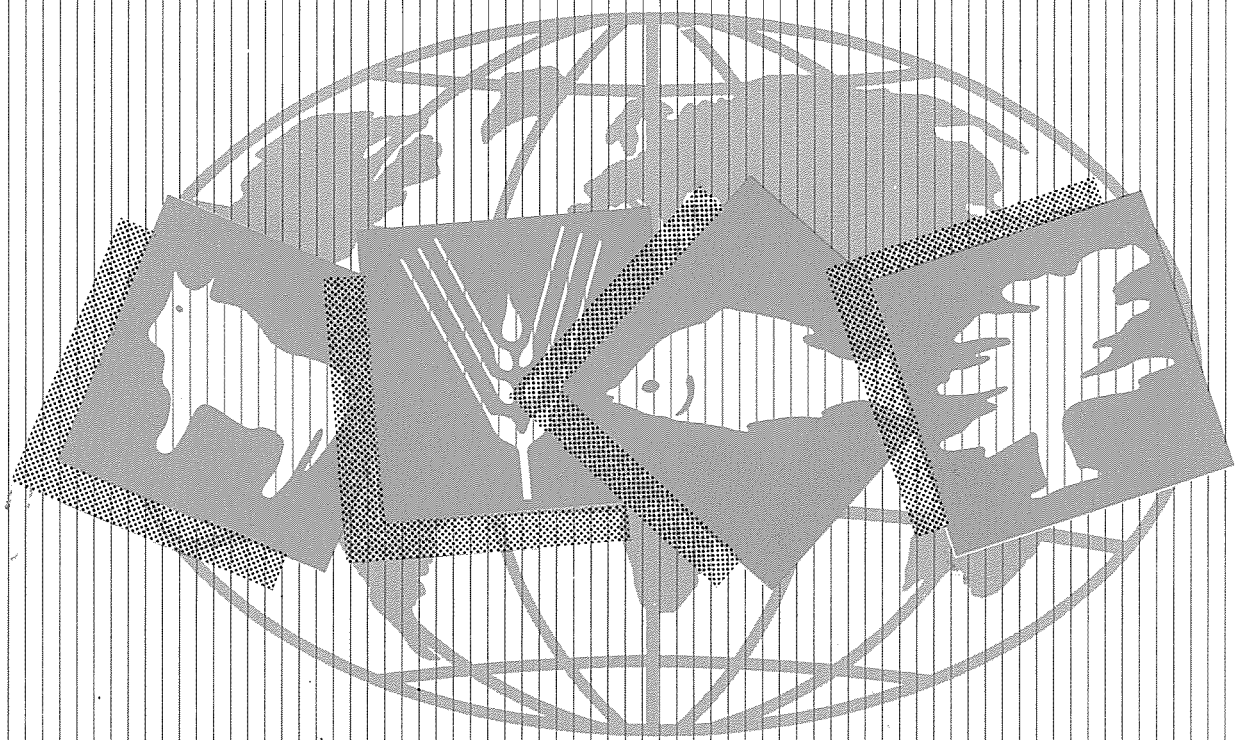
FAO LIBRARY AN: 335797

1992

THE STATE OF FOOD AND AGRICULTURE

World and regional reviews
Marine fisheries and the law of the sea: a decade of change



ISSN 0081-4539

Food and Agriculture Organization of the United Nations

Special chapters

In addition to the usual review of the recent world food and agricultural situation, each issue of this report since 1957 has included one or more special studies on 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

1987-88
Changing priorities for agricultural science and technology in developing countries

1989
Sustainable development and natural resource management

1990
Structural adjustment and agriculture

1991
Agricultural policies and issues: lessons from the 1980s and prospects for the 1990s

FAO Agriculture Series No. 25
The State of Food and Agriculture 1992

CORRIGENDA

Page iv
The correct name of the consultant credited for Part III is **Francis T. Christy, Jr.**

Page 160
Column 1 should finish as follows:
"It is equally urgent to begin placing appropriate values on the resources as a means of facilitating the resolution of conflicts. These interrelated steps are discussed more fully in the section, Fisheries management."

P-70/T0656E
ISBN 92-5-103226-2
ISSN 0081-4539

THE STATE OF FOOD AND AGRICULTURE 1992

FAO Agriculture Series *No.25*
ISSN 0081-4539

THE STATE OF FOOD AND AGRICULTURE 1992

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 1992

The statistical material in this publication has been prepared from the information available to FAO up to August 1992.

The designations employed and the presentation 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.

Part III, Marine fisheries and the law of the sea: a decade of change, is based on a study by consultant Francis Christie and was contributed by the Fisheries Department of FAO.

David Lubin Memorial Library
Cataloguing in Publication Data

FAO, Rome (Italy)
The state of food and agriculture 1992.
(FAO Agriculture Series, no. 25)
ISBN 92-5-103226-2

1. Agriculture. 2. Food production. 3. Trade.

I. Title II. Series

FAO code: 70 AGRIS: E16 E70

© FAO 1992

Printed in Italy

Foreword

The year 1992 has seen dramatic changes in the political and economic environment surrounding agriculture. For a number of industrial countries this was a year of crucial political choices on national and regional issues. West European countries pursued efforts towards closer integration, despite mounting and unforeseen political and economic difficulties. Market-oriented transformations continued in Eastern Europe and the former USSR in the context of grave economic and social disruptions as well as plummeting agricultural and industrial production. Ethnic and political tensions also developed in this region, introducing further uncertainty about the prospects for an early and orderly consolidation of the transformation process. These tensions degenerated into the outbreak, and escalation throughout 1992, of a devastating armed conflict in former Yugoslavia.

These events took place in an overall climate of economic malaise. The much-awaited and repeatedly predicted revival of economic growth in the industrial countries remained elusive. Instead, rising unemployment, unstable financial and foreign exchange markets and severe budgetary difficulties in several industrial countries continued to exert destabilizing influences worldwide.

In the increasingly interdependent world of today, it was paradoxical that this year of economic depression and uncertainty in the industrial countries was also a year of renewed optimism for much of the developing world. Development approaches continued evolving towards the principles of democracy, market-based economy and competition, thereby giving rise to a more liberal political and economic environment. Many countries that were committed to economic reform, mainly in Latin America and the Caribbean, saw converging, if still incipient, signs of economic recovery. Equally heartening were the continuing dynamism of most Asian economies and the progress achieved in the Near East in the difficult tasks of reconstruction, recovery and normalization of economic and political relationships following the Iraq/Kuwait conflict.

The recent improvement in economies committed to structural adjustment, which remained elusive during the past decade despite an unusually long period of sustained growth in the industrial world, is undoubtedly one of the most momentous developments of the recent past. This is so not only because of the hope and relief that such an improvement has brought for millions of people after a decade of economic and social regression, but also because it demonstrates the determining role that appropriate domestic policies can play in overcoming adverse external influences.

This being said, I must nevertheless emphasize that these countries' economies cannot be expected to swim indefinitely against the tide. Expanded trade opportunities are the only viable way to recovery for many developing countries. The consolidation and sustainability of their recent achievements will largely depend on an improved environment for their export markets, particularly for their agricultural products. The relentless fall in the real prices of many commodities of primordial economic importance for developing countries is particularly worrisome in this context. Prospects for a stabilization of these trends are slim in the currently distorted and uncertain environment for world trade, and agricultural trade in particular. The economic recession and ensuing protectionism, the tensions among major trading countries, the emergence of regional trade arrangements and the collapse of intraregional trade among former centrally planned economies have added a new array of challenges and issues to those already facing the international trading community.

These developments have rendered it all the more necessary to set the framework for a freer, fairer and more predictable trade order that would provide a badly needed boost to the world economy. The pursuance of these goals has been the object of six years of strenuous efforts under the Uruguay Round of GATT multilateral trade negotiations.

At the close of 1992, the conclusion of the Round finally seemed to be within reach. It is my hope that this year will be remembered as the period when all the remaining differences between the major participants in the Uruguay Round were bridged, paving the way to a successful final agreement. Yet, the record of the negotiations, particularly their latter phase, suggests caution and vigilance for the future. The major industrialized countries have repeatedly pushed the Round to the verge of collapse because of principles and interests that are grossly out of proportion with the global stakes involved, at the same time jeopardizing important results already achieved in other areas of the negotiations. Whatever the immediate outcome of the Uruguay Round, the international community must not allow the emergence of a new framework for international trading relations that does not take full account of the interests and needs of the developing world, particularly the agricultural trading developing countries.

Two other issues of major contemporary importance and directly concerning FAO's area of work were on the institutional agenda this year: the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro in June; and the International Conference on Nutrition (ICN), held in Rome in December.

Although the Rio conference mobilized considerable resources and effort and raised high expectations worldwide, I must admit that the concrete results were disappointing. Major differences persisted on such key issues as the time scale for reducing carbon dioxide emissions; the sustainable and equitable use of biodiversity; and the establishment of a special fund to assist developing countries in the implementation of Agenda 21, the "plan of action for the twenty-first century". Nevertheless, the conference did reach the objective of alerting world opinion and policy-makers to the high stakes involved, and provided operational guidelines for future action.

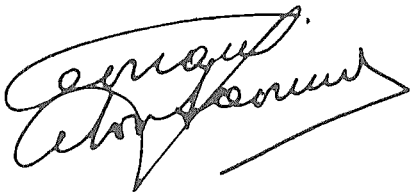
As regards the ICN, the joint decision by FAO and the World Health Organization to call this major conference arose from: the realization that nearly 800 million people in the world are chronically undernourished and that the incidence of malnourishment is worsening rather than receding in many countries; the need for a closer identification of the causes, nature and magnitude of the problem so as to define coordinated strategies and realistic objectives; and the need to enhance international solidarity and mobilize the necessary resources. The conference issued the World Declaration on Nutrition, affirming the commitment of the participant states to work together to ensure sustained nutritional well-being for all people; and the global Plan of Action for Nutrition, containing recommendations of policies, programmes and activities aimed at the achievement of these objectives.

In concluding, I must once again refer to a problem that, year after year, has remained at the forefront of our concerns: the situation in Africa. Most economies in this region receded or, at best, stagnated this year, thus continuing a seemingly inexorable process of regression. Large segments of the population in sub-Saharan Africa, particularly in southern and eastern Africa, were facing situations of drought and civil war, which subsequently translated into acute food shortages and, in some areas, widespread famine and deaths from starvation. Despite our efforts to inform, warn and mobilize assistance, we have seen food shortages turn into emergencies and desperate situations. In some cases we have seen relief supplies arrive in too small a quantity, too late and, furthermore, not get through to the people in need.

While the extent of the disaster currently facing several African countries was not foreseen, in a region where prospects for economic growth remain poor, populations continue to expand rapidly and external assistance is faltering, disasters of similar magnitude are likely to occur with ever-increasing frequency in the years ahead unless we rise to the challenge of rehabilitation and progress towards sustainable agricultural and rural development.

Should we lose hope? Is the international community powerless to halt this process and help Africa revert to a truly "developing" status? In a more general context, can we cope with the massive challenges posed by the situation in the former centrally planned economies and in former Yugoslavia, by the enclaves of poverty cropping up in the developed countries and by the deterioration of our natural resource heritage, while still giving enough attention to the problems of hunger, malnutrition, ignorance, disease and all the other manifestations of widespread poverty in the developing world?

As I recently stated to the 1992 FAO Council, we may not be able to determine the course of events but we can at least have a hand in influencing it. It is my conviction that, if our action cannot shape history, it can make the difference between survival and death, welfare and destitution and progress and frustration for millions of people. This is true for Africa as it is for other developing country regions around the world. Underlying this action must be the international community's awareness of the problems facing us, including the needs and aspirations of the poor around the world and the policy issues involved. This document is a contribution to that goal.



Edouard Saouma
DIRECTOR-GENERAL

Contents

PART II
REGIONAL REVIEW

PART III
MARINE FISHERIES AND THE LAW OF THE SEA: A DECADE OF CHANGE

BOXES

TABLES

FIGURES

ANNEX TABLES

Abbreviations

ACC	Administrative Committee on Coordination
AFTA	ASEAN Free Trade Area
AGROCEPAR	Association of Paraguayan Cereal Producers
AMU	Arab Maghreb Union
ARP	Acreage Reduction Programme
ASALs	Arid and semi-arid lands
AsDB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
AWC	Australian Wool Corporation
BARA	Business Advisers for Rural Areas
BULOG	Bureau of Logistics
BWD	Bangladesh White Grade D
CAP	Common Agricultural Policy
CARICOM	Caribbean Common Market
CARP	Comprehensive Agrarian Reform Programme
CCC	Commodity Credit Corporation
CER	Closer Economic Relations
CFA	Committee on Food Aid Policies and Programmes
CGIAR	Consultative Group on International Agricultural Research
c.i.f	Cost, insurance and freight
CIS	Commonwealth of Independent States
CMB	Coffee Marketing Board
CMBL	Coffee Marketing Board Limited
CMEA	Council for Mutual Economic Assistance
CORFO	Corporation for the Development of Production
CPE	Centrally planned economy
CRM	Coastal resource management
CRP	Conservation Reserve Programme
DAC	Development Assistance Committee
DDT	Dichlorodiphenyltrichloroethane
DES	Dietary energy supply
DRIS	Debt Reconstruction with Interest Subsidy
DRS	Debtor Reporting System
EC	European Communities
ECARP	Environmental Conservation Acreage Reserve Programme
ECE	Economic Commission for Europe
ECLAC	Economic Commission for Latin America and the Caribbean
ECOSOC	Economic and Social Council
ECU	European Currency Unit
EEC	European Economic Community
EEP	Export Enhancement Programme
EEZ	Exclusive Economic Zone
EMS	European Monetary System
FAC	Food Aid Convention
FACT	Food, Agriculture, Conservation and Trade Act
FFA	South Pacific Forum Fisheries Agency
f.o.b.	Free on board
FSA	Food Security Act
FSP	Fisheries Sector Programme
GATT	General Agreement on Tariffs and Trade
GCC	Gulf Cooperation Council
GDI	Gross domestic investment
GDP	Gross domestic product
GDS	Gross domestic savings
GEF	Global Environment Facility
GFCM	General Fisheries Council for the Mediterranean
GNP	Gross national product
GRT	Gross registered tonnage
HYV	High-yielding variety
IAWGD	Inter-Agency Working Group on Desertification
IBRD	International Bank for Reconstruction and Development
ICCO	International Cocoa Organization
ICN	International Conference on Nutrition
ICNAF	International Commission for the Northwest Atlantic Fisheries
ICSEAF	International Commission for the Southeast Atlantic Fisheries
IDA	International Development Association
IDB	Inter-American Development Bank
IEFR	International Emergency Food Reserve
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
INDAP	National Institute for Agricultural Development
INIA	National Institute for Agricultural Research
IPM	Integrated pest management
IRA	Immediate Response Account
ISA	International Sugar Agreement

KCC	Kenya Cooperative Creameries
KTDA	Kenyan Tea Development Authority
KUDs	Village-level cooperatives
LDC	Least-developed country
LIFDC	Low-income food-deficit country
LMB	Lint Marketing Board
MERCOSUR	Southern Common Market
MNR	Maximum net revenue
MSY	Maximum sustainable yield
MTNs	Multilateral trade negotiations
NAFO	Northwest Atlantic Fisheries Organization
NAFTA	North American Free Trade Agreement
NASCO	North Atlantic Salmon Conservation Organization
NCPB	National Cereals and Produce Board
NFA	National Food Authority
NFIDC	Net food-importing developing country
NGA	National Grains Authority
NGO	Non-governmental organization
NIB	National Irrigation Board
NMC	National Milling Corporation
NMP	Net material product
NRM	National Resistance Movement
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
OECS	Organization of Eastern Caribbean States
OPEC	Organization of the Petroleum Exporting Countries
PRO	Protracted refugee operations
PSE	Producer subsidy equivalent
PSP	Paralytic shellfish poisoning
RAS	Rural Adjustment Scheme
RIBES	Rural Industries Business Extension Service
SADCC	Southern African Development Coordination Conference
SAP	Structural adjustment programme
SDR	Special drawing right
SITC	Standard international trade classification
SONY	South Nyanza Sugar Company
TFAP	Tropical Forests Action Programme
TFC	Tanzanian Fertilizer Corporation
TNC	Trade Negotiations Committee
TURFs	Territorial use rights in fisheries
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNGA	United Nations General Assembly
USDA	United States Department of Agriculture
UTGC	Uganda Tea Growers Corporation
VAT	Value added tax
WFP	World Food Programme
WRP	Wetlands Reserve Programme

Explanatory note

The following symbols are used in the tables:

-	= none or negligible
...	= data not available
1990/91	= a crop, marketing or fiscal year, running from one calendar year to the next
1989-91	= average for three calendar years

The 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. "Billion" is equal to 1 000 million.

Production index numbers

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

All indexes 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., these are adjusted to approximate c.i.f. values. This method of estimation shows a discrepancy whenever the trend of insurance and freight diverges from that of the commodity unit values.

Volumes and unit value indexes 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 regions include: Africa, Latin America and the Caribbean, Near East,[3] Far East.[4]

Developed countries/regions include:[5] North America; Western Europe, including Yugoslavia; Oceania; Israel; Japan; Republic of South Africa; Bulgaria; Czechoslovakia; Hungary; Poland; Romania; and the former USSR. Albania is omitted in this report because of insufficient data.

Country designations used in this publication remain those current during the period in which the data were prepared.

[1] For full details, see *FAO Production Yearbook 1991*.

[2] For full details, see *FAO Trade Yearbook 1991*.

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

[4] The *Far East* includes the former Asian CPEs: Cambodia, China, Democratic People's Republic of Korea, Mongolia and Viet Nam.

[5] Note that *industrial countries*, as defined by the IMF, include: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States.

PART I
WORLD REVIEW

WORLD REVIEW

OVERALL ECONOMIC ENVIRONMENT

The world economic environment has continued to be an inhibiting influence for food and agriculture over the past year, although a number of recent developments have provided grounds for cautious optimism regarding the near future.

The slow-down in economic activity since 1990 has proven more persistent than was generally expected and the forecast levels of global recovery in 1992, reported in *The State of Food and Agriculture 1991*, are quite unlikely to materialize. The end of the conflict in the Persian Gulf initially restored consumer and business confidence in industrial countries; however, these early signs of recovery failed to gain momentum.

Consumption and investment were restrained by what was seen as an unpromising outlook for employment and sales. Instead, in several countries the tendency was to reduce the large debts taken on by many households and companies during the 1980s. Furthermore, interest rates remained high in some European countries.

However, the current situation presents a number of positive features suggesting that a small recovery is taking place in 1992 and that it might gather steam in 1993. In particular, moderate levels of inflation have enabled some major industrial countries to reduce interest rates, more significantly in the short term.

The continuing recessionary environment in many industrial countries appears to be having a relatively mild effect on economic activity in the developing countries whose economic growth, after having levelled off in 1990 and 1991, is expected to rebound significantly in 1992. Long-awaited positive results from stabilization and adjustment measures appeared to be emerging in several countries. Many indebted countries benefited from debt- and debt-service reduction operations as well as lower interest rates and there were signs of greater creditworthiness and a consequent recovery of foreign capital inflows. However, it cannot yet be ascertained whether such improved prospects mark the beginning of a new positive trend after a decade of recession for much of the developing world. Furthermore, many developing country economies, particularly in Africa, have been bypassed by these recent improvements.

Countries in central and Eastern Europe and the former USSR are facing an economic crisis that is unprecedented in industrial countries. The economic disruption that followed the collapse of the former command system has been more pronounced than anticipated. While reform has begun to bear some fruit in the countries where the process started first, further declines in economic activity may be in store for the others, including the former USSR.

International Monetary Fund (IMF) economic and financial estimates for the years 1991-1992 and forecasts for 1993 include the following:[1]

- After a decline in 1991, world economic activity is currently expected to expand by a modest 1.5 percent in 1992 and by a further 3.6 percent in 1993. In line with overall trends in economic activity, growth in the volume of world trade decelerated from 1988 to 1991, registering 3.3 percent in the latter year, but it is expected to reach 5 percent in 1992 and 6.3 percent in 1993. Despite the slow-down in 1991, trade continued to expand faster than output.[2]

Industrialized countries

- Economic activity in 1991 rose only 0.8 percent, a weaker performance than previously expected, mainly reflecting outright recession in three of the major industrial economies — the United States, the United Kingdom and Canada — and slower growth in Japan and Western Europe.

[1] IMF. *World Economic Outlook*, May 1992.

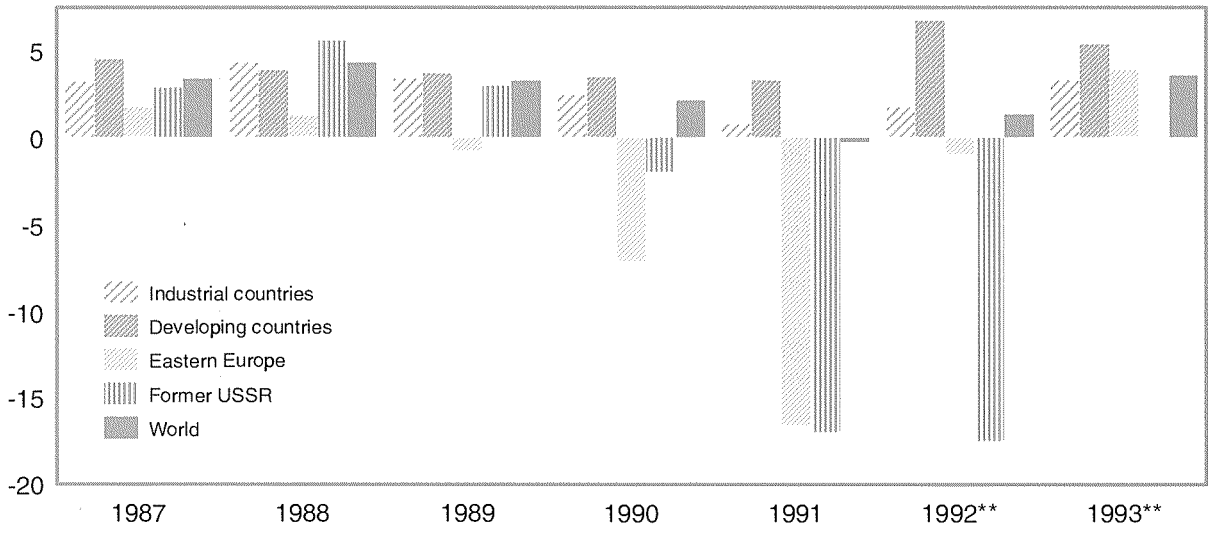
[2] According to the General Agreement on Tariffs and Trade (GATT), world trade volume rose by 3 percent in 1991 and may be expected to rise by 4 percent in 1992.

Growth is expected to rebound modestly to 1.8 percent in 1992 before making a more pronounced recovery, to 3.3 percent, in 1993.

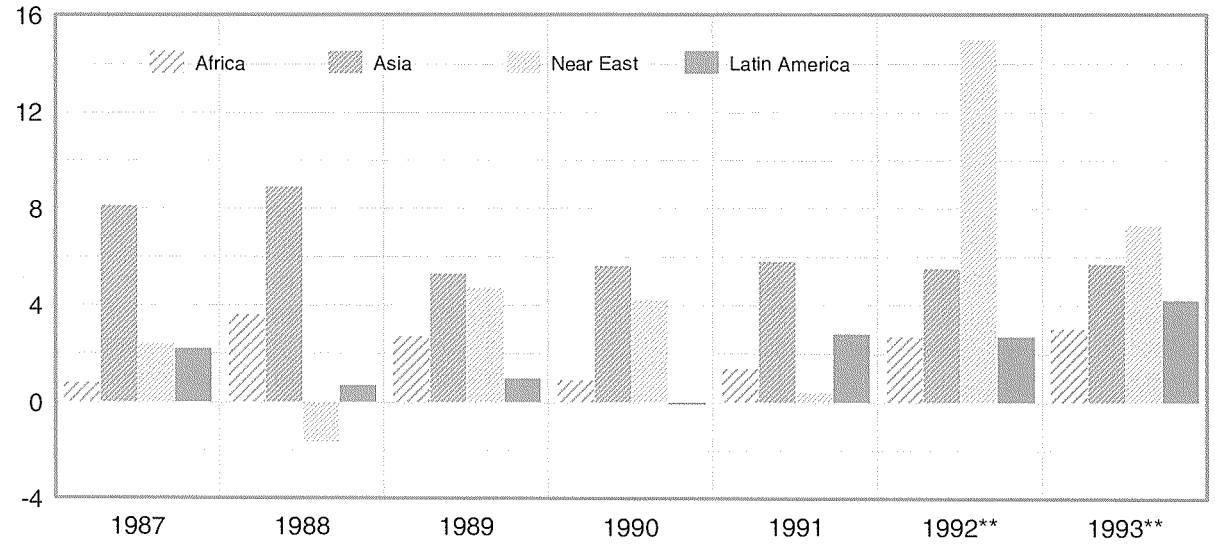
- Consumer price inflation slowed to 4.5 percent in 1991 and, given the continuing excess capacity, is expected to slow further to 3.5 percent during 1992 and 1993.
- The unemployment rate rose from 6.3 percent in 1990 to 7 percent in 1991 and may rise slightly further in 1992.
- In a context of low inflationary pressure, Japan and the United States reduced their interest rates in order to fuel economic growth. However, Germany raised its discount rate to historically high levels, causing other countries in the European Monetary System (EMS) to raise their interest rates also.
- The combined current account deficit of the industrial countries narrowed from about $100 billion in 1990 to $25 billion in 1991,

Figure 1

WORLD ECONOMIC OUTPUT*
(Percentage change over preceding year)



ECONOMIC GROWTH IN DEVELOPING COUNTRY REGIONS
(Percentage change over preceding year)



Source: IMF

* Real GDP or real NMP - ** Projections

reflecting both transfers from Near East countries in response to the conflict in the Persian Gulf and terms of trade improvements which mainly arose from the decline in oil prices.

