomes an even more critical issue than before.

South-South transfers played an important role in the rice and wheat green revolution, both in the breeding and in the dispersion stage. Thus the improved rice varieties developed by IRRI in the Philippines benefited from germ-plasm from China, and other developing countries, as well as Japan. These improved varieties, in turn, were subsequently transferred to other developing countries, particularly in Asia, where they played a major role in the expansion of production from the early 1970s.

Three institutional mechanisms are likely to play a major role in South-South technology development and transfer. First, the IARCs; second, the research networks that FAO and donor agencies are supporting to encourage better information flows and more cooperative research between nations; and, third, the national agriculture research systems which commonly lack sufficient funds and manpower to benefit fully from the work of the IARCs, the other international research and development institutions such as those shown in Box 3.3, and other developing countries.

The final and most important element in the transfer process is that between research, extension and the farmer. This must be a two-way process. Unless the farmer is involved, there is a danger that the solution proposed by the researcher will not be consistent with the objectives and resources of the farmer and will not be adopted. Numerous technical solutions have failed for this reason.

It was primarily such failures that stimulated increased research on the socio-economic circumstances of the small-farm family. It was found that assumptions about constraints to increased productivity were sometimes based on inadequate knowledge of farmers' goals and management strategies and that, consequently, the suggested new technologies were inappropriate.[23] Adaptive research must therefore be based on a thorough understanding of farmers' circumstances and involve on-farm evaluation, in which both the technical and socio-economic factors can be taken into account.

In the farming systems approach, on-farm research is used not only to evaluate new technologies, but also as a feedback mechanism to guide scientists at all levels in planning their work. It therefore introduces a further iterative element into the research process, incorporating the reactions of the farmer to the prospects and limitations of the technology under test.

There is a broader dimension to socio-economic prerequisites for research and technology development. For research to yield its full benefits, it is essential that government policies provide real economic incentives not only for scientists to practise it but also for farmers, foresters and fishermen to use its products. The policy environment for agriculture must therefore be specifically tailored to catalyse and facilitate the adoption of new technologies by the people they are designed to benefit.

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[23] FAO, *The technology applications gap: overcoming constraints on small farm development.* FAO Research and Technology Paper No. 1, Rome, 1986.

ANNEX TABLES

1. VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	ANNUAL RATE OF CHANGE 1977-87
	..... THOUSAND METRIC TONS											PERCENT
WORLD												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	1471181	1602019	1553152	1567131	1650919	1710412	1643302	1806138	1843345	1866318	1786627	2.18
WHEAT	387274	451174	428598	446479	455786	482678	494135	517652	505729	537493	516780	2.78
RICE PADDY	372260	388046	377301	399612	412497	424026	451336	470193	472714	473068	454320	2.65
BARLEY	169238	179919	158285	169154	152095	164245	161925	172626	176582	182169	178518	1.03
MAIZE	370995	393510	418793	396026	450433	450332	347574	453064	497367	486198	457365	2.17
MILLET AND SORGHUM	94177	95339	91435	84326	101476	96758	94988	97451	105855	96274	86829	.27
ROOT CROPS	571875	598232	587130	537701	555929	557388	560573	592296	583664	585443	593948	.26
POTATOES	280445	292206	299040	241572	268589	266149	265369	292312	283548	290557	285009	.24
CASSAVA	117397	121927	117254	124890	128353	127426	124062	130983	137024	135178	137291	1.58
TOTAL PULSES	42180	44087	40825	40482	41120	45224	46953	49045	51366	53368	53345	2.93
CITRUS FRUIT	51854	51355	52937	58531	58878	57947	61764	57239	59948	61819	63814	1.98
BANANAS	33304	33595	33701	35512	36467	36624	36032	37620	38125	39493	39354	1.79
APPLES	30523	32453	36672	34145	32795	41564	39465	40027	38641	41668	36512	2.35
VEGETABLE OILS,OIL EQUIV	45473	47694	51367	50061	53731	57113	53356	59365	64738	64596	66324	3.82
SOYBEANS	73807	75381	88714	81078	88143	92103	79461	90656	101137	94248	98000	2.60
GROUNDNUTS IN SHELL	17669	18487	17980	17115	20542	18082	18710	20213	20992	21443	20103	1.78
SUNFLOWER SEED	12338	13338	15313	13616	14267	16358	15671	16548	18872	20642	20125	4.95
RAPESEED	7904	10570	10538	10609	12344	15086	13996	16529	19041	19677	22534	10.93
COTTONSEED	25654	24441	26411	26633	28716	27923	27474	35090	32297	28125	30857	2.38
COPRA	4719	4863	4298	4511	4702	4852	4764	3953	4958	5556	5195	1.09
PALM KERNELS	1437	1366	1643	1781	1821	2152	2006	2346	2593	2765	2687	7.51
SUGAR (CENTRIFUGAL,RAW)	89660	90361	88358	84205	93280	102761	97453	100086	99283	101815	103358	1.77
COFFEE GREEN	4406	4722	4947	4826	6067	5079	5730	5132	5940	5133	6145	2.40
COCOA BEANS	1461	1487	1676	1665	1738	1612	1602	1769	2002	2027	2002	3.13
TEA	1751	1792	1818	1873	1875	1946	2040	2162	2287	2252	2413	3.30
COTTON LINT	13964	13251	13935	13867	15272	14850	14289	18224	17344	15048	16634	2.32
JUTE AND SIMILAR FIBRES	3258	3910	3702	3557	3605	3211	3439	3580	6333	3824	3350	1.49
SISAL	558	503	501	528	491	492	402	424	479	428	406	-2.70
TOBACCO	5546	5979	5416	5305	5967	6897	5943	6459	7033	5966	6253	1.62
NATURAL RUBBER	3665	3736	3834	3826	3779	3804	4103	4185	4384	4570	4574	2.37
TOTAL MEAT	120772	125424	130283	134333	136689	137932	142361	146041	151209	155273	158787	2.65
TOTAL MILK	448105	454676	461087	467677	469778	480778	500327	504763	512684	521052	513059	1.61
TOTAL EGGS	24487	25639	26458	27216	27886	28733	29283	30771	32466	33483	34395	3.40
WOOL GREASY	2646	2629	2688	2757	2820	2848	2882	2877	2955	2984	3061	1.49
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	7517	7468	7683	8052	8586	8898	9744	10210	11169	11214	4235	.44
MARINE FISH	53013	54806	55116	55413	57495	58398	57946	63252	64048	68795	52596	1.46
CRUST+ MOLLUS+ CEPHALOP	7458	7786	8126	8619	8726	9235	9169	9658	9814	10174	6118	.84
AQUATIC MAMMALS	3	2	18	19	13	9	3	2	3	3	3	-9.37
AQUATIC ANIMALS	247	208	202	127	221	281	429	427	422	454	269	8.37
AQUATIC PLANTS	3095	3240	3204	3363	3075	3107	3261	3560	3718	3885	2016	-.72
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	619741	637208	645105	614128	581057	561163	623575	646965	656636	694931		
SAWLOGS NONCONIFEROUS	241036	253042	255976	262909	254142	242044	251625	260381	255260	264407		
PULPWOOD+PARTICLES	315850	332541	357378	370658	372407	361952	369606	386528	385619	393641		
FUELWOOD	1327875	1368049	1418626	1475970	1518286	1551678	1580284	1613830	1645904	1678448		
SAWNWOOD CONIFEROUS	343059	348675	346881	333564	315549	311467	327275	343137	346754	355527		
SAWNWOOD NONCONIFEROUS	103250	108061	110249	113441	110854	107943	110745	114501	115526	115966		
WOOD-BASED PANELS	101564	104399	106300	101098	100274	96251	105481	108640	112236	119152		
PULP FOR PAPER	114537	120644	125920	128924	128842	123472	132377	140242	141192	146538		
PAPER+PAPERBOARD	151867	159627	168991	169730	170403	166709	177128	189800	192367	201621		
WESTERN EUROPE												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	153145	168193	164352	177537	167232	181368	173604	211654	195797	191219	185245	2.19
WHEAT	53460	63933	60248	70024	66271	73690	73720	92695	80270	81367	80526	4.21
RICE PADDY	1311	1650	1831	1702	1597	1705	1519	1750	1934	1950	1912	2.51
BARLEY	51197	55362	52830	57235	50636	53714	49747	62890	58836	53716	52667	.47
MAIZE	29539	28202	32384	31280	32623	35556	34534	36439	37684	39837	36198	2.97
MILLET AND SORGHUM	604	764	649	618	601	513	466	501	399	391	400	-6.05
ROOT CROPS	55022	53084	52802	49256	48603	48371	42526	50518	51553	47740	48346	-1.07
POTATOES	54872	52940	51857	49110	48465	48240	42404	50412	51440	47639	48235	-1.06
TOTAL PULSES	1651	1774	1791	1873	1640	1916	2088	2676	3218	3739	4518	10.24
CITRUS FRUIT	6603	6305	6488	6627	6775	6737	8655	6416	7997	8858	7448	2.55
BANANAS	422	431	436	511	522	492	500	489	455	531	470	1.26
APPLES	7713	10635	10720	10701	7646	12727	9152	10983	9207	10747	9263	.67
VEGETABLE OILS,OIL EQUIV	2596	2737	2677	3309	2930	3762	3638	4241	4693	4723	6259	8.51

1/ NOMINAL CATCH (LIVE WEIGHT) EXCLUDING WHALES
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

1. (Cont.) VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	ANNUAL RATE OF CHANGE 1977-87
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
SOYBEANS	78	85	102	66	118	233	300	389	523	1132	1950	38.49
GROUNDNUTS IN SHELL	19	20	21	19	15	14	17	15	17	17	19	-1.53
SUNFLOWER SEED	1010	1149	1276	1302	1219	1736	1891	2474	2938	3644	4305	15.75
RAPESEED	1330	1731	1696	2543	2522	3295	3141	4160	4390	4396	6508	15.37
COTTONSEED	337	326	284	333	366	285	329	363	447	534	463	4.64
SUGAR (CENTRIFUGAL,RAW)	15447	15601	15789	15729	19071	18036	14808	16569	16539	16833	15794	.37
COTTON LINT	173	165	146	178	196	156	176	196	238	292	253	5.37
TOBACCO	391	409	439	401	438	462	436	480	494	498	468	2.20
TOTAL MEAT	26315	27212	28502	29524	29675	29739	30296	31029	31126	31605	31991	1.80
TOTAL MILK	132359	136901	139554	141823	142416	146249	150639	149285	146962	147774	141741	.88
TOTAL EGGS	5192	5316	5395	5443	5536	5692	5562	5489	5514	5465	5502	.44
WOOL GREASY	152	157	157	160	159	161	165	167	171	173	180	1.48
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	183	200	210	260	248	265	272	281	326	350	150	2.60
MARINE FISH	10943	10285	10037	9957	10006	9503	9706	10107	9910	9930	6336	-2.61
CRUST+ MOLLUS+ CEPHALOP	947	953	917	1036	1048	1131	1171	1124	1175	1203	366	-2.52
AQUATIC MAMMALS			17	18	12	8	1					
AQUATIC ANIMALS	3	5	2	1	1	1	1	1				
AQUATIC PLANTS	280	295	290	258	217	233	231	253	262	285	196	-1.99
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	87161	89561	96073	97381	90791	89591	94371	96551	93783	94644		
SAWLOGS NONCONIFEROUS	21885	24084	23882	24240	23838	22524	21723	22929	23385	23873		
PULPWOOD+PARTICLES	73403	75913	83932	83788	86401	84045	82462	87598	89023	91260		
FUELWOOD	35486	34084	35526	37305	38303	38905	39520	39921	39867	40215		
SAWNWOOD CONIFEROUS	49219	49031	53613	54877	50554	50134	52307	53491	51936	52139		
SAWNWOOD NONCONIFEROUS	12385	12538	12724	12437	11472	11210	10631	11300	11405	11314		
WOOD-BASED PANELS	25132	25535	26607	26602	24960	23577	23901	24045	24262	24947		
PULP FOR PAPER	23251	24948	26736	26647	26489	25045	26880	29171	29189	29703		
PAPER+PAPERBOARD	39230	41472	45174	44736	44707	43738	45571	49890	49912	51611		
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	266091	312719	251009	264130	233882	269542	268617	260557	273674	303632	305116	.86
WHEAT	121253	151590	113566	127688	107425	113780	107436	105104	110339	127287	119879	-1.11
RICE PADDY	2381	2269	2584	2934	2666	2651	2818	2933	2817	2924	2982	2.25
BARLEY	67038	78108	62927	59219	51413	59740	64483	58199	62261	70362	72466	.12
MAIZE	30955	29062	32920	30619	31776	40048	35967	37924	39395	44263	47503	4.57
MILLET AND SORGHUM	2231	2408	1744	2077	2035	2718	2709	2151	3154	2569	4090	5.05
ROOT CROPS	145232	154405	163116	111251	135403	129664	135629	147334	134606	150737	136019	-.40
POTATOES	145229	154403	163113	111249	135399	129661	135627	147332	134603	150733	136016	-.40
TOTAL PULSES	8231	8620	5052	7132	5290	7800	9866	10215	10883	9442	10026	4.65
CITRUS FRUIT	234	204	340	161	313	286	415	369	156	336	235	1.48
APPLES	10946	8967	11301	8567	10002	13278	13125	11935	11712	13825	9091	1.69
VEGETABLE OILS,OIL EQUIV	4689	4472	4436	4364	4365	4676	4556	4481	4784	5184	5349	1.44
SOYBEANS	862	1012	1042	1118	907	1007	953	997	857	1281	1265	1.93
GROUNDNUTS IN SHELL	4	5	6	7	9	9	8	8	7	9	10	6.62
SUNFLOWER SEED	7395	6794	7208	6328	6636	7350	6904	6536	7106	7725	8202	1.00
RAPESEED	1285	1306	574	1226	1097	1064	1312	1718	1932	2321	2279	9.18
COTTONSEED	5366	5210	5615	6100	5901	5690	5647	5278	5361	5045	4973	-.89
SUGAR (CENTRIFUGAL,RAW)	13889	13621	12229	10842	10943	12450	13563	13434	12979	13434	14093	.77
TEA	106	111	118	130	137	140	146	151	152	146	150	3.66
COTTON LINT	2709	2744	2514	2816	2905	2830	2598	2354	2791	2658	2661	-.34
JUTE AND SIMILAR FIBRES	47	44	48	52	45	45	45	45	45	45	45	-.53
TOBACCO	608	567	627	545	574	637	670	665	707	664	689	1.99
TOTAL MEAT	23831	25051	25245	25096	24844	24737	26042	26902	27273	28601	29447	1.84
TOTAL MILK	134505	135205	133850	131386	127755	129327	137329	140562	141320	144815	145652	.95
TOTAL EGGS	5174	5397	5498	5630	5818	5853	6053	6172	6264	6464	6553	2.31
WOOL GREASY	567	578	573	559	574	571	584	595	577	598	584	.41
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	1136	1084	1141	1121	1146	1216	1277	1213	1324	1269	1114	1.14
MARINE FISH	9098	8825	8625	9064	9121	9310	9522	10369	10008	10621	9907	1.77
CRUST+ MOLLUS+ CEPHALOP	213	210	439	567	542	734	430	370	482	688	580	8.48
AQUATIC ANIMALS							1		1	6		
AQUATIC PLANTS	2	15	19	20	19	16	15	17	18	24	24	14.65
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	164533	158643	154849	155724	155698	153520	156432	158709	157298	163099		
SAWLOGS NONCONIFEROUS	35079	34599	33545	33594	33619	33109	33368	34357	34124	35187		
PULPWOOD+PARTICLES	57068	55829	55277	55992	55666	56524	57323	59471	59346	62182		

1/ NOMINAL CATCH (LIVE WEIGHT) EXCLUDING WHALES
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

1. (Cont.) VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	ANNUAL RATE OF CHANGE 1977-87
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
FUELWOOD	94855	92055	91301	92415	96413	99294	95838	98756	103258	104207		
SAWNWOOD CONIFEROUS	110966	108612	102829	101494	100809	100153	100268	100630	101194	101652		
SAWNWOOD NONCONIFEROUS	19551	19365	18638	18260	18269	18060	18272	18430	18232	18405		
WOOD-BASED PANELS	16518	17095	17005	17464	17598	17987	18562	19480	19682	21111		
PULP FOR PAPER	11843	12161	11489	11607	11774	12052	12869	13261	13432	13401		
PAPER+PAPERBOARD	14428	14520	13989	14102	14264	14356	14993	15379	15625	15761		
NORTH AMERICA DEVELOPED												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	308361	318607	338726	311336	381936	386618	255321	357704	395590	373164	331572	1.22
WHEAT	75529	69459	75277	84092	100608	101988	92363	91806	90251	88303	83637	1.93
RICE PADDY	4501	6040	5985	6629	8289	6969	4523	6296	6120	6049	5793	.57
BARLEY	21115	20299	16821	19257	24033	25198	21289	23324	25263	27926	25856	3.49
MAIZE	169434	189092	206659	174400	212895	215693	111974	201705	232448	215466	186444	.91
MILLET AND SORGHUM	19837	18575	20509	14716	22247	21212	12384	22004	28456	23829	18819	1.77
ROOT CROPS	19186	19727	18895	16715	18588	19565	18253	19833	22170	19737	21022	1.15
POTATOES	18642	19129	18285	16215	18005	18889	17702	19241	21493	19159	20470	1.17
TOTAL PULSES	943	1304	1299	1676	1954	1717	1149	1360	1479	1755	2380	4.90
CITRUS FRUIT	13827	12932	12092	14954	13703	10938	12344	9790	9549	10026	10887	-3.46
BANANAS	3	3	2	2	3	3	2	4	4	4	5	6.67
APPLES	3468	3898	4121	4553	3933	4162	4283	4213	4073	3986	4988	1.65
VEGETABLE OILS,OIL EQUIV	11852	12875	15756	11883	13251	14351	10900	13310	14169	13214	13076	.24
SOYBEANS	48678	51376	62183	49612	54742	60459	45253	51565	58125	53762	52512	.22
GROUNDNUTS IN SHELL	1685	1793	1800	1045	1806	1560	1495	1998	1870	1679	1627	.71
SUNFLOWER SEED	1411	1943	3528	1863	2201	2513	1502	1783	1492	1250	1083	-5.43
RAPESEED	1973	3497	3411	2483	1849	2246	2609	3412	3498	3787	3852	4.38
COTTONSEED	5009	3873	5242	4056	5803	4304	2791	4671	4789	3448	5263	-.85
SUGAR (CENTRIFUGAL,RAW)	5403	5482	5167	5438	5774	5384	5217	5476	5527	6197	6760	1.58
COFFEE GREEN	1	1	1	1	1		1	1	1	1	1	.91
COTTON LINT	3133	2364	3185	2422	3406	2605	1692	2827	2924	2119	3206	-.88
TOBACCO	973	1034	771	918	1048	975	760	875	782	586	619	-4.36
TOTAL MEAT	26019	25869	26138	26978	27380	26839	27729	28003	28660	29011	29595	1.34
TOTAL MILK	63384	62716	63626	66099	68182	69691	71204	69535	73057	73204	72833	1.72
TOTAL EGGS	4125	4276	4417	4463	4477	4459	4386	4373	4374	4385	4452	.36
WOOL GREASY	50	48	49	49	51	50	48	45	41	40	41	-2.12
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	356	396	433	476	502	485	499	491	568	527	543	3.82
MARINE FISH	2581	3032	3107	3153	3122	3518	3774	3949	4162	4446	4654	5.60
CRUST+ MOLLUS+ CEPHALOP	1272	1347	1376	1350	1558	1378	1323	1647	1445	1372	1414	.90
AQUATIC ANIMALS	19	20	10	2	2	10	10	9	11	17	17	3.07
AQUATIC PLANTS	195	196	195	191	78	103	29	63	105	82	82	-11.04
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	278553	299879	299266	260961	238884	220996	276510	289792	300989	333620		
SAWLOGS NONCONIFEROUS	36846	40908	42727	43206	39834	29093	36240	37939	37421	41990		
PULPWOOD+PARTICLES	136788	146956	157282	163894	164429	156026	161024	168524	165561	168434		
FUELWOOD	35679	51645	71933	95976	107410	107595	108119	108119	108119	108119		
SAWNWOOD CONIFEROUS	117609	122491	122060	109483	98688	94908	109365	122090	124881	132534		
SAWNWOOD NONCONIFEROUS	16614	17282	18432	18650	17087	12357	14222	15944	15494	15796		
WOOD-BASED PANELS	37274	37288	36549	31026	32011	28338	34842	36378	38250	41117		
PULP FOR PAPER	58462	61368	63750	65241	65672	61122	65863	69877	68364	72543		
PAPER+PAPERBOARD	65498	68440	70896	70229	71502	67307	72157	76588	75407	79718		
OCEANIA DEVELOPED												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	15315	26087	24143	17159	24472	15069	31940	29719	26361	25129	20512	2.71
WHEAT	9724	18415	16483	11162	16686	9168	22317	18981	16477	16519	12500	1.99
RICE PADDY	530	490	692	613	728	857	519	634	864	690	548	1.77
BARLEY	2655	4265	3967	2910	3721	2295	5236	6125	5513	4107	3670	3.97
MAIZE	355	305	348	307	325	382	282	392	466	466	358	2.73
MILLET AND SORGHUM	975	747	1162	936	1231	1355	987	1929	1395	1448	1214	5.14
ROOT CROPS	1008	1027	1012	1091	1089	1168	1127	1327	1277	1252	1303	2.95
POTATOES	999	1010	1001	1071	1075	1157	1117	1314	1264	1239	1290	2.99
TOTAL PULSES	106	120	175	209	225	315	321	619	866	920	1973	31.48
CITRUS FRUIT	461	496	489	566	509	534	525	587	647	625	672	3.47
BANANAS	98	113	125	124	130	140	146	145	134	108	147	2.29
APPLES	447	444	525	513	549	529	534	513	629	586	672	3.40
VEGETABLE OILS,OIL EQUIV	86	140	159	120	126	118	105	164	265	225	188	7.34
SOYBEANS	55	77	99	82	73	77	53	89	110	105	115	4.72
GROUNDNUTS IN SHELL	32	39	62	39	43	58	23	47	42	43	45	.79

1/ NOMINAL CATCH (LIVE WEIGHT) EXCLUDING WHALES
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

1. (Cont.) VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	ANNUAL RATE OF CHANGE 1977-87
	.....				THOUSAND METRIC TONS							PERCENT
SUNFLOWER SEED	75	158	186	142	139	115	104	170	293	215	145	5.58
RAPESEED	16	24	41	18	15	7	18	33	88	84	75	16.04
COTTONSEED	46	72	79	136	161	191	164	230	410	382	330	22.80
SUGAR (CENTRIFUGAL,RAW)	3318	2902	2963	3330	3435	3536	3170	3548	3379	3371	3450	1.13
COTTON LINT	28	44	53	83	99	134	101	141	249	258	214	23.19
TOBACCO	19	19	19	18	17	15	15	16	14	12	14	-3.88
TOTAL MEAT	4089	4307	4102	3799	3812	3855	3923	3583	3782	3816	4039	-.80
TOTAL MILK	12582	11724	12202	12248	12079	12203	12593	13711	14077	14461	13433	1.71
TOTAL EGGS	264	274	268	265	278	274	275	264	250	249	252	-.76
WOOL GREASY	1005	988	1025	1066	1082	1080	1073	1091	1188	1188	1237	2.07
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	5	5	5	5	4	4	4	5	5	4	5	-.66
MARINE FISH	122	136	171	227	257	253	289	308	308	355	379	11.52
CRUST+ MOLLUS+ CEPHALOP	81	81	93	113	121	150	158	166	152	137	139	6.84
AQUATIC PLANTS	15	16	18	15	16	11	11	18	14	13	13	-2.47
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	7178	6913	7021	8443	8607	8357	7703	7308	8267	8297		
SAWLOGS NONCONIFEROUS	6518	6336	5846	5881	6077	5725	4569	4556	4911	4784		
PULPWOOD+PARTICLES	8596	8335	8330	9890	10177	9513	9865	10455	11137	11577		
FUELWOOD	1619	1636	1447	1458	1818	2118	2524	2924	2924	2930		
SAWNWOOD CONIFEROUS	2917	2559	2743	3101	3370	3414	3141	3163	3496	3595		
SAWNWOOD NONCONIFEROUS	2340	2063	1986	2069	2145	2013	1790	1739	1830	1801		
WOOD-BASED PANELS	1043	1059	1073	1166	1215	1228	1053	1210	1292	1330		
PULP FOR PAPER	1661	1699	1699	1824	1913	1896	1794	1917	2065	2032		
PAPER+PAPERBOARD	1890	1867	1942	2104	2151	2188	2101	2214	2316	2267		
AFRICA DEVELOPING												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	43624	46227	45544	49070	47344	51072	47259	46496	58544	62937	54745	2.78
WHEAT	3634	4789	4644	5419	4367	5639	4589	5021	6401	7303	6908	5.38
RICE PADDY	5725	5794	6063	6317	6507	6566	6691	6874	7232	7513	7609	2.94
BARLEY	2468	3894	3769	4464	3150	4435	2882	3199	5522	5890	4333	4.52
MAIZE	14970	14788	13468	13223	14894	15052	13824	14276	17693	18933	15727	1.96
MILLET AND SORGHUM	15598	15553	15930	17954	16953	17642	17848	15940	20325	21831	18837	2.62
ROOT CROPS	80142	80640	81054	84139	86638	89542	87020	91725	102549	102482	101178	2.77
POTATOES	2665	3044	3125	3264	3278	3543	3710	3553	4349	4340	4338	4.78
CASSAVA	46706	45491	45523	48060	49693	51104	50084	53387	58622	59961	59002	3.09
TOTAL PULSES	4290	4632	5091	4789	4708	5201	5170	4427	5536	6643	5961	2.97
CITRUS FRUIT	2486	2699	2498	2617	2554	2510	2386	2555	2511	2809	2693	.42
BANANAS	3943	3990	4164	4483	4632	4609	4647	4641	4849	4978	5140	2.53
APPLES	61	61	64	73	81	82	83	103	118	126	124	8.48
VEGETABLE OILS,OIL EQUIV	3734	3832	3650	3888	3756	3868	3786	3882	4095	4369	4422	1.58
SOYBEANS	142	172	178	204	184	202	170	184	202	211	234	3.13
GROUNDNUTS IN SHELL	3629	4000	3281	3411	3600	3659	3142	3384	3482	3954	4058	.49
SUNFLOWER SEED	149	157	150	140	134	137	139	155	170	194	187	2.38
RAPESEED	22	22	21	22	16	16	24	16	23	25	24	.95
COTTONSEED	934	957	893	896	850	857	944	1125	1220	1210	1355	3.99
COPRA	161	170	180	178	173	187	195	195	199	204	207	2.36
PALM KERNELS	642	546	656	706	692	677	587	654	692	691	702	1.13
SUGAR (CENTRIFUGAL,RAW)	3039	3367	3494	3524	3740	3884	3956	3986	4007	4324	4080	2.94
COFFEE GREEN	1235	1064	1088	1161	1271	1194	1186	1058	1232	1287	1294	1.02
COCOA BEANS	944	902	1030	1025	1070	883	891	1069	1096	1092	1084	1.42
TEA	192	202	197	186	195	208	215	231	263	260	279	3.97
COTTON LINT	498	512	485	503	468	484	534	593	684	670	768	4.39
JUTE AND SIMILAR FIBRES	7	8	8	8	8	9	9	9	9	9	9	1.26
SISAL	204	175	156	168	146	142	124	117	104	96	92	-7.44
TOBACCO	224	224	259	275	214	234	254	300	280	292	308	2.96
NATURAL RUBBER	205	195	194	196	201	199	199	227	236	250	266	2.91
TOTAL MEAT	4216	4389	4510	4637	4757	4921	4940	4918	5115	5279	5387	2.30
TOTAL MILK	7051	7380	7599	7611	7741	8071	8072	7854	8179	8749	8743	1.91
TOTAL EGGS	548	571	612	644	675	734	797	817	878	942	970	6.16
WOOL GREASY	67	69	70	73	76	82	95	89	98	97	102	4.74
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	1386	1338	1336	1271	1252	1315	1394	1389	1332	1363	49	-13.80
MARINE FISH	1586	1622	1545	1557	1700	1677	1740	1599	1688	1828	868	-1.97
CRUST+ MOLLUS+ CEPHALOP	57	69	80	104	119	131	164	165	152	145	76	7.14
AQUATIC ANIMALS	1	1	1	1	1	1	1	1	1	1		
AQUATIC PLANTS	5	5	5	5	5	5	5	5	5	5	5	-.39

1/ NOMINAL CATCH (LIVE WEIGHT) EXCLUDING WHALES
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1. (Cont.) VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	ANNUAL RATE OF CHANGE 1977-87
	.....				THOUSAND METRIC TONS							PERCENT
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	1292	1316	1032	1286	1241	1339	1177	1267	1269	1300		
SAWLOGS NONCONIFEROUS	15591	15889	16418	17496	17339	16374	16046	16644	16890	16698		
PULPWOOD+PARTICLES	2255	2610	2171	2002	2008	2037	2109	2297	2389	2166		
FUELWOOD	281392	289849	297957	307661	316770	326821	336485	347129	357336	367953		
SAWNWOOD CONIFEROUS	527	461	494	568	570	584	531	549	530	530		
SAWNWOOD NONCONIFEROUS	3587	4354	4432	5194	5310	5089	4818	5117	5525	5505		
WOOD-BASED PANELS	831	891	931	1122	1141	1218	1246	1289	1382	1375		
PULP FOR PAPER	321	343	409	435	471	359	381	376	417	481		
PAPER+PAPERBOARD	265	281	344	378	399	396	414	443	534	591		
LATIN AMERICA												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	86099	85307	84105	88495	104437	105271	99800	107000	110467	106934	109876	3.62
WHEAT	11540	14969	15103	14874	15202	22727	20110	21917	20201	21793	23052	6.46
RICE PADDY	15111	13425	14445	16441	15623	17540	14764	16975	17039	17768	18240	2.36
BARLEY	1376	1716	1330	1302	1262	1147	1161	1331	1268	1323	1387	-1.07
MAIZE	43729	40151	39751	45242	55311	47861	47214	51015	55670	53046	55362	3.13
MILLET AND SORGHUM	13215	13727	12281	9572	16052	14785	15083	14235	15156	11807	10645	-.29
ROOT CROPS	46047	46453	45627	44032	46438	45747	41586	43750	44801	47490	47877	.10
POTATOES	10120	10903	10988	10355	11846	11751	10087	12150	11337	11547	11999	1.22
CASSAVA	31966	31579	30941	30195	31236	30532	28075	27878	29642	32062	31929	-.31
TOTAL PULSES	4583	4725	4587	4318	5337	5482	4341	5169	5085	4981	4642	.67
CITRUS FRUIT	14967	15492	16358	19220	20141	20753	20631	21514	22616	21827	24189	4.64
BANANAS	16274	16109	15764	16358	16542	16808	16131	16666	16413	17411	17323	.69
APPLES	1352	1475	1704	1694	1737	1799	1768	2152	2252	2009	2651	5.54
VEGETABLE OILS,OIL EQUIV	5422	5273	5864	6528	6364	6190	6653	7430	8654	7956	7790	4.58
SOYBEANS	14960	12927	15464	19814	20499	18655	20331	24445	27168	22199	26032	6.60
GROUNDNUTS IN SHELL	1157	1014	1389	1099	1012	881	817	906	968	869	917	-3.10
SUNFLOWER SEED	959	1722	1550	1756	1353	2068	2463	2268	3524	4267	2340	11.19
RAPESEED	91	61	75	96	64	32	17	17	44	109	87	-3.81
COTTONSEED	3367	3218	3096	2956	2794	2447	2305	2968	3414	2722	2250	-2.32
COPRA	232	236	214	235	227	282	281	239	280	266	250	1.75
PALM KERNELS	311	298	327	328	314	308	311	291	312	316	320	-.01
SUGAR (CENTRIFUGAL,RAW)	27225	26909	26272	26394	27226	28887	29591	29373	28407	28266	27956	.75
COFFEE GREEN	2673	3096	3257	2981	4097	3165	3794	3403	3932	3086	4098	2.65
COCOA BEANS	459	520	572	552	561	607	572	536	732	729	671	3.66
TEA	52	39	44	51	39	49	54	55	63	54	63	3.50
COTTON LINT	1897	1808	1727	1651	1556	1355	1314	1702	1895	1454	1235	-2.55
JUTE AND SIMILAR FIBRES	114	100	108	107	129	89	95	106	95	91	93	-1.88
SISAL	342	316	333	346	335	341	270	298	367	324	305	-.64
TOBACCO	740	768	797	732	690	758	710	720	710	698	726	-.75
NATURAL RUBBER	39	41	43	46	51	54	57	58	63	56	59	4.58
TOTAL MEAT	13948	14480	14572	15068	15830	15802	15863	15589	16009	15922	16282	1.38
TOTAL MILK	32658	32777	33759	35455	35840	36568	36155	36478	37812	38039	39221	1.76
TOTAL EGGS	2013	2221	2429	2578	2624	2740	2710	2927	3129	3205	3289	4.62
WOOL GREASY	314	298	301	306	314	315	324	320	306	310	317	.35
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	249	279	235	296	323	340	445	462	461	464	41	-3.34
MARINE FISH	6026	8053	9208	8692	9603	10416	8121	10904	12467	14665	12230	6.70
CRUST+ MOLLUS+ CEPHALOP	437	577	634	540	533	570	591	654	647	641	243	-1.78
AQUATIC ANIMALS	71	52	54	50	49	36	30	46	77	59	54	-.47
AQUATIC PLANTS	99	90	129	124	152	222	213	213	235	170	130	6.71
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	23930	22958	26802	29294	28493	29037	30038	31452	32475	31907		
SAWLOGS NONCONIFEROUS	23694	23908	27100	30176	29789	29631	30049	30752	30906	32041		
PULPWOOD+PARTICLES	13667	19804	26641	29274	29135	29009	30748	31334	31493	31311		
FUELWOOD	216934	223409	229576	235281	239256	244763	251103	257211	263136	269339		
SAWNWOOD CONIFEROUS	10541	11289	12149	11552	11500	11177	12068	12580	13051	13322		
SAWNWOOD NONCONIFEROUS	11725	11531	12167	13736	14496	14024	14365	15093	14860	15316		
WOOD-BASED PANELS	3364	3514	3737	4283	4421	4327	4479	4613	4646	5225		
PULP FOR PAPER	3734	4186	4485	5470	5335	5629	6162	6248	6594	6857		
PAPER+PAPERBOARD	5637	6263	7026	7730	7451	7723	7962	8756	9050	9849		
NEAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	51617	54562	53834	56010	59613	58522	59829	55777	63029	67586	65415	2.24
WHEAT	29190	30312	30726	30952	32205	32548	30992	31562	33943	37232	37530	2.19
RICE PADDY	4569	4807	4739	4705	4862	5036	4565	4597	4987	5114	5226	.88
BARLEY	7383	8177	8234	9573	10471	10588	10145	10282	11605	12384	11545	4.69
MAIZE	5053	5497	5309	5546	5535	5721	6004	6221	6664	7204	7552	3.78

1/ NOMINAL CATCH (LIVE WEIGHT) EXCLUDING WHALES
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

1. (Cont.) VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	ANNUAL RATE OF CHANGE 1977-87
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
MILLET AND SORGHUM	4132	4557	3625	4161	5503	3733	3297	2325	5048	4905	2760	-2.16
ROOT CROPS	5815	5875	6497	7217	7503	7775	7748	8158	9537	9728	9980	5.75
POTATOES	5422	5468	6008	6756	7039	7281	7283	7720	9082	9283	9541	6.07
CASSAVA	95	103	127	122	125	125	125	100	90	80	70	-3.54
TOTAL PULSES	1856	1733	1685	1856	1917	2282	2474	2342	2670	3066	3429	6.93
CITRUS FRUIT	3161	3306	3597	3454	3530	4111	4269	4161	3871	4424	4592	3.53
BANANAS	298	270	260	291	295	335	339	368	400	412	417	4.90
APPLES	1685	1850	2359	2539	2513	2966	3212	3539	3337	3237	3003	6.64
VEGETABLE OILS,OIL EQUIV	1422	1549	1396	1668	1339	1549	1320	1423	1344	1617	1672	.49
SOYBEANS	119	197	195	145	209	319	340	301	357	425	502	13.60
GROUNDNUTS IN SHELL	1145	923	977	814	840	610	524	495	397	506	598	-8.54
SUNFLOWER SEED	506	524	634	794	630	652	763	755	849	1004	1265	7.69
RAPESEED	14	13	43	12	6	2						-43.15
COTTONSEED	2609	2475	2332	2284	2222	2331	2467	2575	2524	2335	2388	-.09
SUGAR (CENTRIFUGAL,RAW)	2678	2512	2587	2492	3104	3748	3823	3702	3652	3690	4142	5.37
COFFEE GREEN	5	5	5	5	5	4	4	5	5	5	5	1.06
TEA	104	113	133	128	76	103	137	154	177	184	192	6.42
COTTON LINT	1520	1443	1372	1360	1328	1389	1442	1493	1473	1357	1375	-.24
JUTE AND SIMILAR FIBRES	13	13	13	13	13	13	13	13	14	14	14	.68
TOBACCO	298	343	274	295	238	277	303	246	232	226	252	-2.81
TOTAL MEAT	3095	3207	3309	3509	3739	3985	4091	4335	4530	4668	4737	4.73
TOTAL MILK	13586	14502	15173	15749	16466	16633	16862	16173	17298	17275	17687	2.29
TOTAL EGGS	691	758	709	744	840	906	966	1035	1101	1177	1213	6.28
WOOL GREASY	162	156	162	166	173	176	182	172	183	183	188	1.70
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	132	140	161	174	176	185	198	202	202	213	44	-2.44
MARINE FISH	487	557	699	771	803	868	948	956	984	1048	143	-1.76
CRUST+ MOLLUS+ CEPHALOP	40	28	36	40	35	40	43	52	52	54	8	-3.50
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	5265	5216	4718	4964	5218	5214	4190	4150	4059	3874		
SAWLOGS NONCONIFEROUS	1442	1859	1523	1315	1366	1366	1371	1353	1340	1294		
PULPWOOD+PARTICLES	984	1003	1043	672	714	712	765	513	380	382		
FUELWOOD	37801	37827	40679	41839	41021	41561	42055	41254	38633	39631		
SAWNWOOD CONIFEROUS	2917	4104	4114	4127	4107	4101	3787	3794	3792	3791		
SAWNWOOD NONCONIFEROUS	871	1146	1146	1139	1121	917	1142	1719	1725	1722		
WOOD-BASED PANELS	761	797	797	652	629	623	654	888	978	979		
PULP FOR PAPER	340	273	463	494	487	487	517	588	588	588		
PAPER+PAPERBOARD	629	560	737	774	832	821	674	808	763	762		
FAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	252274	267447	250759	273696	290003	276050	316883	318588	323338	325728	299188	2.57
WHEAT	38904	41013	46459	44140	49540	50449	57213	58446	57939	62826	59600	4.85
RICE PADDY	171767	181435	162613	186944	193463	184162	209043	211014	221915	217678	198949	2.50
BARLEY	3320	3819	3819	2592	3366	2937	2901	2810	2292	2581	2413	-4.17
MAIZE	15455	17940	17060	19227	20325	18141	22257	23852	22251	24334	20767	3.72
MILLET AND SORGHUM	22738	23155	20725	20705	23226	20268	25390	22382	18857	18226	17372	-2.11
ROOT CROPS	51035	56888	54855	58099	60249	59060	59480	65455	65084	57010	63085	1.66
POTATOES	9455	10312	12459	10921	12424	12822	12994	15347	16042	13900	16283	5.03
CASSAVA	33143	38236	33911	39443	40179	39066	38945	42563	41717	36240	39690	1.31
TOTAL PULSES	13783	13987	13772	11241	12948	13478	14883	15140	15120	16614	13893	1.60
CITRUS FRUIT	2885	3074	3325	3717	4268	4317	4652	4717	4685	4677	4719	5.35
BANANAS	10211	10576	10705	11356	11930	11572	11532	12368	12427	11905	11577	1.54
APPLES	989	1070	1208	1179	1462	1586	1684	1660	1692	1667	1599	5.62
VEGETABLE OILS,OIL EQUIV	10936	11415	11685	11862	13677	14211	13975	15213	16350	17299	16820	4.98
SOYBEANS	1128	1353	1387	1484	1423	1423	1602	2238	2503	2696	2433	8.83
GROUNDNUTS IN SHELL	7495	7712	7159	6440	8790	6976	8372	8135	6902	7915	6231	-.46
SUNFLOWER SEED	141	154	114	41	91	236	349	513	517	523	793	24.89
RAPESEED	1996	2242	2268	1820	2705	2764	2583	2965	3456	3272	2978	5.44
COTTONSEED	3711	3747	4229	4214	4423	4407	3345	5072	5590	5163	5228	3.63
COPRA	3965	4088	3502	3708	3901	3986	3886	3063	4001	4649	4299	.85
PALM KERNELS	431	465	600	691	739	1086	1024	1301	1486	1651	1552	15.42
SUGAR (CENTRIFUGAL,RAW)	12381	13511	12840	9660	12023	17954	16859	14231	14409	15206	16683	3.16
COFFEE GREEN	433	496	532	607	622	655	638	596	695	671	655	3.77
COCOA BEANS	27	33	44	54	71	90	105	131	137	170	208	22.48
TEA	889	897	890	911	923	887	919	997	1033	979	1063	1.71
COTTON LINT	1856	1873	2114	2007	2195	2204	1673	2537	2796	2581	2601	3.71
JUTE AND SIMILAR FIBRES	2613	3165	2950	2792	2743	2484	2711	2605	4039	3137	2416	.33
TOBACCO	1000	1059	1002	950	990	1084	1135	1076	1104	1008	1009	.47

1/ NOMINAL CATCH (LIVE WEIGHT) EXCLUDING WHALES
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

1. (Cont.) VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	ANNUAL RATE OF CHANGE 1977-87
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
NATURAL RUBBER	3269	3331	3431	3415	3346	3342	3612	3648	3824	3970	3965	2.02
TOTAL MEAT	4662	5020	5411	5625	5780	5889	6312	6732	7062	7138	7363	4.59
TOTAL MILK	39825	40849	42160	43841	45541	47679	52493	55597	57734	59822	56457	4.49
TOTAL EGGS	1634	1757	1890	2038	2117	2264	2414	2491	2684	2890	3014	6.22
WOOL GREASY	70	71	75	80	77	80	83	86	90	94	92	2.99
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	2362	2364	2405	2536	2818	2777	3026	3105	3124	3226	1838	1.14
MARINE FISH	7823	7947	7855	7784	8232	8198	8722	9016	9039	9680	5979	.20
CRUST+ MOLLUS+ CEPHALOP	1799	1801	1972	2087	2140	2203	2247	2319	2397	2522	1675	1.68
AQUATIC ANIMALS	100	83	75	23	55	132	241	222	205	212	55	9.31
AQUATIC PLANTS	371	352	372	442	538	477	534	586	642	745	772	8.40
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	3250	2920	3629	3380	3461	3523	3743	3751	3843	3842		
SAWLOGS NONCONIFEROUS	75645	80554	78791	81434	78401	79735	82966	83444	77683	79779		
PULPWOOD+PARTICLES	3331	3367	3388	3436	3167	3123	3430	3507	2863	2893		
FUELWOOD	437787	447888	456967	467082	476699	486281	496536	506569	516757	526148		
SAWNWOOD CONIFEROUS	2810	3006	3454	3148	3854	4012	4580	4220	4402	4999		
SAWNWOOD NONCONIFEROUS	22138	23533	23401	26184	25388	28810	30287	30472	31642	31464		
WOOD-BASED PANELS	5290	5859	6055	5653	6278	7170	8219	8421	9149	10387		
PULP FOR PAPER	1508	1666	1845	2069	2510	2724	3077	3261	3483	3549		
PAPER+PAPERBOARD	2913	3346	3764	3845	4211	4233	4704	5211	5351	6217		
ASIAN CENT PLANNED ECON												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	264823	293700	313601	303114	310120	341362	373213	394945	370257	382848	389139	3.89
WHEAT	41724	54471	63333	55823	60338	69362	82589	88918	87226	91497	89219	7.62
RICE PADDY	149330	156372	163368	161102	165905	185667	193908	204239	195191	198793	199730	3.31
BARLEY	3391	3809	4035	3125	3533	3678	3509	3887	3382	3266	3580	-.40
MAIZE	51803	58522	62634	65434	62070	63491	71401	76815	67411	74546	80050	3.54
MILLET AND SORGHUM	14434	15218	14412	12859	13055	14226	16587	15488	12439	10810	12207	-1.83
ROOT CROPS	160397	172452	156236	158121	143638	147960	159033	155674	143286	140139	155861	-1.05
POTATOES	28543	30751	27906	28342	26875	27823	29821	30347	28946	27379	31389	.33
CASSAVA	5350	6378	6613	6925	6969	6444	6670	6863	6758	6650	6412	.98
TOTAL PULSES	6436	6908	7131	7169	6879	6773	6492	6833	6319	5949	6339	-1.08
CITRUS FRUIT	973	948	1150	1353	1470	1682	2069	2252	2654	3389	2980	14.16
BANANAS	986	1015	1128	1235	1281	1479	1585	1787	2222	2902	3001	12.29
APPLES	2519	2723	3331	2843	3501	2941	4083	3515	4208	3953	3633	4.27
VEGETABLE OILS,OIL EQUIV	4020	4630	5266	5691	7065	7709	7779	8826	9588	9265	9918	9.69
SOYBEANS	7646	7957	7844	8339	9748	9480	10214	10173	11025	12157	12653	5.30
GROUNDNUTS IN SHELL	2155	2568	2994	3788	4021	4119	4146	5072	7033	6256	6373	11.69
SUNFLOWER SEED	170	279	340	910	1332	1286	1341	1705	1733	1544	1430	23.86
RAPESEED	1173	1871	2404	2386	4067	5657	4288	4206	5607	5882	6730	16.76
COTTONSEED	4112	4347	4424	5422	5945	7207	9286	12529	8310	7099	8403	9.07
COPRA	40	46	61	64	65	70	98	112	115	119	117	12.12
PALM KERNELS	40	42	43	40	41	45	47	46	48	49	50	2.26
SUGAR (CENTRIFUGAL,RAW)	3154	3303	3690	3840	4486	5176	4841	5744	6818	6788	6733	8.92
COFFEE GREEN	21	14	14	16	21	19	20	22	28	35	38	8.77
TEA	295	313	325	350	389	444	449	463	484	516	552	6.60
COTTON LINT	2056	2173	2212	2711	2973	3603	4643	6265	4155	3550	4202	9.07
JUTE AND SIMILAR FIBRES	463	578	574	584	665	570	564	800	2130	527	773	6.17
SISAL	8	9	8	8	3	3	3	3	2	3	3	-13.19
TOBACCO	1077	1338	1026	994	1591	2279	1485	1909	2553	1832	2032	7.94
NATURAL RUBBER	149	166	162	164	177	204	232	249	256	289	279	7.40
TOTAL MEAT	10886	11874	14189	15717	16538	17680	18509	20160	22636	24226	24782	8.50
TOTAL MILK	3094	3232	3376	3579	3759	4168	4467	4930	5357	5885	6322	7.71
TOTAL EGGS	2698	2840	2988	3151	3258	3472	3756	4771	5815	6186	6497	9.99
WOOL GREASY	156	157	174	196	210	223	214	202	197	202	227	3.09
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	1422	1376	1468	1605	1785	1978	2289	2724	3439	3447	106	-4.82
MARINE FISH	4646	4532	4327	4466	4512	4752	4762	5073	5187	5313	1603	-3.42
CRUST+ MOLLUS+ CEPHALOP	1166	1237	1122	1144	1152	1338	1435	1580	1720	1839	44	-10.86
AQUATIC MAMMALS	2								1	1		
AQUATIC ANIMALS	13	4	14	10	19	19	20	20	22	25		
AQUATIC PLANTS	1434	1606	1519	1601	1399	1393	1499	1639	1726	1778		
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	28588	29311	30973	30984	27923	28442	29419	33965	34591	35011		
SAWLOGS NONCONIFEROUS	18535	19005	20331	19665	18473	18779	19383	22283	22670	22957		
PULPWOOD+PARTICLES	4671	4876	5089	5074	4670	4752	4893	5614	5614	5614		
FUELWOOD	173263	176538	179956	183467	187081	190792	194587	198435	202366	206398		
SAWNWOOD CONIFEROUS	12188	12745	13318	13887	14511	15162	15695	17410	18270	17819		
SAWNWOOD NONCONIFEROUS	7445	7728	8025	8323	8652	9019	9291	9432	9898	9653		

1/ NOMINAL CATCH (LIVE WEIGHT) EXCLUDING WHALES
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

1. (Cont.) VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	ANNUAL RATE OF CHANGE 1. -87
	.....				THOUSAND METRIC TONS			.....	.....			PERCENT
WOOD-BASED PANELS	1516	2023	2160	2303	2388	2566	2742	2807	3032	3155		
PULP FOR PAPER	3698	4295	4699	4932	4969	4942	5414	5976	7231	7513		
PAPER+PAPERBOARD	4580	5243	6031	6438	6509	7038	8433	9596	11280	11932		

1/ NOMINAL CATCH (LIVE WEIGHT) EXCLUDING WHALES
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

2. INDICES OF FOOD PRODUCTION

	TOTAL						PER CAPUT					
	1983	1984	1985	1986	1987	CHANGE 1986 TO 1987	1983	1984	1985	1986	1987	CHANGE 1986 TO 1987
	1979-81=100					PERCENT	1979-81=100					PERCENT
WORLD	106	111	114	116	115	-1.21	100	104	105	105	102	-2.79
DEVELOPED COUNTRIES	100	107	108	110	108	-1.75	98	104	105	105	103	-2.40
WESTERN EUROPE	103	110	107	109	108	-.24	102	108	106	107	106	-.44
EUROPEAN ECON COMMUNITY	103	110	108	109	109	.66	102	108	106	107	107	.48
BELGIUM-LUXEMBOURG	96	106	106	113	111	-1.10	96	106	106	113	111	-1.18
DENMARK	103	126	123	120	116	-3.41	103	126	123	120	116	-3.39
FRANCE	100	110	109	107	110	2.64	99	108	106	104	107	2.32
GERMANY FED.REP. OF	106	113	108	115	108	-6.07	106	114	109	116	109	-5.93
GREECE	102	103	112	104	98	-6.16	100	100	109	101	94	-6.55
IRELAND	100	111	111	107	105	-1.84	96	106	105	100	97	-3.06
ITALY	108	100	102	100	103	2.99	107	99	101	99	102	2.89
NETHERLANDS	108	110	108	115	116	.35	106	108	106	112	112	
UNITED KINGDOM	105	116	110	110	108	-2.00	105	115	109	110	107	-2.02
OTHER WESTERN EUROPE	106	110	104	109	102	-6.50	104	108	102	107	99	-6.78
AUSTRIA	107	111	109	110	105	-3.87	107	111	109	109	105	-3.88
FINLAND	117	118	115	114	96	-15.64	115	115	112	111	93	-15.89
ICELAND	102	104	106	100	99	-.22	98	99	100	93	92	-1.02
MALTA	115	106	113	115	118	2.00	112	103	108	110	112	1.47
NORWAY	103	111	107	111	113	1.41	102	110	106	109	111	1.24
PORTUGAL	93	102	108	104	110	5.63	91	100	104	100	105	4.96
SPAIN	97	114	110	116	124	7.06	96	111	107	112	119	6.40
SWEDEN	105	115	108	106	97	-8.83	104	114	108	105	96	-8.73
SWITZERLAND	105	108	108	111	109	-1.26	103	106	106	108	107	-1.29
YUGOSLAVIA	104	107	99	112	101	-9.50	102	104	95	107	96	-10.07
USSR AND EASTERN EUROPE	108	110	110	119	117	-1.76	105	107	106	113	111	-2.55
EASTERN EUROPE	104	111	109	117	114	-2.59	102	109	106	114	110	-3.08
ALBANIA	109	109	109	109	111	1.31	102	100	98	96	95	-.79
BULGARIA	101	109	96	106	104	-2.65	100	108	95	105	102	-3.02
CZECHOSLOVAKIA	114	121	120	125	119	-4.73	113	119	119	123	117	-5.03
GERMAN DEMOCRATIC REP.	98	105	112	115	115	-.15	98	105	112	116	115	-.30
HUNGARY	109	115	108	108	110	1.46	109	116	108	109	111	1.54
POLAND	104	107	109	116	113	-3.12	101	103	104	110	106	-3.80
ROMANIA	102	115	109	125	122	-2.94	100	113	106	121	117	-3.60
USSR	109	110	110	118	118	-.62	107	106	106	112	111	-1.54
NORTH AMERICA DEVELOPED	89	103	109	104	100	-3.90	87	99	104	98	94	-4.73
CANADA	109	108	112	123	118	-4.25	105	104	106	115	109	-5.21
UNITED STATES	90	102	108	102	99	-3.30	87	98	103	97	93	-4.12
OCEANIA DEVELOPED	110	106	107	107	106	-1.30	106	101	100	100	97	-2.46
AUSTRALIA	116	110	107	107	104	-2.47	111	104	100	99	95	-3.68
NEW ZEALAND	107	106	116	112	114	1.22	105	103	111	107	107	.34
OTHER DEV.ED COUNTRIES	95	101	104	105	107	1.51	92	97	99	99	99	.53
ISRAEL	117	111	125	114	112	-1.90	111	103	115	103	99	-3.51
JAPAN	99	110	109	110	107	-2.23	97	107	106	105	102	-2.72
SOUTH AFRICA	79	89	95	97	101	3.41	74	81	84	84	85	.83
DEVELOPING COUNTRIES	112	116	120	123	123	-.69	105	107	109	110	107	-2.59
AFRICA DEVELOPING	103	104	115	121	117	-2.93	94	92	99	101	95	-5.92
NORTH WESTERN AFRICA	104	105	121	132	124	-6.02	96	94	106	113	103	-8.49
ALGERIA	102	109	122	126	132	4.65	93	97	104	105	106	1.35
MOROCCO	105	106	117	143	115	-19.71	97	96	103	123	97	-21.53
TUNISIA	106	104	134	118	138	16.96	99	96	120	104	119	14.45
WESTERN AFRICA	101	110	120	126	122	-2.90	92	97	103	104	98	-6.02
BENIN	104	126	132	139	128	-7.98	95	112	114	116	103	-10.80
BURKINA FASO	106	105	129	144	134	-7.20	98	95	114	125	113	-9.62
COTE D'IVOIRE	99	119	132	132	132	.28	89	103	110	106	103	-3.12
GAMBIA	90	112	136	151	145	-3.91	86	104	123	134	127	-5.92
GHANA	88	133	127	133	136	1.57	80	117	108	110	108	-1.78
GUINEA	100	102	103	111	109	-1.22	93	93	92	96	93	-3.65
LIBERIA	112	115	114	115	115	-.75	102	101	98	95	92	-3.93
MALI	121	107	114	122	115	-5.94	112	96	99	103	94	-8.67
MAURITANIA	94	95	99	109	109	-.28	86	84	85	92	88	-3.31
NIGER	100	82	104	108	98	-8.83	92	74	91	91	80	-11.53
NIGERIA	107	113	125	131	126	-3.64	97	99	106	107	100	-6.94
SENEGAL	87	103	122	123	128	4.07	81	93	108	105	107	1.30
SIERRA LEONE	115	104	102	114	114	.13	109	97	93	102	100	-1.79
TOGO	95	105	105	106	106	-.04	87	93	90	89	86	-3.06
CENTRAL AFRICA	105	106	111	113	114	.99	97	95	97	96	94	-1.83
ANGOLA	102	102	102	103	104	.67	94	92	90	88	87	-1.98
CAMEROON	106	104	110	116	117	.79	98	94	97	98	96	-2.00
CENTRAL AFRICAN REP	102	100	106	107	99	-6.92	96	92	94	93	84	-9.16
CHAD	106	95	119	123	119	-3.26	99	87	106	107	101	-5.59
CONGO	102	103	106	108	110	1.66	94	93	93	93	92	-1.05
GABON	107	107	105	107	110	2.22	102	100	97	97	97	.17
ZAIRE	111	113	116	117	120	2.59	101	101	100	98	98	-.48
EASTERN AFRICA	104	96	110	116	112	-3.21	94	85	94	96	90	-6.29
BURUNDI	105	101	114	120	121	.76	97	91	99	102	99	-2.08

2. (Cont.) INDICES OF FOOD PRODUCTION

	TOTAL						PER CAPUT					
	1983	1984	1985	1986	1987	CHANGE 1986 TO 1987	1983	1984	1985	1986	1987	CHANGE 1986 TO 1987
	1979-81=100					PERCENT	1979-81=100					PERCENT
ETHIOPIA	100	91	99	109	105	-3.79	93	83	87	93	87	-6.44
KENYA	114	82	114	127	114	-10.20	101	69	92	99	85	-13.90
MADAGASCAR	109	111	114	114	118	3.30	101	99	99	97	97	.35
MALAWI	104	105	106	106	105	-.40	95	93	91	88	85	-3.66
MAURITIUS	103	101	111	119	121	1.52	97	94	101	107	106	-.17
MOZAMBIQUE	97	96	99	101	101	.53	89	86	85	85	83	-2.14
RWANDA	108	101	115	114	96	-15.72	98	89	97	94	76	-18.49
SOMALIA	102	105	115	122	120	-.98	93	93	99	102	99	-3.04
TANZANIA	104	109	108	111	115	3.42	94	95	91	90	90	-.29
UGANDA	125	95	146	152	150	-1.25	113	83	124	125	119	-4.63
ZAMBIA	103	104	115	122	117	-3.96	94	91	97	100	93	-7.20
ZIMBABWE	78	82	123	126	87	-30.85	70	72	104	102	68	-33.30
SOUTHERN AFRICA	98	98	101	107	106	-.47	90	87	87	89	86	-3.42
BOTSWANA	99	93	91	89	90	.60	88	80	75	71	69	-3.03
LESOTHO	87	89	100	93	97	3.98	81	80	88	80	81	1.31
SWAZILAND	110	113	115	138	126	-8.40	100	101	99	115	102	-11.18
LATIN AMERICA	106	109	113	112	116	3.23	99	100	101	98	99	1.02
CENTRAL AMERICA	108	108	108	111	111	.44	99	97	95	94	92	-2.05
COSTA RICA	97	106	105	108	105	-3.43	89	96	92	92	87	-5.76
EL SALVADOR	91	104	99	104	101	-2.94	83	92	86	87	82	-5.91
GUATEMALA	112	112	111	115	108	-6.33	103	100	97	97	88	-8.98
HONDURAS	95	96	95	95	95	.42	86	83	80	78	76	-2.64
MEXICO	109	110	110	110	111	.85	101	99	97	94	93	-1.53
NICARAGUA	95	91	92	92	85	-7.13	86	79	78	75	67	-10.21
PANAMA	107	107	110	114	107	-5.96	100	98	99	100	92	-7.87
CARIBBEAN	103	109	105	107	105	-2.19	99	102	98	98	94	-3.81
BARBADOS	80	82	80	88	80	-9.89	80	81	78	86	77	-10.25
CUBA	106	115	111	114	106	-6.63	104	112	108	109	101	-7.55
DOMINICAN REPUBLIC	111	115	112	111	112	.76	103	105	100	97	96	-1.45
HAITI	104	107	109	111	115	3.13	97	97	97	95	96	.45
JAMAICA	102	110	109	113	112	-.89	97	104	101	103	101	-2.37
SOUTH AMERICA	106	110	115	113	118	4.40	99	101	103	99	101	2.25
ARGENTINA	104	108	106	109	107	-1.40	100	101	98	99	96	-2.83
BOLIVIA	84	107	115	112	113	.22	78	96	101	96	93	-2.52
BRAZIL	108	114	124	117	128	9.34	101	105	111	102	110	7.10
CHILE	98	105	101	116	118	1.65	93	99	94	106	106	.11
COLOMBIA	99	103	105	113	116	3.22	93	95	94	99	100	1.13
ECUADOR	93	103	119	119	118	-1.04	85	92	103	100	96	-3.77
GUYANA	93	88	89	91	90	-1.31	88	81	81	81	79	-3.01
PARAGUAY	113	121	129	120	134	12.09	103	107	111	100	109	9.01
PERU	103	115	113	112	115	2.63	95	103	99	96	96	.09
URUGUAY	115	105	106	106	108	1.74	113	102	103	102	103	.97
VENEZUELA	108	104	103	116	110	-5.56	99	93	89	98	90	-7.99
NEAR EAST DEVELOPING	107	106	114	118	117	-1.09	99	96	100	101	97	-3.87
NEAR EAST IN AFRICA	108	105	116	117	119	1.80	100	95	101	100	99	-.74
EGYPT	113	114	120	126	132	4.92	105	103	106	109	111	2.56
LIBYA	140	138	175	148	156	6.00	124	118	144	117	120	2.18
SUDAN	101	94	116	118	103	-12.42	93	84	101	99	84	-14.91
NEAR EAST IN ASIA	107	107	113	119	116	-2.03	99	96	100	102	97	-4.90
AFGHANISTAN	104	104	103	107	107	-.35	102	101	100	99	94	-4.76
CYPRUS	82	99	96	89	100	12.55	79	95	91	83	92	11.56
IRAN	109	113	115	119	121	1.41	100	101	100	100	99	-1.36
IRAQ	110	121	154	146	128	-12.41	98	105	129	118	100	-15.26
JORDAN	122	128	143	138	145	5.06	110	111	120	111	112	.95
LEBANON	108	112	120	112	119	5.48	110	114	120	110	114	3.25
SAUDI ARABIA	158	157	236	298	180	-39.64	138	132	190	231	134	-41.91
SYRIA	113	101	109	123	113	-8.06	102	88	91	100	88	-11.39
TURKEY	105	106	109	115	115	.66	99	97	99	101	100	-1.40
YEMEN ARAB REPUBLIC	100	111	125	141	139	-1.53	92	100	109	120	115	-4.37
YEMEN DEMOCRATIC	99	99	101	104	103	-.67	91	89	88	88	85	-3.65
FAR EAST DEVELOPING	114	117	120	122	115	-5.60	107	107	108	108	100	-7.34
SOUTH ASIA	117	118	121	123	114	-7.71	110	108	109	109	99	-9.42
BANGLADESH	108	110	113	114	111	-2.71	99	98	98	97	92	-5.21
INDIA	119	121	124	125	114	-8.86	112	112	113	111	100	-10.42
NEPAL	116	116	117	118	115	-2.78	108	106	105	103	98	-4.97
PAKISTAN	113	115	118	128	129	.04	103	102	101	108	106	-2.16
SRI LANKA	100	90	94	94	85	-10.34	95	84	86	85	75	-11.66
EAST SOUTH-EAST ASIA	109	114	118	118	117	-1.36	103	105	106	105	102	-3.14
BURMA	121	127	134	135	140	3.11	114	117	122	121	122	1.18
INDONESIA	115	125	128	134	132	-1.39	108	115	117	120	116	-3.09
KOREA REP	102	109	111	110	108	-1.50	98	103	103	100	96	-3.13
LAO	116	129	138	146	138	-5.25	109	119	124	128	118	-7.53
MALAYSIA	93	99	115	119	122	2.15	87	90	102	104	104	.01
PHILIPPINES	102	103	105	108	107	-.62	95	93	93	93	91	-2.83
THAILAND	113	116	120	115	114	-1.12	106	107	109	103	100	-2.70
ASIAN CENT PLANNED ECON	117	126	129	136	139	2.29	113	120	121	126	127	1.01
CHINA	117	126	129	136	140	2.52	113	120	121	127	128	1.32
KAMPUCHEA,DEMOCRATIC	139	154	167	167	161	-3.93	130	141	148	145	136	-6.29
KOREA DPR	110	116	121	126	130	3.59	102	105	107	108	110	1.17
MONGOLIA	112	108	111	119	123	3.00	103	96	96	101	101	.24
VIET NAM	115	122	124	133	132	-.96	108	113	113	118	115	-2.97
OTHER DEV.ING COUNTRIES	97	105	106	107	107	.38	90	95	94	92	90	-1.87