Developing countries

- Growth in developing countries as a whole was estimated to be 3.3 percent in 1991, about the same level as in 1990, and is expected to accelerate to 6.7 percent in 1992 and 5.4 percent in 1993. Much of the overall recovery in 1992 will reflect the return to more normal levels of economic activity in the Near East. However, growth is expected to remain high in the Far East in 1992 and 1993, and to pick up decisively in Latin America and the Caribbean in 1993. Growth is also expected to accelerate in Africa in 1992 and still further in 1993, while remaining negative in per caput terms.
- Consumer price inflation decelerated sharply in 1991 and is expected to continue declining in 1992 and 1993. Much of the improvement reflects successful stabilization efforts in several high-inflation countries of Latin America and the Caribbean.
- After having fallen in 1990, growth in the volume of exports from non-oil exporting developing countries recovered significantly in 1991 and is expected to continue expanding during 1992 and 1993. The terms of trade of this group of countries are expected to remain broadly stationary. However, because of the expansion in the volume of their exports, the purchasing power of their exports is forecast to increase by 6 percent in 1992 and by a further 9 percent in 1993.

External debt of developing countries

The overall debt burden of developing countries showed no significant change in 1991. Stocks of debt remained almost stationary, while debt indicators showed only little variation compared with 1990.

The total external debt stock of all developing countries at the end of 1991 is projected by the World Bank[3] to be $1 351 billion, compared with $1 355 billion at the end of 1990. For the 114 low- and middle-income countries covered

[3] World Bank. 1991. *World Debt Tables 1991-92.*

WORLD OUTPUT AND VOLUME OF TRADE

(Percentage change over preceding year)

Source: IMF

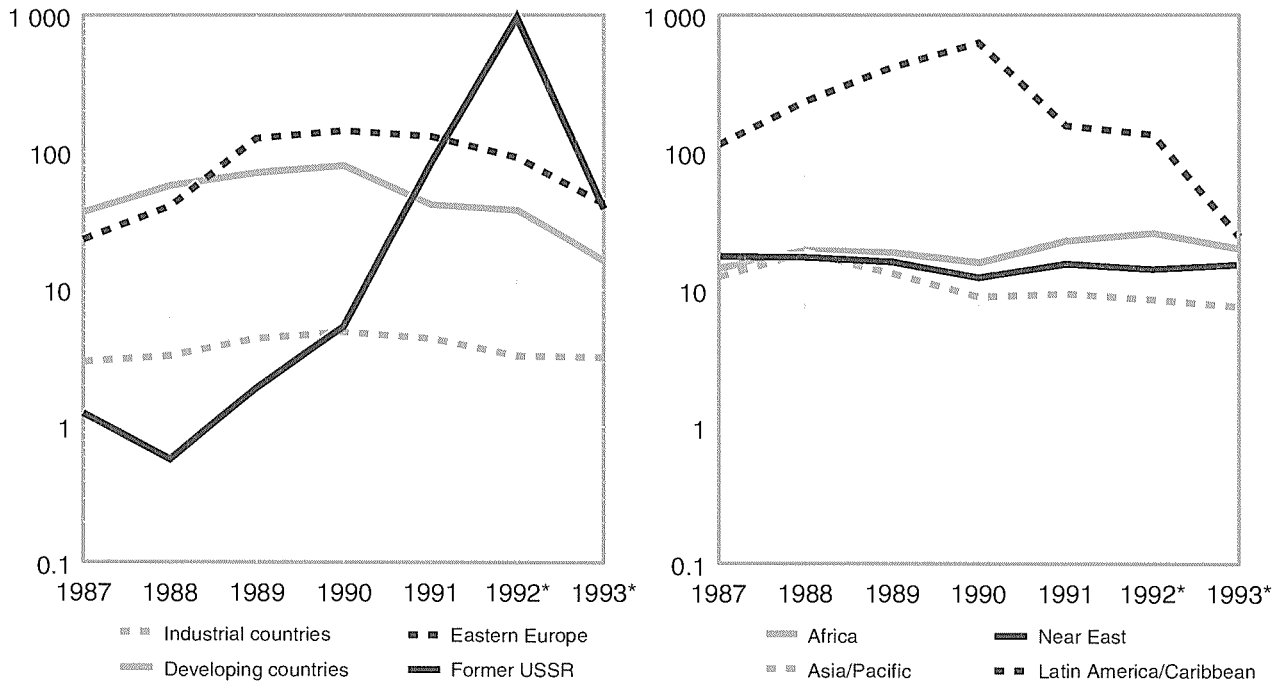
* Projections

Figure 3

CONSUMER PRICES

(Percentage change over preceding year)

- Semi-logarithmic scale -



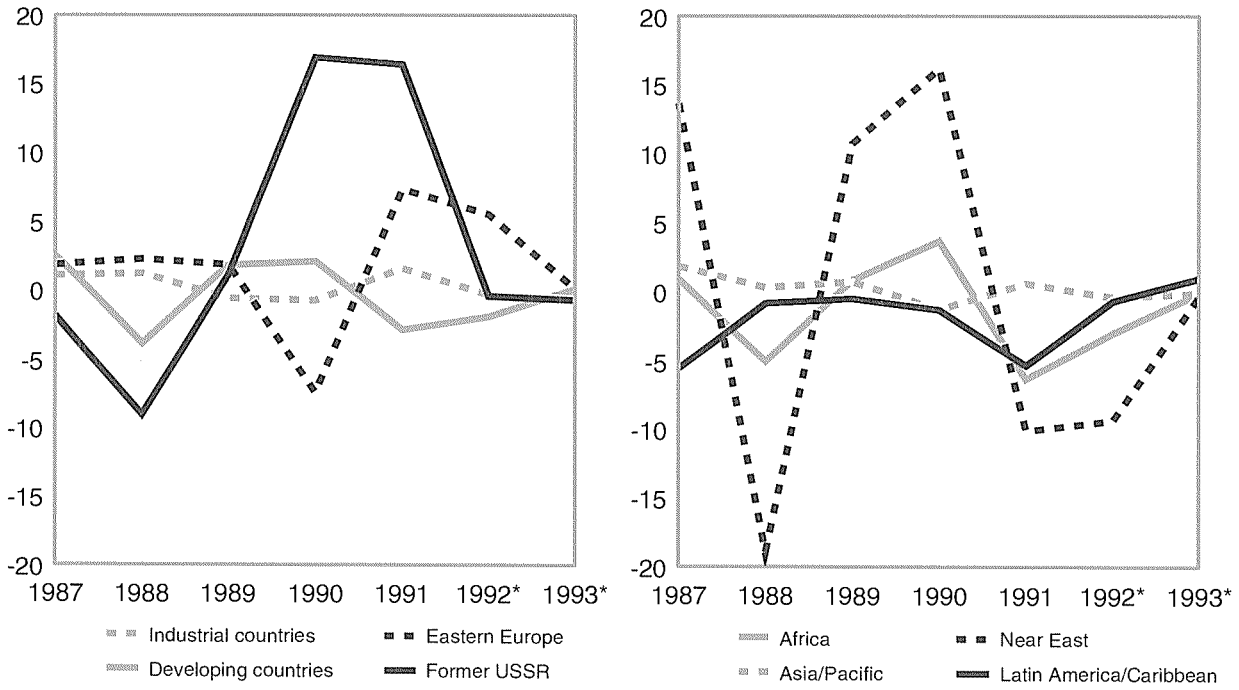
Source: IMF

* Projections

Figure 4

TERMS OF TRADE

(Percentage change over preceding year)



Source: IMF

* Projections

by the World Bank Debtor Reporting System (DRS), debt stocks remained unchanged at $1 281 billion. Net lending flows (on long- and short-term debt) of $38 billion in 1991 were fully offset by the combined effect of debt conversion, debt relief, payments of arrears and exchange rate valuation changes. Debt reductions and conversions, mainly through Paris Club creditors, are estimated to have reduced the debt stock by $22 billion and exchange rate changes by another $24 billion.

The aggregate debt-to-GNP ratio at the end of 1991 decreased to 38 percent from 42 percent in 1990. By contrast, the debt service-to-exports ratio in 1991 increased slightly to 21 percent against 20 percent in 1990, reflecting the poor export performance of developing countries.

These averages conceal considerable regional differences (Fig. 5). In sub-Saharan Africa an increase in the debt stock, combined with a weak export performance, led to an increase in the debt service-to-exports ratio from 19.1 percent in 1990 to 20.5 percent in 1991. In East Asia and the Pacific some increase in the debt stock was recorded in 1991.

However, good growth and export performances led to a decline in the debt-to-GDP ratio and in the debt service-to-exports ratio from 26.8 percent to 25.2 percent and 14.6 percent to 13.9 percent, respectively, between 1990 and 1991. In Latin America and the Caribbean, the debt-to-GNP indicator is estimated to have fallen from 40.8 percent at the end of 1990 to 37.4 percent at the end of 1991, while the debt service-to-export ratio increased from 25.3 percent in 1990 to 29.6 percent in 1991.

Total debt-service payments by DRS countries reached $153 billion in 1991, against $143 billion in 1990. Private creditors received approximately 62 percent of these payments, an amount unchanged from the previous year.

Net flows (disbursements minus principal repayments) on account of all debts were $49.2 billion in 1990 and are estimated to be $39.8 billion for 1991. Net flows on long-term debt increased from $29.7 billion in 1990 to an estimated $35 billion in 1991. The official creditors accounted for 77 percent of the net inflow of long-term debt in 1990 and 74 percent in 1991. However, when interest payments are deducted, the resulting *net transfers* on account of all debts are projected to be negative $31.6 billion for 1991, more than double the negative $14.2 billion calculated in 1990. Net transfers on long-term debt, which stood at negative $21.6 billion in 1990, are estimated to have reached a negative $23.4 billion in 1991.

Among recent efforts to reduce the developing countries' debt burden, the World Bank has reported some important steps for the poorer countries with a largely official debt. One such step was the G7 summit's call, in July 1991, for additional debt relief to be awarded to the poorest countries. It urged the Paris Club to implement debt-relief measures beyond the so-called Toronto terms for low-income countries.[4] Concessional debt rescheduling under the terms of the Toronto menu has been taking place in the Paris Club since 1988, allowing a number of countries relief on debt service falling due in the immediate future. The World Bank estimates that a hypothetical implementation of the more concessional "Trinidad terms" would offer most low-income countries a realistic prospect of returning to external viability.[5]

For the lower middle-income countries the most important development reported by the World Bank was the decision by the Paris Club in April and May of 1991 to grant a period of 50 percent debt forgiveness to Poland and Egypt, the objective being to attain full external viability with no need for further reschedulings. As a consequence of these debt-relief measures, the World Bank estimated the bilateral official debt of these two countries to have fallen by $13 billion by the end of 1991.

Concern about the external debt problem was reiterated at the July 1992 G7 summit, which invited the Paris Club to resolve the problem of developing countries' external indebtedness within three to four years. At the same time, the summit supported a one-year extension of the IMF structural adjustment credits and the replenishment of the International Development Association (IDA).

External debt and agriculture

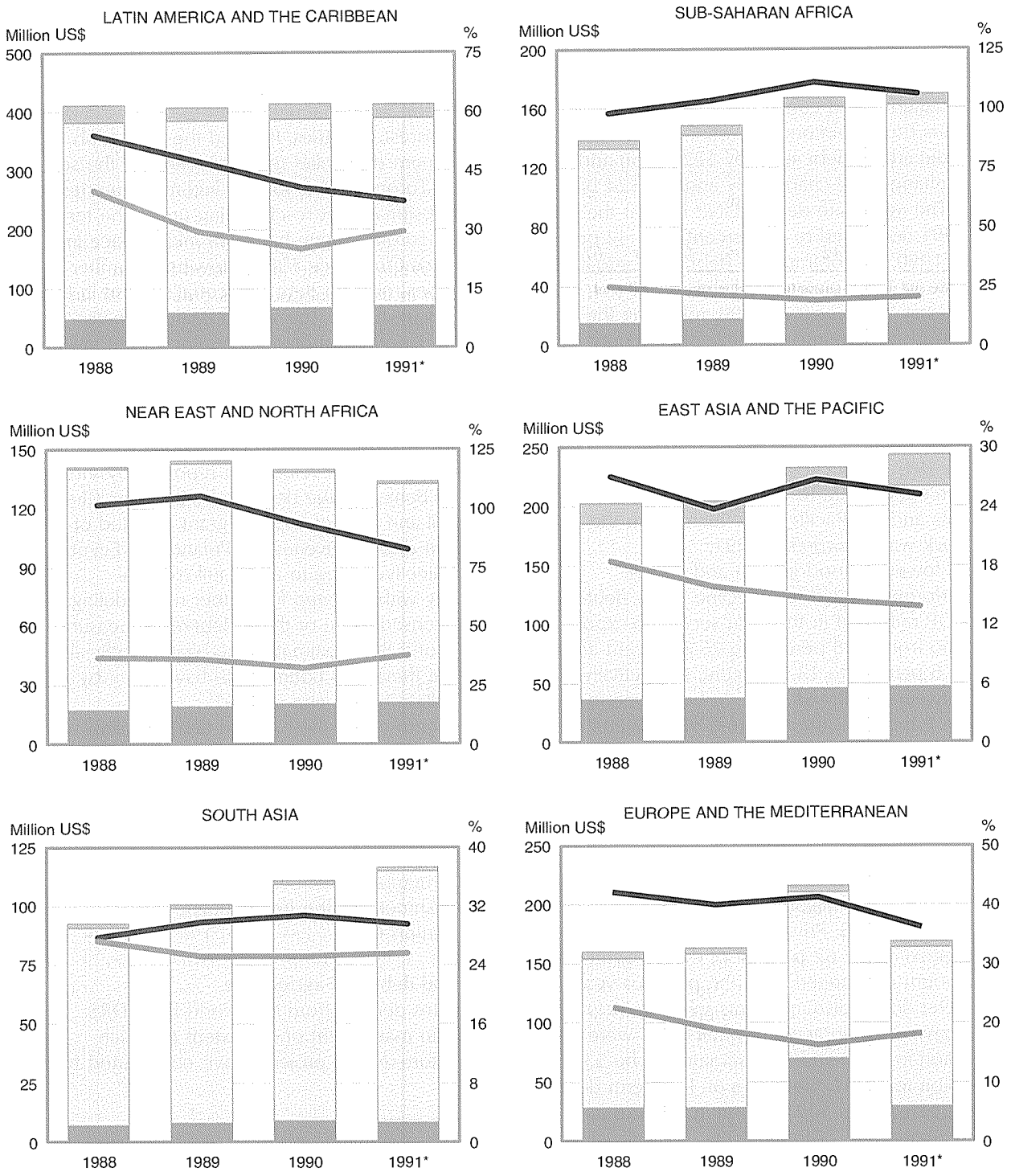
Estimates derived from the World Bank DRS allow an assessment of the extent to which agriculture-related projects have contributed to

[4] The terms of the Toronto menu allow creditors to choose from a number of rescheduling options, including a significant write-off of the amount rescheduled, a reduction in the interest rate on the rescheduled debt and an extension of the grace period and maturity.

[5] The Trinidad terms, proposed in September 1990 by the British Chancellor of the Exchequer, envisaged a once-for-all reduction in the debt stock on a case-by-case basis around a benchmark of two-thirds debt reduction.

Figure 5

COMPOSITION OF DEBT



Source: World Debt Tables 1991-92

* Projections

TABLE 1

Developing countries' agricultural external debt[1]

Form of debt	1985-87 Average	1988	1989	1990
	($ million)			
Private	7 525	5 226	4 751	2 898
Official	51 218	55 069	62 207	64 941
- Bilateral	14 737	15 114	16 159	16 041
- Multilateral	36 466	39 936	46 026	48 891
Total	58 742	60 295	66 959	67 839

[1] Private, public and publicly guaranteed debt in agriculture (broad definition).
Source: World Bank and FAO.

TABLE 2

Net external transfers to agriculture in developing countries[1]

Form of debt	1985-87 Average	1988	1989	1990
	($ million)			
Private	- 1 033	- 590	- 713	- 943
Official	1 330	140	1 256	790
- Bilateral	649	176	426	185
- Multilateral	681	- 34	830	610
Total	298	- 450	543	- 153

[1] Net transfers = gross disbursements - total debt service.
Source: World Bank and FAO.

the creation of debt stocks in developing countries.

Agricultural external debt at the end of 1990 amounted to $67.8 billion compared with $67 billion at the end of 1989 and $60.3 billion at the end of 1988 (Table 1). Agricultural debt at the end of 1990 corresponded to 5.3 percent of total outstanding debt and 6.5 percent of long-term outstanding debt. These proportions were slightly lower than in 1989.

However, agriculture debt servicing as a percentage of total debt servicing increased from 4.5 percent in 1989 to 5.6 percent in 1990 while, as a percentage of long-term debt, it increased from 5.3 percent in 1989 to 6.5 percent in 1990.

Net transfers (gross disbursements less total debt service) to agriculture turned negative by $153 million in 1990 after the positive figure of $543 million in 1989 (Table 2). This resulted from a widening of the negative net transfers from private creditors and a reduction in the positive net transfers from official sources.

Commodity prices

After the temporary surge which followed the Persian Gulf conflict, oil prices fell to an average of $18 per barrel in 1991, 17 percent below the average of the previous year. Prices were forecast by the IMF to average about $16.8 per barrel in 1992 and to increase slightly in 1993.[6]

Weak demand and adequate supplies continued to exert downward pressure on oil prices. While demand is expected to gain strength in industrial countries during 1992 and 1993 and to continue expanding in most developing countries, it is expected to weaken further in Eastern Europe and the former USSR. On the supply side, future developments will depend on a number of factors, including the re-entry of Kuwait and Iraq on the oil markets, the ability of the Organization of the Petroleum Exporting Countries (OPEC) to adopt a coordinated approach to output management and the turn of events in the former USSR.

The market situation and outlook is also less than buoyant for non-oil commodities. The slow-down in global economic activity contributed to a pronounced decline in non-oil commodity prices in 1991. Among agricultural commodities, international trade prices of tropical beverages and agricultural raw materials recorded significant declines, while those of food showed little overall change.[7] The IMF expected prices of non-fuel commodities to rise by about 1 percent in 1992 and 4.3 percent in 1993, on the assumption of a firming of economic growth and some adjustment in supplies. Among agricultural commodities, the most pronounced increases in 1992 and 1993 were expected to be in tropical beverages (a cumulative 15 percent over the two years) and raw materials (a cumulative 10.6 percent). Prices of food, on the other hand, were expected to continue to show little change. However, during the first quarter of 1992, tropical and agricultural non-food prices were, respectively, 8 percent and 3 percent below their average for 1991. Prices of food had risen

[6] These oil price estimates for 1992 may be on the low side. Brent Blend oil prices were about $21 per barrel by late June; the lowest level during the first half of 1992 was $17 per barrel.

[7] Changes in agricultural commodity prices are discussed in more detail in the section, Agricultural trade, p. 26.

by about 3.5 percent during the same period. By mid-1992, prices of coffee and cocoa were at their lowest since the early 1970s.

The above trends and prospects have quite asymmetrical impacts on different groups of countries, according to their net trade position for the various commodities. For industrial countries, the weakening of commodity prices in 1991 and 1992 has contributed to a reduction in inflationary pressure. For a large number of developing countries, by contrast, the subdued state of commodity markets has represented a major inhibiting factor for export and output growth.[8]

The projected price recovery for beverage and agricultural raw materials in 1992 and 1993 would bring welcome relief to countries depending on exports of these commodities. However, the scale of the projected recovery would only provide partial compensation for the losses incurred by price declines of these commodities during the 1980s. At the same time, such a firming of agricultural commodity prices is not seen to present any major risk of increased inflationary pressure for importing countries.

Economic environment and outlook for developing countries' agriculture[9]

Economic growth in many developing countries is crucially linked to growth in exports — the relative scarcity of external financial resources rendering it all the more necessary to generate surpluses from trade. Such expansion in exports, in turn, hinges largely on the levels of economic activity in the industrial countries. For example, the World Bank estimates that an increase of one percentage point per year in Organisation for Economic Cooperation and Development (OECD) growth, if sustained over three years, would raise developing country exports by $60 billion per year.[10]

The fact that agricultural products account for about 13 percent of total developing countries' exports (more than 20 percent for Africa) underlines the importance of prospects for agricultural trade. Despite the well-known difficulties involved in exploring such prospects through formal econometric models and techniques, some important insights may be derived from recent efforts in this field.

According to recent Project LINK projections, agricultural exports by developing countries in 1992 and 1993 are likely to recover significantly from the depressed levels of 1991.[11] With agricultural imports growing at a pace similar to that of exports, the export/import ratio will remain unchanged at around 132 percent. At these projected growth levels, export earnings from agriculture will increase by about $13 billion in 1992 and an additional $14.6 billion in 1993. At least half of these incremental export earnings will be accounted for by Southeast Asia.

A major influence behind the likely improvement in export performance is the expected economic recovery leading to a revival of import demand in industrial countries. In order to explore the extent of this influence, a second simulation model focused on the likely short-term impact that alternative GDP growth scenarios in industrial countries would have on developing countries' GDP and export growth.

- Based on the IMF's forecasts for industrial countries' growth during the period 1992-1993, an improved export performance can be expected in Asia and the Pacific, sub-Saharan Africa and Latin America and the Caribbean in 1992, with an even more marked export improvement in 1993. The volume of both agricultural and non-agricultural products would expand, with a larger expansion of non-agricultural products. Among the three regions, the most

[8] For instance, coffee exports from Côte d'Ivoire rose by 26 percent in volume but fell 21 percent in value between 1988 and 1990; cocoa exports rose by 57 and 8 percent in volume and value, respectively. Had coffee export unit values remained at 1988 levels, export earnings from the volume of coffee exported in 1990 would have been about $184 million more than they were. By the same assumption, export earnings from cocoa would have been $338 million more. The combined figure — $522 million — represents between 10 and 20 percent of the country's total export earnings in recent years.

[9] This section is based on three independent short-term forecasts: Project LINK projections for 1992-1993; a simulation model prepared for FAO and its Situation and Policy Studies Service (ESPS), exploring the likely impact that different GDP growth assumptions in industrialized countries will have on developing countries' trade and growth; and IMF projections of economic performance in two groups of countries selected by FAO on the basis of the economic importance of their agricultural trade.

[10] World Bank. *Global Economic Prospects and the Developing Countries*, April 1992.

[11] *Project LINK World Outlook*, April 1992. Estimates for agriculture were derived by aggregating products in the SITC 0+1 and 2+4 classifications.

TABLE 3

LIFDCs with the lowest capacity to finance food imports

Sub-Saharan Africa	Food imports/ Total exports 1988-90 average	Latin America and Caribbean	Food imports/ Total exports 1988-90 average	Far East and Pacific	Food imports/ Total exports 1988-90 average	Near East and North Africa	Food imports/ Total exports 1988-90 average
	(....%....)		(....%....)		(....%....)		(....%....)
Cape Verde	524	Haiti	87	Samoa	102	Egypt	116
Gambia	167	Nicaragua	37	Bangladesh	54	Yemen	96
Lesotho	152	Dominican Rep.	27	Cambodia	51	Sudan	37
Djibouti	139			Afghanistan	47		
Mozambique	127			Nepal	34		
Guinea-Bissau	105			Laos	33		
Somalia	94			Sri Lanka	26		
Comoros	88			Maldives	25		
Sierra Leone	63						
Ethiopia	56						
Burkina Faso	35						
Togo	33						
Senegal	31						
Benin	29						
Rwanda	29						
Mali	28						
Mauritania	26						

significant increase in total and agricultural exports would be in Asia and the Pacific. The directions of these forecasts were generally in line with those of the LINK model outlined above.