3. INDICES OF AGRICULTURAL PRODUCTION

	TOTAL						PER CAPUT					
	1983	1984	1985	1986	1987	CHANGE 1986 TO 1987						CHANGE 1987
	1979-81=100					PERCENT	1979-81=100					PERCENT
WORLD	106	111	114	116	115	-.67	100	104	105	105	102	-2.26
DEVELOPED COUNTRIES	100	107	108	109	108	-1.35	97	104	104	105	103	-2.00
WESTERN EUROPE	103	110	107	109	108	-.30	102	108	106	107	106	-.49
EUROPEAN ECON COMMUNITY	103	110	108	109	109	.62	102	108	106	107	107	.44
BELGIUM-LUXEMBOURG	96	106	106	113	111	-1.08	96	106	106	113	111	-1.17
DENMARK	103	126	123	120	116	-3.41	103	126	123	120	116	-3.39
FRANCE	100	110	108	107	110	2.64	99	107	106	104	107	2.32
GERMANY FED.REP. OF	106	113	108	115	108	-6.06	106	114	109	116	109	-5.89
GREECE	102	104	114	107	100	-6.75	100	101	110	104	96	-7.14
IRELAND	100	111	111	107	105	-1.83	96	106	105	99	96	-3.05
ITALY	108	100	102	101	103	2.95	107	99	101	99	102	2.85
NETHERLANDS	108	110	108	115	116	.35	106	108	106	112	112	.01
UNITED KINGDOM	105	115	110	110	108	-1.93	105	115	109	110	108	-1.96
OTHER WESTERN EUROPE	106	110	104	110	102	-6.66	104	108	102	107	100	-6.94
AUSTRIA	107	111	109	110	105	-3.86	107	111	109	109	105	-3.88
FINLAND	117	118	115	114	96	-15.63	115	115	112	111	93	-15.89
ICELAND	102	104	106	99	99	-.21	98	99	100	93	92	-1.02
MALTA	114	106	112	115	117	1.98	112	103	108	110	112	1.46
NORWAY	103	111	107	111	113	1.40	102	110	106	109	111	1.23
PORTUGAL	93	102	108	104	110	5.76	91	100	104	100	105	5.08
SPAIN	97	114	110	116	124	6.93	96	111	107	112	119	6.27
SWEDEN	105	115	108	106	97	-8.83	104	114	108	105	96	-8.73
SWITZERLAND	105	108	108	111	109	-1.25	103	106	106	108	107	-1.28
YUGOSLAVIA	104	107	99	112	101	-9.85	102	104	96	108	96	-10.42
USSR AND EASTERN EUROPE	107	109	110	118	116	-1.66	105	106	106	112	110	-2.45
EASTERN EUROPE	103	111	109	117	113	-2.64	102	109	106	113	110	-3.13
ALBANIA	108	108	109	109	110	1.26	101	99	97	95	94	-.84
BULGARIA	99	108	95	104	101	-3.05	98	107	94	103	99	-3.43
CZECHOSLOVAKIA	114	121	120	125	119	-4.63	113	119	119	123	117	-4.94
GERMAN DEMOCRATIC REP.	98	106	112	115	115	-.15	98	106	113	116	116	-.29
HUNGARY	109	115	108	108	109	1.48	109	115	108	109	110	1.55
POLAND	104	107	109	116	112	-3.45	101	103	104	110	106	-4.12
ROMANIA	102	115	109	125	121	-2.76	100	113	106	121	117	-3.42
USSR	109	109	110	117	116	-.52	106	105	105	111	109	-1.44
NORTH AMERICA DEVELOPED	88	102	108	103	100	-2.64	86	98	103	97	94	-3.48
CANADA	109	108	113	123	117	-4.52	105	104	107	115	109	-5.48
UNITED STATES	88	102	107	100	98	-1.74	86	98	102	95	92	-2.58
OCEANIA DEVELOPED	109	106	109	109	108	-.67	105	101	102	101	100	-1.84
AUSTRALIA	113	110	110	111	109	-1.43	109	104	103	102	100	-2.64
NEW ZEALAND	106	105	113	110	110	.51	104	102	109	104	104	-.36
OTHER DEV.ED COUNTRIES	96	101	104	104	106	1.30	93	97	98	98	98	.32
ISRAEL	116	110	124	109	106	-2.35	110	102	113	98	94	-3.96
JAPAN	99	108	107	107	105	-2.34	96	105	104	103	100	-2.84
SOUTH AFRICA	81	89	95	97	100	3.07	75	81	84	84	84	.50
DEVELOPING COUNTRIES	112	116	121	122	122	-.05	105	107	109	109	107	-1.96
AFRICA DEVELOPING	103	104	115	121	118	-2.20	94	92	99	101	95	-5.21
NORTH WESTERN AFRICA	105	106	122	133	125	-5.55	97	95	107	113	104	-8.04
ALGERIA	103	110	122	127	133	4.72	94	97	105	105	107	1.42
MOROCCO	105	106	117	143	115	-19.42	98	96	103	123	97	-21.26
TUNISIA	106	104	133	118	138	16.69	99	96	120	104	119	14.18
WESTERN AFRICA	101	107	119	125	122	-2.23	92	95	102	103	98	-5.37
BENIN	104	126	136	142	133	-6.62	95	112	117	119	108	-9.48
BURKINA FASO	106	105	130	148	137	-7.05	99	96	116	128	116	-9.47
COTE D'IVOIRE	99	106	127	126	127	.56	89	91	106	101	99	-2.84
GAMBIA	90	112	135	150	144	-3.85	85	104	123	134	126	-5.86
GHANA	88	132	126	132	134	1.57	80	116	107	109	107	-1.78
GUINEA	100	102	103	110	109	-1.16	94	93	92	96	93	-3.59
LIBERIA	107	115	113	115	114	-.08	97	101	96	95	92	-3.29
MALI	121	108	115	123	117	-4.83	111	97	100	104	96	-7.59
MAURITANIA	94	95	99	109	109	-.28	86	84	85	92	88	-3.31
NIGER	100	82	104	108	98	-8.80	92	74	91	91	80	-11.51
NIGERIA	107	113	125	131	126	-3.41	97	99	106	107	100	-6.73
SENEGAL	87	105	122	123	128	4.01	81	94	107	105	106	1.24
SIERRA LEONE	112	100	101	115	115	.26	106	93	93	103	101	-1.67
TOGO	95	104	107	109	111	.94	87	93	93	92	90	-2.10
CENTRAL AFRICA	105	107	111	114	115	1.03	96	96	97	96	95	-1.79
ANGOLA	99	100	99	101	102	.92	92	90	87	86	85	-1.74
CAMEROON	101	107	109	116	115	-.31	94	96	95	98	95	-3.07
CENTRAL AFRICAN REP	102	102	106	107	101	-5.62	96	93	94	93	86	-7.89
CHAD	109	96	119	123	119	-3.08	102	88	106	107	101	-5.42
CONGO	102	103	106	108	110	1.65	94	93	94	92	91	-1.07
GABON	107	107	105	107	110	2.22	102	100	97	97	98	.17
ZAIRE	111	114	117	118	121	2.62	102	101	101	99	98	-.45
EASTERN AFRICA	105	99	111	116	114	-2.16	95	87	95	96	91	-5.27
BURUNDI	106	101	111	118	120	1.62	98	90	96	100	99	-1.24

3. (Cont.) INDICES OF AGRICULTURAL PRODUCTION

	TOTAL						PER CAPUT					
	1983	1984	1985	1986	1987	CHANGE 1986 TO 1987						CHANGE 1987
	1979-81=100					PERCENT	1979-81=100					PERCENT
ETHIOPIA	102	90	98	107	103	-3.55	94	81	87	92	86	-6.21
KENYA	115	100	118	129	121	-6.41	101	85	96	101	90	-10.26
MADAGASCAR	109	110	114	114	117	3.16	100	99	99	96	96	.21
MALAWI	105	110	111	111	111	-.05	96	97	95	92	89	-3.32
MAURITIUS	103	104	113	121	121	.53	97	97	103	108	107	-1.13
MOZAMBIQUE	96	96	98	100	100	.50	88	85	84	84	82	-2.16
RWANDA	110	102	116	116	101	-12.84	100	89	98	95	80	-15.71
SOMALIA	102	105	115	122	120	-.98	93	93	99	102	99	-3.04
TANZANIA	102	107	105	109	113	3.30	92	93	88	88	88	-.40
UGANDA	125	97	147	153	151	-1.03	114	85	125	125	120	-4.42
ZAMBIA	103	106	115	122	120	-1.49	94	93	98	100	95	-4.81
ZIMBABWE	84	99	128	129	107	-16.61	76	86	107	104	84	-19.57
SOUTHERN AFRICA	98	98	100	106	105	-.45	90	87	86	88	85	-3.40
BOTSWANA	99	93	91	89	90	.60	88	80	76	71	69	-3.03
LESOTHO	89	91	102	95	99	3.58	83	83	89	82	82	.93
SWAZILAND	110	113	115	135	125	-7.72	100	100	99	113	101	-10.52
LATIN AMERICA	105	108	113	110	115	4.30	98	99	101	96	98	2.07
CENTRAL AMERICA	105	106	105	107	107	-.19	97	95	92	91	89	-2.67
COSTA RICA	101	111	115	111	110	-.39	93	100	100	94	92	-2.80
EL SALVADOR	86	92	77	84	83	-1.36	79	82	66	70	67	-4.38
GUATEMALA	103	105	103	103	98	-5.33	95	94	89	87	80	-8.02
HONDURAS	99	97	97	97	94	-2.34	89	84	82	79	75	-5.32
MEXICO	109	108	109	109	109	.09	101	98	96	94	92	-2.27
NICARAGUA	95	94	92	86	81	-5.60	86	82	78	70	64	-8.73
PANAMA	108	108	111	115	111	-3.60	101	99	100	101	96	-5.56
CARIBBEAN	103	108	106	107	105	-2.42	99	102	98	98	94	-4.04
BARBADOS	80	82	80	88	80	-9.89	80	81	78	86	77	-10.25
CUBA	106	115	112	114	107	-6.22	104	112	108	110	102	-7.14
DOMINICAN REPUBLIC	111	115	113	110	106	-3.59	103	105	101	96	91	-5.71
HAITI	104	106	108	110	113	2.75	97	96	95	94	94	.08
JAMAICA	102	111	108	115	114	-.87	97	105	101	105	103	-2.35
SOUTH AMERICA	105	109	115	111	117	6.01	99	100	103	97	101	3.83
ARGENTINA	104	108	105	108	107	-1.43	99	101	97	99	96	-2.86
BOLIVIA	85	106	114	111	112	.46	78	95	100	95	93	-2.28
BRAZIL	108	113	125	113	128	13.44	101	103	112	99	110	11.11
CHILE	98	105	101	116	117	1.56	93	99	94	105	105	.03
COLOMBIA	100	101	103	110	112	1.63	94	93	92	97	96	-.44
ECUADOR	92	103	120	120	119	-.95	85	92	104	101	98	-3.68
GUYANA	93	88	89	91	89	-1.24	88	81	81	81	78	-2.94
PARAGUAY	110	122	136	122	135	10.98	101	108	117	102	110	7.93
PERU	101	112	111	109	112	3.25	93	101	97	93	94	.70
URUGUAY	115	106	108	108	111	2.80	113	103	104	104	106	2.03
VENEZUELA	107	104	104	116	110	-5.49	98	93	90	98	90	-7.93
NEAR EAST DEVELOPING	107	106	113	117	116	-.76	99	96	99	100	96	-3.54
NEAR EAST IN AFRICA	107	105	114	114	116	1.91	99	94	100	98	97	-.63
EGYPT	108	109	115	120	125	4.34	101	99	102	103	106	2.00
LIBYA	139	137	175	147	156	5.99	124	117	144	117	119	2.17
SUDAN	105	99	119	118	105	-10.57	97	89	103	99	86	-13.11
NEAR EAST IN ASIA	107	107	113	118	116	-1.63	100	97	99	101	96	-4.52
AFGHANISTAN	103	103	103	106	106		101	101	100	98	93	-4.71
CYPRUS	82	99	97	89	100	12.64	79	95	91	83	92	11.65
IRAN	109	113	115	119	121	1.33	100	101	100	100	99	-1.44
IRAQ	110	122	154	146	128	-12.11	99	106	129	118	100	-14.97
JORDAN	123	127	143	138	144	5.03	111	110	119	111	112	.92
LEBANON	108	112	119	111	117	5.67	109	113	119	109	112	3.43
SAUDI ARABIA	157	157	234	296	179	-39.43	138	132	189	229	134	-41.71
SYRIA	116	103	110	122	114	-6.62	105	89	93	99	89	-10.00
TURKEY	105	106	109	114	114	.77	99	97	98	100	99	-1.29
YEMEN ARAB REPUBLIC	100	111	124	140	138	-1.44	92	99	109	119	114	-4.28
YEMEN DEMOCRATIC	100	101	102	105	105	-.62	92	90	89	89	86	-3.60
FAR EAST DEVELOPING	113	116	120	121	115	-5.24	106	107	108	107	99	-6.98
SOUTH ASIA	115	118	122	123	114	-7.20	108	108	110	108	99	-8.92
BANGLADESH	107	109	114	115	110	-4.26	99	98	99	97	91	-6.73
INDIA	118	120	124	124	113	-8.33	111	111	113	110	99	-9.89
NEPAL	115	115	116	118	114	-2.70	107	104	104	102	97	-4.89
PAKISTAN	109	117	122	132	132	-.35	100	103	105	111	109	-2.55
SRI LANKA	99	92	96	97	90	-7.17	94	85	88	87	80	-8.53
EAST SOUTH-EAST ASIA	109	113	117	118	116	-1.32	102	104	106	105	101	-3.10
BURMA	120	126	134	135	138	2.53	114	116	121	120	121	.61
INDONESIA	114	123	127	132	130	-1.37	107	114	116	118	114	-3.06
KOREA REP	102	108	110	108	107	-1.43	97	102	102	98	95	-3.05
LAO	116	129	137	146	139	-4.68	109	118	123	128	119	-6.97
MALAYSIA	96	99	109	114	116	2.19	89	90	97	99	99	.05
PHILIPPINES	103	102	105	108	107	-.64	95	93	93	94	91	-2.85
THAILAND	113	116	121	117	116	-1.20	106	107	110	104	101	-2.78
ASIAN CENT PLANNED ECON	119	130	132	137	141	2.98	115	124	123	126	128	1.69
CHINA	119	131	132	137	141	3.24	115	124	124	127	129	2.04
KAMPUCHEA,DEMOCRATIC	140	155	168	170	164	-3.42	131	141	149	147	138	-5.79
KOREA DPR	110	116	121	126	130	3.63	103	105	107	109	110	1.21
MONGOLIA	110	106	108	116	119	2.76	101	95	94	98	98	.01
VIET NAM	115	122	125	133	132	-.87	109	113	113	118	115	-2.88
OTHER DEV.ING COUNTRIES	98	104	105	105	106	1.02	91	94	93	91	90	-1.25

4. VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	THOUSAND METRIC TONS											PERCENT
WORLD												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	69064	74486	84921	81565	99527	105201	104979	111825	116411	105284	95730	4.32
RICE MILLED	8916	10853	9589	11644	12978	13093	12044	11471	12676	11125	12156	2.19
BARLEY	13930	13112	14585	14106	16226	20278	18346	17754	23007	21900	25996	6.69
MAIZE	62377	57763	68795	76097	80304	79442	70039	69056	68816	69732	57477	.01
MILLET	303	272	315	296	214	242	226	217	160	183	156	-6.60
SORGHUM	11161	11937	10923	11365	11164	14464	13726	11731	12410	13334	8521	-.23
POTATOES	4411	4696	4037	4630	4920	4948	5255	4826	4805	5048	5540	1.93
SUGAR,TOTAL (RAW EQUIV.)	23185	28985	26139	26686	27505	29347	30728	29618	28748	28287	28171	1.36
PULSES	1906	1981	2116	2349	2815	3148	2968	3170	3306	3694	4628	8.45
SOYBEANS	19766	20025	24062	25489	26877	26219	28928	26585	25775	25496	27635	2.77
SOYBEAN OIL	1839	2106	2610	2953	3196	3489	3406	3651	4026	3495	2940	5.76
GROUNDNUTS SHELLED BASIS	1035	874	745	744	723	831	739	771	746	840	926	-.56
GROUNDNUT OIL	561	581	418	503	477	322	449	524	304	323	344	-5.08
COPRA	1148	941	703	443	461	415	431	255	289	392	403	-10.80
COCONUT OIL	1374	1110	1334	1142	1216	1358	1270	1325	991	1231	1643	.69
PALM NUTS KERNELS	391	279	181	160	201	138	136	120	132	101	108	-10.69
PALM OIL	2186	2333	2404	2846	3616	3227	3773	4014	4307	5220	6272	10.49
OILSEED CAKE AND MEAL	18820	19110	21874	23222	25690	27698	27621	31915	28537	30765	32382	5.73
BANANAS	6341	6658	7045	6948	6957	6996	7315	6334	7017	6813	7502	.72
ORANGES+TANGER+CLEMEN	5203	5404	5212	4966	5138	5002	5023	4877	5347	5035	6048	.45
LEMONS AND LIMES	967	894	982	921	996	939	1016	950	1013	1050	1074	1.23
COFFEE GREEN+ROASTED	3656	2934	3441	3796	3707	3697	3966	4033	4210	4418	4201	2.88
COCOA BEANS	1148	972	1085	930	1064	1332	1253	1207	1351	1401	1423	3.59
TEA	852	904	885	903	983	950	925	980	1084	1084	1103	2.51
COTTON LINT	4049	3929	4472	4374	4829	4255	4414	4312	4314	4259	4664	.73
JUTE AND SIMILAR FIBRES	664	563	495	559	519	572	511	506	490	352	501	-3.16
TOBACCO UNMANUFACTURED	1306	1280	1439	1374	1353	1490	1429	1339	1396	1389	1301	.20
NATURAL RUBBER	3249	3292	3317	3422	3329	3148	3115	3450	3648	3661	3787	1.31
WOOL GREASY	1010	1103	890	937	907	952	874	893	882	906	932	-1.22
BOVINE CATTLE 1/	6769	6655	7580	7442	7024	7222	7667	7061	6879	6524	7272	-.03
SHEEP AND GOATS 1/	10776	12430	14776	15267	18639	17607	18483	20514	19664	18598	19274	5.57
PIGS 1/	6945	6942	7951	8421	10746	9846	9357	9575	10123	10146	11759	4.65
TOTAL MEAT	6264	6811	7099	7829	8095	8862	8576	8929	8780	8982	9780	3.98
MILK DRY	457	586	602	662	871	868	816	742	827	844	872	5.43
TOTAL EGGS IN SHELL	518	573	606	656	746	807	825	792	840	771	757	4.22
FISHERY PRODUCTS												
FISH FRESH FROZEN	2964	3354	3868	4217	4380	4531	4590	5050	5260	5857	6717	7.20
FISH CURED	422	394	393	431	442	463	430	409	406	408	424	.11
SHELLFISH	898	869	997	1157	1063	1136	1245	1428	1592	1622	1643	7.06
FISH CANNED AND PREPARED	847	790	853	889	1025	1064	940	915	991	989	1040	2.16
SHELLFISH CANNED+PREPAR	97	115	112	115	138	149	162	184	195	211	218	8.77
FISH BODY AND LIVER OIL	573	578	694	725	741	727	686	730	946	981	788	4.24
FISH MEAL	2111	2054	2090	2343	2359	2164	2662	2327	2655	3058	3130	4.07
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	28411	28593	29773	31753	27909	22485	26315	29386	30888	32595	32646	1.02
SAWLOGS NONCONIFEROUS	45376	47067	48311	45953	42001	32973	33260	32248	29593	29963	28886	-5.72
PULPWOOD+PARTICLE	33858	35121	32616	35824	39944	38596	33372	33535	37338	38447	40159	1.20
FUELWOOD	1998	2423	1894	2243	2780	2248	2392	2784	2715	2424	2083	1.44
SAWNWOOD CONIFEROUS	56294	61710	65879	68743	65938	60646	61439	70576	72755	73473	73827	2.14
SAWNWOOD NONCONIFEROUS	11425	11168	11994	13380	12545	10950	10923	12506	12579	11886	12495	.52
WOOD-BASED PANELS	14384	14971	16401	16680	16323	16759	15443	17389	18217	19101	20542	2.86
PULP FOR PAPER	15523	15594	17489	18704	19749	18746	17310	19805	20316	20586	22039	3.04
PAPER AND PAPERBOARD	27090	28292	30273	33285	35041	35364	33667	36812	39902	40855	43408	4.48
WESTERN EUROPE												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	14499	12860	13773	16091	19926	23693	22408	23811	27408	29646	27691	9.06
RICE MILLED	660	738	839	874	943	999	933	941	984	1198	1192	5.14
BARLEY	5078	4408	8634	7199	8052	10796	7416	8390	11526	12791	13762	9.85
MAIZE	5876	4457	4869	5050	5474	4808	5743	7705	7809	7025	9309	6.02
MILLET	11	12	12	13	15	20	20	26	20	24	17	7.93
SORGHUM	771	385	262	308	206	240	269	159	165	190	124	-12.29
POTATOES	2337	2707	2798	3016	3455	3543	3666	3517	3526	3778	4170	4.92
SUGAR,TOTAL (RAW EQUIV.)	3072	3924	4448	4632	5628	6147	6466	6078	5631	5261	5561	5.16
PULSES	226	302	353	450	458	448	419	606	814	1240	1205	16.74
SOYBEANS	189	120	237	353	327	160	207	127	88	95	153	-6.59

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

4. (Cont.) VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
SOYBEAN OIL	744	767	1099	1208	1204	1272	1380	1387	1427	1323	1264	5.63
GROUNDNUTS SHELLED BASIS	24	21	28	14	18	24	25	17	24	24	33	2.06
GROUNDNUT OIL	49	44	45	64	79	68	74	99	62	61	56	3.51
COPRA	17	3	4	1	2		1					
COCONUT OIL	269	163	119	61	43	58	87	60	57	51	51	-12.38
PALM NUTS KERNELS	1	1	1	2	3	1	2					
PALM OIL	98	111	97	92	123	114	94	123	131	141	171	4.60
OILSEED CAKE AND MEAL	2630	2518	3438	3957	4247	4921	5330	6420	6112	6364	5589	9.91
BANANAS	25	31	41	43	43	48	46	35	47	35	76	5.68
ORANGES+TANGER+CLEMEN	2057	2113	1921	1907	1799	1659	1880	1702	2439	1957	2968	1.89
LEMONS AND LIMES	525	464	505	483	512	433	574	449	532	542	595	1.25
CUFFEE GREEN+ROASTED	92	78	102	130	106	122	126	142	165	202	209	9.22
COCOA BEANS	15	30	34	31	44	48	52	52	66	76	78	14.57
TEA	46	60	50	46	43	44	43	51	56	56	52	.86
CUTTON LINT	89	70	71	60	57	55	75	69	69	98	78	1.07
JUTE AND SIMILAR FIBRES	18	17	19	16	17	17	15	16	14	14	13	-2.93
TOBACCO UNMANUFACTURED	179	153	223	234	197	210	247	249	265	243	253	4.10
NATURAL RUBBER	32	27	21	21	16	14	15	16	23	23	22	-2.54
WOOL GREASY	64	57	60	65	69	61	57	69	65	62	63	.41
BOVINE CATTLE 1/	3121	2979	3322	3340	3412	3620	3546	3493	3537	3422	3730	1.62
SHEEP AND GOATS 1/	1183	1318	1732	1384	1418	927	784	1196	1142	1413	1553	-.45
PIGS 1/	3112	3106	3421	4004	4777	4747	4537	4737	4688	4751	6686	6.33
TOTAL MEAT	2395	2648	2822	3173	3673	3900	3785	4076	4303	4453	5025	7.14
MILK DRY	334	433	450	516	661	673	599	531	641	623	615	5.16
TOTAL EGGS IN SHELL	335	349	382	444	506	538	601	596	586	541	554	5.91
FISHERY PRODUCTS												
FISH FRESH FROZEN	1082	1136	1395	1691	1652	1796	1885	1994	1952	2073	2152	6.87
FISH CURED	287	259	253	275	275	302	271	265	267	270	276	.02
SHELLFISH	277	234	266	283	279	327	314	344	406	422	435	5.97
FISH CANNED AND PREPARED	253	250	262	267	262	268	267	272	276	280	296	1.34
SHELLFISH CANNED+PREPAR	32	34	36	38	42	47	57	72	75	83	78	11.26
FISH BODY AND LIVER OIL	330	339	271	297	333	335	270	265	272	390	277	-.67
FISH MEAL	949	1020	871	951	922	846	825	934	1007	900	827	-.82
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	2428	2590	1899	2395	2937	2735	2429	2494	2786	3282	2898	2.65
SAWLOGS NONCONIFEROUS	1833	2077	2017	2055	2257	2128	1928	2011	2335	2458	2623	2.49
PULPWOOD+PARTICLE	8173	7575	6846	8321	10313	10737	9666	8771	10595	12095	13620	5.39
FUELWOOD	816	1033	551	797	965	745	1010	1241	1172	940	918	3.15
SAWNWOOD CONIFEROUS	17061	16554	18051	20349	19783	17142	18334	20620	20377	19637	19375	1.50
SAWNWOOD NONCONIFEROUS	2801	2494	2756	2514	2395	2037	1896	2017	2428	2261	2415	-1.97
WOOD-BASED PANELS	6151	6194	6737	7386	7047	6696	6312	6459	6899	7150	7409	1.09
PULP FOR PAPER	5697	5578	6705	6852	6654	6210	5612	6744	7068	7183	7396	2.09
PAPER AND PAPERBOARD	13098	13753	15659	17385	17423	18108	17770	19661	21939	22707	23414	5.79
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	4164	5443	3969	5002	4170	4380	5092	4042	3680	4758	3852	-1.25
RICE MILLED	11	11	13	24	33	25	28	38	64	41	39	17.06
BARLEY	943	1725	222	232	336	247	276	276	277	276	195	-12.27
MAIZE	1536	1318	1493	554	1325	1770	1326	860	694	977	811	-5.14
MILLET	7	3	3	5	6	3	5	4	3	2	4	-4.05
SORGHUM	11	5	7	7	5	9	6	4	4	6	9	-2.80
POTATOES	442	682	371	655	322	323	299	185	141	268	302	-9.62
SUGAR,TOTAL (RAW EQUIV.)	573	808	953	717	738	631	807	762	946	1028	1546	5.72
PULSES	112	117	135	145	122	122	112	118	179	212	245	6.20
SOYBEANS	10	32	6	30	5	4	5	5	11	6	5	-9.90
SOYBEAN OIL	12	13	7	10	17	14	20	15	35	25	15	9.39
GROUNDNUTS SHELLED BASIS				1	1				2			
CUCONUT OIL				1	1							
OILSEED CAKE AND MEAL	14	61	53	20	27	91	115	107	70	209	68	18.24
ORANGES+TANGER+CLEMEN					1	2	2	1	1	2		
COCOA BEANS								5	12			
TEA	15	22	17	17	20	18	17	26	30	19	6	-2.67
CUTTON LINT	887	976	865	807	863	928	970	826	663	698	724	-2.69
TOBACCO UNMANUFACTURED	101	99	89	102	103	90	88	85	81	80	89	-2.05
WUOL GREASY	1	1	2	3	3	1		1	1	1	1	-5.86
BOVINE CATTLE 1/	498	540	544	676	577	460	607	705	707	673	655	2.92
SHEEP AND GOATS 1/	3025	3504	3800	4719	4598	3720	3654	4179	4232	3166	3195	-.26
PIGS 1/	720	720	1158	1152	1144	1713	1091	973	857	995	1096	1.94
TOTAL MEAT	547	658	620	744	738	779	715	758	832	831	849	3.72

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

4. (Cont.) VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
TOTAL EGGS IN SHELL	101	120	114	104	90	78	59	55	65	44	38	-10.49
FISHERY PRODUCTS												
FISH FRESH FROZEN	607	532	561	594	610	496	412	542	531	589	793	.91
FISH CURED	12	11	15	21	17	11	6	18	6			
SHELLFISH	1	22	16	21	10	16	51	114	141	134	113	45.76
FISH CANNED AND PREPARED	47	46	37	33	36	35	29	37	38	65	66	2.93
SHELLFISH CANNED+PREPAR	2	1	1	1	2	1	2	2	1	1	2	-.78
FISH BODY AND LIVER OIL	2	1	1	1	1							
FISH MEAL	18	14	21	20	22	12	9	12	8	11	12	-7.07
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	9534	9919	10281	8774	7430	6783	7025	7762	8085	8257	9791	-1.46
SAWLOGS NONCONIFEROUS	201	315	296	404	384	285	289	315	232	208	201	-2.85
PULPWOOD+PARTICLE	12401	12155	11375	11667	11463	11529	9631	10909	12616	12617	12898	.32
FUELWOOD	92	115	141	143	183	94	70	92	121	132	148	.58
SAWNWOOD CONIFEROUS	11009	10592	10782	9956	9513	9363	9630	9697	9476	9701	10238	-1.03
SAWNWOOD NONCONIFEROUS	714	702	752	600	597	539	487	536	564	389	338	-6.51
WOOD-BASED PANELS	1702	1791	1875	1842	1827	1683	1548	1598	1437	1488	1593	-2.09
PULP FOR PAPER	854	856	926	827	895	896	982	1162	1217	1227	1226	4.50
PAPER AND PAPERBOARD	1480	1653	1779	1664	1732	1697	1745	1775	1806	1791	1732	1.18
NORTH AMERICA DEVELOPED												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	38974	40736	50841	47174	54495	61342	61264	63319	65263	43504	42863	2.01
RICE MILLED	2107	2288	2279	2301	3054	3133	2540	2385	2141	1940	2392	-.29
BARLEY	5432	4343	4249	4654	4195	6853	7097	7258	5876	2938	7586	2.29
MAIZE	44692	40580	50550	59414	63923	56067	49658	48099	49602	44362	27486	-2.52
MILLET			23	15	60	24	28	41	55	39	74	
SORGHUM	5797	6139	5184	5950	8050	8032	6051	5325	6828	7239	4149	-.63
POTATOES	857	503	282	289	344	395	461	363	296	321	319	-5.18
SUGAR,TOTAL (RAW EQUIV.)	122	166	149	135	654	1187	154	323	399	436	545	14.22
PULSES	400	374	390	470	913	1141	854	679	635	646	841	7.58
SOYBEANS	15361	16234	20794	20951	21882	21980	25652	22791	19641	17052	21576	1.88
SOYBEAN OIL	506	768	916	1110	1081	809	911	786	1043	588	540	-1.10
GROUNDNUTS SHELLED BASIS	130	302	381	356	285	146	201	224	266	311	276	1.40
GROUNDNUT OIL	48	45	40	5	18	20	10	2	7	17	35	-11.33
COCONUT OIL	26	17	9	5	19	14	13	11	21	19	18	1.95
OILSEED CAKE AND MEAL	5370	4740	6793	6845	8009	7471	6917	7517	5551	5599	7378	1.55
BANANAS	201	199	201	197	205	217	210	188	202	197	163	-1.04
ORANGES+TANGER+CLEMEN	461	410	356	318	482	443	353	497	374	412	417	.21
LEMONS AND LIMES	225	236	237	173	171	176	135	163	148	144	148	-5.19
COFFEE GREEN+ROASTED	69	106	59	79	79	70	60	43	63	52	77	-3.21
COCOA BEANS	10	14	9	9	7	14	14	16	12	11	14	3.38
TEA	3	4	5	5	5	4	4	5	5	13	22	14.83
COTTON LINT	779	1017	1347	1527	1823	1269	1392	1201	1500	1095	657	-.89
JUTE AND SIMILAR FIBRES	1	2	1									
TOBACCO UNMANUFACTURED	293	314	364	299	293	300	290	264	275	277	247	-2.21
NATURAL RUBBER	29	25	20	21	28	18	16	20	35	41	37	3.85
WOOL GREASY						1	1	1	1	1	1	
BOVINE CATTLE 1/	684	651	592	436	424	441	563	440	479	506	355	-4.11
SHEEP AND GOATS 1/	250	214	153	135	144	225	287	226	332	382	145	3.36
PIGS 1/	56	54	201	145	254	171	342	483	1362	1171	515	33.63
TOTAL MEAT	693	700	721	777	973	1073	987	926	956	1013	1150	4.86
MILK DRY	16	16	7	5	36	37	29	37	19	49	30	14.04
TOTAL EGGS IN SHELL	22	38	39	30	61	87	64	31	25	22	19	-3.60
FISHERY PRODUCTS												
FISH FRESH FROZEN	252	345	383	424	480	638	801	918	1167	1465	1908	21.37
FISH CURED	63	65	63	64	76	87	89	70	65	70	79	1.72
SHELLFISH	51	71	93	133	115	88	80	80	71	83	97	1.55
FISH CANNED AND PREPARED	46	52	63	64	81	93	68	82	96	85	100	7.01
SHELLFISH CANNED+PREPAR	10	9	11	11	11	11	11	4	3	3	6	-10.81
FISH BODY AND LIVER OIL	91	60	110	101	137	117	98	191	188	133	92	5.40
FISH MEAL	63	61	82	40	108	75	42	95	41	58	55	-1.98
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	14842	14362	15565	17865	15135	11676	15269	17395	18441	19320	18316	2.49
SAWLOGS NONCONIFEROUS	470	481	522	630	784	751	506	755	761	602	779	4.15
PULPWOOD+PARTICLE	8337	8710	8216	9463	9887	8382	6605	6422	5846	5613	5933	-5.01
FUELWOOD	162	200	170	98	63	108	85	85	90	89	82	-7.51
SAWNWOOD CONIFEROUS	26379	32305	34492	35407	33612	31770	31423	38296	40879	42219	42232	3.72
SAWNWOOD NONCONIFEROUS	814	847	1341	1025	1190	1209	1083	1340	1373	1172	1513	4.57