- Simulation exercises suggest a considerable positive impact of an accelerated economic recovery in industrial countries on sub-Saharan African countries' total and agricultural exports and growth.[12] Assuming GDP growth rates in industrial countries to be about twice those projected by the IMF for 1992 and 1993,[13] the effects on sub-Saharan Africa would be as follows: the growth rate of the region's economic activity would increase by 30 percent in 1992 (i.e. GDP growth would be 2.7 percent instead of 2.1 percent), building up to an increase of 42 percent in 1993 (with GDP growth being 3.1 percent instead of 2.2 percent). In 1992 and 1993, respectively, total exports would expand 15 and 21 percent faster than could be expected from the baseline scenario. The impact on agricultural export growth would be relatively small in 1992 but would gain momentum in 1993, by which time the growth rate would be at least twice as fast as that projected under the baseline scenario.

With all its limitations, this theoretical exercise provides a broad order of magnitude of the developing countries' dependence on changes in the external economic environment. Such dependence obviously varies according to the degree of economic openness of the various countries, the relative importance of trade in their economies and the composition of their exports and imports.

A further insight may be derived from an examination of the past experience and economic prospects of two country groups, selected according to their economic dependence on agricultural trade:

i) *Low-income food-deficit countries (LIFDCs) with the lowest capacity to finance food imports* (31 countries). This is a subgroup of the traditional FAO-defined LIFDC group,

[12] The model assumes no changes in external influences other than through trade.

[13] This scenario, quite unlikely in the current setting, was defined for illustrative purposes only. It may be noted, however, that several industrial countries did achieve growth rates that were about double those projected for 1992 and 1993 during the 1980s (e.g. Japan in 1988 and the United States in 1984).

TABLE 4

Countries highly dependent on agricultural exports

Latin America and Caribbean	Agric. exp.[1]/ Total imp.[2] 1988-90 average	Agric. exp.[1]/ Total exp.[3] 1988-90 average	Far East and Pacific	Agric. exp.[1]/ Total imp.[2] 1988-90 average	Agric. exp.[1]/ Total exp.[3] 1988-90 average	Sub-Saharan Africa	Agric. exp.[1]/ Total imp.[2] 1988-90 average	Agric. exp.[1]/ Total exp.[3] 1988-90 average
	(.....%.....)			(.....%.....)			(.....%.....)	
Argentina	129	57	Sri Lanka	29	41	Côte d'Ivoire	92	64
Paraguay	87	83	Thailand	21	28	Malawi	60	92
Honduras	62	70	Afghanistan	21	66	Zimbabwe	59	42
Cuba	59	83	Viet Nam	21	32	Mali	47	83
Uruguay	57	45	Malaysia	20	19	Sudan	47	99
Brazil	52	28				Madagascar	46	59
Guatemala	50	71				Burundi	43	95
Costa Rica	48	60				Cameroon	43	54
Colombia	46	41				Ghana	39	46
Saint Vincent and the Grenadines	39	66				Liberia	37	27
Ecuador	38	28				Uganda	35	94
Guyana	38	41				Kenya	33	68
Belize	35	57				Ethiopia	33	88
Dominica	34	68				Rwanda	32	88
Nicaragua	29	73				Swaziland	31	38
El Salvador	27	56				Mauritius	25	34
Dominican Rep.	21	45				Central African Rep.	23	28
Sao Tome and Principe	18	53				Tanzania, United Rep.	21	66
						Chad	21	65
						Burkina Faso	19	43
						Somalia	18	86
						Benin	18	41
						Guinea-Bissau	14	53
						Gambia	9	40

[1] Agric. exp. = Exports of agriculture, forestry and fishery products.
[2] Total imp. = Total merchandise imports.
[3] Total exp. = Total merchandise exports.

which currently comprises 76 countries. Food imports absorbed one-fourth or more of each of these 31 countries' total export earnings in 1988-1990.

ii) *Economies highly dependent on agricultural exports* (47 countries). For these countries, agricultural, fishery and forestry exports were equivalent to one-fifth or more of their total export earnings or one-fifth or more of their total imports in 1988-1990.

Tables 3 and 4 show countries assigned to each of these groupings and include relevant indicators.[14] For convenience, the two groups are henceforth referred to as "food importers" and "agricultural exporters".

A striking feature of the early 1980s was the counter-cyclical economic behaviour of food importers in relation to world economic trends (Fig. 6). Not only did these countries show resilience to external shocks but their economies actually expanded at relatively fast rates during 1981-83 — in marked contrast to the devastating effect of these shocks on agricultural exporters. An important explanatory factor may have been the sharp decline in international food prices during this period. Declining food import prices contributed to a major improvement in the terms of trade and purchasing capacity of food importers' exports (purchasing capacity increased by a cumulative 16 percent during 1981-84, although the bulk of the improvement took place in the latter year).

[14] These macro-economic estimates for FAO-defined country groups were prepared for FAO by the IMF World Economic Studies Division.

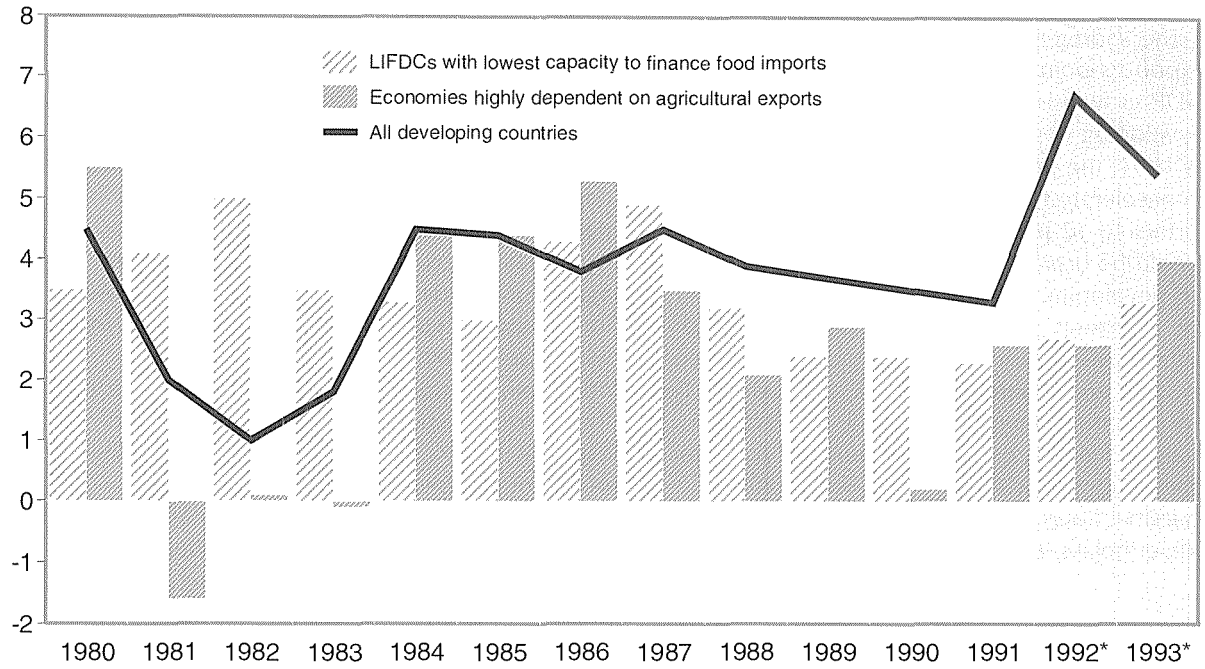
A significant feature underlying subsequent poor growth performances of the food importers was their inability to maintain adequate levels of investment. Gross capital formation declined dramatically during the 1980s, falling to a low of 17 percent of GDP in 1991, with levels in 1989-91 being about 28 percent below the average for developing countries. Agricultural exporters experienced a similar, albeit less marked, decline in investment levels from the beginning of the 1980s, although they picked up again in the latter part of the decade. Still, gross capital formation as a share of GDP in 1989-91 was 12 percent below the average of developing countries.

The fact that the food importers use much of their export earnings to finance such an essential import item as food is indicative of financing difficulties of a more general nature. Indeed, their current account balance showed major and chronic deficits during the past decade — the value of merchandise exports being less than half that of imports. These deficits were only partially offset by a positive balance of remittances throughout the 1980s. As a corollary, these countries confronted severe problems of external debt, the servicing of which absorbed about one-fourth to one-third of their total export earnings during the 1980s. The debt problem was equally acute across the various regions of this group, the debt-service ratio of countries in Asia and the Pacific being particularly high by regional standards.

However, some reduction in the current account deficit of these countries was recorded in 1991 and further reductions are expected in 1992 and 1993. The main reason would be a balancing of the services account, as no improvement is forecast for merchandise trade balances. Another positive feature is an expected improvement in the purchasing capacity of the food importers' exports which, except for in 1984 and 1988, had stagnated or deteriorated during the 1980s. The increase in purchasing capacity, projected to be about 5 percent in 1992 and 9 percent in 1993, should mainly reflect a strong expansion in export volume, since no improvement in terms of trade is foreseen. Finally, the debt problem is expected to ease somewhat; the debt-service ratio, which had already shown a decline from its 34 percent peak in 1986, should average about 26 percent in 1990-91 and fall further to 21 percent in 1992-93.

REAL GDP GROWTH OF SELECTED COUNTRIES AND ALL DEVELOPING COUNTRIES

(Percentage change over preceding year)



Source: IMF and FAO

* Projections

The agricultural exporters also recorded consistently large current account deficits over the past decade. However, unlike the importers, they recorded a positive net trade balance in most years. Trade surpluses were mainly concentrated in Latin America and the Caribbean, where the current account imbalance reflected a strong deficit in net factor income (i.e. interest payments, foreign investment profits and foreign remittances). A common experience in this region had been a recourse to foreign borrowing to fill current account gaps until the early 1980s and, when capital inflows subsequently ceased, debt repayment through surpluses from trade. In the African countries, the problem arose more from the inability to expand export volumes sufficiently to compensate for falling export prices and expanded import requirements. Finally, Far East and Pacific countries expanded the volume of their exports considerably since the mid-1980s, but the volume of imports rose at an equally fast rate while the terms of trade deteriorated.

From these different experiences emerged common problems of indebtedness. These were also more acute among exporters in Latin America and the Caribbean, where the debt service-to-exports ratio reached a peak of 55 to 60 percent in 1981-83 and fluctuated around 35 to 40 percent thereafter. However, exporters in sub-Saharan Africa and the Far East and Pacific also showed debt-service ratios above the average of their respective regions.[15]

The short-term prospects for agricultural exporters point to some improvement, although GDP growth is still forecast to lag behind that of developing countries as a whole. After slowing in 1991, the growth in export values is expected to accelerate to about 10 percent in 1992 and further to 12 percent in 1993. Such growth rates would be broadly in line with those expected for developing countries as a whole. Although the subgroup of sub-Saharan countries would only increase their export earnings by 4 percent in 1992 and 7 percent in 1993, these would be good performances in a historic context. No major change is expected in terms of trade for the group as a whole in 1992, while only a marginal improvement may occur in 1993. Nevertheless, the volume of exports is expected to expand significantly, leading to a 7 percent increase in the purchasing power of exports in 1992 and a further 9 percent in 1993. On the negative side, the current account deficit, which had widened significantly from 1988 to 1991, is forecast to widen further in 1992-1993, while the aggregate debt stock of these countries is expected to rise by $10 billion in 1992 and by a further $16 billion in 1993, reaching a total of $430 billion in the latter year. The debt-service ratio would increase from 23 percent in 1991 to 28 percent in 1992 but, with exports expected to pick up, would fall back to 23 percent in 1993.

[15] Five countries in this group — Argentina, Brazil, Colombia, Côte d'Ivoire and Ecuador — are in the IMF-defined category of "heavily indebted countries".

Conclusions

Current expectations are for some improvement in the overall economic environment in 1992, an improvement which would gather momentum in 1993, with a modest slowing in developing country growth from 1992 to 1993 being more than offset by a degree of recovery in Eastern Europe and stronger growth in the industrialized countries. Agricultural growth and trade should benefit from the improved overall economic performance. However, as in the past, benefits are likely to be unevenly distributed and, in several respects, the general short-term outlook for developing countries appears to be the mirror image of past trends. At the two extremes are the Near East, recovering from the affects of the Persian Gulf conflict, and sub-Saharan Africa, where the meagre gains expected in the coming years suggest that adequate returns from the development process are not yet forthcoming. Elsewhere, an encouraging but still fragile recovery seems to be under way in Latin America and the Caribbean while the Far East continues to progress, although at a slower pace than was the case earlier in the 1980s.

As regards economies more dependent on agricultural trade, the agricultural exporter and food importer countries have generally shown worse performances than the average of developing countries. This is a consequence of their narrow export base and limited import capacity, factors which are *prima facie* evidence of external vulnerability. These countries' economic performance has been to a large extent determined by the external shocks and depressed economic conditions which have prevailed during much of the 1980s and early 1990s. In the case of agricultural exporters, for whom even moderate changes in agricultural export prices can make the difference between

crisis and bonanza, the effect of several years of declining prices was devastating. In the case of food importers, by definition a low-income group, the economic problems of the past decade transcend those directly linked to their food-deficit status. However, for these countries, a sudden, strong and/or protracted increase in food import prices would pose the problem of food shortages and economic havoc — unless food aid or other forms of external assistance come to their rescue.

For the two country groups, these problems must be tackled both in a long-term and an immediate dimension. In a long-term perspective, the task for these countries would be to promote the structural changes necessary to reduce external dependence — to the extent permitted by their natural endowments and competitive potential. For agricultural exporters, this would involve diversifying the export base, improving productivity and expanding trade of processed agricultural products. For food importers the long-term tasks would be, on the one hand, to strengthen purchasing capacity through export-oriented strategies and, on the other hand, to promote indigenous agriculture with a view to substituting imports with domestically produced crops — bearing in mind, however, that increasing domestic food production might in some cases reduce export earnings and worsen current account positions. It may be noted that, despite the asymmetric nature of trade patterns and related problems in the two groups, they face a number of similar policy issues. In particular, overvalued exchange rates militate against domestic food producers and keep import prices artificially low while penalizing exporters.

In any case, these countries face more immediate and pressing concerns. For the agricultural export-dependent countries, market access for agricultural products and market stability remain crucial issues. Agricultural protectionism in the markets where they compete limits their export and growth potentialities and may also add to market price instability. At the same time, food importers' short-term welfare largely hinges on a regular flow of food supplied by exporters at accessible and stable prices as well as on access to foreign markets for their non-food exports. The situation of abundant food supplies at abnormally low prices in international markets, resulting from producer and export subsidies, may save their foreign exchange but it can also have negative repercussions on domestic staple food prices and encourage changes in food preferences. These considerations highlight the delicate balance between "not enough and too much" in world agricultural markets, the industrialized countries' worldwide responsibility in formulating and implementing agricultural policies and the importance of a successful conclusion to the Uruguay Round of multilateral trade negotiations (MTNs). For the developing countries the challenge is to make the policy and structural adjustments necessary to participate in the distorted global markets of today and to press for fairer global markets for their products in the future.

FOOD AND AGRICULTURAL SUPPLY

Agricultural production in 1991

For the first time since 1983, global agricultural production in 1991 declined, reflecting reduced harvests in North America, Australia, Eastern Europe and, more markedly, the former USSR. In the developing countries, agricultural production growth slowed from the trend level of the 1980s (Fig. 7). In per caput terms, agricultural production declined in much of Latin America and the Near East while increasing marginally in the Far East. The substantial rise in Africa's total agricultural production was almost entirely eroded by the high population growth of the region.

Among the main components of food production, world *cereal* output is estimated to have been 1 891 million tonnes, approximately 4 percent less than the record harvest achieved in 1990 and below the trend level (Table 5). The countries accounting for the overall decline in cereal output for 1991 include the former USSR and the United States. Regarding the major cereals, reduced area and yields resulted in a decline in world wheat production to 555 million tonnes, 8 percent below the record level of 1990, while coarse grains are estimated to have fallen by 3.8 percent to 816 million tonnes because of adverse growing conditions. World output of paddy, on the other hand, is estimated to have declined only slightly to 519.9 million tonnes.

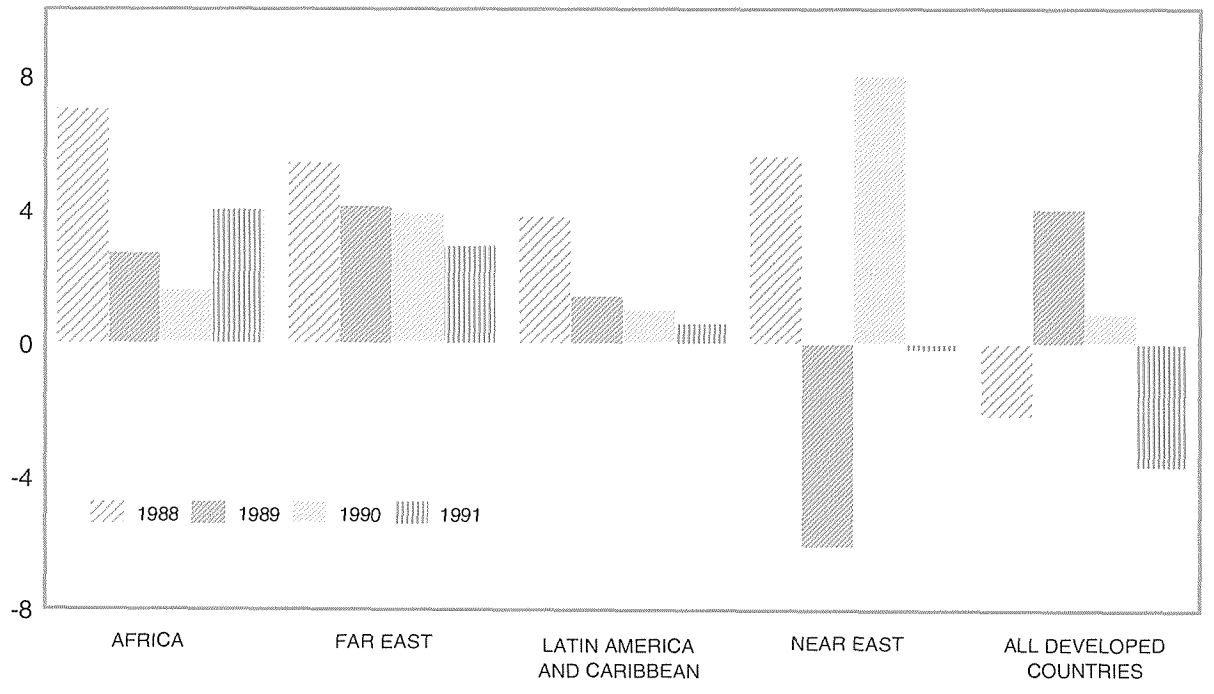
World production of *root crops*, the second most important group of staples, did not change much. The growth in cassava production is estimated to have been more than offset by a fall in output of sweet potatoes and potatoes. Output of other roots and tubers, such as yams and cocoyams, is estimated to be at approximately the same level as in the previous year.

World production of *pulses* rose to nearly 62 million tonnes in 1991, up 4.9 percent from 1990. As in previous years, this increase occurred mainly in output for food consumption, as opposed to feed consumption.

Total *fats and oils* production in 1991 fell slightly from 1990 levels in industrial countries. In North America, production increased by 3 percent, but the former USSR and Eastern Europe experienced a decline of 7 percent, while production in Western Europe changed little. Production in developing countries

CHANGES IN AGRICULTURAL PRODUCTION

(Percentage change over preceding year)



Source: FAO

TABLE 5

Agricultural production by major commodities, 1990-1991

Commodity	Developed countries			Developing countries			World		
	1990	1991	1990 to 1991 Change	1990	1991	1990 to 1991 Change	1990	1991	1990 to 1991 Change
	(.....Million tonnes.....)		(%)	(.....Million tonnes.....)		(%)	(.....Million tonnes.....)		(%)
Total cereals	933.5	848.6	- 9.1	1 038.0	1 042.0	0.4	1 971.5	1 890.6	- 4.1
- Wheat	366.5	316.2	- 13.7	235.3	238.8	1.5	601.7	555.0	- 7.8
- Rice, paddy	26.0	24.3	- 6.7	495.7	495.6	-	521.7	519.9	- 0.3
- Coarse grains	541.0	508.1	- 6.1	307.0	307.6	0.2	848.0	815.7	- 3.8
Root crops	191.2	180.8	- 5.5	382.9	393.9	2.9	574.1	574.6	0.1
Total pulses	21.4	21.5	0.3	37.4	40.0	6.9	58.9	61.6	4.9
Fats and oils	39.0	38.8	- 0.4	42.8	44.0	2.6	81.8	82.8	1.2
Sugar, centrifugal (raw)	45.3	42.4	- 6.5	65.5	69.9	6.6	110.8	112.2	1.3
Total meat	104.5	103.6	- 0.8	72.2	75.2	4.2	176.6	178.8	1.2
Total milk	383.4	369.5	- 3.6	155.8	158.5	1.7	539.2	528.1	- 2.1
Hen eggs	19.0	18.7	- 1.2	15.9	16.6	4.6	34.9	35.4	1.5
Cocoa beans	-	-	-	2.5	2.5	- 2.9	2.5	2.5	- 2.9
Coffee, green	-	-	-	6.3	6.1	- 3.1	6.3	6.1	- 3.1
Tea	0.2	0.2	- 7.1	2.3	2.4	2.6	2.5	2.6	1.7
Vegetable fibres	7.4	7.7	4.5	17.1	19.0	11.1	24.5	26.7	9.1
- Cotton lint	6.7	7.0	4.9	11.7	13.6	15.9	18.4	20.6	11.7
- Jute and jute-like fibres	-	-	6.0	3.6	3.6	0.3	3.7	3.7	0.4
Tobacco	1.8	1.9	2.5	5.2	5.8	10.3	7.1	7.7	8.3
Natural rubber	-	-	-	4.9	5.1	3.5	4.9	5.1	3.5

Source: FAO.

increased by nearly 3 percent in 1991, with marked changes occurring across regions. Asia accounted for most of the increase (large gains were registered in China, India and Indonesia), which more than offset declines in Latin America (output in Brazil fell significantly). Production in Africa increased slightly.

Global *sugar* production in 1991 increased slightly to 112.2 million tonnes. The developing countries' output increased by nearly 7 percent to almost 70 million tonnes, with gains recorded particularly in Brazil, China and Turkey. The developed countries' production is estimated to have fallen by 6.5 percent to 42.4 million tonnes, despite a sharp recovery in output in the United States.

World *meat* production in 1991 is estimated to have increased marginally from the previous year's level. Poultry production increased significantly in some developed countries as well as in Brazil, China and Thailand.

World production of *milk* is estimated to have fallen in 1991 by about 2 percent below the previous year's record output. The fall resulted from a decline in the developed countries, particularly in Eastern Europe and the former USSR. In developing countries, output growth accelerated in China but stagnated in the producing regions of southern and eastern Africa and Latin America and the Caribbean.

The slow growth in developing countries' food production is also reflected in the relatively small number of countries that recorded an increase in per caput food production from 1990 to 1991 (Table 6). In particular, less than 40 percent of the countries in Africa recorded an increase in per caput food production in 1991.

TABLE 6

Rates of change in per caput food production by country, 1990-1991

Percentage rate of change	Developing countries				Developed countries
	Africa	Asia and Pacific	Latin America and Caribbean	Near East	
+5	Algeria Burkina Faso Chad Gambia Ghana Malawi Morocco Namibia Niger Reunion Zambia	Samoa Thailand	Bolivia Guadeloupe Guyana	Cyprus Sudan	Greece Italy New Zealand
3.01 to 5	Mali Nigeria	Nepal	Barbados Puerto Rico		Belgium/ Luxembourg
0.1 to 3	Benin Burundi Guinea Tunisia	Bangladesh Bhutan Indonesia Pakistan Tonga Viet Nam	Brazil Chile Ecuador El Salvador Honduras Martinique Nicaragua Peru Suriname Trinidad and Tobago	Islamic Rep. of Iran Kingdom of Saudi Arabia Libyan Arab Jamahiriya	France Germany, Fed. Rep. Ireland Switzerland United Kingdom
0 to -3	Angola Central African Rep. Comoros Congo Ethiopia Gabon Guinea-Bissau Mauritius Rwanda Sao Tome and Principe Swaziland Uganda Zaire	Brunei Darussalam China India Korea, Dem. People's Rep. Korea, Rep. Malaysia Maldives Myanmar Papua New Guinea Philippines Solomon Islands	Argentina Belize Colombia Mexico Panama Venezuela		Austria Canada Czechoslovakia Denmark Iceland Malta Netherland Norway South Africa, Rep. Yugoslavia
-3.01 to -5	Cameroon Côte d'Ivoire Liberia Mauritania Senegal Togo	Cambodia Laos Macau Sri Lanka	Cuba Dominican Rep. Guatemala Jamaica Paraguay	Turkey	Japan Portugal Spain United States

TABLE 6 (cont.)