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

4. (Cont.) VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
WOOD-BASED PANELS	1567	1774	2061	2053	2312	2533	2088	2401	2668	2754	2948	5.52
PULP FOR PAPER	7666	7723	8132	8906	9838	9261	8531	9428	9611	9791	10917	2.94
PAPER AND PAPERBOARD	10935	11232	11124	12326	13675	13134	11931	12918	13390	13372	14676	2.47
OCEANIA DEVELOPED												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	7875	8196	11134	6933	14955	10677	10998	8312	10647	15782	16171	5.74
RICE MILLED	218	255	277	241	457	281	596	405	246	341	178	1.01
BARLEY	2022	2157	1375	1757	3047	1650	1599	852	3231	5482	4399	7.63
MAIZE	88	79	32	75	37	52	24	73	30	164	117	3.36
MILLET	20	23	15	18	14	11	25	19	18	16	16	-1.15
SORGHUM	815	829	385	516	580	463	1271	445	772	1594	1234	6.83
POTATOES	25	29	20	18	23	21	23	26	21	24	19	-.96
SUGAR,TOTAL (RAW EQUIV.)	2002	2558	2481	1842	2203	2563	2502	2551	2361	2529	2760	2.01
PULSES	33	42	36	45	72	64	71	106	78	100	219	16.72
SOYBEANS	32											
SOYBEAN OIL								1				
GROUNDNUTS SHELLED BASIS	2	4	2	2	12	4	4	8		5	3	
GROUNDNUT OIL							1				1	
PALM OIL											2	
OILSEED CAKE AND MEAL	3	2		1	1		1	1	2	1	13	
ORANGES+TANGER+CLEMEN	19	11	22	25	38	32	28	32	25	30	36	7.52
LEMONS AND LIMES	1	1			4	1	2	1	1	1	5	
COCOA BEANS								1	1	1		
TEA	1		1									
COTTON LINT	16	6	10	24	49	59	79	129	81	140	241	39.69
TOBACCO UNMANUFACTURED			1		1	1		1				
NATURAL RUBBER					1					1	2	
WOOL GREASY	750	826	630	705	650	680	642	660	659	709	733	-.68
BOVINE CATTLE 1/	33	45	71	107	74	109	121	120	96	67	181	11.18
SHEEP AND GOATS 1/	1847	3409	4143	3898	6172	5763	6097	7035	6350	6262	6554	10.73
PIGS 1/	1		1	1	2	1		1	3			
TOTAL MEAT	1446	1643	1664	1814	1494	1602	1493	1666	1351	1323	1361	-1.77
MILK DRY	67	113	125	123	157	137	157	146	153	158	207	7.43
TOTAL EGGS IN SHELL	2	1	1	1	1	1	1	3	6	2	2	5.94
FISHERY PRODUCTS												
FISH FRESH FROZEN	19	28	32	54	81	95	88	98	94	97	118	18.50
FISH CURED					1	1	2	1		1	3	
SHELLFISH	15	17	20	32	56	57	70	68	78	70	61	18.40
FISH CANNED AND PREPARED	1			1	3	2	4	5	4	4	4	
SHELLFISH CANNED+PREPAR	2	2	2	2	2	2	2	3	3	3	3	4.99
FISH BODY AND LIVER OIL	8	6	5	4					2	2	1	
FISH MEAL						1			4	1	2	
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	958	1027	936	1236	971	529	479	508	452	361	389	-11.44
SAWLOGS NONCONIFEROUS	1	3	2	1	4	4				1	1	
PULPWOOD+PARTICLE	3866	5326	5074	5357	7064	6647	6240	6105	7345	7376	7188	5.27
SAWNWOOD CONIFEROUS	232	295	367	509	617	546	515	401	381	489	401	3.90
SAWNWOOD NONCONIFEROUS	23	31	30	41	54	35	34	35	41	36	34	2.40
WOOD-BASED PANELS	28	32	52	104	142	138	99	113	93	79	98	10.96
PULP FOR PAPER	375	452	435	464	475	518	421	471	459	428	504	1.22
PAPER AND PAPERBOARD	269	302	332	359	418	447	340	361	342	340	462	2.84
AFRICA DEVELOPING												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	21	20	46	31	17	19	23	9	8	1	1	-28.56
RICE MILLED	55	46	13	12	22	18	9	8	5	4	2	-24.45
BARLEY		1		2								
MAIZE	472	434	652	365	69	245	380	738	385	376	800	3.34
MILLET	79	13	31	78	46	41	36	27	2	2		
SORGHUM	2			53	12	3	15	24	29	13	2	
POTATOES	91	82	58	50	55	36	30	49	63	60	83	-1.93
SUGAR,TOTAL (RAW EQUIV.)	1365	1468	1296	1658	1586	1490	1683	1680	1586	1651	1777	2.28
PULSES	410	262	150	150	220	127	166	189	77	64	101	-12.36
SOYBEANS	3	13	36	1	1	1		1				
SOYBEAN OIL	2	1	2	1			1					
GROUNDNUTS SHELLED BASIS	286	192	64	82	86	36	56	91	55	47	62	-11.95
GROUNDNUT OIL	290	258	94	160	92	38	161	206	105	49	92	-9.54
COPRA	60	55	52	45	32	22	20	15	12	20	13	-15.72
COCONUT OIL	11	6	9	14	15	18	21	21	30	32	33	16.78

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

4. (Cont.) VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
PALM NUTS KERNELS	353	239	152	123	140	107	97	87	98	52	75	-13.66
PALM OIL	155	118	96	64	140	85	84	70	73	89	117	-3.27
OILSEED CAKE AND MEAL	760	712	456	668	480	362	490	487	336	425	450	-5.49
BANANAS	317	308	344	292	243	205	187	193	216	214	204	-5.43
ORANGES+TANGER+CLEMEN	664	744	873	672	854	715	662	594	582	641	660	-2.11
LEMONS AND LIMES	1	1	2	1	1	1	2	7	6	7	2	20.42
COFFEE GREEN+ROASTED	1147	877	926	1015	896	963	1055	938	902	982	1090	.11
COCOA BEANS	862	691	777	601	757	973	823	787	891	838	888	1.79
TEA	148	165	182	197	180	168	190	200	194	215	223	3.10
COTTON LINT	351	300	312	339	336	334	296	331	360	400	469	2.63
JUTE AND SIMILAR FIBRES				1								
TOBACCO UNMANUFACTURED	141	129	139	132	172	189	148	141	176	172	173	2.63
NATURAL RUBBER	159	153	145	142	138	146	151	156	186	186	208	2.89
WOOL GREASY	3	4	4	3	4	4	4	4	5	4	4	3.01
BOVINE CATTLE 1/	1126	1105	1181	1255	1398	1446	1441	1167	1219	973	1013	-.96
SHEEP AND GOATS 1/	2548	2461	3066	3047	3044	3410	3569	2961	2570	3284	2929	1.14
PIGS 1/	15	2	1	1	1			1				
TOTAL MEAT	112	118	99	97	48	44	46	50	54	46	36	-10.90
MILK DRY	1		2	4								
TOTAL EGGS IN SHELL	1	1			1				2	1		
FISHERY PRODUCTS												
FISH FRESH FROZEN	60	83	128	117	113	144	152	146	164	-183	198	10.12
FISH CURED	13	12	12	13	14	11	11	11	11	10	9	-2.97
SHELLFISH	43	43	48	34	34	76	77	127	134	132	125	16.08
FISH CANNED AND PREPARED	74	69	62	77	79	94	82	101	98	108	112	5.37
FISH BODY AND LIVER OIL	4	7	7	7	4	10	1	8	5		4	-24.58
FISH MEAL	35	19	39	27	21	22	6	15	9	3	3	-20.64
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	11	2	2	2								
SAWLOGS NONCONIFEROUS	6309	6434	6211	6175	5971	4599	4723	4547	5076	4207	3782	-5.06
PULPWOOD+PARTICLE	127	100	75	112	84	173	173	173	173	173	173	7.43
FUELWOOD	47	51	51	51	5				28	28	28	
SAWNWOOD CONIFEROUS	113	119	116	126	108	94	81	79	82	78	80	-5.04
SAWNWOOD NONCONIFEROUS	664	682	706	680	611	520	554	598	681	793	792	.93
WOOD-BASED PANELS	220	241	261	236	272	283	264	287	293	302	294	2.82
PULP FOR PAPER	235	173	218	240	240	229	192	202	252	244	244	1.32
PAPER AND PAPERBOARD	22	19	16	24	21	20	9	8	12	11	6	-11.22
LATIN AMERICA												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	3345	6095	1833	4427	4620	3958	4042	10409	7491	9767	4187	8.34
RICE MILLED	535	999	732	573	548	638	512	511	533	608	446	-3.69
BARLEY	43	130	18	58	72	32	24	59	95	86	45	2.35
MAIZE	4560	6864	5927	5990	3557	9199	5827	7320	5732	7115	7397	3.10
MILLET	124	172	196	139	63	136	101	96	54	93	33	-11.33
SORGHUM	3499	4295	4625	3899	1544	5073	5369	5332	4252	3332	1936	-2.12
POTATOES	99	106	67	77	61	45	44	34	43	56	68	-6.74
SUGAR,TOTAL (RAW EQUIV.)	10533	13050	12429	12726	12025	12701	13035	12935	12849	12249	11623	.41
PULSES	312	424	464	395	341	287	286	340	409	348	351	-.95
SOYBEANS	3934	3441	2845	3814	4493	3909	2877	3270	5168	7170	4494	4.31
SOYBEAN OIL	562	544	570	609	840	1355	1024	1369	1413	1505	1058	11.30
GROUNDNUTS SHELLED BASIS	24	53	52	97	97	86	61	101	104	137	127	13.30
GROUNDNUT OIL	140	181	155	209	207	80	113	104	57	109	55	-10.14
COPRA	2			2			5					
COCONUT OIL	5	5	9	8	4	5	6	6	17	4	5	.36
PALM NUTS KERNELS	2	3	9	7	5	1	4	4	3	2		
PALM OIL	5	3	4	5	1	5	11	14	24	36	37	30.59
OILSEED CAKE AND MEAL	5798	7354	7676	7497	8891	10912	10498	12366	12164	13438	12203	8.21
BANANAS	4839	5231	5520	5366	5358	5470	5756	5080	5549	5375	6045	1.10
ORANGES+TANGER+CLEMEN	173	224	269	312	306	316	383	419	409	488	484	9.85
LEMONS AND LIMES	25	29	47	74	53	51	34	56	64	144	106	13.13
COFFEE GREEN+ROASTED	2032	1547	1960	2179	2199	2114	2263	2429	2523	2611	2190	3.20
COCOA BEANS	209	187	211	226	183	201	246	226	212	298	232	2.50
TEA	32	34	41	39	44	35	43	53	54	53	59	5.92
COTTON LINT	607	689	903	733	637	599	600	527	481	640	383	-4.63
JUTE AND SIMILAR FIBRES	1		1	2	2		1			2		
TOBACCO UNMANUFACTURED	255	238	274	276	254	271	273	275	290	304	259	1.16
NATURAL RUBBER	7	5	6	4	3	2	3	3	2	2	4	-8.43
WOOL GREASY	92	108	107	80	105	125	108	87	79	67	73	-3.39

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

4. (Cont.) VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
BOVINE CATTLE 1/	985	983	1551	1277	754	766	961	721	442	576	1025	-5.83
SHEEP AND GOATS 1/	106	112	125	98	65	312	245	613	414	34	72	1.74
PIGS 1/	65	31	24	16	1			2	7	1	5	-29.40
TOTAL MEAT	775	779	840	816	748	1000	1028	986	791	831	820	.97
MILK DRY	34	18	10	4	3	11	18	17	2			
TOTAL EGGS IN SHELL	3	3	2	4	12	14	6	2	4	6	9	8.88
FISHERY PRODUCTS												
FISH FRESH FROZEN	209	303	347	362	418	373	410	383	374	480	392	4.95
FISH CURED	4	7	4	6	8	5	4	4	4	5	3	-3.07
SHELLFISH	97	100	143	168	136	124	164	173	176	164	159	4.95
FISH CANNED AND PREPARED	29	48	79	81	143	170	95	55	64	44	63	1.62
SHELLFISH CANNED+PREPAR	6	5	2	5	4	5	4	5	6	6	7	4.39
FISH BODY AND LIVER OIL	40	46	71	108	103	76	137	25	139	197	180	12.32
FISH MEAL	846	741	834	1025	1053	962	1495	1025	1287	1764	1883	8.64
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	23	167	689	968	1029	377	906	1024	902	1271	1162	29.65
SAWLOGS NONCONIFEROUS	86	49	60	86	114	65	54	55	68	47	19	-7.76
PULPWOOD+PARTICLE	115	53										
FUELWOOD	21	106	152	214	167	71	23	57	10	7	6	-23.64
SAWNWOOD CONIFEROUS	1050	1429	1477	1678	1718	1319	1102	1172	1217	1004	1153	-2.42
SAWNWOOD NONCONIFEROUS	629	838	727	1121	1130	994	892	851	911	894	747	.92
WOOD-BASED PANELS	326	374	487	488	625	606	608	584	650	655	651	6.46
PULP FOR PAPER	382	443	715	1024	1318	1374	1302	1566	1532	1515	1511	14.53
PAPER AND PAPERBOARD	199	226	276	351	398	497	404	651	939	778	925	17.30
NEAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	27	640	2131	877	540	649	709	1143	1038	890	303	11.56
RICE MILLED	256	276	223	211	259	159	59	78	108	34	109	-15.29
BARLEY	366	302	50	88	229	424	1026	661	319	97	4	-13.11
MAIZE	14	8	43	111	155	40	53	10	6	12	7	-11.83
MILLET	6	3	4	2	2	3	8	2	4		1	-15.28
SORGHUM	75	137	66	196	286	256	423	186	25		3	
POTATOES	382	438	291	314	453	393	536	470	511	354	396	1.83
SUGAR,TOTAL (RAW EQUIV.)	48	64	55	37	45	71	224	318	592	329	12	12.22
PULSES	121	176	256	303	299	500	573	658	609	386	556	15.18
SOYBEAN OIL	1				3	5	16	11	11	5	1	
GROUNDNUTS SHELLED BASIS	312	175	111	52	51	108	101	24	31	19	14	-23.40
GROUNDNUT OIL	2	26	35	16	33	16	18	2	18	3	2	-12.24
COCONUT OIL		1				1						
PALM OIL							1					
OILSEED CAKE AND MEAL	368	252	225	214	261	145	105	104	122	29	64	-17.76
BANANAS	10	5	4	7	19	20	11	10	12	11	11	6.74
ORANGES+TANGER+CLEMEN	716	754	643	619	627	759	705	687	695	662	641	-.46
LEMONS AND LIMES	162	131	151	149	202	206	208	216	217	157	165	2.46
COFFEE GREEN+ROASTED	3	3	3	3	2	6	5	6	8	3	2	2.91
TEA	8	7	10	16	15	17	5	4	3	4	2	-13.98
COTTON LINT	1004	710	768	669	608	532	584	623	643	482	534	-4.80
TOBACCO UNMANUFACTURED	86	71	84	77	94	138	110	75	72	105	86	1.12
NATURAL RUBBER											1	
WOOL GREASY	7	12	9	8	7	3	6	6	5	5	7	-5.29
BOVINE CATTLE 1/	11	16	12	21	13	60	112	77	51	18	19	11.91
SHEEP AND GOATS 1/	828	680	1209	1421	2026	2858	3505	3710	3866	3317	4012	20.14
PIGS 1/		1	1	3								
TOTAL MEAT	9	11	15	15	22	74	96	74	88	62	60	26.80
MILK DRY	1						1	1	1	1	1	
TOTAL EGGS IN SHELL	1	3	7	10	13	17	26	41	72	76	47	46.97
FISHERY PRODUCTS												
FISH FRESH FROZEN	3	3	7	17	15	28	28	28	33	33	32	27.77
FISH CURED	3	4	3	2	1	1	2	1	1	1	1	-9.56
SHELLFISH	9	9	8	11	10	5	7	7	6	7	7	-4.62
FISH CANNED AND PREPARED	3	2	4	5	8	3	2	1	1	1	1	-15.20
SHELLFISH CANNED+PREPAR	2	3	1	2	3	4	5	7	8	9	9	19.30
FISH BODY AND LIVER OIL	1	2	1	1			1	2	5	5	5	
FISH MEAL					1	1			1	1	1	
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	3		1	1	1	2	7	11	20	15	15	44.22
SAWLOGS NONCONIFEROUS	10	9	5	3	4	36	36	35	100	76	76	37.96
FUELWOOD	22	31	22	20	31	24	16	24	11	11	11	-8.55
SAWNWOOD CONIFEROUS	60	69	60	103	84	96	94	126	107	82	82	4.10

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

4. (Cont.) VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
SAWNWOOD NONCONIFEROUS	1	1		2	3	6	12	7	8	5	5	32.97
WOOD-BASED PANELS	29	26	26	24	19	19	24	27	19	19	20	-3.08
PULP FOR PAPER	2											
PAPER AND PAPERBOARD	10	11	10	16	21	35	35	41	71	56	65	24.61
FAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	83	264	967	801	510	295	157	247	352	534	178	.09
RICE MILLED	3534	4732	3031	4965	5331	6033	6050	5495	7020	5840	6807	6.54
BARLEY	32	39	13	73	259	275	907	252	1658	133	5	13.33
MAIZE	2483	1767	2198	2146	2342	2721	3030	2859	3473	2912	4092	6.28
MILLET		8	1	6	2	2	1		2	1	2	
SORGHUM	182	138	166	170	208	288	317	248	327	334	268	8.21
POTATOES	95	73	55	99	106	72	69	89	85	94	96	1.54
SUGAR,TOTAL (RAW EQUIV.)	3639	4511	2822	3269	2722	2930	4093	3762	3112	2958	2682	-2.01
PULSES	191	181	245	291	312	338	379	339	343	500	611	10.92
SOYBEANS	38	47	30	27	27	27	27	26	23	29	37	-2.61
SOYBEAN OIL	2	4	7	6	27	32	49	76	84	45	59	42.19
GROUNDNUTS SHELLED BASIS	174	69	24	40	55	113	106	84	72	72	91	2.18
GROUNDNUT OIL	10	5	6	16	5	5	6	28	8	10	9	3.50
COPRA	878	683	445	193	234	172	232	77	73	156	196	-17.11
COCONUT OIL	1004	845	1112	976	1061	1192	1064	1144	779	1045	1454	1.79
PALM NUTS KERNELS	33	30	13	23	45	24	15	14	13	25	8	-8.53
PALM OIL	1897	2067	2168	2638	3303	2963	3487	3709	3951	4811	5800	11.03
OILSEED CAKE AND MEAL	3353	2871	2582	3291	3054	2998	3220	3344	2931	3199	3874	1.48
BANANAS	846	738	832	921	972	924	983	684	842	827	894	.16
ORANGES+TANGER+CLEMEN	86	113	65	89	78	50	62	74	69	61	57	-4.46
LEMONS AND LIMES			1	2	1	7	2	3	3	3	3	
COFFEE GREEN+ROASTED	264	267	339	335	370	371	403	409	485	516	557	7.47
COCOA BEANS	18	18	24	32	41	65	88	89	120	142	176	28.00
TEA	512	499	459	445	539	546	488	483	562	558	539	1.26
COTTON LINT	218	56	128	133	396	415	329	398	199	388	935	18.12
JUTE AND SIMILAR FIBRES	642	541	465	520	465	514	451	454	431	278	439	-4.52
TOBACCO UNMANUFACTURED	210	232	224	212	198	259	238	206	197	173	159	-2.52
NATURAL RUBBER	2967	3027	3080	3179	3101	2924	2886	3206	3347	3344	3444	1.22
WOOL GREASY	2		1			1	1			1	5	
BOVINE CATTLE 1/	73	98	78	66	60	36	39	66	76	58	60	-3.14
SHEEP AND GOATS 1/	80	215	70	100	120	60	26	155	241	236	274	9.09
PIGS 1/	23	11	15	19	18	24	129	160	113	222	335	40.76
TOTAL MEAT	44	60	68	95	90	103	127	96	102	116	151	9.91
MILK DRY	5	5	7	10	13	10	10	9	11	12	19	11.03
TOTAL EGGS IN SHELL	6	10	6	5	5	11	8	6	15	17	21	11.26
FISHERY PRODUCTS												
FISH FRESH FROZEN	297	542	559	555	573	545	455	543	448	475	604	1.92
FISH CURED	28	26	30	27	28	27	29	28	37	39	41	3.92
SHELLFISH	288	292	317	362	313	328	378	384	441	463	492	5.43
FISH CANNED AND PREPARED	28	37	49	47	55	80	100	112	146	153	171	20.39
SHELLFISH CANNED+PREPAR	21	38	35	36	50	55	61	68	72	79	87	13.30
FISH BODY AND LIVER OIL	1	1	3	2	2	1	1	1	1	1	2	.07
FISH MEAL	84	117	141	164	153	151	141	154	157	157	174	4.56
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	423	394	270	396	327	291	127	109	107	38	38	-22.29
SAWLOGS NONCONIFEROUS	35758	37017	38457	35843	31534	24005	24286	23128	19372	20789	19714	-7.42
PULPWOOD+PARTICLE	697	1033	860	736	1003	1033	909	1001	605	447	246	-7.94
FUELWOOD	810	841	731	799	1181	1164	1086	1229	1208	1141	813	3.25
SAWNWOOD CONIFEROUS	251	258	425	481	410	254	197	138	186	214	218	-6.30
SAWNWOOD NONCONIFEROUS	5551	5374	5463	7236	6415	5511	5838	7003	6469	6239	6557	1.63
WOOD-BASED PANELS	3110	3198	3342	3159	2933	3590	3428	4772	5274	5847	6751	8.17
PULP FOR PAPER	3	2	2	6	6	10	8	9	15	16	16	24.34
PAPER AND PAPERBOARD	175	139	154	153	298	309	228	223	249	326	526	10.34
ASIAN CENT PLANNED ECON												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	4	6	8	9	4	9	6	67	75	19	18	22.95
RICE MILLED	1540	1488	2096	1836	1637	948	994	1279	1466	1116	990	-5.01
BARLEY	2		1	2	1			7		58		
MAIZE	430	356	230	240	104	141	96	92	1043	6388	5657	27.78
MILLET	52	37	30	20	5	1	2	2	2	5	9	-24.57
SORGHUM				10	1		3	4	4	564	753	
POTATOES	55	53	62	81	77	80	89	78	72	61	58	1.29

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

4. (Cont.) VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	THOUSAND METRIC TONS											PERCENT
SUGAR,TOTAL (RAW EQUIV.)	678	777	493	514	657	440	463	257	189	406	453	-8.04
PULSES	97	89	76	90	71	111	103	134	159	195	476	14.08
SOYBEANS	199	130	113	306	140	139	160	367	843	1144	1370	25.37
SOYBEAN OIL	1	2	6	4	4		1	2	9	1	1	-4.12
GROUNDNUTS SHELLED BASIS	45	25	30	49	84	250	136	201	180	201	290	26.93
GROUNDNUT OIL	16	5	13	18	21	57	55	72	39	57	77	25.10
COPRA							1	2	2	11	9	
COCONUT OIL								4	4	7	3	
PALM NUTS KERNELS							1			1	1	
OILSEED CAKE AND MEAL	36	30	31	49	87	208	337	1127	951	1298	2466	63.51
BANANAS	96	140	101	117	109	103	112	134	135	143	101	1.40
ORANGES+TANGER+CLEMEN	52	74	81	73	70	54	57	62	52	67	76	-.36
COFFEE GREEN+ROASTED	12	4	5	5	4	1	10	15	13	11	22	12.57
TEA	77	104	109	126	125	107	126	148	169	157	192	7.36
COTTON LINT	65	71	33	22	2	1	17	131	218	261	558	28.32
JUTE AND SIMILAR FIBRES	2	3	8	20	35	41	43	36	45	57	49	35.78
TOBACCO UNMANUFACTURED	33	37	35	35	32	28	30	35	32	27	22	-3.27
NATURAL RUBBER	49	50	41	50	39	38	41	47	50	58	63	2.25
WOOL GREASY	25	21	22	24	23	21	16	16	14	13	10	-7.61
BOVINE CATTLE 1/	195	195	181	224	272	263	257	252	257	220	229	2.31
SHEEP AND GOATS 1/	873	482	443	463	448	330	312	438	515	502	540	-2.04
PIGS 1/	2953	3016	3129	3079	4548	3189	3256	3217	3091	3007	3121	-.02
TOTAL MEAT	201	155	210	246	251	250	274	271	284	295	313	5.58
TOTAL EGGS IN SHELL	38	35	42	51	54	56	57	57	60	56	64	5.46
FISHERY PRODUCTS												
FISH FRESH FROZEN	135	133	163	129	144	166	165	183	229	238	249	6.84
FISH CURED	6	4	6	10	9	6	7	6	9	5	7	1.26
SHELLFISH	75	56	64	69	66	70	71	87	99	101	101	5.40
FISH CANNED AND PREPARED	16	13	22	32	42	32	38	42	37	33	32	8.81
SHELLFISH CANNED+PREPAR	11	10	14	10	10	11	9	11	13	13	14	2.01
FISH MEAL	1		1	1	1	1		1	2	1	1	
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	128	63	32	27	21	33	29	38	35	5	5	-20.43
SAWLOGS NONCONIFEROUS	12	33	42	45	45	33	35	36	59	39	39	6.55
SAWNWOOD CONIFEROUS	103	19	28	19	10	12	13	13	12	12	12	-13.22
SAWNWOOD NONCONIFEROUS	136	85	103	48	34	26	56	55	53	56	56	-6.40
WOOD-BASED PANELS	872	949	1244	1096	885	957	834	884	614	565	520	-6.39
PULP FOR PAPER	33	33	44	46	49	86	81	64	30	68	79	6.94
PAPER AND PAPERBOARD	122	119	116	89	149	174	165	139	217	304	408	12.19

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

5. WORLD AVERAGE EXPORT UNIT VALUES OF SELECTED AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	US $ PER METRIC TON											PERCENT
AGRICULTURAL PRODUCTS												
WHEAT	153	125	131	163	186	188	173	162	157	145	135	-.36
WHEAT FLOUR	215	191	199	225	284	294	245	197	215	210	195	-.26
RICE MILLED	277	263	346	324	383	444	344	302	291	270	229	-1.46
BARLEY	138	132	137	145	175	175	161	143	147	121	107	-1.36
MAIZE	123	111	117	128	150	154	128	143	149	126	119	1.03
POTATOES	246	197	157	188	185	178	186	168	209	124	151	-3.27
SUGAR CENTRIFUGAL RAW	376	295	341	355	537	505	403	420	419	382	402	1.86
SOYBEANS	216	272	250	271	264	282	243	256	278	217	202	-1.00
SOYBEAN OIL	456	586	617	675	625	542	483	498	715	644	416	-.46
GROUNDNUTS SHELLED	467	596	661	679	698	964	668	633	758	613	602	1.47
GROUNDNUT OIL	723	814	946	965	781	995	648	568	1008	912	672	-.88
COPRA	183	314	369	571	393	308	263	355	582	333	145	-.84
COCONUT OIL	361	552	627	936	650	536	461	555	1017	591	290	-.68
PALM NUTS KERNELS	160	266	262	357	267	235	222	263	330	231	129	-1.57
PALM OIL	362	514	554	617	563	529	441	441	661	506	291	-1.39
PALM KERNEL OIL	393	554	617	896	653	540	450	574	906	535	270	-1.92
OLIVE OIL	1314	1259	1363	1649	1958	1774	1748	1509	1333	1184	1615	.39
CASTOR BEANS	251	334	319	341	318	325	284	291	376	278	188	-1.91
CASTOR BEAN OIL	557	883	801	803	970	856	824	908	1119	706	592	.45
COTTONSEED	147	168	177	183	179	196	143	141	181	146	117	-2.12
COTTONSEED OIL	555	599	607	682	628	627	534	548	748	648	455	-.59
LINSEED	291	273	217	281	311	326	285	275	287	266	207	-.99
LINSEED OIL	520	500	379	542	611	662	533	417	527	625	504	.97
BANANAS	138	144	157	168	186	200	204	215	211	222	236	5.50
ORANGES	201	222	268	348	358	345	330	326	299	331	340	4.04
APPLES	274	350	410	399	436	411	437	337	330	325	398	.53
RAISINS	677	965	1080	1563	1675	1479	1213	1078	882	912	1046	.25
DATES	240	320	387	414	418	609	653	718	882	889	833	13.91
COFFEE GREEN	2264	4229	3168	3153	3319	2258	2302	2290	2562	2543	3606	-1.22
COCOA BEANS	1509	2800	3138	3283	2663	1770	1591	1631	2104	2079	2137	-2.30
TEA	1240	2204	2055	1934	2051	1903	1776	2012	2647	2193	1851	2.47
COTTON LINT	1294	1536	1358	1527	1621	1717	1446	1499	1638	1430	1121	-.54
JUTE	267	277	338	383	378	313	285	266	336	553	302	2.16
JUTE-LIKE FIBRES	207	250	245	248	259	190	234	310	304	170	191	-.87
SISAL	341	375	375	479	593	553	501	445	424	411	428	1.42
TOBACCO UNMANUFACTURED	2180	2361	2628	2740	2823	2952	3239	3128	2966	2918	2994	2.95
NATURAL RUBBER	749	806	919	1214	1304	1125	818	988	1017	834	866	.26
RUBBER NATURAL DRY	723	796	916	1180	1312	1066	799	963	964	752	772	-.59
WOOL GREASY	1797	2160	2221	2463	2825	2959	2921	2518	2622	2502	2451	2.50
CATTLE 1/	290	310	355	416	440	424	401	383	365	376	426	2.30
BEEF AND VEAL	1638	1861	2160	2390	2514	2377	2439	2213	1960	1891	2056	.66
MUTTON AND LAMB	1009	1143	1390	1592	1761	1863	1809	1596	1513	1421	1461	2.77
PIGS 1/	90	100	104	111	106	108	113	99	94	88	95	-.66
BACON HAM OF SWINE	1990	1865	2248	2636	2903	2752	2649	2354	2235	2246	2756	1.87
MEAT CHIKENS	1175	1224	1295	1361	1431	1338	1161	1029	1072	1030	1197	-1.74
MEAT PREPARATIONS	1523	1512	1602	2126	2578	2457	2160	2098	1926	1815	1908	2.02
EVAP COND WHOLE COW MILK	626	647	746	846	905	901	920	885	769	762	954	2.72
MILK OF COWS SKIMMED DRY	812	637	742	844	1047	1106	1057	864	786	783	1036	2.09
BUTTER OF COWMILK	1677	1733	2246	2280	2468	2631	2704	2405	2021	1706	1884	.36
CHEESE OF WHOLE COWMILK	1959	2134	2550	2803	3013	2742	2655	2529	2310	2322	2926	1.57
FISHERY PRODUCTS												
FISH FRESH FROZEN	889	1042	1144	1249	1264	1292	1215	1096	1082	1072	1171	.94
FISH CURED	1503	1737	1885	2147	2462	2595	2252	2026	1834	1900	2488	2.38
SHELLFISH	2509	2793	3330	3659	3922	3770	3733	3554	3300	3363	3900	2.59
FISH CANNED AND PREPARED	1464	1731	2035	2281	2343	2406	2314	2398	2267	2330	2576	4.11
SHELLFISH CANNED+PREPAR	3162	3254	3800	4449	4678	4347	4188	4343	4077	4033	4933	2.89
FISH BODY AND LIVER OIL	363	432	433	426	432	399	343	344	348	302	257	-3.99
FISH MEAL	323	427	427	399	468	473	370	428	391	302	350	-1.22
FOREST PRODUCTS												
SAWLOGS CONIFEROUS 2/	52	59	62	83	89	81	73	63	63	61	65	.51
SAWLOGS NONCONIFEROUS 2/	50	54	57	93	105	88	87	85	71	70	74	3.07
PULPWOOD+PARTICLE 2/	23	24	25	27	36	40	35	30	30	29	32	3.04
FUELWOOD 2/	23	21	21	27	34	34	29	25	25	25	28	1.68
SAWNWOOD CONIFEROUS 2/	93	101	108	131	138	127	114	114	110	105	117	.79
SAWNWOOD NONCONIF. 2/	134	152	164	216	245	223	209	215	201	195	213	3.47
WOOD-BASED PANELS 2/	197	211	228	283	316	294	280	268	248	236	261	1.72
PULP FOR PAPER	335	313	282	361	444	451	411	357	416	353	384	2.04
PAPER AND PAPERBOARD	406	421	453	505	572	567	556	503	519	528	595	2.94

1/ U.S. DOLLARS PER HEAD
2/ U.S. DOLLARS PER CUBIC METRE

6. VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
WORLD												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	72259	70923	80096	85542	98007	102951	108112	106432	115246	103979	96454	4.27
RICE MILLED	8656	9955	10164	12152	12995	13795	11470	12042	11394	12359	12179	2.55
BARLEY	13703	12355	14749	14767	15016	18645	18664	17743	22987	20300	20370	5.49
MAIZE	61873	55195	68114	75185	79545	80413	69675	68207	67640	69565	58049	.24
MILLET	314	359	346	331	263	202	249	275	200	186	157	-7.17
SORGHUM	10605	10928	10432	10181	10999	13689	13567	10153	13128	12926	8349	.34
POTATOES	4330	4724	3906	4569	4678	4696	5106	4777	4757	5269	5407	2.13
SUGAR,TOTAL (RAW EQUIV.)	22646	27511	24525	26482	27024	28217	29618	27837	28118	27353	26783	1.30
PULSES	1876	2054	2066	2355	2921	3195	3136	3173	3444	3916	4413	8.58
SOYBEANS	19979	19623	23411	26125	27048	26294	28703	26880	24629	25820	27279	2.69
SOYBEAN OIL	1616	2078	2404	2873	3246	3253	3773	3753	4151	3386	2826	6.64
GROUNDNUTS SHELLED BASIS	1030	815	805	777	709	719	814	762	746	816	908	-.68
GROUNDNUT OIL	512	596	475	474	513	359	413	515	321	333	344	-4.92
COPRA	1215	919	804	458	465	393	477	255	312	366	410	-11.23
COCONUT OIL	1412	1096	1255	1198	1125	1400	1291	1293	1049	1125	1550	.29
PALM NUTS KERNELS	349	292	169	161	182	161	123	127	124	98	106	-10.43
PALM OIL	2018	2471	2318	2701	3411	3223	3687	3907	3968	4862	6040	10.13
OILSEED CAKE AND MEAL	18476	19221	21972	23854	25376	27072	28478	33113	29371	31807	33935	6.28
BANANAS	6346	6582	6875	7039	6735	6781	6783	6093	6612	7133	7298	.57
ORANGES+TANGER+CLEMEN	5188	5288	4971	5067	5236	5023	5170	5105	5256	4935	5316	.01
LEMONS AND LIMES	936	912	961	965	991	969	1049	1002	990	1005	1010	.90
COFFEE GREEN+ROASTED	3777	3126	3435	3913	3790	3810	3878	3987	4037	4197	4258	2.13
COCOA BEANS	1160	1006	1096	1026	1068	1242	1270	1262	1325	1462	1399	3.32
TEA	846	901	832	891	923	883	890	911	1051	1007	1040	2.01
COTTON LINT	4106	4037	4503	4521	5069	4419	4500	4354	4495	4580	4834	1.02
JUTE AND SIMILAR FIBRES	680	562	492	572	574	532	573	505	431	355	499	-3.60
TOBACCO UNMANUFACTURED	1298	1258	1423	1394	1409	1442	1409	1380	1433	1413	1338	.56
NATURAL RUBBER	3274	3388	3351	3493	3392	3282	3130	3426	3709	3661	3745	1.07
WOOL GREASY	1034	870	883	919	853	872	834	842	818	937	975	-.38
BOVINE CATTLE 1/	6581	6660	7209	7209	6657	6912	7291	6757	6568	6533	7165	.03
PIGS 1/	6802	6688	7749	8084	10498	9715	9022	9324	9925	10174	11659	4.89
TOTAL MEAT	6030	6617	6944	7570	7893	8402	8661	8662	8517	9050	9694	4.27
MILK DRY	345	475	471	516	596	598	569	516	604	565	560	3.52
TOTAL EGGS IN SHELL	516	573	636	674	742	781	831	825	841	776	750	4.12
FISHERY PRODUCTS												
FISH FRESH FROZEN	2988	3062	3388	3664	4188	4329	4357	4448	4624	4996	5448	5.92
FISH CURED	363	305	329	364	397	396	359	420	418	464	440	3.27
SHELLFISH	951	900	1077	1230	1120	1145	1240	1355	1502	1622	1770	6.33
FISH CANNED AND PREPARED	890	792	876	923	1021	1065	955	891	920	991	1058	1.62
SHELLFISH CANNED+PREPAR	147	156	162	163	174	186	202	223	236	260	268	6.53
FISH BODY AND LIVER OIL	612	568	653	762	751	732	795	722	914	1004	928	4.96
FISH MEAL	2201	2237	2091	2475	2264	2052	2518	2266	2375	2692	2884	2.21
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	27708	29302	29858	31516	28054	23842	26400	30362	31164	33278	32325	1.16
SAWLOGS NONCONIFEROUS	44190	45972	47694	48277	42243	34891	32704	32986	30879	29891	31177	-5.13
PULPWOOD+PARTICLE	32398	36670	34187	39249	43086	41366	36452	37634	41358	41006	42712	1.97
FUELWOOD	2921	3082	2769	2908	3112	2533	3118	3502	3895	4064	4059	3.84
SAWNWOOD CONIFEROUS	54302	60767	65298	67388	63311	58325	59433	67672	70466	72894	74342	2.27
SAWNWOOD NONCONIFEROUS	10400	11240	11669	13257	12662	11264	10847	11941	12327	12361	12504	1.01
WOOD-BASED PANELS	14559	14548	15866	16789	15657	16637	15466	16890	17869	18859	20685	2.91
PULP FOR PAPER	15497	15533	17563	18799	19316	18517	17299	19596	20422	20726	21995	3.07
PAPER AND PAPERBOARD	26572	27816	30466	32283	33601	34024	33613	35528	39165	40296	43586	4.56
WESTERN EUROPE												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	13184	12602	13384	12981	14127	13336	13964	10586	12635	15531	16501	1.25
RICE MILLED	1212	1294	1461	1299	1291	1490	1687	1559	1703	1901	1796	4.27
BARLEY	6329	6136	6567	5105	5247	5966	6194	6665	5119	4562	5012	-2.16
MAIZE	26440	26733	24757	25117	23455	21740	21103	18873	15992	15035	10786	-7.67
MILLET	90	182	195	150	98	109	122	110	99	126	106	-2.77
SORGHUM	3017	2216	1453	1196	1273	1103	2149	685	1145	244	174	-19.90
POTATOES	3150	2999	2565	2808	3051	3026	3228	3167	3235	3629	3883	2.58
SUGAR,TOTAL (RAW EQUIV.)	4608	4235	3521	3460	3139	3063	3195	3148	3789	3151	3086	-2.81
PULSES	821	888	907	1054	1014	924	1067	1306	1429	1867	2093	9.01
SOYBEANS	11719	11612	14201	15311	16249	14414	16454	15009	13575	13843	13802	1.24

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

6. (Cont.) VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
SOYBEAN OIL	532	502	559	580	675	643	681	743	702	682	604	2.81
GROUNDNUTS SHELLED BASIS	726	558	541	528	414	389	431	385	396	424	459	-4.37
GROUNDNUT OIL	351	355	325	407	446	297	349	396	255	274	273	-2.96
COPRA	961	670	515	294	253	184	280	113	132	133	148	-17.89
COCONUT OIL	427	331	395	390	414	561	537	512	372	419	583	2.88
PALM NUTS KERNELS	327	271	153	137	147	140	106	96	100	81	97	-11.29
PALM OIL	860	829	781	856	833	723	735	859	717	828	1156	1.00
OILSEED CAKE AND MEAL	12778	12863	15320	16704	17397	18205	19297	21471	19780	22424	23699	6.26
BANANAS	2256	2430	2525	2460	2221	2172	2178	2018	2183	2306	2456	-.58
ORANGES+TANGER+CLEMEN	3245	3322	3143	3227	3229	2969	3185	3117	3299	3010	3415	-.07
LEMONS AND LIMES	432	408	428	432	429	416	452	451	431	449	459	.78
COFFEE GREEN+ROASTED	1811	1543	1703	1955	1930	1999	1997	2062	1999	2098	2143	2.48
COCOA BEANS	566	561	590	569	616	664	721	649	738	793	778	3.77
TEA	297	336	250	278	297	244	287	266	306	277	290	-.37
COTTON LINT	1320	1154	1216	1150	1259	1017	1147	1246	1232	1343	1344	.73
JUTE AND SIMILAR FIBRES	232	208	157	182	132	120	97	85	88	54	74	-12.47
TOBACCO UNMANUFACTURED	695	677	785	743	701	679	670	683	670	678	619	-1.14
NATURAL RUBBER	941	950	861	925	892	838	844	830	865	929	932	-.36
WOOL GREASY	528	418	437	444	399	394	353	316	395	422	409	-2.11
BOVINE CATTLE 1/	3306	3175	3472	3529	3404	3210	3478	3401	3336	3694	3827	1.06
PIGS 1/	3629	3284	3875	4382	5202	5496	4680	4889	4876	4973	7178	5.48
TOTAL MEAT	3333	3461	3776	3789	3761	3504	3778	3889	3835	4198	4322	2.00
MILK DRY	125	108	115	137	156	132	145	147	145	135	120	1.33
TOTAL EGGS IN SHELL	307	327	366	399	431	431	445	441	467	466	482	4.30
FISHERY PRODUCTS												
FISH FRESH FROZEN	1130	1233	1335	1474	1599	1613	1711	1564	1621	1666	1753	3.86
FISH CURED	156	158	165	191	196	174	173	215	209	244	222	4.02
SHELLFISH	333	277	349	372	416	414	473	521	598	651	680	8.93
FISH CANNED AND PREPARED	310	297	286	312	335	337	317	350	362	378	403	2.91
SHELLFISH CANNED+PREPAR	64	68	73	80	87	86	90	97	97	104	108	5.20
FISH BODY AND LIVER OIL	538	511	584	666	666	637	706	607	813	898	827	4.91
FISH MEAL	1187	1115	1104	1245	1183	1027	1288	1230	1163	1303	1399	1.52
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	4417	4890	4094	4547	5103	4507	4660	4456	4356	4756	4391	-.08
SAWLOGS NONCONIFEROUS	8858	8793	7715	8044	8424	6889	6139	6174	6337	6032	6052	-4.31
PULPWOOD+PARTICLE	17252	16718	15037	17463	20877	22039	19447	19125	22488	23737	24503	4.15
FUELWOOD	1956	1940	1673	1784	2016	1539	1851	2238	2490	2631	2390	3.50
SAWNWOOD CONIFEROUS	23111	22096	23684	27274	25507	21507	22714	23839	22948	21753	24888	-.16
SAWNWOOD NONCONIFEROUS	5435	5521	5620	6724	6088	4933	4891	5386	5322	5516	5643	-.58
WOOD-BASED PANELS	7564	7524	8440	9652	8951	8956	8462	8980	9484	9981	10950	2.89
PULP FOR PAPER	8441	8270	9435	10034	10013	9531	8807	9611	10057	10293	11024	2.01
PAPER AND PAPERBOARD	12368	12631	13602	15046	15107	15728	15742	17301	18745	18578	20617	5.01
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	13099	11996	13101	16167	21293	24583	27316	26829	31394	24387	16950	7.55
RICE MILLED	647	725	710	940	994	1599	1127	601	490	586	713	-2.03
BARLEY	4118	2225	4137	4559	4311	6019	3258	3531	3326	5907	6530	4.43
MAIZE	17664	7493	17809	20175	18863	22097	14985	7861	13431	18014	9172	-2.45
MILLET			1	1	1	1	1	1		1	7	
SORGHUM	1041	705	830	229	1567	3967	2709	2078	1990	1452	39	-5.24
POTATOES	368	664	301	512	297	330	481	158	131	237	172	-10.55
SUGAR,TOTAL (RAW EQUIV.)	4596	5634	4667	4933	5825	6397	8146	7028	6935	5838	6409	3.74
PULSES	39	33	39	41	62	85	60	35	77	39	80	5.60
SOYBEANS	2089	1544	1409	2360	1707	1653	1906	1938	1205	1113	2550	-.97
SOYBEAN OIL	72	94	103	126	154	198	313	255	197	382	157	13.14
GROUNDNUTS SHELLED BASIS	54	59	57	46	54	61	67	54	68	71	73	2.94
GROUNDNUT OIL	2	2		2	1		1	1		1		
COPRA	25	38	26	18	20	10	14	14	5	2	5	-20.83
COCONUT OIL	93	48	66	58	89	77	99	79	68	60	66	-.08
PALM NUTS KERNELS	4	4	4	3	4							
PALM OIL	28	67	58	113	112	184	384	329	292	250	249	24.88
OILSEED CAKE AND MEAL	3592	3704	3699	4033	4599	5331	5069	6664	4131	4122	3970	2.17
BANANAS	224	281	299	298	269	232	155	167	200	217	152	-5.22
ORANGES+TANGER+CLEMEN	693	727	719	690	748	688	645	599	637	697	669	-1.02
LEMONS AND LIMES	330	314	326	309	333	308	363	289	272	272	275	-1.87
COFFEE GREEN+ROASTED	199	201	178	201	228	203	207	214	236	248	228	2.20
COCOA BEANS	256	175	202	198	201	199	178	243	246	253	248	2.01
TEA	82	80	71	79	102	116	107	110	129	151	147	7.51
COTTON LINT	679	720	681	718	743	638	693	764	841	868	743	1.73

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

6. (Cont.) VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
JUTE AND SIMILAR FIBRES	80	68	70	79	93	111	122	93	45	55	79	-1.49
TOBACCO UNMANUFACTURED	126	133	135	133	178	196	201	189	202	185	168	4.43
NATURAL RUBBER	485	409	433	437	441	418	360	446	435	374	347	-1.96
WOOL GREASY	162	161	182	188	182	174	173	219	135	153	149	-1.12
BOVINE CATTLE 1/	195	224	77	169	173	162	160	183	209	167	166	.97
PIGS 1/	59	291	507	442	479	844	565	637	519	732	496	14.95
TOTAL MEAT	416	757	267	645	956	1226	1091	1132	923	854	907	8.88
MILK DRY	28	43	29	42	71	78	90	47	58	70	85	9.61
TOTAL EGGS IN SHELL	37	43	43	47	43	34	36	31	28	21	24	-6.48
FISHERY PRODUCTS												
FISH FRESH FROZEN	180	138	202	210	251	145	115	382	468	517	550	13.37
FISH CURED	28	18	17	15	20	26	20	40	30	39	34	7.32
SHELLFISH				2								
FISH CANNED AND PREPARED	52	41	39	34	38	39	37	34	32	32	33	-3.44
FISH BODY AND LIVER OIL	4	7	6	5	22	13	25	16	23	23	24	20.65
FISH MEAL	445	407	384	476	310	233	291	218	274	303	303	-5.09
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	787	885	960	720	1050	960	498	655	629	612	723	-3.66
SAWLOGS NONCONIFEROUS	556	556	442	410	454	487	385	367	375	405	301	-4.66
PULPWOOD+PARTICLE	1548	1440	1345	1446	1583	1390	1248	1286	1323	1248	1222	-2.05
FUELWOOD	31	31	27	25	25	25	20	25	25	12		
SAWNWOOD CONIFEROUS	2702	3157	3228	2644	2665	2884	2544	2685	2983	3661	3527	1.53
SAWNWOOD NONCONIFEROUS	366	363	326	268	274	331	213	226	222	214	187	-6.34
WOOD-BASED PANELS	1386	1314	1132	1045	1137	1115	939	831	764	795	888	-5.36
PULP FOR PAPER	1040	1027	1053	1021	1173	1093	1031	1101	1067	1063	1019	.09
PAPER AND PAPERBOARD	1706	1712	1709	1784	2044	1968	1965	1732	1689	1717	1717	-.08
NORTH AMERICA DEVELOPED												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	24	36	1	6	8	11	74	63	110	282	279	44.14
RICE MILLED	80	80	82	91	94	106	126	128	141	174	207	10.00
BARLEY	195	180	108	157	140	127	198	141	146	105	135	-2.62
MAIZE	838	623	476	849	1228	1276	807	352	541	567	937	-1.46
MILLET		1										
SORGHUM			1				2		7			
POTATOES	213	301	235	242	212	340	344	278	303	330	305	3.41
SUGAR,TOTAL (RAW EQUIV.)	5054	6383	4835	5406	4595	5459	3471	3665	4163	3672	3142	-5.39
PULSES	34	53	43	39	43	61	47	48	55	51	56	3.25
SOYBEANS	419	318	325	351	483	382	468	315	285	247	166	-5.55
SOYBEAN OIL	31	28	35	22	12	9	4	35	17	42	15	-3.89
GROUNDNUTS SHELLED BASIS	62	55	66	63	55	72	61	67	70	69	79	2.27
GROUNDNUT OIL	8	7	6	5	5	4	4	6	5	4	6	-4.11
COCONUT OIL	603	495	503	527	422	476	427	475	400	474	558	-1.30
PALM OIL	416	282	173	163	137	138	132	168	161	251	289	-2.21
OILSEED CAKE AND MEAL	386	374	426	491	431	443	457	525	690	750	791	7.56
BANANAS	2411	2410	2543	2659	2669	2794	2935	2708	2942	3352	3350	3.26
ORANGES+TANGER+CLEMEN	339	380	303	294	320	333	317	329	307	299	330	-.77
LEMONS AND LIMES	24	27	34	36	38	43	38	40	51	66	61	9.27
COFFEE GREEN+ROASTED	1290	986	1195	1277	1190	1104	1150	1089	1178	1233	1282	.42
COCOA BEANS	252	186	226	179	162	264	213	233	218	292	224	1.78
TEA	106	117	91	101	107	107	103	97	109	97	110	-.14
COTTON LINT	73	53	59	61	65	63	52	61	59	57	54	-1.32
JUTE AND SIMILAR FIBRES	25	14	17	23	10	18	18	16	11	16	15	-3.44
TOBACCO UNMANUFACTURED	161	142	173	188	191	176	167	163	214	202	207	2.68
NATURAL RUBBER	818	903	846	862	695	759	713	772	906	923	872	.38
WOOL GREASY	17	12	15	11	14	20	16	20	22	17	24	5.03
BOVINE CATTLE 1/	1183	1184	1337	758	731	816	1085	1004	792	893	1410	-.79
PIGS 1/	46	44	204	137	248	147	295	448	1322	1227	502	35.48
TOTAL MEAT	862	755	875	912	854	766	866	808	866	1010	1064	1.80
TOTAL EGGS IN SHELL	13	19	18	21	12	12	11	22	30	19	20	3.37
FISHERY PRODUCTS												
FISH FRESH FROZEN	713	727	800	776	699	735	676	700	688	760	810	.11
FISH CURED	37	30	34	31	26	35	33	32	33	32	33	-.06
SHELLFISH	156	158	146	155	146	156	175	213	222	235	261	5.83
FISH CANNED AND PREPARED	103	78	89	95	99	104	112	126	153	187	218	9.09
SHELLFISH CANNED+PREPAR	35	41	40	41	39	47	54	69	73	84	76	9.46
FISH BODY AND LIVER OIL	11	8	9	9	12	10	8	9	8	10	11	-.22
FISH MEAL	128	74	40	82	45	56	79	68	81	234	171	7.85

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

6. (Cont.) VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	THOUSAND METRIC TONS											PERCENT
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	2025	2174	2043	2458	2146	1674	1772	2683	2887	2837	2826	3.47
SAWLOGS NONCONIFEROUS	291	294	409	502	471	415	335	424	585	576	645	6.63
PULPWOOD+PARTICLE	2039	2273	2516	2504	2249	2348	2000	2409	2173	1976	2805	-.37
FUELWOOD	181	303	352	377	268	137	113	113	161	160	154	-7.86
SAWNWOOD CONIFEROUS	19583	25061	28675	26582	22839	22542	21694	28483	31316	34407	33653	4.01
SAWNWOOD NONCONIFEROUS	1287	1351	1431	1571	1422	1557	912	1246	1407	1432	1496	.02
WOOD-BASED PANELS	3645	3546	3956	3336	2378	2851	2283	3366	3548	3956	4268	.80
PULP FOR PAPER	3271	3393	3522	3857	3528	3563	3245	3645	4085	4069	4150	1.99
PAPER AND PAPERBOARD	6982	7017	8387	8322	8118	7595	7303	8291	10235	10631	11183	4.18
OCEANIA DEVELOPED												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	112			32	54	53	51	71	126	67	73	
RICE MILLED	6	9	8	8	8	9	10	12	15	19	21	11.40
MAIZE	1	2	3	3	4	5	11	14	9	11	9	28.62
MILLET				1	1	1	1	1	1	1	1	
SORGHUM							4					
POTATOES									1			
SUGAR,TOTAL (RAW EQUIV.)	174	185	166	172	151	120	147	157	169	172	149	-1.07
PULSES	13	12	13	12	14	13	16	16	22	12	11	1.39
SOYBEANS	10	21	15		13	41	10	23	36	38		
SOYBEAN OIL	38	33	29	26	32	29	45	53	48	31	21	-.04
GROUNDNUTS SHELLED BASIS	8	5	12	4	5	9	12	6	13	8	9	4.09
GROUNDNUT OIL	2	4	2	3		1	1	1	1	1	1	-13.45
COPRA	10	11	5	7	4	6	6	4				
COCONUT OIL	18	20	18	19	17	16	20	20	22	20	19	1.09
PALM OIL	17	23	23	28	26	24	20	4	7	9	15	-10.58
OILSEED CAKE AND MEAL	3	6	30	7	12	19	10	52	11	38	33	18.91
BANANAS	29	35	38	35	37	36	36	40	30	60	37	2.63
ORANGES+TANGER+CLEMEN	15	17	18	14	16	16	17	18	24	21	18	2.59
LEMONS AND LIMES				1	1	1	1	3	3	4	2	
COFFEE GREEN+ROASTED	32	34	26	35	41	38	42	39	37	37	39	2.44
COCOA BEANS	16	20	17	15	14	15	13	13	10	7	6	-9.38
TEA	33	35	30	30	32	28	30	28	28	27	26	-2.46
COTTON LINT	4	5	4	2	2	2	1	1	1	3	1	-15.77
JUTE AND SIMILAR FIBRES	14	12	11	12	9	11	8	8	6	8	9	-5.98
TOBACCO UNMANUFACTURED	17	13	16	13	15	15	14	14	14	23	24	3.27
NATURAL RUBBER	61	55	52	53	54	50	47	40	40	44	43	-3.68
WOOL GREASY	1	1	1	1								
BOVINE CATTLE 1/	1	2	1	1	1				1	2		
TOTAL MEAT	2	2	1	2	4	4	4	5	8	7	5	16.38
MILK DRY	1	1	1			1		1		1	1	
FISHERY PRODUCTS												
FISH FRESH FROZEN	19	20	21	22	29	33	33	29	35	41	38	7.91
FISH CURED	4	5	3	5	4	4	4	4	5	5	5	1.75
SHELLFISH	3	3	2	4	4	6	6	8	8	9	10	16.99
FISH CANNED AND PREPARED	19	25	26	22	27	27	28	25	31	30	31	3.66
SHELLFISH CANNED+PREPAR	6	7	7	6	5	7	8	8	8	9	8	3.39
FISH BODY AND LIVER OIL	1	1	1	1			1			1	1	
FISH MEAL	13	8	3	4	14	8	8	11	8	13	8	3.94
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	5	2	2					1				
SAWLOGS NONCONIFEROUS	46	26	17	11	2	1	7	1	1	1	2	-32.79
FUELWOOD	4	2	2	2	1	1	1	1				
SAWNWOOD CONIFEROUS	693	754	638	682	697	781	881	642	823	1113	1044	4.16
SAWNWOOD NONCONIFEROUS	346	445	311	304	317	306	290	210	282	317	265	-3.41
WOOD-BASED PANELS	137	121	89	99	88	104	111	79	102	112	121	-.67
PULP FOR PAPER	234	277	239	280	281	286	262	220	243	208	239	-1.38
PAPER AND PAPERBOARD	470	652	584	671	739	736	794	558	670	899	813	3.84
AFRICA DEVELOPING												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	5350	6362	7946	7744	9067	8987	9337	9434	10254	11234	10641	6.48
RICE MILLED	887	1584	1885	2233	2266	2537	2827	2727	2485	2725	2756	8.81
BARLEY	68	219	647	419	302	459	680	397	743	583	328	12.48
MAIZE	685	880	1154	1287	2329	2356	2340	1770	2820	2424	2190	12.74
MILLET	123	112	83	101	106	35	61	100	53	6	6	-22.83

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

6. (Cont.) VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	THOUSAND METRIC TONS											PERCENT
SORGHUM	118	99	149	132	106	153	157	215	399	375	137	9.96
POTATOES	149	211	233	307	245	217	270	449	348	425	344	8.57
SUGAR,TOTAL (RAW EQUIV.)	1481	1888	2043	2106	2252	2340	2121	2403	2217	2206	2746	3.85
PULSES	77	91	118	209	217	145	153	220	230	215	199	9.44
SOYBEANS	16	50	22	31	25	11	35	16	20	22	17	-3.81
SOYBEAN OIL	121	256	312	357	336	337	448	405	363	300	233	4.56
GROUNDNUTS SHELLED BASIS	17	25	27	12	16	9	12	8	6	35	33	-.86
GROUNDNUT OIL	30	22	10	10	16	16	18	27	10	4	16	-6.71
COPRA	3	3	4	4	3	2	2	3	5	2	2	-3.62
COCONUT OIL	18	20	10	9	7	14	12	10	17	10	19	-.19
PALM OIL	68	81	106	98	165	243	289	260	190	206	349	15.86
OILSEED CAKE AND MEAL	54	102	122	157	188	241	259	230	298	295	375	17.49
BANANAS	41	47	31	17	18	28	59	26	29	10	11	-9.66
ORANGES+TANGER+CLEMEN	10	12	12	12	10	9	9	9	9	6	7	-4.66
LEMONS AND LIMES		1	1		1	1	1	1	1	1	1	
COFFEE GREEN+ROASTED	78	59	83	76	80	103	67	115	97	103	89	3.78
COCOA BEANS	1	3	1	1	1	1	1	5	1	2	1	-.08
TEA	42	46	56	70	57	69	56	57	61	70	73	3.91
COTTON LINT	46	51	42	48	44	64	84	90	99	98	120	11.37
JUTE AND SIMILAR FIBRES	61	73	58	58	64	50	49	58	37	48	45	-4.31
TOBACCO UNMANUFACTURED	46	49	62	62	56	49	48	52	46	53	59	.12
NATURAL RUBBER	18	22	21	20	21	26	23	23	23	22	24	2.12
WOOL GREASY	3	3	4	3	2	2	1	2	1	2	2	-8.37
BOVINE CATTLE 1/	632	690	776	835	824	895	839	919	1007	703	712	1.52
PIGS 1/	1	1	1	1	1	2	2	3	4	1		
TOTAL MEAT	84	110	139	137	142	151	220	186	214	236	267	10.72
MILK DRY	23	23	24	23	33	32	27	31	51	48	49	8.96
TOTAL EGGS IN SHELL	13	21	44	35	50	52	71	78	49	47	16	5.79
FISHERY PRODUCTS												
FISH FRESH FROZEN	348	249	291	328	838	859	736	630	562	628	696	9.83
FISH CURED	55	21	34	44	56	70	40	46	30	30	31	-1.70
SHELLFISH	16	17	19	6	3	2	1	1	1	1	1	-29.04
FISH CANNED AND PREPARED	137	114	153	146	135	139	113	72	62	67	68	-8.62
SHELLFISH CANNED+PREPAR						3	2	1				
FISH BODY AND LIVER OIL	3	2	3	2		1	1					
FISH MEAL	13	17	27	24	24	25	32	37	49	30	39	10.33
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	43	31	32	73	94	84	110	169	171	171	171	20.58
SAWLOGS NONCONIFEROUS	172	286	197	204	326	225	241	321	318	325	305	5.05
FUELWOOD						1	1					
SAWNWOOD CONIFEROUS	829	1251	763	1019	905	1409	1531	1827	1790	1478	1227	6.46
SAWNWOOD NONCONIFEROUS	168	155	202	203	194	232	193	183	183	154	166	-.53
WOOD-BASED PANELS	192	310	263	316	359	321	258	290	198	198	206	-2.51
PULP FOR PAPER	95	97	102	104	120	135	116	149	143	141	147	5.03
PAPER AND PAPERBOARD	456	496	519	529	537	671	579	563	538	559	567	1.72
LATIN AMERICA												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	8981	8152	10787	10718	12099	11969	11357	12070	12135	11378	9447	1.94
RICE MILLED	489	428	432	1339	1064	792	609	950	622	1036	1991	9.92
BARLEY	207	203	358	323	484	413	334	527	470	453	395	7.43
MAIZE	2438	3590	4714	3954	8988	7027	3464	6857	5473	5324	5590	5.91
MILLET	6	2	4	6	3	2	3	4				
SORGHUM	554	1440	1442	1876	2927	3578	3228	3005	3158	4550	1563	12.73
POTATOES	174	198	205	251	340	191	191	166	187	158	236	-.97
SUGAR,TOTAL (RAW EQUIV.)	286	646	882	717	1567	1489	1424	1536	1103	380	428	1.82
PULSES	299	400	291	284	816	878	740	517	508	608	523	6.81
SOYBEANS	444	628	971	952	1205	2235	2200	1393	1805	2120	1481	13.70
SOYBEAN OIL	243	245	351	372	432	433	656	554	724	551	562	10.35
GROUNDNUTS SHELLED BASIS	38	8	14	11	13	13	18	7	19	29	15	.92
GROUNDNUT OIL	64	136	85	9	2	4	1	2	1	1	1	-42.19
COPRA	1											-4.35
COCONUT OIL	88	26	39	15	25	19	21	14	13	10	34	-10.20
PALM NUTS KERNELS	2	1		2	1	1	1	3	1			
PALM OIL	16	16	8	6	16	12	7	2	2	3		
OILSEED CAKE AND MEAL	413	593	647	710	968	961	1135	1199	1221	1257	1226	11.08
BANANAS	184	228	287	391	434	446	317	231	228	216	257	-.53
ORANGES+TANGER+CLEMEN	19	26	22	44	57	36	25	20	19	21	17	-3.82
LEMONS AND LIMES	3	4	6	4	2	3	2	2	2	5	2	-5.59
COFFEE GREEN+ROASTED	86	54	58	93	49	60	59	49	55	41	25	-7.43

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

6. (Cont.) VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	THUUSAND METRIC TONS											PERCENT
COCOA BEANS	7	3	3	2	3	10	13	3	6	7	9	8.76
TEA	13	14	16	19	16	14	13	14	13	15	13	-.84
COTTON LINT	56	85	71	91	79	93	79	76	121	115	170	7.56
JUTE ANO SIMILAR FIBRES	30	15	12	18	36	34	14	13	13	3	4	-15.15
TOBACCO UNMANUFACTUREO	17	18	16	17	28	24	21	19	15	16	14	-1.27
NATURAL RUBBER	165	170	182	182	187	184	155	166	200	194	221	1.76
WOOL GREASY	8	6	7	9	13	12	13	8	9	12	9	3.81
BOVINE CATTLE 1/	516	490	583	928	419	464	430	155	192	184	120	-15.17
PIGS 1/	59	36	32	21	10	26	58	17	9	7	4	-18.59
TOTAL MEAT	172	197	373	365	336	414	341	262	298	369	667	7.51
MILK ORY	73	181	138	120	153	157	140	118	152	107	90	-.82
TOTAL EGGS IN SHELL	9	14	11	17	19	18	25	14	10	9	13	-.33
FISHERY PRODUCTS												
FISH FRESH FROZEN	98	90	109	134	111	97	107	91	82	81	78	-2.87
FISH CURED	56	48	46	46	56	52	52	47	47	49	49	-.46
SHELLFISH	4	5	5	9	8	10	9	7	4	7	10	5.02
FISH CANNEO ANO PREPARED	43	49	60	74	92	87	79	44	41	44	43	-2.55
SHELLFISH CANNEO+PREPAR	1	1	1	2	2	2	1		1	1	1	.70
FISH BOOY ANO LIVER OIL	43	27	36	67	43	64	35	69	34	20	15	-6.03
FISH MEAL	75	64	108	138	163	126	108	61	97	87	91	-.15
FOREST PROOUCTS 2/												
SAWLOGS CONIFEROUS	43	26	34	54	128	156	162	160	144	143	143	19.43
SAWLOGS NONCONIFEROUS	73	69	105	65	57	30	29	30	75	88	97	-.68
PULPWOOO+PARTICLE				31	35	24	16	16	8	8	8	
FUELWOOO	6	12	4	4	5	7	5	3	4	6	6	-4.18
SAWNWOOD CONIFEROUS	1467	1486	1715	1524	2184	1874	1477	1666	1938	1860	1995	2.38
SAWNWOOO NONCONIFEROUS	427	520	679	692	917	642	652	597	735	696	777	3.49
WOOO-BASEO PANELS	184	234	304	401	493	499	482	519	454	429	420	7.78
PULP FOR PAPER	536	462	530	653	740	762	735	645	766	773	814	4.87
PAPER ANO PAPERBOARO	1756	2162	1869	1856	2395	2437	2278	1958	1796	1735	1860	-.59
NEAR EAST DEVELOPING												
AGRICULTURAL PROOUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	7658	9207	10320	10703	12836	13999	14163	16787	19461	18160	16979	9.12
RICE MILLED	1106	1456	1548	1887	1790	2020	1991	2244	2391	2247	2121	6.33
BARLEY	465	991	852	1493	2361	3290	5002	3873	9263	6148	5645	30.88
MAIZE	1009	1492	1850	2369	2685	3745	3805	4083	4177	4525	4935	15.92
MILLET	10	6	4	4	2	2	3	4	4	5	2	-7.26
SORGHUM	197	189	254	109	101	132	340	59	317	34	11	-17.10
POTATOES	164	230	231	282	353	426	422	373	380	317	286	5.89
SUGAR,TOTAL (RAW EQUIV.)	1694	2266	2400	3463	3263	3405	3947	3427	3786	3348	3478	6.27
PULSES	234	202	213	258	257	359	308	281	325	277	290	3.67
SOYBEANS	29	63	138	180	99	116	108	94	79	175	296	12.41
SOYBEAN OIL	332	233	281	381	442	504	529	717	667	604	443	8.80
GROUNDNUTS SHELLED BASIS	8	15	6	8	16	9	7	7	7	8	6	-4.29
GROUNDNUT OIL	2	2	1	1	3	1	1	1				
COPRA	7		1									
COCONUT OIL	31	8	7	4	14	12	16	13	13	14	58	9.25
PALM NUTS KERNELS	5										1	
PALM OIL	76	148	164	187	148	291	376	418	456	496	656	21.29
OILSEEO CAKE ANO MEAL	238	379	459	442	406	543	674	860	1121	1304	1297	17.70
BANANAS	308	277	289	319	300	316	285	255	226	182	146	-5.86
ORANGES+TANGER+CLEMEN	636	555	472	512	541	619	634	627	613	508	465	-.52
LEMONS ANO LIMES	54	52	45	77	79	77	80	87	98	81	70	5.26
COFFEE GREEN+ROASTEO	51	53	42	40	46	56	74	75	64	64	57	4.09
COCOA BEANS	4	2	4	1	2	5	5	6	5	5	6	11.12
TEA	157	150	205	188	183	171	168	194	239	213	218	3.22
COTTON LINT	7	37	21	41	22	24	27	27	29	56	78	13.21
JUTE AND SIMILAR FIBRES	40	31	24	41	20	25	37	34	32	28	30	-.75
TOBACCO UNMANUFACTURED	45	45	52	60	47	61	75	79	83	69	67	5.78
NATURAL RUBBER	50	49	46	37	40	52	65	86	82	79	90	8.25
WOOL GREASY	27	32	17	18	18	19	13	18	18	21	21	-2.63
BOVINE CATTLE 1/	184	389	390	386	503	736	728	598	582	436	414	6.54
PIGS 1/		5										
TUTAL MEAT	334	482	582	676	980	1302	1284	1266	1238	1227	1229	13.62
MILK ORY	5	10	11	20	14	24	28	24	28	26	14	12.81
TUTAL EGGS IN SHELL	77	83	84	75	109	153	161	156	166	124	98	6.30

1/ THOUSANO HEAD
2/ EXCEPT FOR PULP FOR PAPER ANO PAPER AND PAPERBUARD, ALL FOREST PROOUCTS ARE EXPRESSED IN THOUSANO CUBIC METRES