Rates of change in per caput food production by country, 1990-1991 (cont.)

Percentage rate of change	Developing countries				Developed countries
	Africa	Asia and Pacific	Latin America and Caribbean	Near East	
-5.01 to -10	Botswana Cape Verde Kenya Lesotho Madagascar Mozambique Tanzania, United Rep.	Fiji	Costa Rica Haiti Uruguay	Egypt Syrian Arab Rep.	Australia Bulgaria Poland Romania Sweden
Less than -10	Sierra Leone Somalia Zimbabwe	Mongolia Singapore Vanuatu		Iraq Jordan Yemen	Albania Finland Former USSR Germany, New Länder Israel

Source: FAO.

Among the major agricultural non-food crops, world production of *green coffee* in 1991 was estimated to have fallen 3.1 percent from the previous year's level. Large production shortfalls in Africa and Latin America and the Caribbean were only marginally offset by larger harvests in the Far East. Global *cocoa* production also fell by nearly 3 percent from the record 1990 level. In Africa and Latin America and the Caribbean the declines were 6 percent and 4.6 percent, respectively. World production of *tea* increased slightly in 1991 after the recovery of 1990, mainly reflecting larger harvests in India, Sri Lanka and Kenya.

World *cotton* production in 1991 increased by almost 12 percent to 20.6 million tonnes, as area planted and yields expanded under the influence of attractive prices and as a result of favourable weather in many countries. The increase in the developed countries was nearly 5 percent while, in the developing countries, it was more substantial — almost 16 percent. In the Far East, output rose sharply (by 21 percent) mainly thanks to the world's principal producer, China, whose output reached a new record. World production of *jute, kenaf and allied fibres* increased slightly, continuing the slow growth of the late 1980s.

World production of *natural rubber* rose by 3.5 percent, reflecting increased output in most major producing countries of the Far East and Africa.

Production of staple foods

A closer focus on the food supply situation in the various regions can be derived from changes in per caput production of staple foods (Table 7).[16] World staple food production in 1991 fell to 387 kg per caput, one of the lowest levels of the decade. This decline reflects the large cereal shortfall in the developed countries reviewed above and, to a lesser extent, the fall in root crop production, particularly potatoes, in Eastern Europe. However, developing countries experienced an overall decline, resulting from stagnating cereal and root crop harvests, which more than offset a moderate increase in per caput pulse production.

The reduced per caput staple food output in developing countries mainly resulted from the 3.5 percent fall in the Far East which followed an exceptionally bountiful 1990 crop year in that region. The production of rice, the principal staple, fell in some of the major producing countries such as China and Indonesia. Above-average crops were recorded elsewhere, particularly in India and Viet Nam. Per caput staple food production also fell in the Near East, as the increase in cereal crop production lagged behind population growth and pulse and root crop production fell from the 1990 level.

[16] Staple food comprises cereals, pulses, roots and tubers, measured in grain equivalent.

TABLE 7

Per caput producton of staple foods[1]

Region	1981-85 Average	1987	1988	1989	1990	1991
	(kg per caput/year)					
Africa	188	193	206	206	190	201
Far East	302	294	301	312	317	306
Latin America and Caribbean	317	306	294	280	263	269
Near East	267	269	300	233	284	281
Total developing countries	287	281	288	289	292	286
North America	1 392	1 258	912	1 233	1 371	1 234
Oceania	1 412	1 171	1 238	1 239	1 244	932
Western Europe	536	542	564	566	557	570
- *EEC*	519	539	563	558	548	566
Eastern Europe	867	878	880	918	888	857
Former USSR	718	800	727	784	865	666
Total developed countries	760	749	665	756	795	717
World	407	395	379	401	411	387

[1] Cereals, pulses, roots and tubers, in grain equivalent.
Source: FAO.

Per caput staple food production increased significantly in developing African countries, albeit following poor harvests in 1990. Cereal production rose by an estimated 14 percent, primarily as a result of higher coarse grain outputs in West Africa and record crops in Sahelian countries. Increases in root crop production, particularly cassava, failed to keep pace with population growth, however.

Staple food production in Latin America and the Caribbean staged a slight recovery after several years of pronounced decline. However, at 269 kg per person, output remained significantly below the developing countries' average. This situation contrasts with that prior to 1987 when the Latin America and Caribbean region was, by a considerable margin, the largest producer of staple food in per caput terms among all developing country regions.

Food availability and undernutrition[17]

Estimates of dietary energy supply (DES), measured in terms of kilocalories (kcal)[18] per day for a given reference period, indicate the average amount of food per caput that is available for human consumption at country and regional levels. DES represents, therefore, the average domestic food disposition (whether domestically produced, commercially imported or received in the form of food aid) for the total population. It does not indicate the actual per caput consumption of food. As a country or regional average, however, DES hides considerable variations between individuals depending on their different income levels, dietary preferences and food habits.

Estimates of per caput DES by region from the early 1970s to recent years are shown in Table 8. The following features may be observed:

- A wide, although narrowing, gap exists between per caput DES in developing and developed regions (930 kcal in 1988-90 compared with 1 070 kcal in 1969-71).
- Despite faster population growth,

[17] This section is based on recent FAO estimates of food supply and prevalence of undernutrition, prepared as part of the documentation for the International Conference on Nutrition (ICN) to be held in December 1992. The information has been published in *World food supplies and the prevalence of chronic undernutrition in developing regions, as assessed in 1992*. Statistics Division, FAO. 1992.

[18] The traditional unit of calories is being used until the proposed kilojoule gains wider acceptance. One joule is the energy expended when one kilogram is moved one metre by a force of one newton.

TABLE 8

Per caput DES by region

Region	Level of DES			Average annual growth rates	
	1969-71	1979-81	1988-90	1969-71/1979-81	1979-81/1988-90
	(..... kcal per caput/day .....)			(..... % .....)	
World	**2 430**	**2 580**	**2 700**	**0.6**	**0.5**
Developed regions	**3 190**	**3 290**	**3 400**	**0.3**	**0.4**
- *North America*	**3 230**	**3 330**	**3 600**	**0.3**	**0.9**
- *Europe*	**3 240**	**3 370**	**3 450**	**0.4**	**0.3**
- *Oceania*	**3 290**	**3 160**	**3 330**	**-0.4**	**0.6**
- *Former USSR*	**3 320**	**3 370**	**3 380**	**0.1**	**-**
Developing regions	**2 120**	**2 330**	**2 470**	**0.9**	**0.7**
- *Africa*	**2 140**	**2 180**	**2 200**	**0.2**	**0.1**
- *Far East*	**2 040**	**2 250**	**2 450**	**1.0**	**0.9**
- *Latin America*	**2 500**	**2 690**	**2 690**	**0.7**	**-**
- *Near East*	**2 420**	**2 810**	**2 920**	**1.5**	**0.4**

Source: Statistics Division, FAO. 1992. ***World food supplies and the prevalence of chronic undernutrition in developing regions, as assessed in 1992.***

developing regions as a whole show much higher average annual rates of growth in per caput DES than the developed regions.

- While per caput DES increased substantially during the 1970s in all developing regions except Africa (which recorded a growth rate of just 0.2 percent), during the 1980s it decelerated significantly in most of these same regions, except the Far East (mainly because of China's performance). This latter period was marked by unfavourable conditions for economic and agricultural growth in many countries.

FAO has adopted a revised methodology to estimate the prevalence[19] of undernutrition in the developing regions on the basis of DES combined with information on the distribution of the food available. The estimates are presented in Table 9. Small countries with a population of less than one million have been excluded from the calculations but this has had little effect on the regional totals.

For the developing countries covered as a whole, the declines in the proportion of undernourished in the total population were sufficiently large to outpace population growth and thus lead to a decline in the absolute number of undernourished.[20] However, because of the differential rates of per caput DES and population increases, this was not true of all regions. In Africa, where the share of undernourished was lower than in the Far East in 1969-71, the decline in the 1970s was not fast enough to outpace population growth and, therefore, the number of undernourished rose from 101 million in 1969-71 to 128 million in 1979-81. The situation actually worsened during the 1980s as the percentage of undernourished remained virtually the same while their number grew at a faster pace to reach 168 million in 1988-90.

As regards the other three regions in the 1980s, only the Far East maintained the declining trend observed in the previous decade. The Near East and Latin America and

[19] The estimate of prevalence is defined as "the proportion of the population who, on average during the course of a year, did not have enough food to maintain body weight and support light activity".

[20] This is the first time a decline in the number of undernourished has been reported by FAO. The primary reason for the decline since 1969-71 is the extension of the country coverage. The most recent estimate includes China, Viet Nam, Cambodia, the Democratic People's Republic of Korea and Mongolia. If, as in previous estimates, these countries are excluded, the proportion and absolute number of chronically undernourished persons would be 31 percent and 526 million, respectively, in 1969-71; 24 percent and 536 million in 1979-81; and 21 percent and 579 million in 1988-90. Hence, the exclusion of these countries would result in a consistent decline in relative but not absolute terms.

TABLE 9

Prevalence of chronic undernutrition in developing regions

Region	Period	Total population	Chronic undernutrition	
			Proportion of total population	Number
		(Million)	(%)	(Million)
Africa	1969-71	288	35	101
	1979-81	384	33	128
	1988-90	505	33	168
Far East	1969-71	1 880	40	751
	1979-81	2 311	28	645
	1988-90	2 731	19	528
Latin America	1969-71	281	19	54
	1979-81	357	13	47
	1988-90	433	13	59
Near East	1969-71	160	22	35
	1979-81	210	12	24
	1988-90	269	12	31
Total developing regions[1]	1969-71	2 609	36	941
	1979-81	3 262	26	844
	1988-90	3 938	20	786

[1] Seventy-two countries with a population of less than one million are excluded from these totals. The combined population of these countries represents 0.6 percent of the total developing countries' population.
Source: Statistics Division, FAO. 1992. *World food supplies and the prevalence of chronic undernutrition in developing regions, as assessed in 1992.*

the Caribbean experienced a stabilization in the percentage of undernourished and an increase in their total number. Thus, in both regions, the improving trends of the 1970s were halted.

Because of the large population involved, by far the largest number of undernourished continued to be in the Far East (67 percent of the developing countries' total number in 1988-90), although the region experienced the largest decline in the proportion of undernourished: from 40 percent in 1969-71 to 19 percent in 1988-90.

Current cereal supply, utilization and stocks

Although cereal utilization declined in 1991/92, it still exceeded production and global cereal stocks therefore diminished over the same period (Fig. 8). The decline in total utilization was largely on account of a fall in the amount of cereals fed to animals. The direct consumption of cereals as food rose in aggregate but not in per caput terms, which were marginally lower worldwide and particularly so in a number of LIFDCs. Moreover, despite a 5 percent increase in the average per caput use of cereals as food in LIFDCs as a whole over the past decade, almost half of these countries recorded lower estimated levels of per caput cereal consumption than a decade ago.

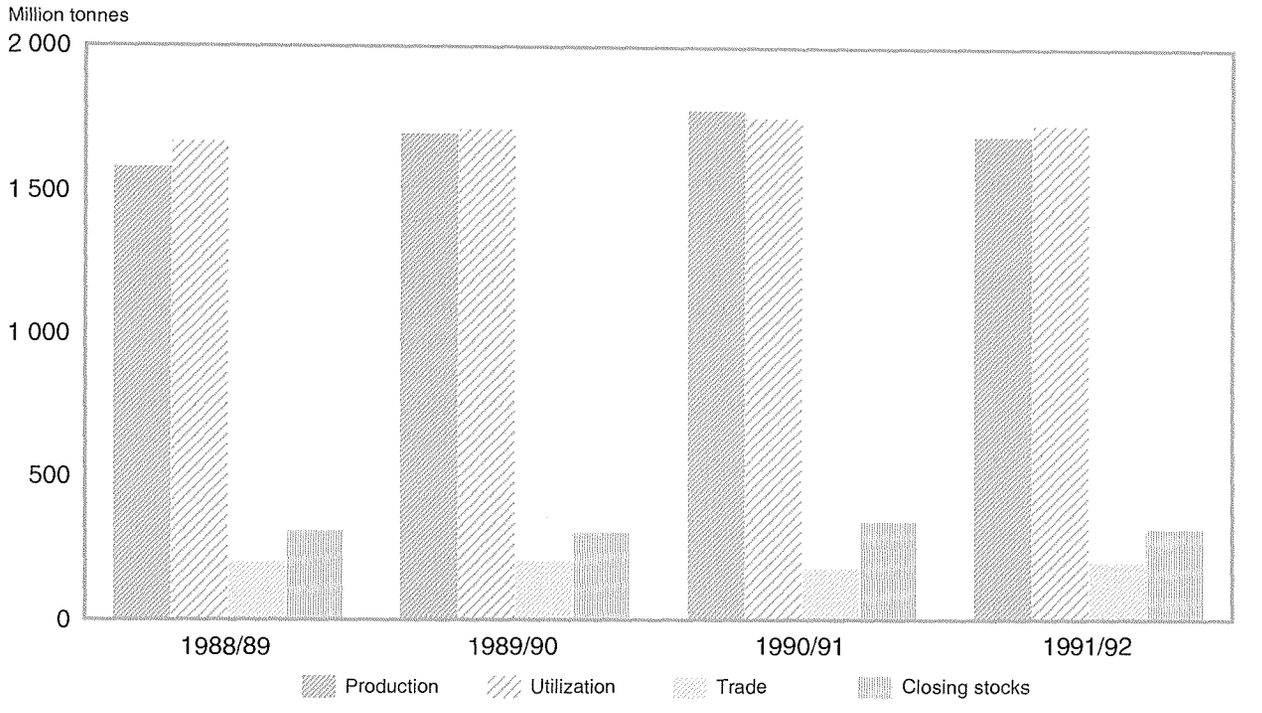
At mid-1992, tentative FAO forecasts for 1992 indicated an increase of world cereal production to 1 933 million tonnes, 2.5 percent more than in 1991. At the forecast level, output would be below the trend, mainly on account of the limited recovery anticipated in wheat output, which was forecast to rise by only 0.5 percent. Production of coarse grain was forecast to expand by 4 percent. Assuming a normal monsoon, world paddy output in 1992 was tentatively projected at 529 million tonnes, 3 percent above the previous year.

According to FAO's mid-1992 estimates, global cereal stocks at the close of the 1991/92 seasons should amount to 324 million tonnes, 20 million tonnes less than their opening level (Fig. 9). The drawdown would occur in all the major cereals, with wheat down by 4 million tonnes to 136 million tonnes, coarse grains down by 11 million tonnes to 128 million tonnes and rice down by 5 million to 60 million tonnes. Expected to close at 152 million tonnes, aggregate cereal holdings in developing countries were anticipated to show little change in 1991/92, while stocks held in the developed countries are expected to fall sharply despite an increase of 12 million tonnes in the European Economic Community (EEC). The holdings of major exporters, which account for 40 percent of global stocks, were expected to decline by 12 million tonnes in 1991/92.

As stocks of all cereals are expected to decline in 1991/92, the expansion in the availability of cereals in 1992/93 (opening stocks plus production) is forecast to be rather limited while no significant replenishment of stocks is foreseen. The availability of wheat is expected to remain rather tight and global wheat consumption in 1992/93 will probably remain below the trend level. For coarse grains, current indications point to an expansion in availabilities and the possibility of an increase in stocks in 1992/93. Little change is forecast for stocks of rice. At the estimated level, carryover stocks of cereals into 1992/93 should represent 18 percent of the trend of consumption in 1992/93, a ratio which remains within the range

Figure 8

SUPPLY AND UTILIZATION TRENDS IN CEREALS*



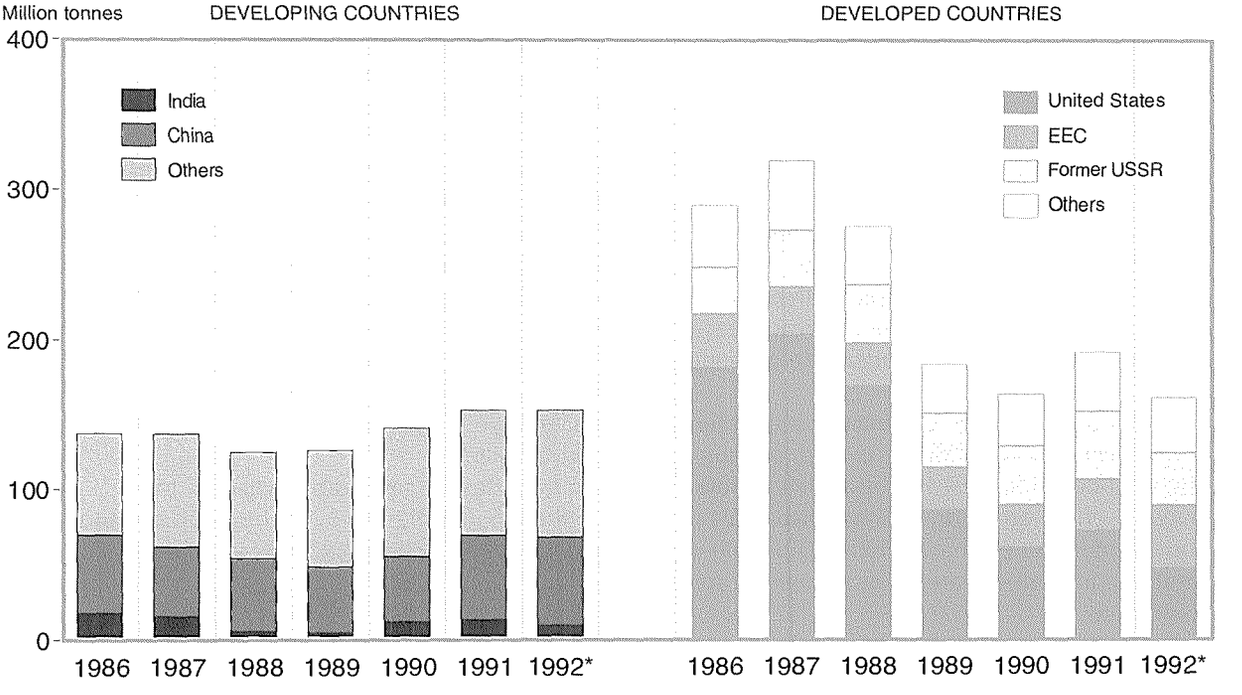
Source: FAO

* Including milled rice

Figure 9

CARRYOVER CEREAL STOCKS

(Crop year ending in the year shown)



Source: FAO

* Estimates

that FAO considers the minimum necessary to safeguard world food security.

If the mid-1992 production forecasts were to materialize, the global level of supplies would be adequate to meet expected utilization in 1992/93. However, the current production forecast is only tentative and a significant deterioration in crop conditions could lead to serious repercussions for global food security, which is already threatened by several critical regional food shortages, particularly in Africa.

Food shortages and emergencies

Widespread food shortages are affecting vast expanses of East and southern Africa. The food supply situation around the Horn of Africa has been disrupted by a combination of poor rains and continuing civil disturbances.

Ethiopia continues to be at risk from famine and is dependent on an estimated 1 million tonnes of food aid, of which 760 000 tonnes have been pledged or delivered to date. The short rains crop was poor, and there is no immediate prospect of an improvement in the domestic supply situation.

In *Somalia* a combination of drought and civil unrest has placed over half the population at risk from famine. The distribution of relief supplies has been severely disrupted and deaths from starvation have been reported in Mogadishu.

After very poorly distributed rains, the immediate food situation in *Kenya* is also critical, particularly in pastoral areas. A total of 961 000 persons are judged to be drought-affected, 679 000 of whom are in need of immediate relief assistance.

In the *Sudan*, despite a record wheat harvest and substantial increases in sorghum and millet production, civil disturbances have resulted in an increased number of displaced people. The food position remains serious in the western states and in the south. People in these areas still lack purchasing power or the resources permitting them access to adequate amounts of food.

The *United Republic of Tanzania* has suffered from severe localized droughts and, although the total cereal harvest will be slightly below average, there are wide regional disparities in food supply. An estimated 800 000 people in central and northern areas are in need of relief assistance.

In West Africa, civil disturbances have seriously affected paddy cultivation in *Sierra Leone* and *Liberia*, which require about 100 000 and 127 000 tonnes of food aid assistance, respectively.

Approximately 18 million people have been seriously affected by prolonged drought and civil disturbances in the Southern African Development Coordination Conference (SADCC) region.[21] An estimated 3.1 million people are at risk in *Mozambique*: food supplies throughout the country are critically low. The recent cereals harvest was disastrous in most areas of the country and input markets, cultivation and food distribution have been seriously disrupted by civil strife. Hopefully, the agreement that the government and the RENAMO movement reached in July, concerning the movement of food within the country, will help curb the number of deaths from starvation, which had been on the increase.

The SADCC region as a whole has a huge food deficit of more than 6 million tonnes. Many of the subregion's cereal imports are supplied by the Republic of South Africa, but this country has also been severely affected by drought. While some countries (Botswana and Swaziland) have a considerable capacity to import food on commercial terms, others (Malawi, Mozambique and Zambia) must rely largely on the provision of exceptional food aid. Relief operations are under way in all the countries of the subregion, but they are critically dependent on the flow of commercial and food aid imports being maintained, at least until May 1993. Serious local food shortages have already been reported in Zimbabwe and Malawi.

In *Afghanistan*, poor input supplies and continuing civil unrest are likely to result in a poor wheat and barley crop. The food supply situation is particularly serious around the Kabul area where prices of foodstuffs on the open market remain well beyond the purchasing power of the majority of the population.

In 1991 the output of rice in *Cambodia* was drastically reduced by droughts, floods and shortages of inputs. An estimated 360 000 people who have been repatriated from Thailand are in border camps and in need of food assistance.

In *Iraq*, despite favourable weather, food production in 1992 will again be poor, owing to inadequate input supplies and crop losses

[21] The ten states of SADCC are Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, Swaziland, the United Republic of Tanzania, Zambia and Zimbabwe.

through infestation. Although some food prices show a declining trend, reflecting an increase in supplies, they remain sharply higher than those prevailing in July 1990 and they are thereby beyond the purchasing power of large sections of the population.

Elsewhere, serious food shortages are reported in *Albania, Armenia, Haiti, Jordan, Laos, Lebanon* and *Peru*, where exceptional or emergency assistance is required.

Fertilizers

World fertilizer (plant nutrient) consumption in 1990/91 dropped by 4.2 percent or 6 million tonnes. After the record consumption of 145.6 million tonnes and 4.3 percent growth in 1988/89, the consumption of 143.5 million tonnes in 1989/90 and 137.5 million tonnes in 1990/91 marked the beginning of a medium-term period of decreasing global fertilizer use. World fertilizer consumption is estimated to drop further in 1991/92 and 1992/93 before increasing again.

As regards the consumption of individual nutrients, the least affected was phosphate which declined by 1.4 percent in 1990/91 after a loss of 0.4 percent in 1989/90. Potash was the most seriously affected, with consumption declining by 1.1 and 2.5 percent in 1989/90 and 1990/91, respectively.

Fertilizer production continues to be strongly affected by fluctuations in demand for individual nutrients. The continuing political, economic and policy changes in Eastern Europe and the former USSR strongly affected nitrogen, potash and phosphate production.

The short-term outlook for nitrogen fertilizers is for a moderate surplus supply and consequent downward pressure on prices. Phosphate fertilizers are in ample supply and there is likely to continue to be a surplus of potash fertilizers. Nevertheless, tight market situations cannot be ruled out for individual products such as urea.

Fertilizer consumption in the developing countries continued to increase despite the fall at the world level. These countries recorded increases of 4.5 percent in total fertilizer consumption; 3 percent for nitrogen, 5.7 percent for phosphate and 10.9 percent for potash consumption. The developed countries, however, recorded a drop of 10.8 percent in total consumption, with a small gain for nitrogen (3 percent) and large losses for phosphate (-10 percent) and potash (-15.4 percent).