6. (Cont.) VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
FISHERY PRODUCTS												
FISH FRESH FROZEN	54	50	69	55	77	107	116	137	137	137	139	12.61
FISH CURED	2	2	3	3	3	6	5	5	5	5	5	10.46
SHELLFISH	1	2	1	2	2	2	2	2	1	2	1	3.21
FISH CANNED AND PREPARED	36	39	55	51	70	64	57	56	43	44	44	.65
SHELLFISH CANNED+PREPAR				1	1	2	3	2	2	2	2	
FISH BODY AND LIVER OIL	2	2	1	1	1	1	1		1	1	1	-11.31
FISH MEAL	51	136	56	58	77	147	113	106	133	111	133	7.69
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	196	231	176	126	173	205	275	319	316	435	187	5.98
SAWLOGS NONCONIFEROUS	86	55	68	42	57	46	5	6	11	37	23	-16.62
PULPWOOD+PARTICLE	9	13	36	40	14	4	9	9	4	5	47	-5.54
FUELWOOD	180	159	163	119	126	146	183	169	202	157	214	2.34
SAWNWOOD CONIFEROUS	2202	3063	2441	2689	3242	3498	3938	4179	4563	4139	3021	5.36
SAWNWOOD NONCONIFEROUS	406	659	620	469	630	550	630	758	811	838	669	4.86
WOOD-BASED PANELS	597	749	804	931	1072	1425	1588	1324	1450	1510	1515	9.85
PULP FOR PAPER	159	135	127	113	121	111	110	178	171	196	197	3.99
PAPER AND PAPERBOARD	725	866	889	905	975	1042	1008	1006	1205	1532	1531	6.74
FAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	13644	7213	8058	8808	8897	7794	9707	11519	10772	9825	11221	1.61
RICE MILLED	3698	3848	3465	3392	4497	4404	2083	3225	2467	2579	1185	-8.01
BARLEY	8	327	107	106	206	270	916	450	1624	235	84	23.51
MAIZE	1971	2662	3360	4328	4120	4740	5051	6439	5068	5640	5555	9.93
MILLET	29	10	1	2	3	3	6	4	5	4	5	-4.24
SORGHUM	398	19	49	144	62	178	445	223	419	391	292	19.68
POTATOES	93	104	117	143	155	145	147	160	148	151	161	4.76
SUGAR,TOTAL (RAW EQUIV.)	1116	1435	1866	1935	2607	2807	2310	2138	2317	4300	3761	10.71
PULSES	90	91	167	207	207	377	380	373	469	562	841	23.64
SOYBEANS	433	370	489	728	874	1093	1219	1137	1355	1459	1678	16.24
SOYBEAN OIL	194	529	583	841	1004	981	976	927	1356	721	575	8.88
GROUNDNUTS SHELLED BASIS	43	23	28	39	67	93	152	144	82	110	173	19.77
GROUNDNUT OIL	48	64	42	36	38	34	36	55	38	43	42	-1.56
COPRA	96	99	163	74	115	110	81	51	89	135	149	.45
COCONUT OIL	55	87	158	91	58	151	83	90	86	64	123	1.22
PALM NUTS KERNELS	5	5	6	10	15	6	3	12	5	4	1	-11.70
PALM OIL	372	842	847	1058	1757	1436	1561	1679	1944	2565	2907	17.82
OILSEED CAKE AND MEAL	533	717	804	965	1005	1026	1339	1524	1737	1210	1939	11.59
BANANAS	45	48	57	69	59	49	59	51	71	69	73	3.68
ORANGES+TANGER+CLEMEN	199	215	222	208	238	273	249	287	253	255	270	3.04
LEMONS AND LIMES			4	6	7	8	8	9	10	13	14	
COFFEE GREEN+ROASTED	42	32	19	27	19	36	51	72	96	91	107	16.21
COCOA BEANS	9	8	12	17	27	45	60	61	50	57	58	25.00
TEA	70	81	77	84	86	97	94	110	127	114	113	5.46
COTTON LINT	794	843	860	827	888	775	788	865	993	962	1139	2.52
JUTE AND SIMILAR FIBRES	122	55	64	80	119	109	165	142	155	131	189	9.28
TOBACCO UNMANUFACTURED	58	68	64	69	82	86	69	63	68	66	62	-.04
NATURAL RUBBER	142	160	193	215	182	208	226	198	277	250	296	6.20
WOOL GREASY	27	32	29	30	33	39	34	36	35	46	53	5.45
BOVINE CATTLE 1/	279	293	324	356	343	362	367	363	320	293	297	.34
PIGS 1/	3004	3023	3123	3095	4552	3194	3414	3323	3188	3226	3469	.82
TOTAL MEAT	173	212	279	297	227	266	352	360	330	325	339	5.97
MILK DRY	84	99	143	159	161	162	130	140	160	168	194	5.78
TOTAL EGGS IN SHELL	57	64	68	75	76	75	80	78	89	87	95	4.41
FISHERY PRODUCTS												
FISH FRESH FROZEN	157	162	185	229	210	258	280	294	367	382	464	11.22
FISH CURED	21	18	21	21	28	22	26	26	54	56	57	12.24
SHELLFISH	90	95	119	180	122	115	132	140	152	171	181	5.71
FISH CANNED AND PREPARED	112	84	83	79	96	78	92	51	48	49	53	-7.39
SHELLFISH CANNED+PREPAR	16	15	16	14	18	16	21	22	21	22	23	5.17
FISH BODY AND LIVER OIL	7	4	4	4	2	2	3	3	5	22	20	11.90
FISH MEAL	85	93	131	164	148	158	251	171	173	197	220	8.71
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	750	1200	2426	2128	1536	1186	1548	2116	2073	2217	2444	7.43
SAWLOGS NONCONIFEROUS	7505	8558	9371	9355	6526	5985	5415	5789	4986	4337	5761	-6.23
PULPWOOD+PARTICLE		1		2	2	1		3	117	118	83	
FUELWOOD	462	546	489	519	560	588	741	749	727	773	776	5.78
SAWNWOOD CONIFEROUS	214	228	235	80	87	72	45	46	49	37	35	-18.75

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

6. (Cont.) VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	THOUSAND METRIC TONS	.....	.....	.....	.....	.....	.....	PERCENT
SAWNWOOD NONCONIFEROUS	1463	1741	1829	2345	1850	1762	1910	1840	1778	1361	1506	-1.24
WOOD-BASED PANELS	472	495	575	610	724	821	680	794	652	585	667	2.99
PULP FOR PAPER	423	555	696	735	728	815	791	1090	1045	1120	1181	9.55
PAPER AND PAPERBOARD	1459	1495	1830	1995	2072	2247	2349	2313	2536	2495	2569	5.87
ASIAN CENT PLANNED ECON												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	3798	9164	10271	11756	13243	15688	15565	12643	11234	6624	7460	2.44
RICE MILLED	282	214	250	619	652	441	578	205	497	705	943	10.04
BARLEY	333	265	336	704	402	354	509	481	430	369	481	3.12
MAIZE	2150	2222	3064	5412	4438	3287	4117	5569	3015	3108	3664	3.65
SORGHUM	255	394	473	517	417	840	767	534	597	564	728	7.60
SUGAR,TOTAL (RAW EQUIV.)	952	1895	1587	1368	1114	1294	2373	2130	1456	2088	1417	3.48
PULSES	39	49	68	58	72	91	124	88	93	89	100	8.90
SOYBEANS	829	985	1172	1696	1529	1682	1516	1420	1345	1470	2032	5.73
SOYBEAN OIL	27	149	137	143	136	56	63	36	25	43	194	-3.32
GROUNDNUTS SHELLED BASIS			2	1			6					
GROUNDNUT OIL								20	1		2	
COPRA				1	3	3	7	1	3	7	18	
COCONUT OIL	29	22	19	27	31	26	31	26	27	29	54	4.92
PALM NUTS KERNELS						2	1					
PALM OIL	3	30	14	48	63	26	24	18	21	73	205	23.36
OILSEED CAKE AND MEAL	29	41	55	1	9	14	15	33	50	48	32	7.41
BANANAS	15							20	20	40	50	
ORANGES+TANGER+CLEMEN			1		2	1	1	5	2	3	4	
COFFEE GREEN+ROASTED	7	6	6	5	6	7	17	30	16	16	12	14.11
COCOA BEANS	11	12	15	17	17	4	23	10	12	6	27	.63
TEA	5	5	6	5	5	4	4	5	6	6	5	.67
COTTON LINT	428	422	818	835	1235	1021	824	521	369	362	461	-3.55
JUTE AND SIMILAR FIBRES	27	34	39	36	47	25	44	36	24	3	41	-8.52
TOBACCO UNMANUFACTURED	13	15	19	22	32	54	46	21	28	45	33	9.57
NATURAL RUBBER	248	316	300	333	358	220	232	337	321	264	335	.53
WOOL GREASY	22	22	28	51	60	94	112	116	85	149	194	24.58
BOVINE CATTLE 1/	1				2		1	1	4	10	8	
PIGS 1/	2	1	4	3	3	5	3	3	2	2	4	4.30
TOTAL MEAT	10	4	11	18	16	23	27	28	32	38	54	22.08
FISHERY PRODUCTS												
FISH FRESH FROZEN	4	6	4	4	2	3	3	3	4	5	5	.14
FISH CURED	1	1	1	1	1	1						
SHELLFISH	3	4	9	14	20	2	5	4	2	2	2	-12.35
FISH CANNED AND PREPARED	5	1	1	1	2	2	2	2	3	2	3	3.91
SHELLFISH CANNED+PREPAR					1	1		1	1	1	1	
FISH BODY AND LIVER OIL	1	1	2	2	1	1	1	1	3	4	4	11.07
FISH MEAL	136	124	142	168	154	160	226	205	262	262	286	8.86
FOREST PRODUCTS 2/												
SAWLOGS CONIFEROUS	618	419	389	422	630	1181	3115	5391	6776	7576	5976	41.50
SAWLOGS NONCONIFEROUS	4437	5994	7170	6810	6509	5286	4762	5431	4634	4630	5634	-1.72
PULPWOOD+PARTICLE	711	711	728	1069	843	1957	1192	2005	1563	811	811	4.73
SAWNWOOD CONIFEROUS	29	29	29	29	31	10	6	11	15	9	8	-13.65
SAWNWOOD NONCONIFEROUS	30	38	56	96	139	197	293	423	519	529	700	39.48
WOOD-BASED PANELS	12	13	24	36	51	260	287	314	710	551	592	58.19
PULP FOR PAPER	235	175	208	210	427	525	440	683	672	737	822	17.70
PAPER AND PAPERBOARD	217	297	411	427	650	662	510	678	634	987	1401	15.76

1/ THOUSAND HEAD
2/ EXCEPT FOR PULP FOR PAPER AND PAPER AND PAPERBOARD, ALL FOREST PRODUCTS ARE EXPRESSED IN THOUSAND CUBIC METRES

7. INDICES OF VALUE OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	.....	1979-81=100	.....	.....	.....	.....	.....	PERCENT
WORLD												
AGRICULTURAL PRODUCTS	60	69	78	91	105	104	95	93	98	92	98	3.90
FOOD	59	65	75	88	104	107	96	92	97	90	94	4.12
FEED	54	67	73	86	101	113	105	115	100	83	100	5.06
RAW MATERIALS	65	75	82	97	103	100	93	93	99	94	95	2.98
BEVERAGES	67	97	93	105	110	85	89	90	103	106	133	3.29
FOREST PRODUCTS	60	65	73	94	107	98	89	91	97	95	110	4.80
DEVELOPED COUNTRIES												
AGRICULTURAL PRODUCTS	58	64	75	89	105	106	96	92	95	88	96	4.21
FOOD	58	62	73	87	105	107	96	91	93	85	93	4.07
FEED	50	60	74	88	103	109	103	114	95	80	96	5.24
RAW MATERIALS	59	73	80	98	102	100	98	93	101	97	100	3.98
BEVERAGES	54	69	79	101	103	96	96	93	98	106	135	6.30
FOREST PRODUCTS	61	66	74	93	107	100	91	92	99	98	115	5.03
WESTERN EUROPE												
AGRICULTURAL PRODUCTS	54	62	76	92	105	103	97	94	96	97	118	5.95
FOOD	54	61	75	90	106	104	96	92	94	95	116	5.79
FEED	47	58	71	87	98	115	118	129	117	102	103	8.23
RAW MATERIALS	59	63	83	105	100	96	96	97	104	106	124	5.85
BEVERAGES	53	65	79	101	103	96	95	93	98	109	139	6.93
FOREST PRODUCTS	59	63	72	93	109	98	89	88	96	97	120	5.39
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS	72	87	86	98	102	100	94	85	80	80	85	-.06
FOOD	72	87	85	99	102	99	90	80	79	77	79	-.75
FEED	134	134	117	113	96	91	116	100	75	97	73	-5.10
RAW MATERIALS	70	89	87	93	103	104	104	95	81	84	95	.97
BEVERAGES	65	78	90	104	103	94	97	103	96	94	109	3.20
FOREST PRODUCTS	74	84	88	97	104	99	97	100	100	99	104	2.49
NORTH AMERICA DEVELOPED												
AGRICULTURAL PRODUCTS	58	60	73	86	104	110	95	94	99	76	69	2.54
FOOD	60	58	71	84	103	112	95	94	98	73	64	2.11
FEED	51	58	75	88	107	105	93	106	82	67	95	3.88
RAW MATERIALS	54	69	80	95	104	101	96	92	109	96	83	3.91
BEVERAGES	49	111	75	94	110	95	91	79	91	88	123	3.37
FOREST PRODUCTS	62	66	74	93	105	102	91	96	104	100	111	5.12
OCEANIA DEVELOPED												
AGRICULTURAL PRODUCTS	61	69	68	82	107	111	103	89	92	96	95	4.22
FOOD	60	62	65	77	109	114	104	88	91	94	91	4.57
FEED	55	125	119	127	74	100	103	95	73	60	74	-2.81
RAW MATERIALS	62	84	74	95	103	102	99	90	93	99	105	3.52
BEVERAGES	67	63	68	74	94	132	139	157	177	158	182	13.02
FOREST PRODUCTS	45	54	59	83	106	111	94	83	89	81	102	6.42
DEVELOPING COUNTRIES												
AGRICULTURAL PRODUCTS	66	81	84	95	104	101	92	94	106	99	103	3.34
FOOD	62	72	79	91	102	107	95	95	108	102	98	4.25
FEED	59	75	72	83	98	118	106	117	106	86	103	4.93
RAW MATERIALS	73	77	85	97	104	99	85	92	96	88	88	1.43
BEVERAGES	74	112	100	107	113	80	85	88	106	106	133	1.98
FOREST PRODUCTS	54	59	66	101	110	89	82	88	83	80	88	3.47

7. (Cont.) INDICES OF VALUE OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	1979-81=100	.....	.....	.....	.....	.....	.....	PERCENT
AFRICA DEVELOPING												
AGRICULTURAL PRODUCTS	78	101	98	105	105	90	84	79	90	88	104	-.15
FOOD	75	90	102	102	106	92	82	73	85	81	93	-.76
FEED	98	124	77	128	94	78	80	88	60	59	58	-6.35
RAW MATERIALS	76	78	78	94	99	107	90	93	104	96	96	2.52
BEVERAGES	82	129	102	115	105	80	84	81	93	99	127	-.05
FOREST PRODUCTS	68	71	78	91	124	85	70	67	69	66	65	-1.86
LATIN AMERICA												
AGRICULTURAL PRODUCTS	65	81	85	94	104	102	91	97	105	101	100	3.31
FOOD	62	73	78	90	101	109	92	100	109	105	93	4.30
FEED	52	76	71	79	95	125	104	122	109	84	93	5.12
RAW MATERIALS	71	84	97	95	101	104	93	83	85	80	62	-1.47
BEVERAGES	78	105	102	107	116	77	86	87	102	103	134	1.78
FOREST PRODUCTS	32	40	48	81	111	109	90	96	115	98	106	11.89
NEAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS	77	78	85	89	99	112	110	104	106	91	91	2.34
FOOD	56	63	76	82	98	120	123	115	113	96	103	6.44
FEED	115	113	78	94	121	85	60	49	66	21	31	-13.47
RAW MATERIALS	113	103	100	100	100	100	91	90	99	86	75	-2.80
BEVERAGES	48	68	79	104	85	111	74	64	68	47	40	-3.45
FOREST PRODUCTS	49	56	46	78	86	136	152	164	205	156	174	16.66
FAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS	58	72	74	91	105	104	91	93	111	96	97	4.48
FOOD	57	67	68	88	100	112	100	93	117	100	92	5.43
FEED	66	71	78	90	104	106	110	99	98	81	103	3.39
RAW MATERIALS	59	64	75	95	109	95	75	91	91	80	90	2.83
BEVERAGES	59	115	95	95	115	90	81	98	139	126	135	4.97
FOREST PRODUCTS	57	62	67	110	108	82	80	88	75	76	85	2.20
ASIAN CENT PLANNED ECON												
AGRICULTURAL PRODUCTS	68	66	80	93	106	101	100	107	123	140	160	8.31
FOOD	70	64	79	90	106	103	95	94	109	128	143	6.86
FEED	17	14	10	24	97	179	177	335	251	295	502	50.45
RAW MATERIALS	75	83	89	111	102	87	113	145	170	185	203	10.26
BEVERAGES	43	81	93	106	105	89	107	116	149	140	170	10.18
FOREST PRODUCTS	55	62	82	101	96	103	87	93	85	84	95	3.45

8. INDICES OF VOLUME OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	1979-81=100											PERCENT
WORLD												
AGRICULTURAL PRODUCTS	79	81	89	93	102	106	105	105	109	107	106	3.20
FOOD	78	81	89	92	102	106	104	104	108	106	103	3.02
FEED	73	75	90	90	100	110	115	122	116	123	133	6.07
RAW MATERIALS	93	94	100	100	101	99	97	100	102	102	107	.91
BEVERAGES	90	84	88	100	97	102	104	103	110	116	108	2.78
FOREST PRODUCTS	87	90	96	101	102	97	94	103	108	109	114	2.21
DEVELOPED COUNTRIES												
AGRICULTURAL PRODUCTS	76	77	88	91	103	105	103	102	106	100	99	2.96
FOOD	76	77	88	91	104	106	102	101	106	100	98	2.84
FEED	67	67	87	92	101	107	112	121	107	110	115	5.60
RAW MATERIALS	84	92	95	100	102	99	99	99	102	101	100	1.30
BEVERAGES	82	83	82	100	96	104	105	103	111	115	105	3.30
FOREST PRODUCTS	86	88	94	100	102	98	95	105	110	112	117	2.79
WESTERN EUROPE												
AGRICULTURAL PRODUCTS	77	75	85	91	99	109	108	115	124	131	135	6.35
FOOD	77	75	85	91	100	109	106	114	124	131	138	6.38
FEED	63	64	85	92	94	114	136	144	139	152	127	9.24
RAW MATERIALS	88	85	94	98	98	104	100	109	120	124	126	3.97
BEVERAGES	85	83	80	101	94	105	106	102	111	117	106	3.32
FOREST PRODUCTS	83	84	93	101	100	99	97	107	116	118	122	3.75
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS	91	108	94	102	98	100	100	95	95	99	98	-.05
FOOD	90	108	94	102	98	100	100	94	95	100	99	.02
FEED	141	126	118	109	96	95	111	93	76	118	73	-4.46
RAW MATERIALS	101	109	99	96	100	104	108	96	83	87	91	-1.72
BEVERAGES	81	92	93	100	100	100	104	112	109	107	90	1.75
FOREST PRODUCTS	107	109	112	103	100	97	98	102	104	104	108	-.36
NORTH AMERICA DEVELOPED												
AGRICULTURAL PRODUCTS	73	73	88	92	103	104	100	98	99	80	75	.80
FOOD	74	73	88	92	103	105	100	98	99	79	72	.54
FEED	66	65	85	90	107	103	99	111	92	88	113	4.20
RAW MATERIALS	71	84	92	98	105	97	96	92	97	92	85	1.07
BEVERAGES	44	64	75	87	111	102	98	94	96	104	113	6.97
FOREST PRODUCTS	84	88	91	99	103	98	92	103	106	107	114	2.46
OCEANIA DEVELOPED												
AGRICULTURAL PRODUCTS	74	85	93	78	123	99	105	94	107	140	140	5.43
FOOD	72	83	92	75	125	100	106	93	108	142	141	5.84
FEED	119	141	134	150	67	83	102	98	67	74	96	-5.42
RAW MATERIALS	108	112	103	110	98	93	100	106	100	110	122	.41
BEVERAGES	86	73	77	86	100	115	113	160	165	157	191	10.20
FOREST PRODUCTS	67	79	81	94	105	101	87	88	89	87	96	2.00
DEVELOPING COUNTRIES												
AGRICULTURAL PRODUCTS	86	94	94	96	97	107	109	115	117	125	124	3.79
FOOD	86	97	93	97	96	107	109	115	117	125	119	3.55
FEED	78	83	93	88	98	114	118	122	123	134	149	6.42
RAW MATERIALS	104	97	105	101	101	98	94	101	102	103	114	.47
BEVERAGES	100	86	96	100	100	100	103	102	110	116	113	2.12
FOREST PRODUCTS	97	98	104	107	102	91	86	94	94	93	98	-.83

8. (Cont.) INDICES OF VOLUME OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	1979-81=100	.....	.....	.....	.....	.....	.....	PERCENT
AFRICA DEVELOPING												
AGRICULTURAL PRODUCTS	108	99	100	100	101	99	101	96	89	94	98	-1.01
FOOD	103	96	100	98	103	99	102	96	88	93	97	-.73
FEED	143	132	96	128	96	76	90	104	71	93	80	-5.07
RAW MATERIALS	108	93	96	100	98	101	92	94	104	105	115	.75
BEVERAGES	125	105	106	104	94	102	104	87	90	98	105	-1.64
FOREST PRODUCTS	109	107	107	108	106	86	84	84	93	86	81	-3.15
LATIN AMERICA												
AGRICULTURAL PRODUCTS	82	100	95	98	92	110	104	121	116	127	108	3.25
FOOD	84	105	95	100	89	110	103	121	115	126	105	2.68
FEED	69	85	88	85	98	117	113	133	129	141	128	6.86
RAW MATERIALS	90	98	130	103	102	95	85	84	80	89	67	-3.50
BEVERAGES	93	73	92	101	102	98	104	111	118	125	113	3.74
FOREST PRODUCTS	49	59	71	92	105	103	94	113	127	118	124	9.01
NEAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS	78	79	98	88	97	116	137	136	133	110	111	4.85
FOOD	68	74	95	85	96	119	143	143	139	115	116	6.59
FEED	174	116	102	101	122	77	53	54	62	20	33	-15.83
RAW MATERIALS	156	112	122	107	98	94	99	100	104	86	89	-3.96
BEVERAGES	76	88	81	103	86	111	93	89	102	80	65	-.63
FOREST PRODUCTS	66	69	59	90	85	124	138	163	219	173	190	14.17
FAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS	86	88	89	94	100	107	118	107	120	118	140	4.62
FOOD	85	91	80	94	100	106	120	111	127	120	137	5.05
FEED	83	80	103	91	98	111	124	102	113	121	155	5.18
RAW MATERIALS	99	94	95	99	101	100	96	105	104	103	122	1.57
BEVERAGES	88	87	91	90	104	106	101	101	119	122	124	3.78
FOREST PRODUCTS	108	108	111	112	102	86	83	90	83	87	92	-2.83
ASIAN CENT PLANNED ECON												
AGRICULTURAL PRODUCTS	92	87	91	96	111	93	97	114	128	191	208	7.97
FOOD	96	91	96	99	112	88	91	99	115	181	182	5.87
FEED	19	15	11	27	94	179	184	342	298	363	579	51.11
RAW MATERIALS	114	106	92	108	98	94	117	181	229	245	410	13.26
BEVERAGES	75	95	97	105	105	90	111	130	143	135	166	6.61
FOREST PRODUCTS	99	98	126	107	92	101	93	96	85	88	98	-1.70

9. INDICES OF VALUE OF IMPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	.....	.....	.....	.....	.....	1979-81=100	.....	.....	.....	.....	.....	PERCENT
WORLD												
AGRICULTURAL PRODUCTS	60	69	77	91	104	104	96	93	98	94	99	4.09
FOOD	59	64	74	89	104	107	97	92	97	92	96	4.41
FEED	53	68	72	87	101	112	106	115	101	86	100	5.43
RAW MATERIALS	66	75	83	98	104	98	91	92	101	96	96	2.93
BEVERAGES	63	97	93	104	109	87	88	89	99	101	128	3.08
FOREST PRODUCTS	60	67	74	95	108	97	94	91	96	96	111	4.72
DEVELOPED COUNTRIES												
AGRICULTURAL PRODUCTS	64	73	81	95	104	101	94	91	96	94	104	3.44
FOOD	64	68	79	93	104	103	95	90	95	93	102	3.71
FEED	54	68	72	88	101	112	104	112	94	81	95	4.50
RAW MATERIALS	71	78	85	102	103	96	90	92	100	96	94	2.21
BEVERAGES	64	98	93	104	110	86	87	88	98	100	130	3.02
FOREST PRODUCTS	62	68	76	98	108	94	91	88	94	94	111	4.15
WESTERN EUROPE												
AGRICULTURAL PRODUCTS	64	75	85	99	106	95	92	88	89	91	108	2.91
FOOD	64	73	85	98	106	96	93	87	87	89	107	2.81
FEED	53	66	72	89	101	109	106	107	95	83	99	4.88
RAW MATERIALS	71	77	87	104	104	91	89	88	99	102	100	2.48
BEVERAGES	61	96	91	104	110	86	86	86	92	95	130	2.91
FOREST PRODUCTS	62	67	72	94	110	96	89	84	88	87	112	3.92
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS	61	62	68	84	102	114	99	94	97	90	82	4.01
FOOD	58	54	63	80	101	119	101	90	97	90	79	4.73
FEED	57	73	69	82	94	124	100	133	79	63	69	1.62
RAW MATERIALS	70	80	81	98	104	98	93	103	99	94	90	2.33
BEVERAGES	68	99	89	96	112	92	91	94	101	102	113	2.58
FOREST PRODUCTS	78	83	84	86	106	107	99	91	91	95	95	1.64
NORTH AMERICA DEVELOPED												
AGRICULTURAL PRODUCTS	67	79	87	98	102	100	92	95	113	112	119	4.57
FOOD	66	71	81	94	100	106	94	98	118	119	119	5.76
FEED	73	82	88	104	93	102	91	108	132	111	122	4.70
RAW MATERIALS	71	74	81	99	95	105	90	96	108	89	88	2.38
BEVERAGES	68	100	101	106	109	85	89	88	104	106	133	2.84
FOREST PRODUCTS	66	77	96	103	97	100	102	115	134	137	143	6.99
OCEANIA DEVELOPED												
AGRICULTURAL PRODUCTS	63	78	89	90	106	104	112	99	122	126	123	6.05
FOOD	64	74	86	91	103	106	128	111	136	134	129	7.41
FEED	24	43	186	48	87	165	75	338	107	192	171	17.79
RAW MATERIALS	74	75	85	88	107	105	90	78	100	109	105	3.06
BEVERAGES	49	94	100	90	114	96	92	87	111	120	128	5.50
FOREST PRODUCTS	58	73	70	85	104	110	122	83	103	117	115	6.16
DEVELOPING COUNTRIES												
AGRICULTURAL PRODUCTS	48	57	67	81	105	114	102	97	103	92	87	6.05
FOOD	47	54	64	79	105	116	104	98	102	90	82	6.19
FEED	40	66	70	81	100	118	123	142	164	129	148	12.72
RAW MATERIALS	53	66	76	89	106	105	93	91	101	96	101	5.16
BEVERAGES	61	87	95	103	100	97	88	94	110	104	111	3.53
FOREST PRODUCTS	49	62	68	84	104	112	108	105	106	106	111	7.55

9. (Cont.) INDICES OF VALUE OF IMPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	1979-81=100											PERCENT
AFRICA DEVELOPING												
AGRICULTURAL PRODUCTS	49	61	72	81	105	114	100	94	93	93	87	5.24
FOOD	47	57	69	79	106	115	102	95	93	93	85	5.72
FEED	23	46	60	79	99	122	116	93	124	114	141	14.85
RAW MATERIALS	60	74	85	94	99	106	106	102	107	115	111	5.30
BEVERAGES	70	101	99	93	105	103	71	82	74	75	89	-1.33
FOREST PRODUCTS	58	73	71	82	94	124	108	110	97	93	92	4.61
LATIN AMERICA												
AGRICULTURAL PRODUCTS	48	52	63	79	110	111	87	78	85	75	70	3.75
FOOD	47	50	62	75	112	113	87	78	84	75	69	3.91
FEED	37	64	62	81	102	116	118	125	126	95	94	8.97
RAW MATERIALS	50	63	72	96	106	98	80	73	94	84	87	3.59
BEVERAGES	55	68	67	129	87	84	73	54	53	49	56	-3.43
FOREST PRODUCTS	54	63	63	74	111	115	114	89	84	83	85	4.37
NEAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS	43	54	63	76	101	122	116	113	127	109	98	9.42
FOOD	42	50	59	74	102	124	117	111	124	105	92	9.62
FEED	42	73	83	83	87	130	136	199	240	252	246	19.06
RAW MATERIALS	57	76	81	91	96	113	106	126	134	127	130	7.96
BEVERAGES	54	87	118	97	106	97	102	112	149	127	121	6.11
FOREST PRODUCTS	54	78	75	78	103	119	116	107	110	121	110	6.81
FAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS	61	65	73	85	103	112	100	105	116	104	99	5.63
FOOD	61	60	71	83	104	113	100	105	111	99	90	5.33
FEED	45	68	70	85	107	108	123	138	163	97	153	10.77
RAW MATERIALS	64	79	81	92	101	107	98	99	120	112	114	5.21
BEVERAGES	68	92	83	95	97	108	112	136	182	194	214	11.47
FOREST PRODUCTS	47	56	71	99	101	100	96	95	100	92	99	6.19
ASIAN CENT PLANNED ECON												
AGRICULTURAL PRODUCTS	37	54	64	86	107	108	102	83	72	60	68	3.50
FOOD	37	56	63	88	102	110	110	89	75	58	64	3.25
FEED	49	71	98	49	92	158	124	155	213	151	114	11.66
RAW MATERIALS	37	47	67	81	118	101	82	69	65	63	75	3.74
BEVERAGES	51	115	77	96	96	109	69	121	92	93	116	3.61
FOREST PRODUCTS	32	45	57	77	109	115	111	147	160	167	205	18.71

10. INDICES OF VOLUME OF IMPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	1979-81=100											PERCENT
WORLD												
AGRICULTURAL PRODUCTS	79	80	88	94	101	105	106	105	108	108	105	3.28
FOOD	79	79	87	94	101	105	105	103	108	106	103	3.09
FEED	70	76	89	93	98	109	119	124	117	128	130	6.34
RAW MATERIALS	93	93	98	99	102	99	96	98	102	103	106	1.07
BEVERAGES	90	86	89	100	98	102	103	103	108	112	107	2.36
FOREST PRODUCTS	86	90	96	102	101	96	94	101	106	108	115	2.27
DEVELOPED COUNTRIES												
AGRICULTURAL PRODUCTS	89	85	92	97	99	104	104	100	104	107	103	1.97
FOOD	90	85	92	97	99	103	102	97	103	104	99	1.48
FEED	72	76	89	93	98	109	118	122	111	124	124	5.70
RAW MATERIALS	102	99	101	102	100	98	96	99	104	106	104	.33
BEVERAGES	90	84	89	100	98	102	103	102	107	112	107	2.47
FOREST PRODUCTS	89	91	97	104	101	94	92	99	105	107	114	1.82
WESTERN EUROPE												
AGRICULTURAL PRODUCTS	93	92	97	99	100	100	105	101	100	106	107	1.35
FOOD	98	96	98	100	102	98	102	97	96	101	103	.30
FEED	70	74	91	95	97	108	121	118	113	126	126	5.97
RAW MATERIALS	104	103	105	104	100	96	95	97	103	108	110	.18
BEVERAGES	90	85	88	102	97	102	103	101	102	109	105	2.07
FOREST PRODUCTS	86	87	92	103	101	96	94	102	106	106	116	2.45
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS	78	61	78	89	97	114	104	93	102	101	79	2.80
FOOD	77	58	77	88	97	115	104	89	102	101	78	2.98
FEED	78	80	80	87	99	114	108	142	88	93	91	2.49
RAW MATERIALS	91	89	92	98	102	100	96	105	105	103	92	1.05
BEVERAGES	99	95	88	94	103	103	99	96	102	103	81	-.21
FOREST PRODUCTS	94	97	96	92	105	103	95	90	90	95	93	-.44
NORTH AMERICA DEVELOPED												
AGRICULTURAL PRODUCTS	95	98	96	100	96	104	99	101	118	122	123	2.66
FOOD	96	101	95	99	96	105	98	100	117	121	123	2.42
FEED	93	90	105	106	94	100	100	111	145	157	151	5.38
RAW MATERIALS	102	102	99	105	90	106	93	101	111	114	105	.84
BEVERAGES	83	74	93	99	100	101	106	108	120	126	125	4.84
FOREST PRODUCTS	91	96	109	107	97	96	87	107	123	129	134	3.08
OCEANIA DEVELOPED												
AGRICULTURAL PRODUCTS	104	97	93	94	107	99	114	120	129	132	117	3.08
FOOD	105	96	90	94	109	97	119	122	139	135	116	3.50
FEED	27	48	227	56	94	150	85	393	82	298	259	19.27
RAW MATERIALS	118	107	105	99	103	98	91	84	89	106	96	-1.86
BEVERAGES	91	99	82	94	104	102	111	102	114	123	124	3.36
FOREST PRODUCTS	83	100	86	96	100	104	113	83	100	125	117	2.60
DEVELOPING COUNTRIES												
AGRICULTURAL PRODUCTS	60	70	80	89	103	108	109	113	117	111	110	6.09
FOOD	60	69	79	89	103	108	109	113	116	110	108	6.07
FEED	59	75	84	87	101	112	132	150	176	171	198	12.47
RAW MATERIALS	73	80	90	92	106	102	97	96	99	97	113	3.05
BEVERAGES	94	103	95	99	97	105	104	108	114	109	106	1.47
FOREST PRODUCTS	72	84	89	93	101	106	104	110	112	114	120	4.52

10. (Cont.) INDICES OF VOLUME OF IMPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	ANNUAL RATE OF CHANGE 1976-86
	1979-81=100											PERCENT
AFRICA DEVELOPING												
AGRICULTURAL PRODUCTS	61	76	88	90	102	107	110	110	118	121	116	6.04
FOOD	59	74	86	90	103	107	110	110	118	121	116	6.22
FEED	31	53	66	81	97	122	130	117	148	149	184	16.20
RAW MATERIALS	89	98	94	97	102	101	102	105	109	114	118	2.41
BEVERAGES	132	154	101	90	96	114	100	108	107	113	108	-1.51
FOREST PRODUCTS	75	91	83	90	93	117	105	115	105	101	98	2.84
LATIN AMERICA												
AGRICULTURAL PRODUCTS	56	63	78	82	110	107	93	101	98	100	88	4.73
FOOD	55	62	78	82	111	108	92	100	97	99	86	4.61
FEED	49	68	75	82	109	109	127	134	134	139	135	10.34
RAW MATERIALS	70	79	87	96	107	97	88	85	105	104	129	3.99
BEVERAGES	72	72	79	113	92	95	90	76	69	61	58	-2.71
FOREST PRODUCTS	77	86	81	84	110	106	99	88	84	82	87	.51
NEAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS	52	68	75	87	99	114	122	128	149	133	131	9.90
FOOD	51	67	74	87	99	114	121	127	148	132	129	9.87
FEED	50	81	92	93	90	117	148	186	260	278	275	18.28
RAW MATERIALS	83	88	81	87	96	117	114	131	130	127	115	5.11
BEVERAGES	76	82	110	99	99	103	115	117	135	117	112	4.13
FOREST PRODUCTS	70	88	83	86	101	112	121	122	134	141	126	6.66
FAR EAST DEVELOPING												
AGRICULTURAL PRODUCTS	90	78	85	92	105	103	106	118	119	118	123	4.41
FOOD	91	77	84	92	106	102	105	117	116	117	118	4.09
FEED	70	78	86	93	102	105	131	150	170	149	214	10.93
RAW MATERIALS	86	93	98	95	98	107	105	109	120	114	134	3.68
BEVERAGES	90	94	86	94	98	107	115	133	157	150	160	6.93
FOREST PRODUCTS	75	85	101	108	95	97	96	103	103	100	110	2.35
ASIAN CENT PLANNED ECON												
AGRICULTURAL PRODUCTS	40	67	77	97	99	104	112	101	83	68	78	3.60
FOOD	39	68	76	98	97	105	114	103	83	68	78	3.72
FEED	80	101	130	54	85	160	130	159	236	217	173	10.76
RAW MATERIALS	52	60	85	86	119	95	87	75	62	62	81	-.78
BEVERAGES	36	36	35	107	99	94	72	122	89	102	76	10.18
FOREST PRODUCTS	57	69	86	87	103	110	107	146	156	171	211	12.60

11. THE IMPORTANCE OF AGRICULTURE IN THE ECONOMY

COUNTRY	AGRIC. POPULATION AS % TOTAL POPULATION 1986	AGRIC. EXPORTS AS % TOTAL EXPORTS 1986	AGRIC. IMPORTS AS % TOTAL IMPORTS 1986	SHARE OF TOTAL IMPORTS FINANCED BY AGR. EXPORTS % 1986
ALGERIA	26	1	20	1
ANGOLA	71	5	16	7
BENIN	65	53	19	16
BOTSWANA	66	9	14	11
BURKINA FASO	85	69	29	22
BURUNDI	92	94	13	77
CAMEROON	65	57	12	48
CAPE VERDE	47	19	35	1
CENTRAL AFRICAN REPUBLIC	67	38	19	42
CHAD	78	78	11	65
COMOROS	81	60	29	30
CONGO	61	1	13	2
COTE D'IVOIRE	60	79	21	132
DJIBOUTI	79		36	
EGYPT	43	18	33	7
EQUATORIAL GUINEA	60	69	12	62
ETHIOPIA	77	85	30	40
GABON	71		14	1
GAMBIA	82	38	48	17
GHANA	53	51	11	65
GUINEA	77	7	17	9
GUINEA-BISSAU	80	68	23	25
KENYA	79	74	11	55
LESOTHO	82	93	36	5
LIBERIA	72	27	41	46
LIBYA	14		24	
MADAGASCAR	78	86	17	69
MALAWI	79	93	4	88
MALI	83	84	15	38
MAURITANIA	67	10	44	17
MAURITIUS	25	42	16	42
MOROCCO	40	17	18	11
MOZAMBIQUE	83	39	29	8
NAMIBIA	38			
NIGER	89	20	24	21
NIGERIA	66	2	15	3
REUNION	14	83	21	9
RWANDA	92	86	12	34
SAO TOME AND PRINCIPE	69	43	21	27
SENEGAL	79	17	28	12
SEYCHELLES	79	4	18	1
SIERRA LEONE	65	42	37	29
SOMALIA	72	85	38	22
SOUTH AFRICA	17	6	5	9
SUDAN	65	94	31	44
SWAZILAND	70	71	17	53
TANZANIA	81	86	12	35
TOGO	71	52	25	31
TUNISIA	28	10	15	6
UGANDA	83	92	5	131
ZAIRE	68	38	23	39
ZAMBIA	71	3	7	3
ZIMBABWE	70	51	4	55
BARBADOS	8	15	14	7
BELIZE	35	57	21	34
BERMUDA	3		20	
CANADA	4	8	6	8
COSTA RICA	27	70	6	65
CUBA	21	79	12	63
DOMINICA	30	83	17	37
DOMINICAN REPUBLIC	40	64	16	37
EL SALVADOR	40	64	10	44
GRENADA	30	55	18	20
GUADELOUPE	11	86	22	12
GUATEMALA	53	86	11	86
HAITI	63	35	23	16
HONDURAS	59	88	8	69
JAMAICA	31	24	19	15
MARTINIQUE	10	67	21	16
MEXICO	33	16	13	21
NICARAGUA	41	65	9	16
PANAMA	27	44	11	11
TRINIDAD AND TOBAGO	8	3	22	4
UNITED STATES	3	14	6	8
ARGENTINA	11	67	6	97
BOLIVIA	43	5	13	4
BRAZIL	27	35	13	56
CHILE	14	16	6	21
COLOMBIA	30	70	9	80
ECUADOR	34	37	7	44
FRENCH GUIANA	28	8	19	1
GUYANA	24	48	7	32
PARAGUAY	49	90	7	36

11. (Cont.) THE IMPORTANCE OF AGRICULTURE IN THE ECONOMY

COUNTRY	AGRIC. POPULATION AS % TOTAL POPULATION 1986	AGRIC. EXPORTS AS % TOTAL EXPORTS 1986	AGRIC. IMPORTS AS % TOTAL IMPORTS 1986	SHARE OF TOTAL IMPORTS FINANCED BY AGR. EXPORTS % 1986
PERU	39	17	22	16
SURINAME	18	13	10	13
URUGUAY	14	86	9	60
VENEZUELA	12	2	10	2
AFGHANISTAN	57	39	15	23
BANGLADESH	71	20	22	6
BHUTAN	91			
BRUNEI DARUSSALAM	55		17	
BURMA	49	51	8	55
CHINA (EXC TAIWAN)	70	18	6	13
CYPRUS	23	45	15	18
HONG KONG	1	5	11	5
INDIA	64	27	8	17
INDONESIA	48	17	9	23
IRAN	30	2	21	2
IRAQ	24		41	1
ISRAEL	5	12	9	9
JAPAN	8		14	1
JORDAN	7	18	25	6
KAMPUCHEA, DEMOCRATIC	72	70	16	8
KOREA DPR	37	1	7	1
KOREA REP	26	2	10	2
KUWAIT	2	1	18	1
LAOS	73	29	8	15
LEBANON	11	14	16	4
MALAYSIA	34	24	13	31
MALDIVES	66		14	
MONGOLIA	34	16	5	11
NEPAL	92	25	13	14
OMAN	44	1	15	1
PAKISTAN	55	33	20	18
PHILIPPINES	48	24	10	22
QATAR	2		20	
SAUDI ARABIA KINGDOM OF	43		17	
SINGAPORE	1	8	9	7
SRI LANKA	52	47	16	31
SYRIA	27	16	15	6
THAILAND	63	40	6	39
TURKEY	48	32	7	21
UNITED ARAB EMIRATES	3	1	13	2
VIET NAM	63	58	69	46
YEMEN ARAB REPUBLIC	65	80	29	1
YEMEN DEMOCRATIC	35	1	13	1
AUSTRIA	6	4	7	3
BELGIUM-LUXEMBOURG	2	11	12	11
BULGARIA	14	12	8	12
CZECHOSLOVAKIA	11	3	9	3
DENMARK	6	27	10	25
FINLAND	10	4	7	5
FRANCE	6	17	12	15
GERMAN DEMOCRATIC REP.	9	2	8	2
GERMANY, FED. REP. OF	4	5	14	7
GREECE	24	32	17	16
HUNGARY	14	20	9	20
ICELAND	7	2	11	2
IRELAND	15	26	13	28
ITALY	8	7	17	7
MALTA	4	5	13	3
NETHERLANDS	4	23	15	23
NORWAY	7	2	6	1
POLAND	21	8	12	9
PORTUGAL	21	7	15	6
ROMANIA	21	7	9	10
SPAIN	13	15	12	12
SWEDEN	5	2	7	3
SWITZERLAND	4	4	8	3
UNITED KINGDOM	2	8	13	7
USSR	15	3	17	3
YUGOSLAVIA	24	9	10	8
AUSTRALIA	6	36	6	34
FIJI	42	37	18	23
FRENCH POLYNESIA	16	7	18	
KIRIBATI	16	6	26	2
NEW CALEDONIA	48		19	
NEW ZEALAND	10	55	6	53
PAPUA NEW GUINEA	71	31	15	34
SOLOMON ISLANDS	48	19	16	19
TOKELAU	16			
TONGA	16	60	36	8
VANUATU	48	47	12	14

12/A. RESOURCES AND THEIR USE IN AGRICULTURE

COUNTRY	ARABLE LAND AS % OF TOTAL LAND 1986	IRRIGATED LAND AS % OF ARABLE LAND 1986	FOREST LAND AS % OF TOTAL LAND 1986	AGRIC. POPULATION PER HA OF ARABLE LAND 1986	AGRIC. LAB. FORCE AS % OF AGRIC. POPULATION 1986
ALGERIA	3	5	2	.8	23
ANGOLA	3		43	1.8	42
BENIN	17		33	1.5	48
BOTSWANA	2		2	.6	34
BURKINA FASO	10	1	25	2.3	54
BURUNDI	52	5	3	3.4	53
CAMEROON	15		54	.9	40
CAPE VERDE	10	5		3.9	37
CENTRAL AFRICAN REPUBLIC	3		58	.9	49
CHAD	3		10	1.3	35
COMOROS	45		16	3.8	46
CONGO	2	1	62	1.6	40
COTE D'IVOIRE	11	2	22	1.7	41
DJIBOUTI					45
EGYPT	3	100		8.1	27
EQUATORIAL GUINEA	8		46	1.0	43
ETHIOPIA	13	1	25	2.5	44
GABON	2		78	1.8	44
GAMBIA	17	7	18	3.2	47
GHANA	12		36	2.6	36
GUINEA	6	4	41	3.0	46
GUINEA-BISSAU	12		38	2.2	48
KENYA	4	2	6	7.1	40
LESOTHO	10			4.3	48
LIBERIA	4	1	22	4.4	37
LIBYA	1	11		.2	25
MADAGASCAR	5	28	26	2.6	45
MALAWI	25	1	47	2.4	44
MALI	2	9	7	3.3	32
MAURITANIA		6	15	6.5	31
MAURITIUS	58	16	31	2.5	37
MOROCCO	19	15	12	1.1	31
MOZAMBIQUE	4	3	19	3.8	55
NAMIBIA	1	1	22	.9	31
NIGER	3	1	2	1.5	52
NIGERIA	34	3	16	2.1	38
REUNION	22	9	35	1.3	40
RWANDA	45		20	5.2	50
SAO TOME AND PRINCIPE	39			1.9	40
SENEGAL	27	3	31	1.0	45
SEYCHELLES	22		19	10.3	44
SIERRA LEONE	25	2	29	1.3	37
SOMALIA	2	18	14	3.2	43
SOUTH AFRICA	11	9	4	.4	30
SUDAN	5	15	20	1.2	32
SWAZILAND	10	34	6	2.6	42
TANZANIA	6	2	48	3.6	49
TOGO	26		26	1.5	42
TUNISIA	30	6	4	.4	32
UGANDA	34		29	2.0	45
ZAIRE	3		77	3.2	39
ZAMBIA	7		40	.9	34
ZIMBABWE	7	7	52	2.3	39
BARBADOS	77			.6	51
BELIZE	2	4	44	1.1	33
BERMUDA			20		49
CANADA	5	2	38		50
COSTA RICA	10	21	32	1.4	34
CUBA	30	26	25	.6	40
DOMINICA	23		41	1.4	42
DOMINICAN REPUBLIC	30	14	13	1.7	30
EL SALVADOR	35	15	5	3.2	32
GRENADA	41		9	2.4	42
GUADELOUPE	23	7	40	.9	45
GUATEMALA	17	4	38	2.4	28
HAITI	33	8	2	4.7	45
HONDURAS	16	5	32	1.5	29
JAMAICA	25	13	17	2.8	43
MARTINIQUE	18	32	25	1.7	46
MEXICO	13	20	23	1.1	33
NICARAGUA	11	7	32	1.1	31
PANAMA	8	5	53	1.1	36
TRINIDAD AND TOBAGO	23	19	44	.9	38
UNITED STATES	21	10	29		44
ARGENTINA	13	5	22	.1	36
BOLIVIA	3	5	51	.8	31
BRAZIL	9	3	66	.5	37
CHILE	7	23	12	.3	35
COLOMBIA	5	9	50	1.7	32
ECUADOR	9	21	44	1.3	30
FRENCH GUIANA			83	4.7	35
GUYANA	3	26	83	.5	36
PARAGUAY	5	3	51	.8	32

12/A. (Cont.) RESOURCES AND THEIR USE IN AGRICULTURE

COUNTRY	ARABLE LAND AS % OF TOTAL LAND 1986	IRRIGATED LAND AS % OF ARABLE LAND 1986	FOREST LAND AS % OF TOTAL LAND 1986	AGRIC.POPULATION PER HA OF ARABLE LAND 1986	AGRIC.LAB.FORCE AS % OF AGRIC.POPULATION 1986
PERU	3	33	54	2.1	30
SURINAME		98	97	1.1	32
URUGUAY	8	7	4	.3	39
VENEZUELA	4	9	36	.6	36
AFGHANISTAN	12	33	3	1.2	30
BANGLADESH	68	23	16	8.1	29
BHUTAN	2		70	13.0	45
BRUNEI DARUSSALAM	1	14	50	19.0	42
BURMA	15	11	49	1.9	45
CHINA (EXC TAIWAN)	10	46	12	7.6	59
CYPRUS	17	20	13	1.0	47
HONG KONG	8	38	12	10.6	52
INDIA	57	26	23	2.9	41
INDONESIA	12	34	67	3.8	42
IRAN	9	39	11	.9	30
IRAQ	13	32	4	.7	27
ISRAEL	21	66	5	.5	38
JAPAN	13	62	67	2.0	52
JORDAN	4	10	1	.6	23
KAMPUCHEA,DEMOCRATIC	17	3	76	1.8	49
KOREA DPR	20	48	74	3.2	45
KOREA REP	22	58	66	5.2	45
KUWAIT		25		7.5	37
LAOS	4	13	57	3.4	49
LEBANON	29	29	8	1.0	29
MALAYSIA	13	8	60	1.2	42
MALDIVES	10		3	41.6	36
MONGOLIA	1	3	10	.5	47
NEPAL	17	28	17	6.7	42
OMAN		87		12.0	29
PAKISTAN	27	77	4	2.7	28
PHILIPPINES	27	18	37	3.4	37
QATAR				1.8	46
SAUDI ARABIA KINGDOM OF	1	36	1	4.4	29
SINGAPORE	7		5	7.7	48
SRI LANKA	29	32	27	4.6	37
SYRIA	31	12	3	.5	25
THAILAND	39	20	29	1.7	55
TURKEY	36	8	26	.9	47
UNITED ARAB EMIRATES		26		2.4	51
VIET NAM	21	26	40	5.7	48
YEMEN ARAB REPUBLIC	7	18	8	3.4	25
YEMEN, DEMOCRATIC	1	37	5	4.7	26
AUSTRIA	18		39	.3	55
BELGIUM-LUXEMBOURG	25		21	.3	40
BULGARIA	37	30	35	.3	51
CZECHOSLOVAKIA	41	5	37	.3	53
DENMARK	62	16	12	.1	55
FINLAND	8	3	76	.2	50
FRANCE	35	6	27	.2	48
GERMAN DEMOCRATIC REP.	47	3	28	.3	57
GERMANY, FED. REP. OF	31	4	30	.3	57
GREECE	30	28	20	.6	43
HUNGARY	57	3	18	.3	47
ICELAND			1	2.1	61
IRELAND	11		5	.7	39
ITALY	41	25	23	.4	46
MALTA	41	8		1.3	36
NETHERLANDS	27	59	9	.7	41
NORWAY	3	11	27	.3	47
POLAND	49	1	29	.5	59
PORTUGAL	30	23	40	.8	42
ROMANIA	46	28	28	.5	56
SPAIN	41	16	31	.2	37
SWEDEN	7	2	64	.1	45
SWITZERLAND	10	6	26	.7	58
UNITED KINGDOM	29	2	9	.2	49
USSR	10	9	42	.2	51
YUGOSLAVIA	30	2	37	.7	50
AUSTRALIA	6	3	14		47
FIJI	13		65	1.2	33
FRENCH POLYNESIA	20		31	.4	33
KIRIBATI	52		3	.3	36
NEW CALEDONIA	1		38	3.7	32
NEW ZEALAND	2	51	27	.6	44
PAPUA NEW GUINEA	1		85	6.6	48
SOLOMON ISLANDS	2		93	2.5	32
TOKELAU					36
TONGA	81		12	.3	32
VANUATU	10		1	.5	32

12/B. RESOURCES AND THEIR USE IN AGRICULTURE

COUNTRY	AGRICULTURAL GFCF $ PER HA ARABLE LAND 1985	AGRICULTURAL GFCF $ PER CAPUT OF AGRIC.LAB.FORCE 1985	FERTILIZER USE PER HA ARAB.LAND KG/HA 1985	NOS. OF TRACTORS PER 000 HA ARABLE LAND 1985	OFFICIAL COMMITM. TO AGRICULTURE $ PER CAPUT 1986
ALGERIA			38	8	3.1
ANGOLA			6	3	1.6
BENIN			7		3.9
BOTSWANA	4.3	24.4		2	8.5
BURKINA FASO			5		6.0
BURUNDI			2		1.1
CAMEROON			8		6.3
CAPE VERDE					38.0
CENTRAL AFRICAN REPUBLIC			1		11.0
CHAD			2		8.2
COMOROS					1.6
CONGO			7	1	33.7
COTE D'IVOIRE			12	1	8.4
DJIBOUTI					3.1
EGYPT	260.7	123.0	347	17	8.1
EQUATORIAL GUINEA					2.5
ETHIOPIA			5		2.1
GABON	48.1	57.3	6	3	56.2
GAMBIA			24		11.4
GHANA			4	1	.9
GUINEA					10.9
GUINEA-BISSAU					10.9
KENYA	32.0	11.6	46	4	6.5
LESOTHO	48.7	24.5	12	5	5.5
LIBERIA			4	1	6.3
LIBYA	400.0	6197.8	26	13	
MADAGASCAR			3	1	7.9
MALAWI			14	1	10.2
MALI			13		11.2
MAURITANIA			10	2	26.3
MAURITIUS	85.0	92.9	261	3	38.8
MOROCCO			36	4	17.7
MOZAMBIQUE			1	2	2.8
NAMIBIA				4	
NIGER			1		10.7
NIGERIA			10		2.8
REUNION			259	31	
RWANDA			1		6.8
SAO TOME AND PRINCIPE				3	155.8
SENEGAL			4		10.7
SEYCHELLES				6	67.0
SIERRA LEONE			2		.4
SOMALIA			4	2	26.7
SOUTH AFRICA	28.0	217.1	66	14	
SUDAN			7	1	10.1
SWAZILAND	104.2	80.9	46	21	6.9
TANZANIA	8.3	4.8	8	4	6.5
TOGO			7		5.1
TUNISIA	67.5	485.0	19	5	64.8
UGANDA				1	.4
ZAIRE			1		1.4
ZAMBIA			15	1	10.6
ZIMBABWE	22.8	26.0	62	7	5.7
BARBADOS			101	18	7.8
BELIZE			46	18	12.9
CANADA	61.1	5352.1	51	16	
COSTA RICA	92.1	227.3	154	12	24.3
CUBA			179	21	
DOMINICA			159	5	47.3
DOMINICAN REPUBLIC			41	2	1.7
EL SALVADOR	12.7	13.2	116	5	3.3
GRENADA				2	
GUADELOUPE			231	34	
GUATEMALA	50.0	75.2	52	2	2.4
HAITI			4	1	3.1
HONDURAS			13	2	18.4
JAMAICA			44	11	7.4
MARTINIQUE			795	39	
MEXICO			69	6	3.9
NICARAGUA			50	2	2.7
PANAMA			45	11	4.4
TRINIDAD AND TOBAGO			60	22	
UNITED STATES	77.2	4398.7	94	25	
ARGENTINA			4	6	11.5
BOLIVIA			2		3.6
BRAZIL			43	10	7.0
CHILE			39	6	8.2
COLOMBIA			69	6	14.8
ECUADOR			28	3	27.3
FRENCH GUIANA			201	42	2.7
GUYANA			25	7	7.6
PARAGUAY			5	4	2.0
PERU			20	5	1.4

12/B. (Cont.) RESOURCES AND THEIR USE IN AGRICULTURE

COUNTRY	AGRICULTURAL GFCF $ PER HA ARABLE LAND 1985	AGRICULTURAL GFCF $ PER CAPUT OF AGRIC.LAB.FORCE 1985	FERTILIZER USE PER HA ARAB.LAND KG/HA 1985	NOS. OF TRACTORS PER 000 HA ARABLE LAND 1985	OFFICIAL COMMITM. TO AGRICULTURE $ PER CAPUT 1986
SURINAME			198	28	8.2
URUGUAY			42	23	3.6
VENEZUELA	118.7	573.1	127	12	3.6
AFGHANISTAN			9		
BANGLADESH			59	1	3.7
BHUTAN			1		8.2
BRUNEI DARUSSALAM			128	10	
BURMA			20	1	4.0
CHINA (EXC TAIWAN)	12.4	4.5	169	9	.2
CYPRUS	157.2	943.1	115	84	.1
HONG KONG				1	
INDIA	41.0	35.1	51	4	
INDONESIA			94	1	4.4
IRAN	120.3	438.3	61	7	
IRAQ	242.0	1264.5	32	7	2.5
ISRAEL	401.9	2000.0	220	63	
JAPAN	146.1	126.3	427	390	
JORDAN			37	12	9.2
KOREA DPR			342	30	
KOREA REP	899.9	380.8	376	6	
KUWAIT			233	20	
LAOS			2	1	2.3
LEBANON			119	10	
MALAYSIA	104.4	205.8	140	3	21.6
MALDIVES					.2
MONGOLIA			14	8	
NEPAL			19	1	10.6
OMAN			102	3	13.3
PAKISTAN	30.4	40.6	73	8	6.6
PHILIPPINES			36	2	4.2
QATAR			145	21	
SAUDI ARABIA KINGDOM OF			293	1	
SINGAPORE			1040	11	
SRI LANKA			104	15	13.3
SYRIA	118.1	931.1	41	8	1.5
THAILAND	30.0	36.4	21	6	4.7
TURKEY			54	21	5.2
UNITED ARAB EMIRATES	7120.0	4450.0	221		
VIET NAM			55	6	.6
YEMEN ARAB REPUBLIC	85.6	110.4	12	2	7.1
YEMEN DEMOCRATIC			14	7	
AUSTRIA	492.5	2746.7	255	214	
BELGIUM-LUXEMBOURG	439.3	3745.4	523	153	
BULGARIA			209	13	
CZECHOSLOVAKIA			337	27	
DENMARK	197.7	3072.8	242	63	
FINLAND	480.0	4702.0	210	100	
FRANCE	177.1	1915.3	301	81	
GERMAN DEMOCRATIC REP.			330	32	
GERMANY, FED. REP. OF	537.0	3009.0	427	199	
GREECE	97.3	366.5	174	46	
HUNGARY			253	10	9.4
ICELAND	7312.5	5318.2	3151	1650	
IRELAND	309.1	1365.5	784	198	
ITALY	455.1	2646.5	171	100	
MALTA	246.2	533.3	56	34	
NETHERLANDS	1468.0	4960.2	786	196	
NORWAY	956.4	5977.2	278	175	
POLAND			230	62	
PORTUGAL	85.1	269.9	87	28	1.1
ROMANIA			129	17	
SPAIN			82	31	
SWEDEN	287.5	4333.3	141	62	
SWITZERLAND			436	256	
UNITED KINGDOM	190.0	2124.5	357	74	
USSR			109	12	
YUGOSLAVIA	108.2	238.3	128	113	
AUSTRALIA			24	7	
FIJI	36.6	100.0	72	20	32.8
FRENCH POLYNESIA			15	2	
KIRIBATI					17.3
NEW CALEDONIA			20	63	
NEW ZEALAND	937.9	3019.2	822	147	
PAPUA NEW GUINEA			22	3	9.7
SOLOMON ISLANDS					20.9
TONGA	77.4	683.3	2	1	29.0
VANUATU					33.5

13. MEASURES OF OUTPUT AND PRODUCTIVITY IN AGRICULTURE

COUNTRY	INDEX OF FOOD PRODUC.PER CAPUT 1979-81=100 1985-87	INDEX OF TOT.AGR. PRODUC.PER CAPUT 1979-81=100 1985-87	PER CAPUT DIETARY ENERGY SUPPLIES 1983-85	INDEX OF VALUE OF AGRIC.EXPORTS 1979-81=100 1984-86
ALGERIA	126	106	2669	47
ANGOLA	103	96	1953	50
BENIN	133	115	2136	200
BOTSWANA	90	72	2221	102
BURKINA FASO	136	120	1985	80
BURUNDI	118	98	2254	150
CAMEROON	114	96	2036	91
CAPE VERDE	110	97	2706	53
CENTRAL AFRICAN REPUBLIC	104	91	1945	124
CHAD	120	105	1587	130
COMOROS	115	96	2104	98
CONGO	108	93	2574	101
COTE D'IVOIRE	132	102	2523	115
EGYPT	126	104	3280	104
EQUATORIAL GUINEA				98
ETHIOPIA	104	88	1652	100
GABON	107	97	2464	66
GAMBIA	144	128	2264	82
GHANA	132	108	1648	66
GUINEA	108	94	1797	74
GUINEA-BISSAU	168	149	2067	122
KENYA	118	96	2179	118
LESOTHO	96	85	2322	110
LIBERIA	115	94	2347	88
LIBYA	160	127	3629	
MADAGASCAR	115	97	2425	93
MALAWI	106	92	2404	112
MALI	117	100	1954	102
MAURITANIA	106	88	2294	87
MAURITIUS	117	106	2724	93
MOROCCO	125	108	2827	65
MOZAMBIQUE	100	83	1638	38
NAMIBIA	103	86	1875	87
NIGER	103	87	2333	76
NIGERIA	128	104	2084	60
REUNION	84	79	2948	75
RWANDA	108	91	1912	109
SAO TOME AND PRINCIPE	80	68	2387	38
SENEGAL	124	106	2307	91
SEYCHELLES			2285	36
SIERRA LEONE	110	99	1892	90
SOMALIA	119	100	2080	57
SOUTH AFRICA	98	84	2950	49
SUDAN	112	96	2063	81
SWAZILAND	126	104	2543	76
TANZANIA	111	88	2204	72
TOGO	106	91	2166	116
TUNISIA	130	114	2889	80
UGANDA	150	123	2197	128
ZAIRE	118	99	2157	129
ZAMBIA	118	98	2159	152
ZIMBABWE	112	99	2098	103
BARBADOS	83	81	3151	72
BELIZE	106	93	2575	80
BERMUDA			2534	
CANADA	117	110	3394	106
COSTA RICA	106	96	2743	101
CUBA	110	107	3082	112
DOMINICA	140	133	2619	276
DOMINICAN REPUBLIC	112	96	2437	80
EL SALVADOR	102	68	2142	70
GRENADA	90	85	2382	67
GUADELOUPE	126	123	2657	83
GUATEMALA	111	85	2280	89
HAITI	112	94	1903	99
HONDURAS	95	79	2093	98
JAMAICA	111	103	2579	111
MARTINIQUE	131	130	2767	155
MEXICO	110	94	3152	113
NICARAGUA	90	71	2436	51
PANAMA	110	99	2447	95
TRINIDAD AND TOBAGO	79	72	3045	58
UNITED STATES	103	96	3606	77
ARGENTINA	107	97	3159	94
BOLIVIA	113	96	2083	36
BRAZIL	123	107	2631	107
CHILE	112	102	2576	149
COLOMBIA	111	95	2554	107
ECUADOR	118	101	2050	101
FRENCH GUIANA			2717	794
GUYANA	90	80	2450	57
PARAGUAY	128	110	2826	112
PERU	113	95	2153	101

13. (Cont.) MEASURES OF OUTPUT AND PRODUCTIVITY IN AGRICULTURE

COUNTRY	INDEX OF FOOD PRODUC. PER CAPUT 1979-81=100 1985-87	INDEX OF TOT. AGR. PRODUC. PER CAPUT 1979-81=100 1985-87	PER CAPUT DIETARY ENERGY SUPPLIES 1983-85	INDEX OF VALUE OF AGRIC. EXPORTS 1979-81=100 1984-86
SURINAME	113	106	2688	108
URUGUAY	107	105	2700	85
VENEZUELA	110	93	2556	181
AFGHANISTAN	106	97	2289	63
BANGLADESH	113	96	1905	109
BHUTAN	127	113		100
BRUNEI DARUSSALAM	157	121	2856	153
BURMA	136	121	2564	70
CHINA (EXC TAIWAN)	137	128	2608	163
CYPRUS	95	89		104
HONG KONG	34	30	2743	222
INDIA	121	107	2185	93
INDONESIA	132	116	2490	104
IRAN	118	100	3269	88
IRAQ	143	116	2994	50
ISRAEL	117	102	3026	100
JAPAN	109	102	2859	71
JORDAN	142	114	2939	64
KAMPUCHEA, DEMOCRATIC	165	145	2116	175
KOREA DPR	126	109	3164	26
KOREA REP	110	98	2849	71
KUWAIT			3105	83
LAOS	141	123	2236	964
LEBANON	117	113	3091	59
MALAYSIA	119	98	2685	102
MALDIVES	128	105	2042	116
MONGOLIA	118	97	2817	73
NEPAL	117	101	2051	93
OMAN				97
PAKISTAN	125	108	2223	90
PHILIPPINES	107	93	2328	67
SAUDI ARABIA KINGDOM OF	238	184	3048	100
SINGAPORE	96	90	2813	137
SRI LANKA	91	85	2413	113
SYRIA	115	93	3262	98
THAILAND	116	105	2302	101
TURKEY	113	99	3102	114
UNITED ARAB EMIRATES			3714	62
VIET NAM	130	115	2221	162
YEMEN ARAB REPUBLIC	135	114	2255	71
YEMEN DEMOCRATIC	103	88	2321	74
AUSTRIA	108	108	3408	118
BELGIUM-LUXEMBOURG	110	110	3829	106
BULGARIA	102	99	3631	87
CZECHOSLOVAKIA	121	119	3482	91
DENMARK	120	120	3445	102
FINLAND	108	105	3051	93
FRANCE	109	106	3222	102
GERMAN DEMOCRATIC REP.	114	115	3770	77
GERMANY, FED. REP. OF	111	112	3419	109
GREECE	105	103	3678	127
HUNGARY	108	109	3533	89
ICELAND	102	95	3063	75
IRELAND	108	100	3730	86
ITALY	102	101	3462	105
MALTA	115	110	2888	75
NETHERLANDS	113	110	3208	103
NORWAY	111	109	3193	89
POLAND	113	107	3270	94
PORTUGAL	107	103	3116	118
ROMANIA	119	115	3336	63
SPAIN	117	112	3338	104
SWEDEN	104	103	3029	117
SWITZERLAND	110	107	3450	104
UNITED KINGDOM	110	109	3198	99
USSR	116	108	3398	77
YUGOSLAVIA	104	100	3560	101
AUSTRALIA	106	102	3304	92
FIJI	102	91	2898	57
FRENCH POLYNESIA	116	102	2880	62
KIRIBATI			2942	109
NEW CALEDONIA	112	99	2974	20
NEW ZEALAND	114	106	3365	98
PAPUA NEW GUINEA	109	92	2162	108
SOLOMON ISLANDS	114	91	2164	116
TONGA	101	88	2945	75
VANUATU	108	86	2356	105

14. CARRY-OVER STOCKS OF SELECTED AGRICULTURAL PRODUCTS

	CROP YEAR ENDING IN						
	1982	1983	1984	1985	1986	1987[A]	1988[B]
	..... MILLION TONS						
CEREALS							
DEVELOPED COUNTRIES	188.7	235.7	157.7	198.5	287.6	316.4	277.9
CANADA	16.2	18.5	13.3	12.1	14.4	18.8	16.6
UNITED STATES	111.2	152.2	79.5	98.8	181.2	203.5	165.3
AUSTRALIA	5.3	2.5	8.2	8.8	6.2	4.2	3.2
EEC	19.0	23.7	16.4	29.2	36.1	30.7	31.6
JAPAN	7.1	5.2	4.8	4.3	5.2	5.8	5.9
USSR	13.0	18.0	23.0	29.0	31.0	38.0	42.0
DEVELOPING COUNTRIES	109.8	106.6	124.3	136.2	130.8	130.4	107.6
FAR EAST	78.4	77.9	96.9	106.6	95.9	89.5	70.7
BANGLADESH	0.7	0.6	0.8	1.0	0.9	0.8	1.3
CHINA	46.0	51.0	58.0	64.0	51.5	45.8	43.0
INDIA	7.7	7.6	12.8	18.1	17.1	15.2	8.6
PAKISTAN	2.2	2.2	2.2	1.7	2.0	3.6	2.0
NEAR EAST	13.1	12.4	14.0	14.9	15.1	18.7	16.7
TURKEY	1.1	1.0	0.3	0.7	0.5	0.9	0.8
AFRICA	5.1	4.8	4.1	4.5	8.5	11.0	7.0
LATIN AMERICA	13.3	11.5	9.3	10.2	11.3	11.3	13.3
ARGENTINA	1.5	1.8	1.7	0.9	0.7	0.7	1.1
BRAZIL	3.3	3.1	1.4	1.7	2.8	4.6	6.9
WORLD TOTAL							
OF WHICH:	298.6	342.3	282.0	334.6	418.3	446.8	385.5
WHEAT	105.8	122.0	133.7	151.4	159.0	166.6	144.1
RICE (MILLED BASIS)	46.7	43.2	48.6	54.7	55.1	50.7	35.2
COARSE GRAINS	146.1	177.1	99.7	128.5	204.2	229.5	206.2
SUGAR (RAW VALUE)							
WORLD TOTAL 1 SEPT.	33.3	39.1	39.9	40.3	37.9	37.1	...
COFFEE[C]	2.97	3.26	3.08	3.05	2.50	2.14	...
DRIED SKIM MILK				....THOUSAND TONS....			
UNITED STATES	582	628	566	459	312	80	...
EEC	670	996	664	520	772	473	...
TOTAL OF ABOVE	1 252	1 624	1 280	979	1 084	553	...