The same general trends are expected to prevail in the medium term; namely increasing fertilizer consumption in developing regions, especially Asia, and reduced consumption decline in the developed regions, especially Eastern Europe and the former USSR.

The economic and political transformations under way in the former USSR and the East European countries are influencing the world fertilizer supply/demand balance and the international fertilizer markets more than was anticipated. The global impact of the problems faced by these countries is already manifested by the sizeable drop in fertilizer consumption and production, resulting in a reduction of exportable surpluses.

Fertilizer prices were higher in these countries, resulting from the removal of subsidies on fertilizers and the reduced product availability caused by lower plant operating rates and the disruption of transport systems.

The most important factor affecting fertilizer production capability in the East European countries is the increase in energy and feedstock prices. In contrast to the former favourable prices in non-convertible currencies, these higher costs are a result of the new hard currency market prices for oil and gas imported from the former USSR. It has also been reported that future oil and gas supplies will continue to be limited.

As regards the former USSR, the struggle to accomplish the transition to a market economy is taking time to reach the agricultural sector. Meanwhile, farmers do not have the incentive to use more fertilizers, while the cut in fertilizer subsidies has depressed demand further. The transport and distribution system in the former USSR needs to be significantly improved to allow the efficient movement of fertilizers and agricultural products.

On the production side, the existence of inefficient and polluting plants, problems related to mechanical maintenance and political pressure from environmental protection groups are decreasing production. However, an attempt is being made to maintain the present level of exports in order to earn much-needed foreign exchange.

World fertilizer consumption is forecast to grow from 1990/91 to 1996/97 at approximately 0.9 percent per annum. Individual nutrient demand is expected to grow at 1 percent for nitrogen, 0.7 percent for phosphate and 0.8 percent for potash. This overall growth should reflect a large initial

decline in the developed countries, including the former USSR and Eastern Europe, offset by a sustained growth of about 2.5 percent in the developing countries and a gradual recovery in the developed countries towards the end of the period.

AGRICULTURAL TRADE

According to the General Agreement on Tariffs and Trade (GATT), total merchandise trade in 1991 rose by 3 percent in volume, the smallest gain since 1983, and by 1.5 percent in value, the smallest rise since 1985. Against a background of this unfavourable overall environment for trade, agricultural trade in 1991 was even more depressed than other sectors.

Preliminary estimates of agricultural (crops and livestock) trade in 1991 suggest little change in the value of world agricultural exports relative to the previous year. This standstill would reflect virtually unchanged export levels in developed countries and very little growth in those of developing countries. Such an agricultural trade performance, the worst since 1985, follows an average annual increase of 3.5 percent during the 1980s, nearly 5 percent in 1989 and 7.7 percent in 1990.

Among developed countries, a significant expansion in agricultural exports was recorded in Western Europe, particularly Belgium, Italy, Spain and the United Kingdom. This expansion was offset, however, by lower shipments from all other developed country regions, yet more pronouncedly from Eastern Europe, Oceania and the former USSR. In the United States, agricultural exports were estimated to be almost 2 percent lower than in 1990.

Developed countries' agricultural trade was even more depressed on the side of imports which, in value terms, may have actually fallen from the previous year's level. Western Europe was again the only region where a significant increase was recorded, while imports into the former USSR and Eastern Europe were drastically curtailed and those into the United States fell slightly.

Although information is less complete for developing countries, the overall picture for 1991 seems to be: a significant decline in export earnings from agriculture in Africa and, to a lesser extent, Latin America and the Caribbean; a continued expansion of exports from the Far East, albeit possibly at a lower rate than the average of the 1980s and 1990; and a strong increase in exports from the Near East, which continued the expansionary phase begun in 1986. The overall poor export performance of developing countries reflected a decline in export unit values, since the volume of agricultural shipments is provisionally estimated to have increased in all regions except Latin America and the Caribbean.

Developing countries' imports of agricultural products are estimated to have increased at a significantly faster rate than their exports in 1991. For the Far East and Africa, which had shifted from being agricultural net exporters to net importers in the late 1980s, this represented an accentuation of their deficit position. However, the largest increases in imports were in Latin America and the Caribbean, mainly reflecting expanded import requirements by Brazil, Colombia, Chile and Venezuela.

Cereal trade prospects for 1992/93

Following the large rise in world cereals trade, which reached 205 million tonnes in 1991/92, largely on account of the 16 percent growth in wheat imports, world trade in cereals in 1992/93 is forecast to be 206 million tonnes, marginally above the level of 1991/92 and one of the highest volumes recorded in recent years. Some expansion is expected in coarse grains while world imports of wheat are forecast to decline. International trade in rice is assumed to remain the same as 1991/92. The most noteworthy feature of cereal trade in 1992/93 is that, while shipments to the developed countries are forecast to decline from 1991/92 to reach 73 million tonnes — the second lowest level since the mid 1970s — imports into the developing countries are forecast to reach a record in 1992/93. FAO's first forecast is that their cereal imports will rise above 1991/92 levels by nearly 10 million tonnes (8 percent) to 133 million tonnes. Imports into the LIFDC group are forecast to rise to a new peak of 65 million tonnes, 10 percent higher than their estimated aggregate imports in 1991/92 and about 40 percent more than in the mid-1980s. Most of the expansion in 1992/93 is expected to be in imports of coarse grains, particularly destined for the drought-stricken LIFDCs of southern Africa.

The forecast of global cereal trade in 1992/93 is based on the mid-1992 FAO cereal production forecasts for 1992. However, production forecasts at mid-year were still very tentative and subject to adverse weather shocks. There are major uncertainties in the outlook for cereal trade this year on account of the production prospects and financial situation in the former USSR: its grain imports are at present estimated to be 23 million tonnes, 12 million tonnes less than in 1991/92, which would suggest increased production and continuing difficulties in financing imports. This difficulty could lead to increased barter trade and to a growth in the volume of exports destined for the international markets from some of the grain surplus members of the former USSR. Consequently, the final cereal import estimate for the former USSR could differ greatly from the current forecast.

Agricultural prices

US dollar prices of agricultural products in international markets generally declined in 1991 (Fig. 10). Among individual commodities the downward trend continued for coffee and cocoa and, by mid-1992, these beverages were trading at the lowest prices since the early 1970s. There are still major stocks of coffee and cocoa and exporting countries are seeking ways to regulate the market, especially by strengthening international commodity agreements. Prices of tea, sugar, cotton, jute and hides and skins also declined substantially in 1991 and in the first quarter of 1992, although prices of tea, sugar and cotton have since risen somewhat. These and other price declines in 1991 reduced by 6 percent the overall level of prices paid for the agricultural, fishery and forestry exports of the developing countries. For the developed countries the overall decline was 4 percent, as indicated by the UN indices of commodity export prices. A major exception to the decline in prices was wheat, for which prices increased by 20 percent, reaching a high point in early 1992 before falling off.

Real prices (net barter terms of trade) of agricultural, fishery and forestry exports (Fig. 11) declined by less than the US dollar prices in 1991, since there was also a 3 percent decline in import prices of the same products — as indicated by the global weighted average price of manufactured exports and crude petroleum. Nevertheless, in 1991 the real price of developing countries' agricultural, fishery and forestry exports fell to 64 percent of the average level for 1979-1981. For the developed countries, the figure was 81 percent.

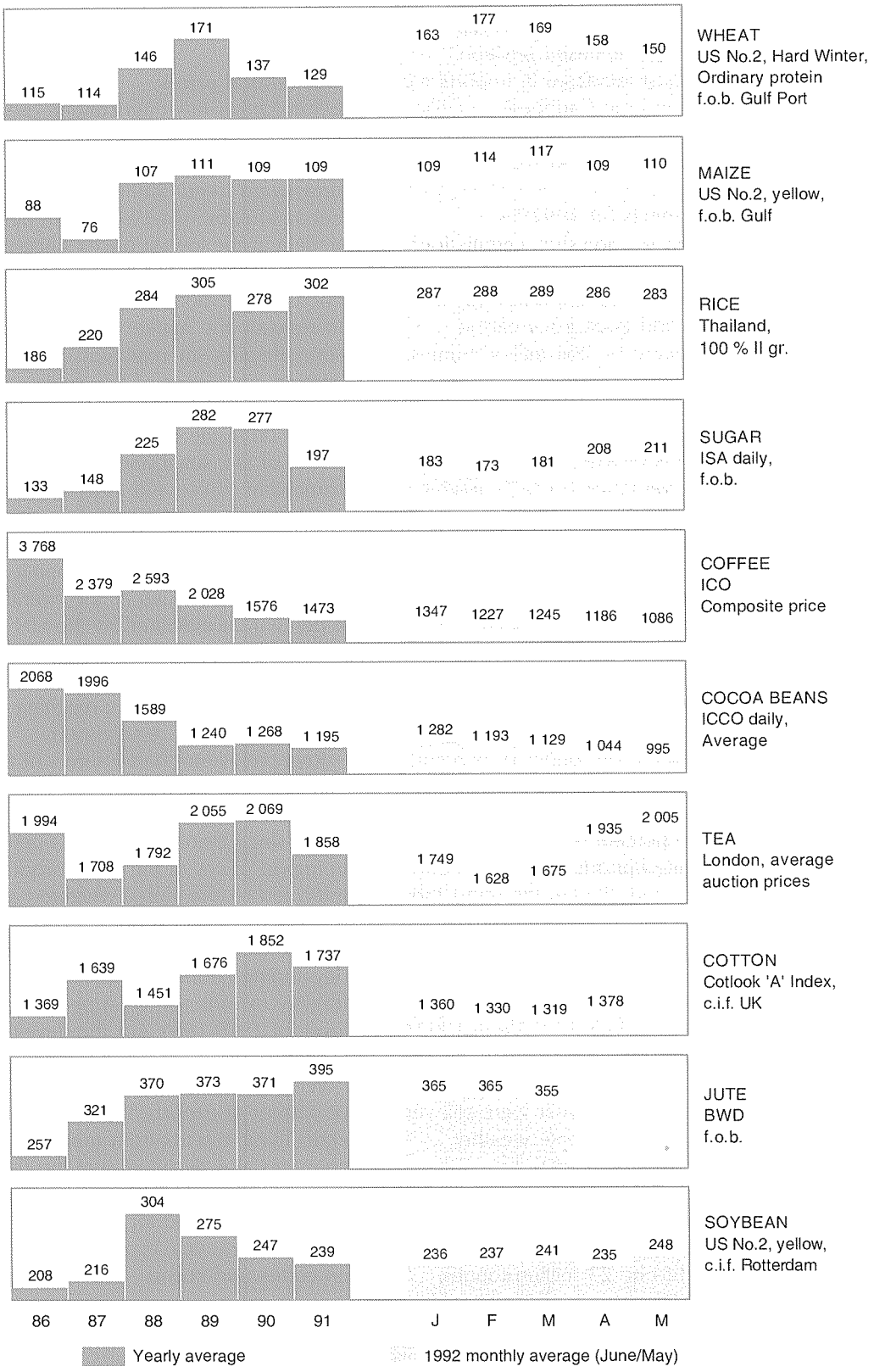
Without an offsetting change in the quantity or pattern of exports, the purchasing power of agricultural exports from many developing countries also declined over the decade. This decline in export purchasing power was particularly marked for many countries in Africa and Latin America, especially those dependent on coffee and cocoa.

Uruguay Round of MTNs

Following the resumption of the Uruguay Round of MTNs in February 1991, a series of

EXPORT PRICES OF SELECTED COMMODITIES

(US$ per tonne)



Source: FAO

negotiations led up to the meeting of the Trade Negotiations Committee (TNC) on 20 December 1991.[22] On the same day, the chairman of the TNC officially issued the Draft Final Act which embodied the results of the Round and, in January 1992, the committee adopted a four-track work plan for the concluding phases of the Round:

Track one. Intensive non-stop bilateral and multilateral negotiations on market access, including specific commitments regarding internal support and export competition in agriculture.

Track two. Intensive non-stop negotiations, again with continuous multilateral monitoring of initial commitments regarding services.

Track three. Work to ensure the legal conformity and internal consistency of the agreements constituting the Final Act.

Track four. Work at the level of the TNC to examine whether it is possible to adjust certain points of the package.

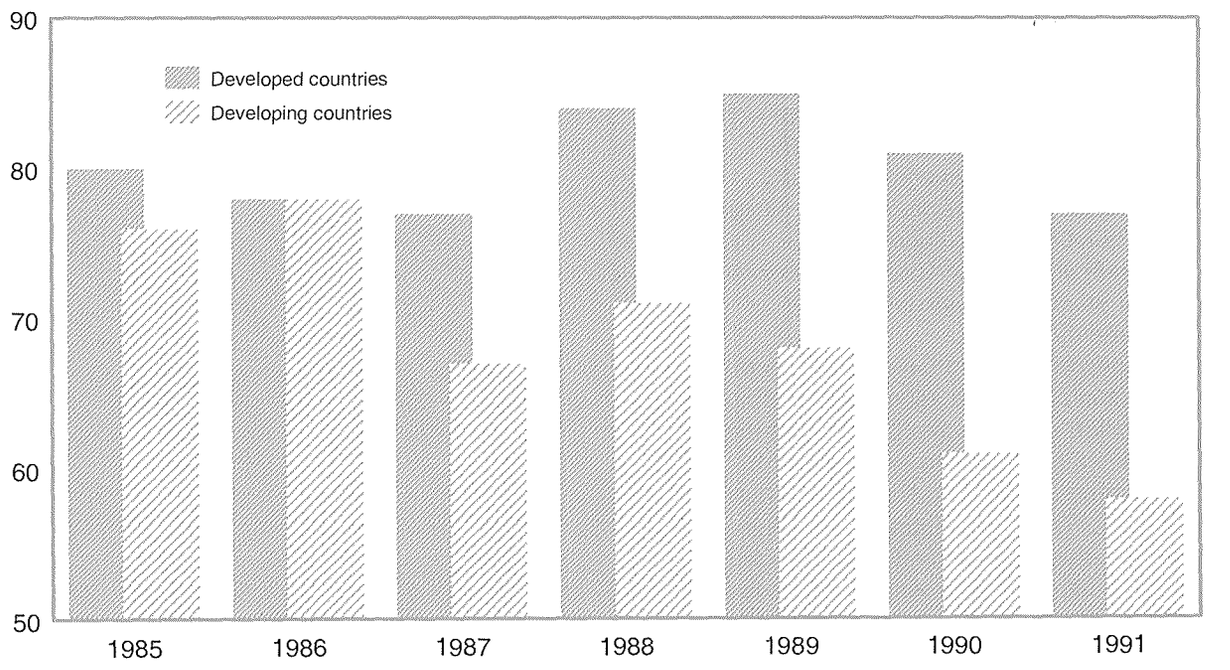
At mid-1992, discussions were continuing but no decisions had been taken. The main point of discussion remained the Draft Final Act. With regard to agriculture, the main features of the draft include reductions in domestic support measures which distort production and trade; improvements in market access; reductions in export subsidies; special and differential treatment for developing countries; agreement on sanitary and phytosanitary measures; and special measures for net food-importing developing countries (NFIDCs).

Regarding internal support measures, the idea is to reduce all domestic support, with the exception of specified exempt measures, by a total of 20 percent between 1993 and 1999. Credit will also be given for action already undertaken since the period 1986-1988. A *de minimis* rule has been proposed according to which no further reductions in support would be necessary if the existing level of support were to fall below a given minimum percentage. Negotiations have centred on the policies to be exempt from reduction commitments, i.e. the "green box" set of policies.

The proposals on market access involve *i)* tariffication, i.e. the conversion of all non-tariff border measures into tariff equivalents and

[22] For a discussion of events leading up to this point, see *The State of Food and Agriculture 1991*, p. 153-156.

NET BARTER TERMS OF TRADE FOR AGRICULTURAL PRODUCTS
(Index: 1980 = 100)



Source: UN Monthly Bulletin of Statistics and FAO

ii) a 36 percent cut in tariffs over a six-year period. Where there are no significant imports at present, access opportunities would be established at a specified percentage of domestic consumption, rising to a minimum of 5 percent of consumption by 1999. An important question concerns the special safeguard measures to permit protective action in the event of "import surges". Such action, in the form of additional duties, would be triggered by specified changes in either import volumes or import prices.

Export competition would be tackled by a 36 percent reduction in the outlay on export subsidies and a 24 percent cut in the volume of exports thus subsidized, again by the year 1999. The various types of export subsidy are listed and rules on international food aid are laid down — the latter based on existing international principles embodied in the Food Aid Convention (FAC) and in *FAO Principles of Surplus Disposal and Consultative Obligations of Member Nations*.

In each of the above areas, there are provisions for special and differential treatment for developing countries. Reduction in domestic support would be smaller while the *de minimis* percentage would be higher and provision would be made for wider exceptions in the green box. Commitments regarding market access and export competition would be reduced and the least-developed countries (LDCs) would be fully exempt from all reduction commitments.

The negotiators have before them a draft Decision by Contracting Parties on the Application of Sanitary and Phytosanitary Measures which involves the relevant international organizations (the Codex Alimentarius Commission, the International Plant Protection Convention and the International Office of Epizootics) as well as their standards, guidelines and recommendations.

The negotiators also have before them, as an integral part of the agreement, a draft Declaration on Measures Concerning the Possible Negative Effects of the Reform Programme on Net Food-Importing Developing Countries. This Declaration covers issues of food aid, the technical and financial needs of these countries to improve their agricultural productivity and infrastructure, agricultural export credit and arrangements to address short-term difficulties in financing normal levels of food imports.

Finally, under discussion is the establishment of a Committee on Agriculture to review progress in the implementation of commitments and the need for a continuation of the reform process in order to achieve the long-term objective of substantial progressive reductions in support and protection.

EXTERNAL ASSISTANCE AND FOOD AID

Commitments of external assistance to agriculture

Total commitments of external assistance to agriculture were estimated to be about $14.6 billion in 1990, the latest year for which complete coverage is available (Table 10). Although this represented only a marginal decline from the 1989 figure of $14.7 billion, external commitments to agriculture in nominal terms in 1990 were 8.6 percent less than those of 1988. When deflated by the unit value of exports of manufactured goods, total commitments to agriculture in 1990 declined by 10.1 percent relative to 1989, the cumulative decline from 1988 being 16.7 percent.

Some shift took place between bilateral and multilateral commitments in 1990: the former declined by 12.3 and the latter increased by 12.9 percent, while the World Bank and the regional development banks strongly expanded their commitments in 1990. The increased World Bank commitments were accounted for entirely by a 39 percent nominal increase in IDA commitments, while International Bank for Reconstruction and Development (IBRD) commitments contracted by 6.5 percent. Multilateral concessional commitments increased in 1990, reflecting both the increase in IDA and an increase in concessional commitments from regional development banks and the International Fund for Agricultural Development (IFAD). Even when deflated by prices of manufactured exports, the recorded increase in multilateral concessional commitments amounted to 15.5 percent.

The grant component of total commitments increased both in US dollar terms, from $4.5 billion in 1989 to $5.3 billion in 1990, and as a percentage of the total, from 30.9 percent in 1989 to 36.6 percent in 1990. While the multilateral grant component as a percentage of multilateral commitments remained virtually unchanged — slipping by 0.5 percent — that of bilateral commitments increased from 51.9 percent in 1989 to 70.6 percent in 1990.

For 1991, preliminary data are available only for multilateral commitments which are estimated to have increased to $8.1 billion, 1.2 percent over the figure for 1990. Concessional commitments, however, recorded a major contraction which brought them back close to their 1989 level. The slight increase in total multilateral commitments in 1991 is the net result mainly of a 25 percent decline in commitments from regional development banks and a 16.6 percent increase in commitments from the World Bank. For the World Bank, the 1991 increase is concentrated entirely in IBRD commitments, while IDA commitments have contracted significantly.

Disbursements of external assistance to agriculture

For disbursements of external assistance to agriculture only figures for multilateral disbursements are currently available for 1990 and 1991. The preliminary data for 1991 show total multilateral disbursements to agriculture to be $7.3 billion compared with $7 billion in 1990 and $6.3 billion in 1989 (Table 11). The figure for 1991 is, however, still below the total multilateral disbursements of $7.6 billion recorded in 1988.

When deflated by prices of manufactured exports, multilateral disbursements to agriculture increased by 0.5 percent in 1990 and by a further 4.8 percent in 1991, but still remained 12.4 percent below the figure for 1988. The 11 percent nominal increase in multilateral disbursements in 1990 is mainly accounted for by a 9.5 percent increase in World Bank disbursements and a 16.1 percent increase in disbursements in 1991 from regional development banks.

In contrast, the 4.8 percent nominal increase in multilateral disbursements in 1991 is entirely attributable to a further 11.4 percent increase in disbursements from the World Bank, while regional development bank disbursements decreased slightly. Within the World Bank, both in 1990 and 1991, IDA disbursements grew at a much more rapid rate than IBRD disbursements.

Recent developments in agency funding

The Persian Gulf crisis, which affected a large number of developing member countries of the World Bank both inside and outside the Near East region, provoked a prompt reaction by the Bank to help those members whose short-term prospects were put in danger.

The Persian Gulf assistance programme led to an increase in IBRD lending of $1 billion in fiscal year 1991 and in IDA lending of SDR 314 million ($449 million) compared with the previously planned IDA commitments. Funds needed for the additional IDA lending were covered by the use of existing mechanisms (carrying over a total of SDR 190 million from the IDA's eighth replenishment [IDA-8] that had not been

TABLE 10

Commitments of external assistance to agriculture (broad definition)

Donors	Total commitments					Concessional commitments					Non-concessional commitments				
	1987	1988	1989	1990	1991[1]	1987	1988	1989	1990	1991[1]	1987	1988	1989	1990	1991[1]
	($ million)														
AT CURRENT PRICES															
Total commitments	14 491	15 999	14 715	14 621	...	10 193	12 171	10 739	10 833	...	4 298	3 828	3 976	3 788	...
- *of which grants*	4 450	5 222	4 550	5 344	...	4 450	5 222	4 550	5 344	...	-	-	-	-	...
Bilateral	6 757	8 592	7 468	6 550	...	6 411	8 187	7 077	6 160	...	346	406	391	(390)	...
- *of which grants*	3 888	4 582	3 876	4 627	...	3 888	4 582	3 876	4 627	...	-	-	-	-	-
Multilateral	7 734	7 406	7 247	8 071	8 164	3 782	3 984	3 662	4 673	3 730	3 952	3 422	3 585	3 398	4 434
- *of which grants*	562	640	674	717	(731)	562	640	674	717	(731)	-	-	-	-	-
World Bank	4 045	3 951	4 047	4 443	5 182	1 413	1 762	1 451	2 017	1 775	2 632	2 189	2 596	2 426	3 407
- *IBRD*	2 632	2 189	2 596	2 426	3 407	-	-	-	-	-	2 632	2 189	2 596	2 426	3 407
- *IDA*	1 413	1 762	1 451	2 017	1 775	1 413	1 762	1 451	2 017	1 775	-	-	-	-	-
IFAD	216	176	240	348	280	214	153	188	306	252	2	23	52	42	28
Regional development banks	2 663	2 484	2 078	2 444	1 833	1 393	1 335	1 183	1 514	834	1 271	1 149	895	930	999
OPEC multilateral	272	217	280	182	(221)	...	156	238	182	(221)	42	61	42	-	-
UNDP/FAO/CGIAR	530	578	603	654	(648)	530	578	603	654	(648)	-	-	-	-	-
AT CONSTANT 1985 PRICES[2]															
Total commitments	10 734	11 110	10 290	9 254	...	7 550	8 452	7 510	6 856	...	3 184	2 658	2 780	2 398	...
- *of which grants*	3 296	3 626	3 182	3 382	...	3 296	3 626	3 182	3 382	...	-	-	-	-	-
Bilateral	5 005	5 967	5 222	4 146	...	4 749	5 685	4 949	3 898	...	256	282	273	247	...
- *of which grants*	2 880	3 182	2 710	2 928	...	2 880	3 182	2 710	2 928	...	-	-	-	-	-
Multilateral	5 729	5 143	5 069	5 108	5 167	2 801	2 767	2 561	2 958	2 361	2 928	2 376	2 507	2 151	2 806
- *of which grants*	416	444	471	454	463	416	444	471	454	463	-	-	-	-	-

Note: ( ) Estimates.
[1] Preliminary data.
[2] Deflated by UN unit value of exports index for manufactured goods: 1985 = 100.
Source: Statistics Division, FAO; and OECD.