[A] ESTIMATE.
[B] FORECAST.
[C] GROSS OPENING STOCKS AT THE COMMENCING OF THE COFFEE YEARS, 1 OCTOBER.

SOURCE: FAO, COMMODITIES AND TRADE DIVISION.

15. ANNUAL CHANGES IN CONSUMER PRICES: ALL ITEMS AND FOOD

REGION AND COUNTRY	ALL ITEMS				FOOD			
	1970 TO 1975	1975 TO 1980	1980 TO 1985	1985 TO 1986	1970 TO 1975	1975 TO 1980	1980 TO 1985	1985 TO 1986
	%/YEAR							
DEVELOPED COUNTRIES								
WESTERN EUROPE								
AUSTRIA	7.4	3.8	4.8	1.6	6.7	4.4	4.1	2.4
BELGIUM	8.3	6.4	13.3	1.3	7.5	4.6	7.5	1.9
DENMARK	9.5	10.4	7.9	3.6	10.7	...	8.1	2.0
FINLAND	2.0	10.6	8.5	3.6	12.4	10.8	9.3	3.6
FRANCE	8.8	10.4	9.6	2.7	9.6	10.0	9.7	3.4
GERMANY, FED. REP.	6.2	4.0	3.8	−0.2	5.6	3.3	3.2	0.6
GREECE	13.1	16.3	20.5	23.0	14.7	17.6	20.6	20.3
ICELAND	24.8	42.0	50.5	21.3	28.3	41.0	53.1	22.9
IRELAND	13.0	12.9	12.1	3.9	14.3	13.7	10.0	4.4
ITALY	11.4	3.0	13.8	5.9	11.6	15.6	12.5	5.5
NETHERLANDS	8.6	6.1	4.0	0.2	6.9	...	3.3	−0.7
NORWAY	8.3	8.4	8.9	7.2	8.3	7.4	6.6	...
PORTUGAL	15.3	...	23.9	11.7	16.3	21.0	24.2	9.1
SPAIN	12.0	18.6	12.3	8.8	12.1	16.0	12.3	10.6
SWEDEN	7.8	10.5	8.9	4.2	7.9	10.7	11.7	7.2
SWITZERLAND	7.9	2.4	4.1	0.8	7.3	2.9	4.9	1.3
UNITED KINGDOM	12.3	14.4	6.8	3.4	15.1	13.9	5.5	3.3
YUGOSLAVIA	19.3	18.2	45.7	89.0	19.1	19.4	47.1	90.0
NORTH AMERICA								
CANADA	7.4	8.4	7.3	4.0	11.1	9.9	5.9	5.0
UNITED STATES	6.7	8.9	5.2	1.9	9.5	7.6	3.8	3.2
OCEANIA								
AUSTRALIA	10.2	10.6	8.4	9.1	9.8	12.0	7.8	9.0
NEW ZEALAND	9.8	14.8	11.3	13.3	9.4	16.8	9.6	11.4
OTHER DEVELOPED COUNTRIES								
ISRAEL	23.9	60.0	193.7	48.1	25.1	65.0	192.9	54.8
JAPAN	12.0	6.5	2.6	0.6	13.0	5.5	2.6	0.2
SOUTH AFRICA	9.3	12.0	13.7	18.6	11.7	13.0	12.9	20.3
DEVELOPING COUNTRIES								
LATIN AMERICA								
ARGENTINA	59.5	100.0	207.9	90.1	58.0	...	327.0	98.1
BAHAMAS	9.5	6.9	5.5	5.5	11.8	7.7	5.1	8.6
BARBADOS	18.6	10.0	6.1	1.4	21.0	9.1	6.1	2.4
BOLIVIA	23.7	17.0	51.6[A]	276.3	27.2	16.4	...	276.7
BRAZIL	23.5[B]	46.0	133.7	130.0	25.9[B]	49.0	142.8	138.5
CHILE	225.4	70.0	41.0	19.5	245.5	70.0	18.0	23.8
COLOMBIA	19.5	23.0	21.9	18.1	24.0	25.0	22.5	19.3
COSTA RICA	13.7	8.1	36.3	12.4	3.7	9.6	38.5	11.8
DOMINICAN REPUBLIC	11.1	8.3	10.6[A]	9.8	13.3	3.4	8.6[A]	11.9
ECUADOR	13.7	11.7	27.2	23.0	18.4	11.2	35.6	23.1
EL SALVADOR	8.4	...	14.0	32.0	8.8	...	14.3	31.8
GUATEMALA	2.9	10.7	...	37.1	3.3	9.4	...	39.2
GUYANA	8.2	12.8	19.6[A]	...	12.2	14.1	26.5[A]	...
HAITI	13.7	8.0	8.8	2.9	15.5	9.3	6.6	2.7
HONDURAS	6.5	9.2	7.1	3.9[C]	8.0	9.6	4.2	2.9[C]
JAMAICA	14.9	22.0	...	15.1	17.2	24.0	15.7	17.8
MEXICO	12.4	21.0	18.9	86.3	13.9	19.5	63.7	85.6
PANAMA	7.8	6.9	9.6	—	9.9	6.6	3.6	0.4
PARAGUAY	12.6	14.7	3.1	...	15.4	14.9	...	...
PERU	12.1	37.0	100.2	77.7	13.9	50.0	87.8	...
PUERTO RICO	8.8	5.6	2.9	−0.2	12.6	5.5	2.8	1.1
SURINAME	8.2	11.5	6.4	18.7	9.5	12.2	4.8	25.5
TRINIDAD & TOBAGO	13.7	12.9	13.1	7.7	17.1	11.1	14.8	10.6
URUGUAY	73.4	55.0	43.7	76.3	76.0	55.0	43.1	91.8
VENEZUELA	5.5	11.4	10.5	11.6	8.5	15.7	13.6	18.5
FAR EAST								
BANGLADESH	39.0[D]	7.6	10.1	11.6	42.0[D]	5.0	10.9	14.8
BURMA	17.8	3.8	4.5	9.2	21.0	2.6	4.2	6.3
INDIA	13.2	1.3	6.9	5.3	14.2	0.8	6.7	5.4
INDONESIA	21.3	...	10.1	5.8	25.2	...	8.4	8.5
KOREA, REP. OF	14.3	17.2	6.3	2.3	16.8	17.2	5.4	1.1
MALAYSIA	6.7	4.6	4.5	0.7	10.4	3.7	2.5	0.2
NEPAL	10.3	6.7	11.6	18.6	9.8	6.1	4.1	21.2
PAKISTAN	15.2	9.0	7.6	3.8	16.6	8.0	7.5	2.1
PHILIPPINES	18.7	12.0	20.6	0.7	20.1	11.0	20.2	−0.9
SRI LANKA	8.0	9.9	12.6	7.9	9.1	10.7	12.6	7.2
THAILAND	9.8	10.4	4.6	1.8	11.9	10.6	3.0	—

15. (Cont.) ANNUAL CHANGES IN CONSUMER PRICES: ALL ITEMS AND FOOD

REGION AND COUNTRY	ALL ITEMS				FOOD			
	1970 TO 1975	1975 TO 1980	1980 TO 1985	1985 TO 1986	1970 TO 1975	1975 TO 1980	1980 TO 1985	1985 TO 1986
	%/YEAR							
AFRICA								
ALGERIA	5.1	12.4	7.1[A]	...	7.2	15.7	4.0[A]	...
BOTSWANA	...	12.4	8.5	10.1	...	13.8	...	9.5
BURUNDI	...	18.3	8.9	1.8	...	16.2	9.4	7.7
CAMEROON	10.2	10.7	11.6	11.1	11.5	11.8	...	...
ETHIOPIA	3.7	15.7	6.6	−9.8	2.7	19.2	6.8	−15.2
GABON	11.4	12.9	10.1	6.2	2.7	...	...	...
GAMBIA	10.5	10.2	12.0	53.9[E]	12.8	9.7	13.4	60.3[E]
GHANA	17.4	70.0	118.5	24.6	20.3	45.0	51.3	20.3
COTE D'IVOIRE	8.2	16.7	11.7	10.0	9.3	19.3	4.2	9.6
KENYA	13.9[D]	9.8	15.3	2.7	14.7[D]	10.2	12.9	1.5
LESOTHO	14.7[D]	15.1	13.7	19.1	16.4[D]	18.6	13.1	12.8
LIBERIA	12.1	8.8	3.4	4.0	13.7	8.1	2.1	−1.4
MADAGASCAR	9.7	9.2	20.0	14.5	12.0	9.0	19.8	18.1
MALAWI	8.9	9.2	...	14.0	10.7	9.5	...	15.7
MAURITIUS	13.1	16.9	...	1.8	14.7	16.3	...	2.2
MOROCCO	5.4	9.7	9.7	8.8	7.2	9.3	10.3	9.3
NIGER	7.9	14.6	6.8	−3.2	10.6	14.8	8.4	−5.7
NIGERIA	11.5	14.4	19.9	5.4	13.1	20.0	21.3	0.1
SENEGAL	13.0	6.8	12.3	6.1	16.5	6.4	11.5	6.6
SIERRA LEONE	8.4	13.8	45.0[A]	80.8	11.0	12.9	43.1[A]	77.6
SWAZILAND	9.3	13.2	13.9	13.2	9.8	14.0	13.7	11.8
TANZANIA	13.1	14.5	30.2	32.4	17.7	13.4	30.5	34.8
TOGO	8.9	8.1	6.3	5.1[F]	9.7	9.9	5.3	5.9[F]
TUNISIA	4.8	...	10.2[A]	5.7	5.2	...	10.8[A]	5.8
ZAIRE	18.6	...	...	...	21.2	...	...	...
ZAMBIA	7.1	15.2	19.4	51.6	7.4	13.7	19.9	49.6
ZIMBABWE	...	9.8	15.9	14.3	...	8.4	17.8	13.1
NEAR EAST								
CYPRUS	8.0	...	6.4	1.2	10.2	...	7.2	2.9
EGYPT	5.8	12.9	14.9	22.6	8.6	14.4	15.9	23.7
IRAN	9.6	16.1	16.1	7.0[G]	10.0	18.9	15.4	...
IRAQ	11.3	...	14.5	...	18.1	...	...	...
JORDAN	6.0	11.6	...	−0.1	9.2	9.8	...	1.6
KUWAIT	10.1	7.1	4.6	1.0	15.4	6.1	2.6	0.3
SAUDI ARABIA	...	11.3	−0.1	−3.1	...	9.5	0.9	−1.4
SUDAN	11.6	16.8	27.2[A]	...	12.0	14.2	26.6[A]	...
SYRIA	16.7	10.9	12.0	36.0	18.2	...	11.2	41.0
TURKEY	6.2	50.0	42.6[H]	34.6	7.7	47.0	...	30.4

[A] 1980-84
[B] 1972-75
[C] JANUARY-OCTOBER
[D] 1973-75
[E] JANUARY-JULY
[F] JANUARY-SEPTEMBER
[G] JANUARY-JUNE
[H] 1982-85

SOURCE: ILO, *BULLETIN OF LABOUR STATISTICS*, 1988-1.

16. PER CAPUT DIETARY ENERGY SUPPLIES IN SELECTED DEVELOPED AND DEVELOPING COUNTRIES

COUNTRY	1971-73	1974-76	1977-79	1980-82	1983-85
	CALORIES PER CAPUT PER DAY				
ALGERIA	1923	2158	2432	2644	2669
ANGOLA	2012	1951	2144	2111	1953
BENIN	2088	2019	2176	2086	2136
BOTSWANA	2140	2121	2130	2170	2221
BURKINA FASO	1846	1961	2001	2035	1985
BURUNDI	2303	2275	2377	2385	2254
CAMEROON	2235	2266	2211	2099	2036
CAPE VEROE	1999	2168	2487	2571	2706
CENTRAL AFRICAN REPUBLIC	2254	2251	2135	2093	1945
CHAD	1916	1760	1834	1710	1587
COMOROS	2218	2091	2020	2083	2104
CONGO	2256	2272	2368	2487	2574
EGYPT	2502	2677	2846	3126	3280
ETHIOPIA	1629	1580	1654	1765	1652
GABON	1871	2034	2152	2302	2464
GAMBIA	2175	2124	2178	2210	2264
GHANA	2201	2167	1917	1659	1648
GUINEA	1908	1966	1912	1854	1797
GUINEA-BISSAU	1923	1870	1856	1997	2067
COTE D'IVOIRE	2347	2319	2428	2564	2523
KENYA	2256	2249	2242	2196	2179
LESOTHO	1966	2080	2342	2339	2322
LIBERIA	2231	2280	2392	2372	2347
LIBYA	2676	3497	3629	3648	3629
MADAGASCAR	2450	2510	2461	2481	2425
MALAWI	2474	2477	2458	2410	2404
MALI	1738	1765	1724	1755	1954
MAURITANIA	1799	1798	1913	2152	2294
MAURITIUS	2383	2556	2705	2731	2724
MOROCCO	2550	2603	2740	2771	2827
MOZAMBIQUE	1982	1933	1848	1772	1638
NAMIBIA	1979	1935	1946	1931	1875
NIGER	1971	1963	2270	2372	2333
NIGERIA	2108	2084	2200	2251	2084
REUNION	2536	2710	2773	2866	2948
RWANDA	1900	1923	2004	2076	1912
SAO TOME AND PRINCIPE	2113	1953	2251	2252	2387
SENEGAL	2284	2273	2340	2390	2307
SEYCHELLES	2229	2150	2271	2308	2285
SIERRA LEONE	1940	1942	2017	2043	1892
SOMALIA	2113	1991	2038	2089	2080
SOUTH AFRICA	2792	2908	2889	2943	2950
SUDAN	2141	2146	2312	2374	2063
SWAZILAND	2300	2465	2473	2524	2543
TANZANIA	1803	2096	2245	2267	2204
TOGO	2191	2003	2039	2175	2166
TUNISIA	2467	2603	2672	2778	2889
UGANDA	2263	2240	2191	2181	2197
ZAIRE	2275	2290	2163	2143	2157
ZAMBIA	2239	2321	2268	2182	2159
ZIMBABWE	2187	2129	2176	2156	2098
ANTIGUA AND BARBUDA	2193	2073	1961	2152	2098
BAHAMAS	2537	2310	2231	2627	2717
BARBADOS	2995	2950	3029	3132	3151
BELIZE	2530	2598	2699	2660	2575
BERMUDA	2782	2578	2504	2518	2534
CANADA	3298	3286	3290	3314	3394
COSTA RICA	2479	2561	2603	2629	2743
CUBA	2637	2664	2751	2914	3082
DOMINICA	2151	2199	2325	2478	2619
DOMINICAN REPUBLIC	2142	2237	2279	2344	2437
EL SALVADOR	1894	2026	2134	2145	2142
GRENADA	2352	2141	2208	2337	2382
GUADELOUPE	2359	2419	2425	2543	2657
GUATEMALA	2107	2154	2169	2217	2280
HAITI	1919	1921	1898	1891	1903
HONDURAS	2108	2109	2167	2164	2093
JAMAICA	2629	2659	2636	2552	2579
MARTINIQUE	2410	2489	2602	2684	2767
MEXICO	2734	2827	2932	3102	3152
NETHERLANDS ANTILLES	2487	2575	2735	2800	2920
NICARAGUA	2396	2377	2379	2325	2436
PANAMA	2311	2339	2308	2389	2447
ST KITTS AND NEVIS	2220	2286	2301	2313	2325
SAINT LUCIA	2141	2138	2241	2360	2459
ST VINCENT GRENADINES	2353	2281	2307	2578	2738
TRINIDAD AND TOBAGO	2610	2611	2753	2920	3045
UNITED STATES	3413	3409	3484	3525	3606
ARGENTINA	3161	3263	3245	3195	3159
BOLIVIA	1961	2014	2079	2110	2083
BRAZIL	2466	2495	2553	2627	2631
CHILE	2672	2583	2575	2635	2576
COLOMBIA	2238	2347	2453	2529	2554
ECUADOR	1956	2033	2052	2054	2050
FRENCH GUIANA	2508	2406	2476	2582	2717
GUYANA	2318	2304	2389	2418	2450
PARAGUAY	2701	2713	2771	2785	2826

16. (Cont.) PER CAPUT DIETARY ENERGY SUPPLIES IN SELECTED DEVELOPED AND DEVELOPING COUNTRIES

COUNTRY	1971-73	1974-76	1977-79	1980-82	1983-85
	CALORIES PER CAPUT PER DAY				
PERU	2290	2271	2177	2180	2153
SURINAME	2341	2351	2487	2606	2688
URUGUAY	2908	2920	2735	2782	2700
VENEZUELA	2352	2445	2652	2640	2556
AFGHANISTAN	2266	2288	2294	2302	2289
BANGLADESH	1896	1861	1843	1879	1905
BRUNEI DARUSSALAM	2445	2575	2740	2849	2856
BURMA	2030	2110	2182	2418	2564
CHINA	2023	2063	2202	2398	2608
HONG KONG	2672	2654	2693	2735	2743
INDIA	2040	2000	2126	2088	2185
INDONESIA	2119	2196	2322	2474	2490
IRAN	2425	2842	2921	3044	3269
IRAQ	2252	2377	2573	2810	2994
ISRAEL	3064	3044	3023	2990	3026
JAPAN	2816	2801	2821	2834	2859
JORDAN	2478	2368	2583	2791	2939
KAMPUCHEA,DEMOCRATIC	2234	1877	1822	1910	2116
KOREA DPR	2588	2765	2953	3080	3164
KOREA REP	2643	2758	2821	2821	2849
KUWAIT	2732	2761	3063	3091	3105
LAOS	1969	1806	1880	2126	2236
LEBANON	2625	2633	2812	3013	3091
MACAU	2179	2198	2152	2212	2219
MALAYSIA	2439	2510	2580	2597	2685
MALDIVES	1671	1721	1863	1979	2042
MONGOLIA	2414	2511	2609	2730	2817
NEPAL	1939	1999	1987	2016	2051
PAKISTAN	2051	2129	2182	2265	2223
PHILIPPINES	2028	2124	2283	2332	2328
SAUDI ARABIA KINGDOM OF	1885	1976	2507	2881	3048
SINGAPORE	2747	2701	2668	2694	2813
SRI LANKA	2186	2146	2326	2179	2413
SYRIA	2480	2544	2718	3073	3262
THAILAND	2214	2286	2354	2301	2302
TURKEY	2909	2965	3065	3130	3102
UNITED ARAB EMIRATES	3325	3552	3647	3614	3714
VIET NAM	2152	2007	2017	2107	2221
YEMEN ARAB REPUBLIC	1965	2036	2152	2223	2255
YEMEN DEMOCRATIC	1985	1912	2015	2276	2321
ALBANIA	2577	2565	2700	2752	2763
AUSTRIA	3279	3239	3283	3394	3408
BELGIUM-LUXEMBOURG	3495	3522	3518	3716	3829
BULGARIA	3526	3549	3574	3656	3631
CZECHOSLOVAKIA	3396	3411	3389	3459	3482
DENMARK	3420	3341	3413	3531	3445
FINLAND	3167	3149	3059	3106	3051
FRANCE	3114	3139	3214	3222	3222
GERMAN DEMOCRATIC REP.	3361	3452	3552	3659	3770
GERMANY, FED. REP. OF	3231	3204	3289	3356	3419
GREECE	3315	3510	3476	3600	3678
HUNGARY	3344	3413	3479	3519	3533
ICELAND	2983	2942	2954	3017	3063
IRELAND	3572	3553	3605	3753	3730
ITALY	3486	3440	3520	3551	3462
MALTA	2938	2960	2970	2951	2888
NETHERLANDS	3208	3233	3261	3308	3208
NORWAY	3110	3091	3253	3304	3193
POLAND	3377	3465	3492	3336	3270
PORTUGAL	2948	2950	2985	3085	3116
ROMANIA	3144	3296	3393	3308	3336
SPAIN	3009	3255	3316	3333	3338
SWEDEN	2881	2958	2961	3023	3029
SWITZERLAND	3519	3335	3480	3512	3450
UNITED KINGDOM	3365	3270	3295	3221	3198
USSR	3311	3364	3374	3364	3398
YUGOSLAVIA	3343	3514	3528	3621	3560
AUSTRALIA	3223	3243	3343	3274	3304
FIJI	2653	2468	2665	2809	2898
FRENCH POLYNESIA	2786	2766	2813	2846	2880
KIRIBATI	2562	2671	2825	2928	2942
NEW CALEDONIA	2866	2853	2885	2945	2974
NEW ZEALAND	3398	3375	3335	3366	3365
PAPUA NEW GUINEA	2092	2083	2108	2178	2162
SAMOA	2155	2261	2365	2401	2446
SOLOMON ISLANDS	2126	2116	2136	2151	2164
TONGA	2680	2818	2888	2935	2945
VANUATU	2564	2554	2450	2411	2356

17. ANNUAL AGRICULTURAL SHARES OF TOTAL OFFICIAL COMMITMENTS TO ALL SECTORS (BROAD DEFINITION), BY MULTILATERAL AND BILATERAL SOURCES, 1979-86

	1979	1980	1981	1982	1983	1984	1985	1986[A]
					%			
CONCESSIONAL AND NON-CONCESSIONAL COMMITMENTS								
MULTILATERAL AGENCIES[B]	36	38	36	35	35	29	31	34
WORLD BANK[C]	37	35	32	32	38	27	28	32
REGIONAL DEVELOPMENT BANKS[C]	33	45	44	43	27	30	32	34
OPEC MULTILATERAL[C]	7	16	16	17	21	22	27	35
BILATERAL SOURCES	. . .	. .	. .	. .	. .	. .	. .	. .
DAC/EEC	11	12	11	11	11	11	12	(13)
OPEC BILATERAL	. . .	. .	. .	. .	. .	. .	. .	. .
ALL SOURCES (MULTILATERAL + BILATERAL)	. .	. .	. .	. .	. .	. .	. .	. .
CONCESSIONAL COMMITMENTS ONLY (ODA)								
MULTILATERAL AGENCIES[B]	49	49	53	49	47	47	53	41
WORLD BANK[C]	52	45	58	43	51	48	54	30
REGIONAL DEVELOPMENT BANKS[C]	53	62	65	57	39	33	45	48
OPEC MULTILATERAL[C]	7	15	14	30	26	46	65	45
BILATERAL SOURCES	16	13	14	16	15	15	15	15
DAC/EEC	18	16	18	17	17	17	16	(17)
OPEC BILATERAL	7	1	4	12	5	3	5	6
ALL SOURCES (MULTILATERAL + BILATERAL)	21	19	21	22	20	20	21	(19)

[A] PRELIMINARY.
[B] INCLUDING UNDP, CGIAR, FAO/TF, FAO/TCP, AND IFAD.
[C] EXCLUDING COMMITMENTS TO CGIAR.

SOURCES: FAO AND OECD.

18. PERCENTAGE DISTRIBUTION OF OFFICIAL COMMITMENTS TO AGRICULTURE (BROAD DEFINITION), BY MULTILATERAL AND BILATERAL, SOURCES, 1979-86

	1979	1980	1981	1982	1983	1984	1985	1986[A]
					%			
CONCESSIONAL AND NON-CONCESSIONAL COMMITMENTS								
MULTILATERAL AGENCIES	52	59	58	59	63	55	59	61
WORLD BANK[B]	34	35	34	35	44	30	36	38
REGIONAL DEVELOPMENT BANKS[B]	12	15	17	15	11	17	15	15
OPEC MULTILATERAL[B]	–	1	1	2	2	2	2	3
OTHER[C]	6	8	6	7	6	6	6	5
BILATERAL SOURCES	48	41	42	41	37	45	41	39
DAC/EEC	44	40	40	35	35	44	39	37
OPEC BILATERAL	4	1	2	6	2	1	2	2
ALL SOURCES (MULTILATERAL + BILATERAL)	100	100	100	100	100	100	100	100
CONCESSIONAL COMMITMENTS ONLY (ODA)								
MULTILATERAL AGENCIES	37	45	43	40	41	36	41	31
WORLD BANK[B]	18	21	21	20	18	20	24	11
REGIONAL DEVELOPMENT BANKS[C]	11	12	12	7	11	6	7	9
OPEC MULTILATERAL[B]	–	1	1	2	2	2	2	3
OTHER[C]	8	11	9	11	10	8	8	8
BILATERAL SOURCES	63	55	57	60	59	64	59	69
DAC/EEC	59	53	54	51	56	62	56	66
OPEC BILATERAL	4	2	3	9	3	2	3	3
ALL SOURCES (MULTILATERAL + BILATERAL)	100	100	100	100	100	100	100	100

[A] PRELIMINARY.
[B] EXCLUDING COMMITMENTS TO CGIAR.
[C] INCLUDING UNDP, CGIAR, FAO/TF, FAO/TCP AND IFAD (FROM 1978).

SOURCES: FAO AND OECD.

19. DAC COUNTRIES: BILATERAL ODA COMMITMENTS FROM INDIVIDUAL COUNTRIES AND PROPORTION TO AGRICULTURE (BROAD DEFINITION), 1982-86

COUNTRY	BILATERAL ODA TO ALL SECTORS					PROPORTION OF ODA TO AGRICULTURE				
	1982	1983	1984	1985	1986[A]	1982	1983	1984	1985	1986[A]
	$ MILLION					%				
AUSTRALIA	545	536	694	532	532	11	5	10	9	14
AUSTRIA	291	183	79	60	126	1	2	1	3	1
BELGIUM	320	187	180	132	357	3	5	1	23	12
CANADA	807	1 139	1 575	1 172	1 179	15	25	22	24	24
DENMARK	282	260	288	340	480	51	22	38	33	29
FINLAND	123	96	171	233	276	11	24	13	12	27
FRANCE	4 358	4 380	4 403	3 756	4 162	8	11	10	15	12
GERMANY, FED. REP.	2 713	2 271	2 800	2 427	3 337	18	15	14	15	17
IRELAND	12	14	13	17	25	–	–	–	18	16
ITALY	641	882	903	1 178	2 327	17	20	20	27	17
JAPAN	3 622	3 483	3 968	4 076	4 342	18	17	19	25	18
NETHERLANDS	934	901	902	731	1 299	22	23	27	18	29
NEW ZEALAND	47	40	41	47	34	30	15	15	23	15
NORWAY	309	288	350	346	548	25	17	35	23	20
SWEDEN	579	526	576	566	779	32	24	26	25	19
SWITZERLAND	207	239	218	307	329	31	55	22	32	27
UK	1 112	927	1 009	731	1 081	8	12	14	14	17
USA	6 112	6 989	8 144	9 157	8 746	14	14	14	9	11
TOTAL DAC COUNTRIES	23 014	23 341	26 314	25 808	29 959	15	15	16	16	16

[A] PRELIMINARY.

SOURCE: OECD.

20. PERCENTAGE DISTRIBUTION OF OFFICIAL COMMITMENTS TO AGRICULTURE (EXCLUDING TECHNICAL ASSISTANCE GRANTS), BY PURPOSE 1979-86

	1979	1980	1981	1982	1983	1984	1985	1986[A]
	%							
LAND AND WATER DEVELOPMENT[B]	18	22	15	17	17	21	19	17
AGRICULTURAL SERVICES	10	13	7	12	15	17	11	19
SUPPLY OF INPUTS	3	6	5	4	6	7	4	3
CROP PRODUCTION	7	7	6	8	7	7	6	6
LIVESTOCK	3	3	3	1	2	2	4	2
FISHERIES[C]	3	3	3	2	3	2	2	2
RESEARCH, EXTENSION, TRAINING[D]	3	3	4	4	5	7	5	5
FORESTRY	3	2	2	3	2	3	5	3
AGRICULTURE, UNALLOCATED	17	9	15	11	9	10	18	20
TOTAL NARROW DEFINITION	67	68	60	62	66	76	74	77
RURAL DEVELOPMENT/INFRASTRUCTURE	16	19	23	23	21	13	15	13
MANUFACTURING OF INPUTS[E]	11	1	10	4	1	5	2	5
AGRO-INDUSTRIES	6	8	5	4	6	3	4	3
REGIONAL DEVELOPMENT	–	4	2	7	6	3	5	2
TOTAL BROAD DEFINITION	100	100	100	100	100	100	100	100

NOTE: THIS TABLE NOW INCLUDES FORESTRY IN THE NARROW DEFINITION.

[A] PRELIMINARY, INCLUDING PARTIAL ESTIMATES.
[B] INCLUDING RIVER DEVELOPMENT.
[C] INCLUDING INPUTS SUCH AS FISHING TRAWLERS, FISHING GEAR.
[D] INCLUDING COMMITMENTS TO CGIAR.
[E] MOSTLY FERTILIZERS.

SOURCES: FAO COMPUTERIZED DATA BANK ON EXTERNAL ASSISTANCE TO AGRICULTURE.

21. DISTRIBUTION OF OFFICIAL COMMITMENTS TO AGRICULTURE, EXCLUDING TECHNICAL ASSISTANCE GRANTS (BROAD DEFINITION), FROM ALL SOURCES, BY REGION AND ECONOMIC GROUPS, 1979-86

	1979	1980	1981	1982	1983	1984	1985	1986[A]
	%							
CONCESSIONAL AND NON-CONCESSIONAL COMMITMENTS								
FAR EAST AND PACIFIC	46	46	42	49	41	47	46	40
AFRICA	24	22	28	28	26	27	25	27
LATIN AMERICA	22	24	23	18	24	19	19	24
NEAR EAST	8	8	7	5	9	7	10	9
TOTAL 4 DEVELOPING REGIONS	100	100	100	100	100	100	100	100
OF WHICH:								
LOW-INCOME FOOD DEFICIT COUNTRIES[B]	66	65	62	63	59	64	62	53
LEAST DEVELOPED COUNTRIES[C]	21	22	21	21	23	18	21	17
CONCESSIONAL COMMITMENTS								
FAR EAST AND PACIFIC	55	50	48	46	48	53	51	50
AFRICA	23	26	32	39	31	34	30	36
LATIN AMERICA	13	14	12	9	12	7	11	6
NEAR EAST	9	10	8	6	9	6	8	8
TOTAL 4 DEVELOPING REGIONS	100	100	100	100	100	100	100	100
OF WHICH:								
LOW-INCOME FOOD DEFICIT COUNTRIES[B]	74	77	74	75	72	75	71	69
LEAST DEVELOPED COUNTRIES[C]	29	31	31	33	38	28	33	35
NON-CONCESSIONAL COMMITMENTS								
FAR EAST AND PACIFIC	24	37	31	53	33	39	39	32
AFRICA	27	12	20	11	19	17	18	18
LATIN AMERICA	42	47	44	33	40	37	32	41
NEAR EAST	7	4	5	3	8	7	11	9
TOTAL 4 DEVELOPING REGIONS	100	100	100	100	100	100	100	100
OF WHICH:								
LOW-INCOME FOOD DEFICIT COUNTRIES[B]	47	37	39	43	40	46	46	39
LEAST DEVELOPED COUNTRIES[C]	3	1	2	1	1	1	2	1

[A] PRELIMINARY, INCLUDING PARTIAL ESTIMATES.
[B] 67 COUNTRIES WITH PER CAPUT GNP OF US$790 IN 1984.
[C] 41 COUNTRIES (AS OF MAY 88).

SOURCES: FAO COMPUTERIZED DATA BANK ON EXTERNAL ASSISTANCE TO AGRICULTURE.

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