TABLE 11

Disbursements of external assistance to agriculture (broad definition)

Donors	Total disbursements					Concessional disbursements					Non-concessional disbursements				
	1987	1988	1989	1990	1991[1]	1987	1988	1989	1990	1991[1]	1987	1988	1989	1990	1991[1]
	($ million)														
AT CURRENT PRICES															
Total disbursements	12 196	14 334	12 542	...	...	8 310	9 966	8 886	...	...	3 886	4 368	3 657	...	...
- *of which grants*	4 980	5 675	4 989	...	...	4 980	5 675	4 989	...	...	-	-	-	-	-
Bilateral	5 790	6 690	6 225	...	...	5 590	6 480	6 025	...	...	200	210	200	...	...
- *of which grants*	4 430	5 070	4 360	...	...	4 430	5 070	4 360	...	...	-	-	-	-	-
Multilateral	6 406	7 644	6 317	7 010	7 347	2 720	3 486	2 861	3 376	3 593	3 686	4 158	3 457	3 635	3 753
- *of which grants*	550	605	641	680	690	550	605	641	680	690	-	-	-	-	-
World Bank	3 868	4 895	3 371	3 690	4 112	1 350	1 806	1 159	1 387	1 673	2 518	3 089	2 213	2 304	2 439
- *IBRD*	2 518	3 089	2 213	2 304	2 439	-	-	-	-	-	2 518	3 089	2 213	2 304	2 439
- *IDA*	1 350	1 806	1 159	1 387	1 673	1 350	1 806	1 159	1 387	1 673	-	-	-	-	-
IFAD	234	203	194	200	183	218	195	184	185	170	16	8	10	15	12
Regional development banks	1 624	1 788	1 969	2 286	2 224	552	827	835	1 070	1 022	1 072	961	1 134	1 216	1 202
OPEC multilateral	(150)	(180)	(180)	(180)	(180)	(70)	(80)	(80)	(80)	(80)	(80)	(100)	(100)	(100)	(100)
UNDP/FAO/CGIAR	530	578	603	654	648	530	578	603	654	648	-	-	-	-	-
AT CONSTANT 1985 PRICES[2]															
Total disbursements	9 034	9 954	8 771	...	...	6 156	6 921	6 214	...	...	2 879	3 033	2 557	...	...
- *of which grants*	3 689	3 941	3 489	...	...	3 689	3 941	3 489	...	...	-	-	-	-	-
Bilateral	4 289	4 646	4 353	...	...	4 141	4 500	4 213	...	...	148	146	140	...	...
- *of which grants*	3 281	3 521	3 049	...	...	3 281	3 521	3 049	...	...	-	-	-	-	-
Multilateral	4 745	5 308	4 417	4 437	4 650	2 015	2 420	2 001	2 137	2 274	2 730	2 888	2 417	2 301	2 375
- *of which grants*	407	420	448	430	437	407	420	448	430	437	-	-	-	-	-

Note: ( ) Estimates.
[1] Preliminary data.
[2] Deflated by UN unit value of exports index for manufactured goods: 1985 = 100.
Source: Statistics Division, FAO; and OECD.

committed in fiscal year 1990 and reprogramming resources available under the ninth replenishment [IDA-9], totalling SDR 80 million) as well as additional commitments, totalling SDR 130 million, against IDA reflows. In addition, SDR 200 million were transferred to the IDA from the World Bank's net income for fiscal year 1990, while Kuwait agreed in principle to increase its IDA-9 contribution to $50 million.

Food aid flows in 1991/92

Availabilities. Food aid availabilities in cereals during 1991/92 (July/June) are expected to total around 11.5 million tonnes, 500 000 tonnes below the previous year's level (Fig. 12). In addition, donors provide considerable quantities of other non-cereal commodities (mainly vegetable oil, pulses, dried milk and butter oil) which, in 1991, amounted to about 1.1 million tonnes. These food aid shipments include supplies to the former USSR and East European countries which continued to require assistance during 1991/92, although not on such a large scale as was originally envisaged. These countries received around 1.1 million tonnes of cereals in 1991/92 compared with about 1.3 million tonnes in 1990/91 and 1.6 million tonnes in 1989/90.

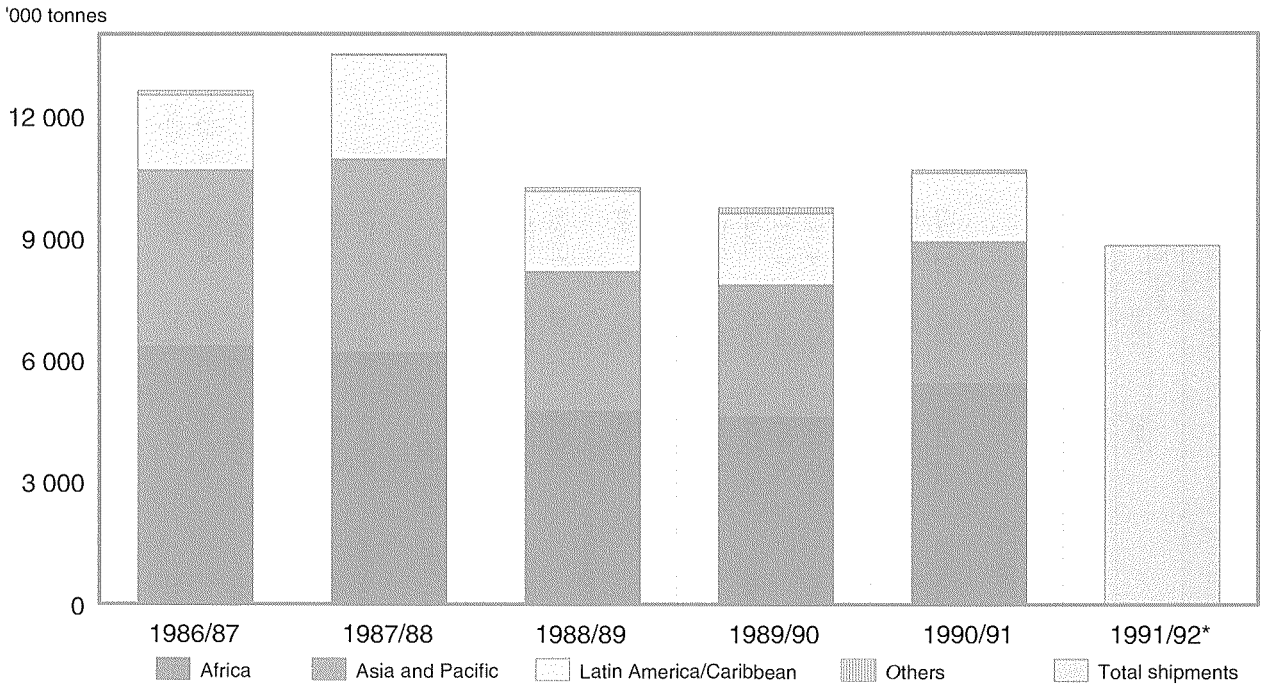
In value terms and at current prices, food aid disbursements by the member countries of the Development Assistance Committee (DAC) amounted to $3.1 billion in 1990 (the latest year for which data are available). These disbursements have not increased in proportion with the steadily increasing level of total Official Development Assistance (ODA), representing only 5.8 percent of total ODA in 1990 against an average of 8.2 percent for the last ten years.

While the bulk of food aid (three-quarters) continues to be provided bilaterally, the multilateral share has increased substantially: making up nearly one-quarter of cereal aid in 1991 compared with an average of 17 percent over the previous four years and over one-third of non-cereal food aid in 1991 compared with 24 percent over the previous four years. The World Food Programme (WFP) remains the main channel for multilateral food aid and, in addition, the Programme provides purchasing, transport and monitoring services to bilateral donors.

The International Emergency Food Reserve (IEFR) continues to be the main multilateral

Figure 12

SHIPMENTS OF FOOD AID IN CEREALS
(Grain equivalent)



Source: FAO

Note: Years refer to the period July/June

* Projection

channel for emergency food aid. At the end of May 1992, pledges by 11 donors to the 1992 IEFR amounted to 214 632 tonnes of food commodities of which 193 234 tonnes were in cereals and 21 398 tonnes in other foodstuffs (mainly vegetable oils, pulses and dried skim milk).

In order to assure the quickest possible response to new food emergencies, the WFP Committee on Food Aid Policies and Programmes (CFA), at its 32nd Session in December 1991, decided to establish an interim cash fund within the IEFR. The purpose of this Immediate Response Account (IRA) is to facilitate the purchase and delivery of food commodities in response to sudden emergencies. A minimum annual target of $30 million was set and, in this respect, the CFA agreed to transfer $7.5 million from the WFP's regular resources to serve as the nucleus of the new Account. So far, contributions to the IRA have reached a level of $22 million. In addition to IEFR contributions, 509 955 tonnes of cereals and 77 993 tonnes of other food commodities have been contributed in 1992 under the subset of WFP regular resources for meeting the requirements of protracted refugee operations (PRO).

Distribution and use of food aid. Developing countries have received about 10.4 million tonnes of cereal food aid in 1991/92, which is about 300 000 tonnes less than the amount received during 1990/91 and well below the amounts provided to these countries during some previous years. In the case of the IFDCs, aid in cereals will cover about 15 percent of their total cereal imports, slightly below the 1990/91 level and significantly lower than the average of 20 percent in earlier years.

Within the group of LIFDCs, sub-Saharan Africa continues to be the major recipient of food aid. During the past year, food aid flows to that region have been close to the peak levels reached during the serious food crisis of the mid-1980s and reflect the considerably increased needs for the relief of refugees, displaced persons and drought victims. The major food aid recipients in the region have continued to be represented by countries with large numbers of refugees and displaced persons, i.e. Ethiopia, the Sudan, Mozambique, Malawi, Liberia and Angola which together accounted for more than two-thirds of total food aid receipts to the region.

The Near East and North Africa region has been the second largest food aid recipient for two consecutive years. More than three-quarters of the food aid to this region continues to be in the form of programme aid, the balance being almost equally divided between project and emergency food aid. Project food aid has continued a downward trend, while emergency food aid more than doubled on account of the increasing assistance for refugees and displaced persons following the conflict in the Persian Gulf. Egypt remained the largest food aid recipient in this region, accounting for more than one-half of the total received, followed by Tunisia, Jordan and Morocco.

Food aid to the Asia and the Pacific region is provided largely in support of projects, while the share of programme food aid declined. Bangladesh continues to be the largest food aid recipient in the region, receiving more than 40 percent of total food aid receipts, followed by Pakistan, India and Sri Lanka.

The continuing limitations on the availability of foreign exchange have limited the commercial import capability of many countries of Latin America and the Caribbean and have increased the need for food assistance. Over two-thirds of the food aid provided to that region was in the form of programme aid and the remainder was mostly provided to support specific projects. Peru, Jamaica, Guatemala, Bolivia and El Salvador together received more than two-thirds of the food aid delivered to the region over the past year.

Food aid to the former USSR and East European countries has mainly been in the form of programme aid. In the particular case of the former USSR, food assistance has been extended in various forms, ranging from direct donations to loans and export credit guarantees for covering the costs of commodities and part of the related transport. Some donors have stipulated that part of the credits advanced should be used for triangular transactions, involving purchases of grain from East European countries. A large part of the assistance to the former USSR and East European countries is reportedly financed by donors from additional budgetary allocations. Major donors have affirmed on several occasions that food aid to the developing countries would not be affected as a result of the significant assistance provided to this group of countries.

SUSTAINABLE AGRICULTURE AND THE ENVIRONMENT: UNCED

The concept of sustainable development was formally introduced in 1987 with the publication of the Brundtland Commission's report, *Our common future*. The Brundtland Commission posed the challenge of developing long-term environmental strategies for sustainable development that are capable of meeting the needs of the present without compromising the ability of future generations to meet their needs. During the intervening years, the challenge posed by the Brundtland Commission has been widely debated and subject to many different interpretations.

The sustainable development issue was also extensively debated at the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, 3-14 June 1992. UNCED represented the starting point of a process to shift away from a short-term, fragmented and sectoral economic approach towards a long-term comprehensive strategy that seeks a balance among environmental, economic and social considerations. An estimated 40 000 people were involved in this major event, underlining the growing importance attached by the international community to sustainable development and environmental issues.

Without debating whether or not UNCED was a success or denying that significant disagreements still exist among countries on many issues, it is clear that the process has contributed substantially to the forces advocating a change in the way natural resources are utilized.

The main products of UNCED were:

- The Rio Declaration on Environment and Development, consisting of 27 guiding principles which concern the rights and duties of states (agreed by consensus) and lay the foundation for a global partnership in sustainable development.
- Agenda 21, referred to as the plan of action for the twenty-first century. Its four volumes deal with economic and social dimensions of such a plan, the conservation and management of resources for development, strengthening the role of major groups and means of implementation.
- An international Framework Convention on Climate Change and a Framework Convention on the Conservation of Biological Diversity, signed by 154 countries. These two conventions were subject to considerable debate and most observers expect them to be strengthened over the coming years.
- A statement of non-legally binding principles for the management, conservation and sustainable development of all types of forest (see UNCED and forestry, p.45). This had been a controversial topic from the outset of the preparations for UNCED, especially on matters such as the right of development, the globalization of forests, compensation and the basis for a full convention. The consensus statement represents a useful beginning for the sustainable management of forest resources for multiple and complementary uses.
- A decision to start a negotiation process for an international convention to combat desertification. The UN General Assembly plans to decide on the modalities and scope of the negotiations.
- An Agenda for Action on Freshwater Resources, arising largely from the Dublin Conference on Water and the Environment. Other actions related to ocean and marine resources were adopted in areas such as coastal area management, high sea fisheries and living marine resources in the Exclusive Economic Zones (EEZs). Problem areas relating to migratory species and straddling stocks remain but the Intergovernmental Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks, to be held in 1993 under the auspices of the UN and with technical support from FAO, will deal with these and other issues.

Only modest progress was made at UNCED on the commitment of financial resources and endorsement of mechanisms to implement Agenda 21. Some countries see these aspects as being the true test of commitment by G7 countries.

It is well known how relatively easy it is to prepare agendas and strategies and how difficult it is for them to be realized in practical terms. Will UNCED be yet another exercise with a short life span? There are signs that it may help to redirect development and development assistance programmes onto more sustainable pathways over the longer term, but this will only happen with the commitment and involvement of all countries. Three initial steps towards concerted commitment are being taken:

- The UN agencies are mobilizing to address Agenda 21 through an Administrative Committee on Coordination (ACC) Task Force that will propose the allocation of responsibilities and improve coordination among agencies for implementing the Agenda. Preliminary meetings on the negotiating process for a convention to combat desertification took place among agencies this past September at the Inter-Agency Working Group on Desertification (IAWGD). Follow-up meetings related to forestry, fisheries and economic and social policy are being planned.
- The Economic and Social Council (ECOSOC) is examining, and is likely to recommend to the General Assembly, the establishment of a high-level commission on sustainable development. The commission would have a small secretariat and would serve as a mechanism to review and monitor the follow-up to Agenda 21.
- An agreement has been reached on the need for additional financial resources to implement Agenda 21. The Global Environment Facility (GEF) will be broadened in scope and replenished financially. Concern about transparency and participation in GEF decision-making will be addressed.

FISHERIES

Production in 1990

In 1990, world fish production declined by just over 3 percent, to 97.2 million tonnes (Table 12). This decline was the first since 1977, although the total fish harvest was higher than in any year prior to 1988. A number of factors contributed to the decline: lower landings of small pelagics in the southeastern Pacific offset increases in landings elsewhere by the developing countries and there were lower landings by the East European fleets, including those of the former USSR. Also important within this decline were lower total landings by the European Economic Community (EEC) and northern European countries together with Japan's continued withdrawal of older vessels from distant-water fishing.

Total production from aquaculture increased by just over 4 percent to 14.9 million tonnes, with an increase in fish and shellfish production more than offsetting a fall in the production of aquatic plants; fish and shellfish production amounted to 12.1 million tonnes. In Asia, recorded production increased significantly, by almost 700 000 tonnes to 9.8 million tonnes, with over 90 percent of this increase accounted for by China. In Africa and Latin America, where aquaculture is still relatively unimportant, production fell slightly in the former and showed a small increase in the latter. European aquaculture production increased by just more than 3 percent to 1.2 million tonnes, the major part of the increase being marine aquaculture, mostly of salmon. In the former USSR, there was a large proportional increase of more than 14 percent in aquaculture production.

Catches of small pelagics in the southeastern Pacific fell in 1990. In Chile, catches fell significantly, by over 19 percent to 5.2 million tonnes, while Peru, which had experienced only a very small increase in landings in the previous year, was able to increase them very slightly to 6.9 million tonnes. In Ecuador, where total production is small relative to the other two southeastern Pacific countries, it declined for the second successive year although, within this total, the high-value cultured shrimp production increased slightly. Argentina and Uruguay reported lower catches of hake.

For the seventh consecutive year, China again reported a significant increase in fish production. At 12.1 million tonnes, its fish harvest exceeded that of any other country and was appreciably higher than that of Japan,

TABLE 12

Annual changes in world catch and culture of fish and shellfish

Producer/product	1987	1988	1989	1990	1987-1988	1988-1989	1989-1990
					Change		
	('000 tonnes)				(%)		
WORLD CATCH AND CULTURE OF FISH AND SHELLFISH	94 399	99 062	100 333	97 246	4.94	1.28	- 3.08
Catch and culture in inland waters	12 703	13 417	13 882	14 444	5.62	3.47	4.05
Catch and culture in marine waters	81 696	85 645	86 451	82 801	4.83	0.94	- 4.22
- by principal producers:							
China	9 346	10 359	11 220	12 095	10.84	8.31	7.80
USSR	11 160	11 332	11 310	10 389	1.54	- 0.19	- 8.14
Japan	11 849	11 966	11 173	10 354	0.99	- 6.63	- 7.33
Peru	4 587	6 642	6 854	6 875	44.80	3.19	0.31
United States	5 986	5 938	5 763	5 856	- 0.80	- 2.95	1.61
Chile	4 815	5 210	6 454	5 195	8.20	23.88	- 19.51
- by main group of species:							
Carp, barbel, etc.	4 430	4 886	4 994	5 294	10.29	2.21	6.01
Miscellaneous freshwater fish	5 353	5 523	5 729	5 928	3.18	3.73	3.47
Cod, hake, haddock	13 786	13 654	12 905	11 944	- 0.96	- 5.49	- 7.45
Redfish, bass, conger	5 711	5 702	5 907	5 526	- 0.16	3.60	- 6.45
Jack, mullet, saury	8 296	9 128	9 360	9 700	10.03	2.54	3.63
Herring, sardine, anchovy	22 392	24 387	24 768	22 146	8.91	1.56	- 10.59
Tuna, bonito, billfish	3 621	4 047	4 097	4 223	11.76	1.24	3.08
Mackerel, snoek, cutlass fish	3 644	3 861	3 755	3 585	5.95	- 2.75	- 4.53
Salmon, trout, smelt	1 092	1 171	1 456	1 499	7.23	24.34	2.95
Miscellaneous marine fish	9 556	9 786	10 011	10 278	2.41	2.30	2.67
Shrimp, prawn	2 372	2 506	2 480	2 527	5.65	- 1.04	1.90
Squid, cuttlefish, octopus	2 318	2 286	2 709	2 355	- 1.38	18.50	- 13.07
WORLD PRODUCTION AND CULTURE OF SEAWEED	3 547	4 134	4 377	4 338	16.55	5.88	- 0.89

which had been the leading world producer through the 1970s and 1980s. The other leading Asian developing country producers showed almost no change in their aggregate catch, as the relatively small increases recorded by India, Indonesia and the Philippines were largely offset by falls in catches in the Republic of Korea and Thailand, the latter being particularly affected by a fall in squid catches.

Catches by African developing countries increased by just over 400 000 tonnes, or 10.6 percent, to 4.3 million tonnes. The increase mainly reflected the fact that the fishery vessels operating from Namibia are now flying its national flag, thus increasing the share of developing countries in world catches. If Namibian catches are excluded, aggregate catches remained at about the same level as in the two preceding years. Countries with comparatively large fish catches appear to have had relatively better results than the smaller fish-producing countries. Moroccan production, which had fallen in the previous year largely as a result of a fall in sardine catches, recovered by a strong 7 percent to reach 560 000 tonnes. Ghana, the second largest African producer, also achieved a significant increase of 8 percent, bringing its catches to more than 391 000 tonnes, while catches in Nigeria increased by 5 percent to 316 000 tonnes.

Fish production in the developed countries fell, for the third successive year, by almost 3 million tonnes (6.6 percent) to 41 million tonnes. The largest proportional decline of 24 percent was experienced by the East European countries where economic readjustment was

TABLE 13

Disposition of world catch

Purpose	1987	1988	1989	1990	1987-1988	1988-1989	1989-1990
					Change		
	(..... '000 tonnes .....)				(..... % .....)		
WORLD CATCH	**94 399**	**99 062**	**100 333**	**97 246**	**4.71**	**1.27**	**- 3.17**
Human consumption	**66 571**	**69 819**	**70 905**	**70 212**	**4.65**	**1.53**	**- 0.99**
- *Fresh*	**21 399**	**22 910**	**23 158**	**22 093**	**6.60**	**1.07**	**- 4.82**
- *Freezing*	**22 899**	**24 143**	**24 263**	**24 261**	**5.15**	**0.49**	**- 0.01**
- *Curing*	**10 653**	**10 838**	**10 904**	**11 158**	**1.71**	**0.61**	**2.28**
- *Canning*	**11 620**	**11 928**	**12 580**	**12 700**	**2.58**	**5.18**	**0.94**
Other purposes	**27 828**	**29 243**	**29 428**	**27 034**	**5.08**	**0.63**	**- 8.14**
- *Reduction*	**26 278**	**27 593**	**27 828**	**25 534**	**5.00**	**0.85**	**- 8.24**
- *Miscellaneous*	**1 550**	**1 650**	**1 600**	**1 500**	**6.45**	**- 3.03**	**- 6.25**

primarily responsible for reducing their aggregate catches to 725 000 tonnes. Fish production in the former USSR fell by almost 1 million tonnes, by just over 8 percent, to 10.4 million tonnes, again largely as a result of economic changes which adversely affected some of its distant-water fishing operations.

About the same proportional decline, of 8 percent, occurred in the EEC, where aggregate catches fell by more than 500 000 tonnes to 6.8 million tonnes. Catches fell in almost all the Community countries as a result of restrictions on fishing as well as lower catch rates. Only Belgium and the former Federal Republic of Germany obtaining higher catches than in the previous year. However, in the latter, the increase in catches was more than offset by a fall in the New Länder (former German Democratic Republic), where catches were affected by adverse economic circumstances.

Catches in non-EEC northern European countries declined in aggregate by 190 000 tonnes, or 4.6 percent, to 3.9 million tonnes. In Norway, the largest European fish-producing country, catches of high-value demersal fish — especially cod — and small pelagics for reduction to fish-meal and oil were both significantly affected by lower catch rates in the North Atlantic. However, Norway's increased production of farmed salmon, up by more than one-third, slightly offset in volume terms and, to a greater extent, value terms the fall in its traditional fishing catches. In Iceland, the other large producer country in this group, the total catch remained at about 1.5 million tonnes.

Landings by Japan fell by over 7 percent to 10.4 million tonnes, with part of this decline accounted for by the withdrawal of some vessels from distant-water fishing, while the decline in pilchard landings in its home waters continued the trend of recent years.

North American catches increased slightly by 2 percent to 7.5 million tonnes. In Australia, catches increased by 20 percent while, in New Zealand, they remained at about the same level as in the previous year, thus bringing the developed countries of Oceania to an aggregate record high production level of 776 000 tonnes.

The quantity of fish used for direct human consumption fell in 1990 by almost 700 000 tonnes, or almost 1 percent, the major fall being of fresh fish (Table 13). There was little change in the quantities of fish frozen or canned. The production of fish-meal fell by 8 percent, the largest decline among the major fish-meal producer countries being that of Chile, where production fell by over 25 percent as a result of sharply reduced small pelagics catches.

In 1990, as a consequence of falls in catches of small pelagics in the southeastern Pacific and North Atlantic, world fish-meal production fell by almost 9 percent to 6.3 million tonnes, the lowest level since 1984. Low supplies led to a sharp increase in prices and a further shift by animal feed producers to lower-priced soybean meal.

Similarly, world production of fish oil fell by over 14 percent to 1.4 million tonnes, the lowest level since 1983. This led to increased prices and a consumer shift to competitive vegetable oils, especially rape-oil.

TABLE 14

Value of trade in fisheries

Country/region	1987	1988	1989	1990	1987-1988	1988-1989	1989-1990
					Change		
	($ million)				(%)		
World							
Exports	28 229	32 402	32 759	36 428	14.78	1.10	11.20
Imports	30 486	35 260	35 833	39 411	15.66	1.63	9.99
Total developing countries							
Exports	12 933	15 152	15 422	16 261	17.16	1.78	5.44
Imports	3 671	4 655	4 857	5 027	26.80	4.34	3.50
Total developed countries							
Exports	15 297	17 250	17 337	20 167	12.77	0.50	16.32
Imports	26 809	30 605	30 976	34 384	14.16	1.21	11.00
Major exporters							
United States	1 825	2 441	2 532	3 020	33.75	3.73	19.27
Canada	2 092	2 206	2 051	2 270	5.45	- 7.03	10.68
Thailand	1 261	1 631	1 959	2 265	29.34	20.11	15.62
Denmark	1 751	1 853	1 745	2 165	5.83	- 5.83	24.07
Norway	1 475	1 608	1 563	2 060	9.02	- 2.80	31.80
China	912	1 399	1 393	1 622	53.40	- 0.43	16.44
Taiwan, Province of China	1 742	1 752	1 592	1 515	0.57	- 9.13	- 4.84
Korea, Rep.	1 540	1 784	1 538	1 363	15.84	- 13.79	- 11.38
Major importers							
Japan	8 308	10 658	10 128	10 668	28.29	- 4.97	5.33
United States	5 662	5 389	5 757	5 573	- 4.82	6.83	- 3.20
France	2 022	2 244	2 193	2 809	10.98	- 2.27	28.09
Italy	1 738	1 899	1 984	2 458	9.26	4.48	23.89
Spain	1 322	1 727	1 817	2 361	30.64	5.21	29.94
United Kingdom	1 387	1 610	1 628	1 911	16.08	1.12	17.38
Germany, Fed. Rep.	1 270	1 429	1 479	1 900	12.52	3.50	28.47
	(%)						
EXPORTS AS SHARE OF CATCHES							
Total developing countries[1]	34.8	32.7	36.3	33.8			
Total developed countries[2]	37.7	39.8	40.2	42.2			

[1] Total exports in liveweight as percentage of developing countries' catches.
[2] Total exports in liveweight as percentage of developed countries' catches.

Trade in 1990

Following a year of negligible growth, the value of world trade in fishery products increased by more than 11 percent in 1990 (Table 14). The recovery was largely a result of increased prices of a number of fishery products traded between the developed countries. Exports of developed countries increased by over 16 percent while those of the developing countries increased by only 5 percent.

The low US dollar helped the United States to maintain its position in 1990 as the world's leading exporter of fishery products. Its exports increased by over 19 percent to more than $3 billion, compared with an increase of less than 4 percent in 1989. Higher prices, reflecting scarcity values, were the major factor which enabled the three leading North Atlantic exporting countries — Canada, Denmark and Norway — to improve the value of their fishery

BOX 1

The law of the sea

Ten years ago, the UN Convention on the Law of the Sea was signed, marking the end of an era of freedom on the seas. The adjustments that have been made since the signing of the convention are examined in Part III of this issue, Marine fisheries and the law of the sea: a decade of change. This special chapter focuses on how the economic challenges have been met with mixed success and reviews the policy changes that have occurred in marine fisheries over the past decade.

In general, the redistribution of the seas' wealth has proceeded as anticipated, with certain coastal states gaining large benefits and few distant-water fishing states incurring large losses. Several developments were not foreseen, however. Most notable are the continued investment in large-scale fishing vessels capable of fishing at great distances away from port, and the significant growth in fishing effort on the high seas beyond the 200-mile limit.

With regard to improvements in the competence of nations to exercise their newly gained authority during the 1980s, the special chapter concludes that developments have proceeded more slowly than anticipated. Coastal states with resources of interest to foreign countries have generally made considerable gains in managing their resources and extracting benefits from foreign users.

Nevertheless, improved management of domestic fisheries still has a long way to go. The task is difficult and many states are reluctant to take the necessary step of assigning and allocating exclusive usufruct rights among their own fishermen.

In addition, environmental issues have become increasingly significant during the decade and have posed difficult challenges. The major problems lie in the coastal zones where disparate uses by diverse sources come into conflict and fisheries receive the brunt of the damage. Such problems are particularly relevant to small-scale fishing communities in developing countries.

In general, the 1980s may be considered a period of transition and erratic adjustment to the dramatic changes that occurred in the law of the sea during the 1970s. Many tasks have to be completed before the great benefits to be drawn from ocean fisheries can be fully realized, but the size of the reward justifies a significant increase in international attention on the problems of fisheries management.

Some of the important specific conclusions are the following:

- The annual operating costs of the global marine fishing fleet in 1989 were estimated to be around $22 billion greater than total revenues, with no account being taken of capital costs. Although calculations are tentative, they suggest that global marine fisheries may be sustaining very significant losses.
- The overall situation is worse than it was ten years ago. Economic waste has reached major proportions; stock depletion has increased as fishing efforts have moved down the food chain and concentrated on intercepting stocks at earlier stages of growth; the marine environment has been increasingly degraded; fishing conflicts have become more widespread; and the plight of small-scale fishermen has worsened.
- Effective management of fisheries is essential. It requires a fundamental institutional reform, with the creation of resource property rights, i.e. licensing programmes, systems that provide individual quotas of total allowable catch, total revenue or territorial user rights. Exclusive user rights are a prerequisite for effective management. Wherever open access is allowed, the result will be economic waste, stock depletion and conflict.

exports substantially despite the collapse in their cod fisheries. Norway also benefited from increased salmon exports. Among the developing countries, Thailand remained the principal exporter of fishery products, increasing its exports by more than 15 percent to almost $2.3 billion. China was able to reverse the slight decline recorded in the value of its exports the previous year, achieving a 16 percent increase to just over $1.6 billion, largely as a result of increased export volumes of cultured shrimp as well as a small increase in US dollar prices.

Mainly as a result of the increases in groundfish prices, almost all major importing countries increased the value of their imports in 1990. The United States market was an exception, there being little demand in that market for high-priced groundfish and, despite the low dollar, the value of its imports fell. Japan recorded only a modest increase which, in part, reflected low tuna prices.

Higher import prices were the main contributing factor in the EEC's increased share of world trade — including intra-Community trade in fishery products — which rose from 33 percent in 1989 to 38 percent in 1990. Japan, however, was the leading importing country, accounting for 27 percent of the value of global imports. The United States remained the second most important country market for fishery products but its share of world imports in 1990, amounting to 14 percent, continued the decline recorded in recent years.

In addition to the very high prices of North Atlantic groundfish which, in turn, led to higher prices for substitutes, a number of fishery products in 1990 showed price increases from the low levels of the preceding year. Shrimp prices recovered somewhat from their earlier low levels and lower catches of squid and octopus also led to higher prices. Prices of canned sardine were strong despite a stagnating market. However, tuna prices generally remained relatively low. A major factor contributing to this situation was the United States' legal requirement that tuna entering that market be caught without dolphins. This requirement resulted in supplies from a number of countries, which would previously have been exported to the United States, being available at relatively low prices. High salmon supplies, both farmed and wild, caused prices to remain weak.

Preliminary estimates for 1991

Preliminary information shows that world fish production in 1991 increased from the previous year by about 1 million tonnes to 98.3 million tonnes. Increases in catches of shoaling pelagics in the southeastern Pacific and North Atlantic were the main reason for this increase. There was a further fall in the catches of EEC countries while those of the former USSR and East European countries stabilized. Markets for fish in 1991 were adversely affected in the first part of the year by the Persian Gulf conflict, while economic recession affected consumer behaviour, particularly in the United States. Demand for shrimp slowed considerably in the three major world markets, while consumer resistance to high groundfish prices brought about some easing of prices at the end of the year, despite low catches and stocks. Catches of yellowfin tuna further increased while the market continued to be adversely affected by the "dolphin issue", causing prices to stay low for much of the year.

FORESTRY

Production and consumption

World output of *roundwood* in 1991 was about 3 440 million m^3, representing a marginal decrease from 1990 (Table 15). In the developing countries, roundwood production continued its upward trend, expanding by 1.6 percent to reach 1 980 million m^3. In the developed countries, production contracted further to 1 460 million m^3, down from 1 501 in 1991, corresponding to a decline of 2.7 percent.

In the developing countries, the most important use of wood is in energy supply; about 17 percent of energy consumption in developing countries is supplied by fuelwood and charcoal, which accounts for more than 80 percent of the total roundwood produced by these countries.

The growth of rural populations is increasing the demand for fuelwood while, at the same time, the demand for additional land for agriculture is leading to the clearance of forests and woodland, thus reducing the supply potential. These trends are particularly marked in the less productive and more fragile areas, such as the semi-arid and mountainous regions of developing countries.

The use of wood in the modern sector — principally as raw material for sawnwood, wood-based panels and paper — is affected by major economic trends. Economic recession in recent years has particularly depressed the consumption and production of sawnwood and wood-based panels in the developed countries and has constrained the flow of imports of these products from developing countries.

In 1991 the economic recession affected the production and consumption of *mechanical wood products* notably, as the downturn in many industrialized countries' economies was accompanied by a sharp decline of activity in the construction industry which is the major outlet for mechanical wood products.

In Japan, the world's largest wood importer, housing construction declined by about 20 percent from the 1990 level, reflecting the slow-down of the country's economy. In North America, housing construction was at the lowest level since the Second World War. In Western Europe, the expansion of mechanical wood industries came to an end and consumption and production of most products were depressed. In Eastern Europe and the former USSR, output fell dramatically, mainly because of the collapse of intertrade among those countries and the difficulties of their transition to market-oriented economies.

In the first part of 1992, lower interest rates in the United States helped to reactivate its construction industry. Housing starts in the first quarter of 1992 registered a 39 percent increase above the same period in 1991.

A sector that showed some strength worldwide in 1991 was that of *pulp and paper*, which continued to experience increasing demand for paper by modern communications sectors. The aggregate growth was, however, much slower than the rates of previous years, as some East European countries and the former USSR suffered sharply declining outputs.

TABLE 15

Output of main forest products in developing and developed countries

Product/region	1988	1989	1990	1991
	(..... *Million m^3* .....)			
Roundwood	**3 426**	**3 455**	**3 450**	**3 440**
- *Developing countries*	**1 887**	**1 921**	**1 949**	**1 980**
- *Developed countries*	**1 539**	**1 534**	**1 501**	**1 460**
Fuelwood and charcoal	**1 768**	**1 796**	**1 796**	**1 810**
- *Developing countries*	**1 495**	**1 527**	**1 557**	**1 590**
- *Developed countries*	**273**	**269**	**239**	**220**
Industrial roundwood	**1 658**	**1 659**	**1 654**	**1 630**
- *Developing countries*	**392**	**394**	**392**	**390**
- *Developed countries*	**1 266**	**1 265**	**1 262**	**1 240**
PROCESSED WOOD PRODUCTS				
Sawnwood and sleepers	**506**	**502**	**486**	**470**
- *Developing countries*	**113**	**115**	**113**	**110**
- *Developed countries*	**393**	**387**	**373**	**360**
Wood-based panels	**127**	**130**	**125**	**124**
- *Developing countries*	**24**	**25**	**26**	**27**
- *Developed countries*	**103**	**104**	**99**	**97**
	(..... *Million tonnes* .....)			
Paper and paperboard	**225**	**231**	**238**	**242**
- *Developing countries*	**35**	**37**	**38**	**40**
- *Developed countries*	**191**	**195**	**200**	**202**
Pulp for paper	**159**	**159**	**160**	**158**
- *Developing countries*	**21**	**18**	**18**	**18**
- *Developed countries*	**139**	**141**	**142**	**140**

Source: FAO.

TABLE 16

Value of exports of main forest products from developing and developed countries

Product/region	1988	1989	1990	1991
	(..... $ billion .....)			
Industrial roundwood	8.5	8.9	9.0	8.3
- *Developing countries*	2.6	2.6	2.6	2.5
- *Developed countries*	5.9	6.3	6.4	5.8
Sawnwood and sleepers	15.7	17.1	17.0	16.4
- *Developing countries*	2.6	3.3	2.5	2.4
- *Developed countries*	13.1	13.8	14.5	14.0
Wood-based panels	8.4	9.4	10.1	9.8
- *Developing countries*	3.8	4.2	4.4	4.3
- *Developed countries*	4.7	5.1	5.8	5.5
Wood pulp	15.4	17.4	15.9	16.3
- *Developing countries*	1.2	1.2	1.3	1.3
- *Developed countries*	14.2	16.2	14.6	15.0
Paper and paperboard	38.8	41.1	45.3	47.0
- *Developing countries*	2.1	2.2	2.4	2.9
- *Developed countries*	36.7	38.9	42.9	44.1

Source: FAO.

Trade and prices

The upward trend of trade in forest products, which had been sustained since 1985, came to a virtual halt in 1991 (Table 16).

Exports from the developing countries, which had decreased in 1990, recovered only slightly while exports from the developed countries maintained their previous levels thanks to the continuation of the ascending trend in paper exports. Major drops occurred in the developed countries' exports of roundwood and mechanical wood products as the economic recession reduced consumption of these products; in addition, legislative action and continuing environmental concern sharply decreased exports of *coniferous logs* from the Pacific Coast of the United States to the main Asian consumers. The drop is reported to have amounted to 16 percent.

Trade in tropical timber continued to decline in 1991 as demand in Japan, Western Europe and North America remained weak; in addition, export restrictions on log and sawnwood producers have tended to favour domestic processing of higher-value products such as plywood, door frames, mouldings, furniture and furniture parts. Exports of *tropical logs* from Malaysia continued to decrease but exports of more manufactured products continue to grow, particularly to other Asian countries.

While Japan is still the largest tropical timber importer, other countries in East Asia are emerging as major consumers. In recent years, the Republic of Korea, Thailand, India and China have become the major importers of tropical timber from Asian-Pacific producers.

African exports of tropical timber were negatively affected by the weak demand on the West European market. In addition, some African countries, such as Côte d'Ivoire and Ghana, have recently introduced quantitative restrictions on their tropical timber exports.

In 1991, trade in *paper* continued its sustained growth while trade in *wood pulp* recovered partly after the sharp fall experienced in 1990.

The weakening of the US and Canadian dollars notably increased the competitiveness of North American exports on international markets. Canadian exports of wood pulp rebounded by 12 percent after a marked decline in 1990 while United States exports of paper and paperboard increased by some 23 percent.

Exports from some developing countries enjoyed very high rates of growth. Brazil's exports of wood pulp grew by 32 percent and paper exports from some Asian developing countries reached very high levels, thus continuing the upward trend observed since the mid-1980s.

Forest resources of the world

Forest resource appraisals on a global basis are a part of FAO's mandate. The last worldwide assessment was carried out with 1980 as the reference year. In keeping with its mandate, in 1989 FAO launched a new assessment, with 1990 as the reference year, to provide current and objective information about the existing conditions of the world's forest resources and recent trends of deforestation and forest degradation.

The new assessment comprises two main components: a survey of the forest resource of the developed countries, coordinated by the Joint ECE/FAO Agriculture and Timber Division in Geneva; and an assessment of the forest resources of developing regions (tropical and non-tropical zones), carried out by FAO. The combined estimates of the two surveys show the world area of forests to be 3.4 billion ha, of which 1.7 billion ha are in the tropical zone and the remaining 1.7 billion ha in the temperate

zone. In addition, there were 0.6 billion ha of "other wooded land", with some woody vegetation in the temperate zone and a further substantial area classified as such in the tropical zone. The world forest area per caput was estimated to be 0.7 ha.

Tropical zone. In 1990, 36 percent or approximately 1.7 billion ha of tropical land were forested. The largest forested area was in Latin America and the Caribbean (840 million ha or 50 percent of its land area), followed by Africa (600 million ha or 27 percent of its land area) and Asia (275 million ha or 31 percent of its land area). The forest area per caput in the tropical zone was also 0.7 ha.

About three-quarters of the tropical forests were found in the tropical rain forest zone and the moist deciduous forest zone. Annual deforestation was estimated to be 16.9 million ha or 0.9 percent of the forest area during the 1980s. This is a much higher area than the annual 11.3 million ha or 0.6 percent estimated in the 1980 survey. The highest rates of deforestation were found in the moist deciduous and hill/montane forest zones, which have relatively high rates of population growth. In terms of annual area loss, 7.3 million ha were depleted in the moist deciduous forest zone, followed by 4.9 million ha in the tropical forest zone and about 2 million ha each in the dry and hill/montane forest zones. The last zone may be regarded as the most threatened because of the relatively small area left and its high deforestation rate.

Temperate zone. Forests in temperate zone countries covered some 1.7 billion ha. Forests of the developed countries situated in the temperate zone accounted for some 1.4 billion ha, the rest being in temperate forests of certain developing countries (Argentina, Chile, China, the Democratic People's Republic of Korea, Mongolia and the Republic of Korea).

Forests situated in the former USSR accounted for about 35 percent of the land area or 0.75 billion ha, while forests in North America amounted to 0.45 billion ha, and in Europe 0.15 billion ha. Forests in these parts of the world covered nearly 27 percent of the land area while the per caput area of forest was 1.13 ha. In the developing countries situated in the temperate zone, the average forest area per caput was estimated to be 0.15 ha, influenced by the large population and the relatively small forest area of China.

In many countries there is a high degree of concern about the need for protecting the environment through the conservation of forests in order to preserve biodiversity, produce non-wood benefits and contribute to the stabilization of the climate. Conflicts sometimes arise regarding the different functions of the forest, most notably wood production and nature conservation but also environmental protection, hunting and recreation. These problems are being addressed by the forest policies of a growing number of countries in the temperate zone.

UNCED and forestry

The idea of establishing a series of forestry principles to be adopted at the international level originated early in 1990 during an independent review mission of the Tropical Forestry Action Plan — since renamed the Tropical Forests Action Programme (TFAP) — and was later endorsed by the G7 meeting in Houston in April of the same year. During the FAO Committee on Forestry meeting in September 1990 and a subsequent informal intergovernmental group meeting in early 1991, a general agreement was established on the necessity to set certain forestry guidelines as a means of ensuring the management, conservation and sustainable development of forests.

Some governments, however, were not ready to agree to a binding international agreement, fearing it could constrain sovereign rights over the use of resources. For this reason, discussions in the preparatory meetings for UNCED were confined to the negotiation of a non-legally binding statement of principles.

On the basis of the text prepared by the preparatory committee, with the cooperation of FAO, UNCED adopted *"a non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests"*, referred to as the "forestry principles". The following extracts give an indication of their main coverage:

- The guiding objective of the principles is to contribute to the achievement of the management, conservation and sustainable development of forests.
- These principles should apply to all types of forests, both natural and planted, in all geographical regions and climatic zones, including austral, boreal, subtemperate, temperate, subtropical and tropical.
- The subject of forests is related to the entire

range of environmental and development issues and opportunities, including socio-economic development.

- Forestry issues and opportunities should be examined in a holistic and balanced manner within the overall context of environment and development, taking into consideration the multiple functions and uses of forests.
- The vital role of all types of forests in maintaining the ecological processes and balance through, *inter alia*, their role in protecting fragile ecosystems, watersheds and freshwater resources, and as rich storehouses of biodiversity, should be recognized.
- Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual human needs of present and future generations.
- The role of planted forests and permanent agricultural crops as sustainable and environmentally sound sources of renewable energy and industrial raw material should be recognized, enhanced and promoted.
- All types of forest play an important role in meeting energy requirements through the provision of a renewable source of bioenergy.
- Efforts should be undertaken towards the greening of the world through reforestation and afforestation.
- Efforts to maintain and increase forest cover and forest productivity should be undertaken in ecologically, economically and socially sound ways.
- The implementation of national policies and programmes aimed at forest management, conservation and sustainable development, particularly in developing countries, should be supported by international financial and technical cooperation.
- National forest policies should recognize and duly support the identity and culture, and respect the rights, of indigenous people and forest dwellers.
- Scientific research, forest inventories and assessments, which take into account biological, physical, social and economic variables in the field of sustainable forest management, conservation and development, should be strengthened.
- Trade in forest products should be based on multilaterally and non-discriminatory agreed rules and procedures consistent with international trade law and practices.
- International exchange of information on the results of forest and forest management research and development should be enhanced.

Notwithstanding all of the above:

- States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies.

PART II
REGIONAL REVIEW

I. Developing country regions
II. Developed country regions

REGIONAL REVIEW

I. Developing country regions

The following review examines recent economic and agricultural performances in the four developing country regions and highlights the main policy developments affecting their agricultural sectors during 1991 and 1992. Following the customary approach, the review then focuses more specifically on the experience of selected countries in each region: Kenya, the United Republic of Tanzania and Uganda in Africa; Indonesia and the Philippines in the Far East; Argentina, Chile and Paraguay in Latin America and the Caribbean; and the Kingdom of Saudi Arabia and Yemen in the Near East.

SUB-SAHARAN AFRICA

Regional overview

Per caput output in sub-Saharan Africa declined by 1.8 percent in 1991 for the fifth consecutive year, bringing the cumulative decline since 1987 to more than 6 percent (according to IMF estimates). The region's economy was adversely affected by sluggish growth in industrial countries and the concomitant decline in commodity import demand and commodity prices. According to the IMF, sub-Saharan Africa's terms of trade fell by 6 percent between 1990 and 1991, causing a reduction in export receipts. More specifically, prices of cocoa in 1991 were lower by 6.3 percent compared with 1990, robusta coffee by 9.3 percent, mild coffee varieties by 5.1 percent, tea by 9.4 percent and sugar by 26.9 percent.[1] Civil strife and natural disasters in some countries exacerbated the effects of low prices. However, growth in per caput incomes varied substantially among countries, ranging from positive (e.g. Kenya, Nigeria) to strongly negative (Cameroon, Côte d'Ivoire). The annual growth rate in per caput incomes is forecast to turn positive, although only slightly, in the 1990s.[2]

Agricultural production (as measured by the agricultural production index) grew by 4 percent in 1990/91, representing a recovery from the poor performance of 1989/90 (1.2 percent) and significantly higher than the 1985-90 annual average growth of 3 percent. Increases were shared almost equally between food (4 percent) and non-food commodities (3.8 percent). The recovery reflected the interplay of several factors such as favourable weather in most countries and improved producer prices. Despite lower international prices of sub-Saharan Africa's export commodities, producer prices for those commodities increased in real terms in several countries as a result of: *i)* policy reforms that brought farmgate prices closer to world prices and *ii)* substantial real devaluations.

The overall economic situation is still characterized by persistent and even worsening macro-economic and financial imbalances with negative repercussions on investment and growth (see Fig.13), which have often translated into extreme hardship for the population.

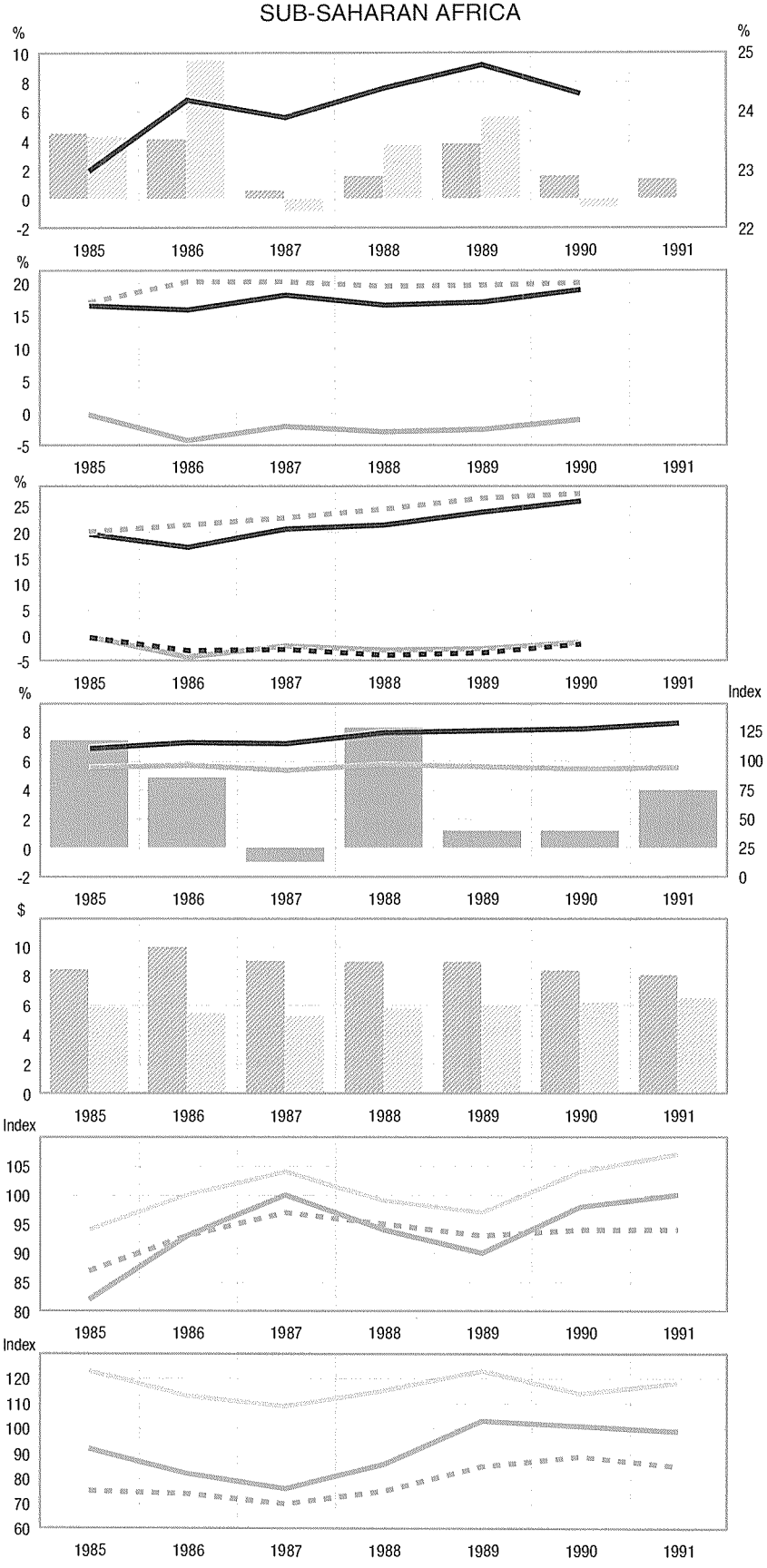
Short-term prospects for agricultural and general economic growth in sub-Saharan Africa are uncertain in view of, *inter alia*, the severe drought in southern Africa. The drought has had catastrophic effects on the coarse grain harvest in countries below 12° south latitude (Zambia, Zimbabwe, Namibia, Swaziland, Lesotho, Mozambique, Malawi, Botswana, Madagascar and the Republic of South Africa). For the developing countries of southern Africa, at mid-1992 FAO was estimating the 1992 maize output to be 2.3 million tonnes, or 40 percent of the average, while the aggregate output of coarse grains (including sorghum and millet) is estimated to be 5.4 million tonnes, a 65 percent drop from the 1991 level. Wheat production is

[1] African Development Bank. *African Development Report, 1992*, Table 2.10.

[2] World Bank. *World Development Report 1992*, Table 1.2.

Figure 1.3

SUB-SAHARAN AFRICA



TOTAL AND AGRICULTURAL GDP GROWTH

- Total GDP
- Agricultural GDP
- Agricultural GDP as % of total GDP (right scale)

SAVING AND INVESTMENT
(Share of GDP)

- Gross domestic investment
- Gross domestic savings
- Saving-investment balance (GDS-GDI)

TRADE AND CURRENT ACCOUNTS
(Share of GDP)

- Total imports
- Total exports
- Trade balance
- Current accounts

AGRICULTURAL AND PER CAPUT FOOD PRODUCTION

- Agricultural production growth (%)
- Agricultural production index (1979-81 = 100)
- Per caput food production index (1979-81 = 100)

AGRICULTURAL TRADE
(Billion US$)

- Exports
- Imports

AGRICULTURAL EXPORTS
(Index: 1979-81 = 100)

- Value
- Unit value
- Quantity

AGRICULTURAL IMPORTS
(Index: 1979-81 = 100)

- Value
- Unit value
- Quantity

Source: FAO, World Bank and IMF

expected to decline by 45 percent in 1992. Coarse grain imports in sub-Saharan Africa are expected to rise from an estimated 3.9 million tonnes in 1991/92 to 10 million tonnes in 1992/93.[3]

External debt continues to constitute a major problem although a number of recent initiatives, by individual countries (such as France and Canada) and at the international level (namely within the framework of the Toronto terms), have enabled many countries to progress in the direction of debt reduction and relief.

The debt reduction and relief measures are most frequently implemented in the context of stabilization and structural adjustment programmes (SAPs) which have been introduced by 40 African countries since 1980.

Regarding *recent policy developments*, 1991 and 1992 saw the continuation of a general move to a more liberal environment in the political and economic fields. This generally positive tendency concealed a variety of individual country experiences, ranging from successful steps towards democratization — in Cape Verde, Sao Tome and Principe and Zambia, for instance — to the persistence of civil war in countries such as Liberia, Somalia, Mozambique and the Sudan. In the economic field, the main elements of policy reform have been privatization and market deregulation throughout Africa, even though their effective implementation is still encountering significant resistance. Examples of more decisive policy reform actions include those of Côte d'Ivoire, Togo, Cameroon, Madagascar, Nigeria and Zambia.

Because of its dominant weight in most African economies, agriculture continues to receive particular attention in adjustment programmes. Examples include Guinea and Burkina Faso, which have prepared documents on agricultural development policies, Mali, which has recently prepared guidelines for rural development, Senegal, Rwanda, Guinea-Bissau, Cape Verde and Sao Tome and Principe.

In the trade area, for several of its traditional exports Africa has lost considerable market share *vis-à-vis* foreign competitors of the developing world, particularly Asia. The creation of a single market in Western Europe has created uncertainty for many African countries regarding their preferential access to this crucial market in the future.

Regional cooperation is seen as a possible solution to current and prospective problems of access to the industrial countries' markets, even though past experiences in this area have been less than encouraging. Recent developments in this context include the Conference of West and Central African Ministers of Agriculture (grouping 17 countries), which met in Dakar in March 1991 and again in Paris in September 1991. The conference defined eight specific action programmes which, at the end of an initial two-year period, should lead to a series of recommendations and specific measures; an investment programme; and the elaboration of a second action plan.

The action programmes emphasize policy coordination, follow-up and evaluation and the establishment of regional markets for a number of commodities.

Finally, the majority of African countries are highly sensitive to the increasing overexploitation of their natural resources as a result of rapid growth in demand for foodstuffs and other products (such as fuelwood) as well as overgrazing. The gravity of the problem has led to the preparation of environmental action plans in 18 African countries, a task pioneered by Lesotho, Madagascar and Mauritius and carried out with World Bank assistance.

The sub-Saharan regional review this year focuses on the three countries of the former East African Community: Kenya, the United Republic of Tanzania and Uganda. This review relates the countries' post-independence development strategies to their current economic condition while analysing their economic objectives, sources of and constraints to agricultural growth as well as the policies used to address these issues.

Kenya

Kenya, which gained its independence in 1963, has an area of 580 367 km^2, 88 percent of which is made up of arid and semi-arid lands (ASALs). Over these first three decades since independence, the country's population has increased by 3 to 4 percent per annum, one of the highest rates of growth in the world, although there is evidence that it is now slowing. The population currently stands at 21.4 million, about 80 percent of which is located in rural areas.

While agriculture's share in GDP is 27 percent, its contribution to visible exports is 60 percent. Approximately one-half of the national labour force works either full or part time in the

[3] The figure includes the Republic of South Africa's imports.

non-wage agricultural and livestock sectors. The vast majority of crop production is rain-fed.

Smallholders produce 70 percent of the maize crop, almost all of the rice and pulse crops, 65 percent of coffee, 50 percent of tea, and nearly all pyrethrum and cotton crops. Of the 2.7 million smallholders, 80 percent have less than 2 ha and more than one-third of farms are managed by women. Horticulture is the only major sector currently dominated by large farms, although an increasing number of smallholders and cooperatives are entering the sector.

White maize provides 40 percent of total calories consumed and it is grown on 1.2 million ha (almost 50 percent of the total area of cultivated land). Another 140 000 ha are planted to wheat while 95 000 ha are planted to sugar cane. Sorghum, millet, cassava and sweet potatoes are grown in marginal semi-arid areas.

Tea, coffee and horticultural commodities are the most important export crops, although Kenya also produces cotton, pyrethrum, tobacco, sisal and cashewnuts.

The livestock sector embraces pastoralist production and ranching in the arid and semi-arid lands and dairying in the high- and medium-potential farming areas. In 1989, there were an estimated 13 million head of cattle in Kenya.

Officially designated (gazetted) forests cover about 3 percent of Kenya's total land area. Approximately 19 000 ha of total forested area (gazetted forests plus biomass) are lost annually, as trees are felled for firewood and charcoal and crop area is expanded.

In the fisheries sector, approximately 186 000 tonnes of fish are caught each year, with over 80 percent coming from Lake Victoria.

Agricultural development and growth

Agriculture experienced an average annual growth rate of 4.7 percent in the decade following independence. This impressive performance was the result of both expansion in the cultivated area and yield increases. Large settler farms were broken up and reallocated to small farmers, while restrictions were removed on smallholders' production of major export crops and dairying activities. Cropped land expanded by an estimated 20 percent during this decade. At the same time, the adoption of high-yielding varieties (HYVs) of maize increased yields in smallholder areas by between 47 percent and 300 percent.[4] Official prices were remunerative, while policies focused attention on extension, credit and input delivery systems to meet smallholder needs. Agriculture benefited from the maintenance of a consistent set of policies, stable institutions and marketing systems and a conducive macro-economic environment.

Agricultural growth slowed after 1972, however, to an annual average rate of 3.7 percent during the 1970s and 3 percent during the 1980s, led by declines in the growth of food crops. The decline resulted from a combination of exogenous and policy-related factors.

A shortage of arable land together with rapid population growth exhausted the possibilities for a further expansion in area. Cropped area expanded by a total of 3 percent in the first half of the 1970s and remained virtually unchanged in the second half. Lack of further technical innovations prevented a continuation of the previous decade's sizeable yield increases. Droughts in the mid-1970s, 1979, 1980 and, especially, 1984, as well as the declines in world commodity prices, particularly for coffee, also contributed to a poor agricultural performance. Coffee "booms" and "busts" had destabilizing effects on export revenues and, in turn, on the domestic monetary base.

Policies did not respond adequately to the need for the transformation of agriculture from an extensive to an intensive system. Official prices, especially for food crops, were unremunerative in some years and price adjustments erratic. The delivery of essential agricultural services (inputs, credit, research and extension) did not keep up with smallholder needs, while private and public investment in agriculture fell. The increased role of the public sector in the control of marketing and pricing systems exceeded its managerial capacity to perform such tasks.

Policies for agricultural growth

When designing strategies to spur agricultural growth, policy-makers in Kenya have to deal with a number of binding constraints. Because of the country's shortage of high- and medium-quality lands, possibilities for a further expansion of land under cultivation are severely limited. The enormous cost of large-scale irrigation development excludes area expansion as an option in the short or medium terms. Ecological constraints limit the scope for large changes in cropping patterns. In the near future, at least, agricultural growth must be based

[4] World Bank. 1986. *Kenya: Agricultural Sector Report*, vol. II.

almost exclusively on the intensification of production on existing lands. The potential for such production is particularly high in the case of smallholders. With proper management, smallholder maize yields could more than double to 50 bags per hectare in some areas. Yield increases in cash crops produced by smallholders (coffee, tea, sugar cane, cotton) are also possible, given proper extension services and improved varieties (e.g. the Ruiru 11 variety for coffee and high-yielding clones for tea).

The above constraints and potentials were taken into account in the *Sessional Paper on Economic Management and Renewed Growth*, approved by the Kenyan Parliament in 1986 in response to sluggish agricultural and overall economic growth. The paper set out a development strategy up to the year 2000. The operational aspects of this strategy were further defined in Kenya's Sixth National Development Plan, 1989-1993.

A major role was given to agriculture in providing food security for an increasing population, absorbing some of the rapidly rising labour force and boosting export earnings. The paper specifies policies to enhance incentives for producers; promote agricultural research, extension, credit and input supply for smallholders; expand the role of the private sector in the marketing system; rationalize public expenditure in the sector; and reform parastatals.

Since 1986, a number of reforms have taken place in the following major policy areas:

Pricing and marketing. The marketing system for major domestically consumed commodities (maize, wheat, rice, beans) has been dominated by the National Cereals and Produce Board (NCPB) which had a legal monopoly in marketing. A pan-territorial pricing scheme was in effect for maize, while legal intradistrict trade was limited to two 90 kg bags in 1986. Payment delays to farmers (sometimes of up to four to nine months after delivery) further reduced incentives. Since 1986, producer prices for cereals have been adjusted upwards, while private traders are allowed to carry up to 88 bags of maize across regions without a licence. Farmers are free to sell maize to private traders. Large-scale maize millers are now allowed to purchase a proportion of their throughput directly from cooperatives and private traders rather than exclusively from the NCPB. Improvements in the payment system permitted 1989/90 maize crop payments to be made one to two weeks after delivery.

In recent years a number of markets have been partially or completely liberalized. Rice imports were liberalized in 1992 and controls of the retail rice prices were lifted. The Cotton Board's monopsony of cotton purchases has been abolished and farmers are free to sell directly to the cooperative-owned ginneries. The Cotton Act, passed in 1989, sets out an improved payment system, but it had still not been implemented by mid-1992. Beef prices were decontrolled in 1989 at both the wholesale and retail level. Tea prices have been freed at the retail level, although maximum consumer prices still exist for milk, maize meal and domestically produced sugar. Licences have been granted to private milk traders to purchase milk from producers.

Export crop prices have been generally in line with world prices. Kenya has avoided the explicit and implicit excessive taxation of export commodities often encountered in sub-Saharan Africa. In 1989 the government abolished all export taxes on coffee and tea and instituted a 5 percent tax on the marketed value of all agricultural commodities. Incentives were improved by a continuous process of devaluation, which caused a real effective exchange rate depreciation of a cumulative 36 percent between 1985 and 1990.

In recent years, however, low world prices and payment delays (sometimes up to 18 months following deliveries) to coffee growers contributed to the neglect and even uprooting of coffee trees by smallholders. A new payment system for coffee producers was introduced in 1990 but had not been put into effect by mid-1992.

Fertilizer policy. It is estimated that in order to sustain an agricultural growth rate of 4 percent a year, fertilizer consumption should increase by 11 percent, especially in the smallholder sector where usage levels are currently low. Until 1990, fertilizer was sold at prices announced by the government and which often did not cover distribution costs. Despite this implicit price subsidy, low availability and, especially, untimely deliveries reduced fertilizer effectiveness. Distribution was liberalized in 1990 and the number of private importers and distributors has since increased. Packaging in bags of less than 50 kg allows more smallholders to purchase fertilizers.

Credit. Smallholders have been constrained by the lack of institutional credit to meet working capital needs. Commercial banks and non-bank financial institutions have not been able to

comply with the government requirement to direct 17 percent of total credit to agriculture. At the same time, government-supported credit institutions are in a weak financial position because of a lack of clear lending criteria and low repayment rates. Commercial credit has been directed to larger farmers or has been diverted to non-agricultural activities. An effort is currently under way to restructure agricultural lending institutions within the framework of liberalization of the financial system.

Government expenditure and parastatal reform. Total (development and recurrent) budget allocations to the agricultural ministries fell as a percentage of total allocations during the period 1975-1985. The share increased in 1987 but has been falling since in real terms. The share of personnel emoluments in the recurrent costs of agricultural ministries rose from 54.6 percent in 1980 to 71.7 percent in 1990, reaching a peak of 75 percent in 1987, a year in which two additional agriculture-related ministries were added to make a total of five.

A significant share of the agricultural budget is used to finance losses by parastatals which control a major part of the overall economic activity in agriculture. With the exception of the Kenyan Tea Development Authority (KTDA), major parastatals such as the NCPB, the Kenya Cooperative Creameries (KCC), the National Irrigation Board (NIB) and South Nyanza Sugar Company (SONY), have been associated with both financial and efficiency losses and have been targeted for reform. The NCPB and SONY have undergone financial and organizational restructuring, while changes in marketing and pricing of major commodities (increased role of the private sector, reduction in retail price subsidies, recovery pricing for livestock services) have reduced the role and losses of parastatals as well as the associated treasury exposure. The role of the NCPB is to be limited to the management of the strategic reserve and to being a buyer of last resort. The NCPB's buying centres have been reduced from 680 to 220, a 70 percent reduction.

Agricultural response to policy reforms

Assessment of the effects of the reforms undertaken becomes difficult as a number of exogenous factors (weather patterns and changes in world prices) tend to blur the overall picture. For agriculture as a whole, the average annual rate of growth between 1986 and 1989 was 4.1 percent but declined to 3.5 percent and 3.4 percent in 1990 and 1991, respectively. This was a slight overall improvement from the 3.7 percent average annual growth rate of the first half of 1980s.[5]

Fertilizer use between 1980/81 and 1983/84 was 187 300 tonnes per year while, for the period 1986/87 to 1990/91, annual use averaged 241 800 tonnes. However, the year-to-year performance has been variable. Fertilizer use decreased drastically in 1989/90, despite lower fertilizer prices charged by the government parastatal. Low prices for coffee (requiring the greatest use of fertilizer) and delayed fertilizer distribution contributed to a reduction in fertilizer consumption.

The production of food crops has increased since 1986, reaching record levels in 1988/89. However, this good performance is at least in part a result of the exceptional run of average and good growing conditions since the 1984 drought. Maize production recovered from the 1984 drought, averaging 2.7 million to 2.8 million tonnes per year during the late 1980s. In addition to favourable weather, timely payments to farmers improved incentives, despite a general decline in real maize prices between 1985/86 and 1988/89. Delayed and irregular rainfall as well as landownership disputes in western Kenya caused a reduction in the 1991 maize production. A below-average crop is also expected in 1992 because of the delayed rainfall. An estimated 600 000 tonnes of maize will have to be imported in 1992.

Tea production has expanded more rapidly than expected in the 1986 sessional paper, despite declining real world prices. The expansion in tea output has resulted largely from yield increases and from a small increase in estate area.

The recent performance of coffee production has been disappointing. In view of the low prices which have existed since the breakup of the International Coffee Organization, in addition to delayed payments, farmers have not been prepared to expand the area of cultivation and there has also been some uprooting. Increased fertilizer and agrochemical costs further reduced incentives. Uptake of the improved Ruiru 11 variety has been slow because of the low profitability at present and problems with the supply of seedlings. National

[5] The year 1984, when crops were hit by an exceptionally dry period, is excluded from the calculation. If it is included, the average growth rate for the first half of the 1980s is only 2.5 percent.

output is currently running at about 30 percent below the 1987/88 record of 130 000 tonnes.[6]

Horticultural production both for the domestic market and export has continued to increase rapidly. Exports of horticultural commodities reached their peak in 1990, having increased tenfold in US dollar value terms since 1970. Further expansion of exports will face a number of constraints, including limited outward airfreight capacity, insufficient improved seeds, limits in the processing capacity and marketing infrastructure and inadequate promotion in foreign markets.

Policy issues and perspectives for the 1990s

Worse than average weather and declining world commodity prices caused agricultural growth in Kenya to decline in 1990/91 compared with the previous four years. Nor is growth expected to recover significantly in 1992, which puts additional pressure on policy-makers to speed up reforms if the targets of the development plan are to be met.

The effects of poor and delayed rainfall on the country's food situation have been exacerbated by the influx of refugees from neighbouring Somalia (70 percent of refugees), Ethiopia (22 percent of refugees) and smaller numbers from the Sudan, Rwanda and Zaire. An estimated 400 000 refugees have already crossed the border to Kenya and the number is expected to rise to 500 000 by year's end.[7] The influx of refugees is creating severe pressure on the food situation in border areas, despite relief operations undertaken by international agencies.

Kenya's macro-economic framework, designed to be conducive to agricultural growth, requires that the challenges of maintaining a realistic exchange rate, reducing inflation and countering the potential destabilizing effects of foreign exchange fluctuations be met. The government has managed to bring the budget deficit down from 6.3 percent of GDP in 1990/91 to an estimated 3.5 percent in 1991/92.

Some expansion of production in the high-potential areas should be possible with the conversion of idle lands, currently held for speculation, into productive areas. This could be accomplished either by the distribution of such lands to small cultivators or by the imposition of a land tax.

Extending policy reforms (especially the elimination of payment delays) to the traditional export crop sector will be necessary in order to improve incentives, expand input use and speed up the adoption of improved varieties.

In the face of growing population, securing *household food security* will be a major policy challenge. The incidence of malnutrition in Kenya is high, despite the country's success in expanding national food production. Moreover, the number of households at risk from malnutrition is likely to increase as population pressure in high-potential areas causes an ever greater number of the farming population to migrate to the semi-arid areas where there is a high probability of crop failure. Although economic development will be the long-term sustainable solution to the food security problem, interventions are needed in the meantime to increase incomes and improve access to food by disadvantaged groups. In 1988 the government prepared a *Household Food Security and Nutrition Policy* paper which was released in 1990. The paper focused on the distributional aspects of food security and made a series of recommendations which constitute the basis for the government's Household Food Security Action Plan, now in the final stages of preparation.

The recommendations of the 1988 policy paper included measures – for example, public infrastructure work programmes – to generate employment and incomes for rural populations; proposed interventions in health and nutrition services; underlined the need to increase the efficiency of public expenditure on programmes to reduce the impact of malnutrition; and stressed the need for improved coordination of food security actions by the government and non-governmental organizations (NGOs).

Agriculture has an important role to play in the *absorption of the country's rapidly increasing labour force*. In 1990, a Presidential Committee on Employment was set up to address the creation of employment in the economy as a whole. For the agricultural sector, the Ministries of Agriculture and Livestock Development contributed a set of policies and programmes for accelerating employment growth by concentrating on per-hectare employment

[6] Part of the record output may have entered Kenya from neighbouring countries as better prices were paid to Kenyan producers.

[7] Reported numbers of refugees vary from 300 000 to 700 000, as many enter the country unregistered. In June 1991, the Kenyan Government announced a policy of open borders to all persons seeking refuge in Kenya and it has designated the Ministry of Home Affairs to administer refugee programmes.

increases in the crops which are currently the major sources of rural employment (maize, coffee, tea, sisal and horticultural crops).

Environmental issues. ASALs support more than 25 percent of the country's population and almost one-half of the livestock. In the past, ASALs were given low priority because of their fragile resource base and low production potential but it has recently been realized that, with proper management, their contribution to the economy may be increased. In addition, environmental degradation problems have been created as a result of land-use conflicts between traditional pastoralists and cultivators (migrants from high-potential areas or sedentary pastoralists). Increases in the number of cultivators and agropastoralists in traditional production areas limit the dry season grazing grounds of pastoralists, leading to overgrazing in the remaining lands. Land adjudication around national parks is disruptive to wildlife migration and dispersal. An increasing population and the opening up of new lands as well as inappropriate cultivation techniques by migrant farmers contribute to soil depletion, devegetation and a lowering of the water-table during the dry season. An integrated framework for addressing environmental problems and land-use conflicts in the ASALs is included in Kenya's Environmental Action Plan, currently in preparation by the government. In an effort to integrate ASAL populations more closely in the national economy, the plan places emphasis on enhancing the ASAL communities' awareness of and ability to conduct sustainable resource management through improved pastoral practices, wildlife integration, dryland farming and drought management practices.

Intensive cultivation in large horticulture farms (especially flower farms) around lake Naivasha has caused some leaching of phosphates, nitrates and insecticides. Unless action is taken, the problem will become more serious as horticultural production increases.

Kenya has always had policies to address individual environmental problems. In the long term, a comprehensive land-use policy will go a long way towards addressing the conflicts between farming and legitimate human settlement, on one side, and environmental conservation (including wildlife), on the other. The Kenya Wildlife Service, which came into legal existence in 1990, constitutes a significant step in the effort to conserve the natural environment and make the best use of wildlife resources for economic development.

United Republic of Tanzania

The United Republic of Tanzania, formed by the union of Tanganyika and Zanzibar in 1964, has a total land area of 945 000 km^2 and a population of 25.2 million. Agriculture currently contributes close to 50 percent of GDP, employs 81 percent of the labour force and accounts for 80 percent of the country's exports. About 35 percent of the land is arid or semi-arid while a small share of total land is of high quality and the majority of land is of medium quality – suitable for the cultivation of a variety of food crops, tobacco, cotton, cashews and sisal. The best conditions for crop production are found around the country's borders. Currently, only 20 percent of total arable land is under cultivation while 95 percent of the cropped area is rain-fed. Production is dominated by smallholders (83 percent of all farms are less than 2 ha in size) who use traditional methods and employ few purchased inputs and unimproved plant varieties.

Population grew at a rate of 3.2 percent per year before 1978 and 2.8 percent between 1978 and 1988. Unlike Kenya, overall population pressure on land is low and estimated to be 0.37 rural inhabitants per hectare of agricultural land compared with Kenya's 1.09. Population pressure, however, is high in the high-potential areas.

Maize provides roughly one-third of all calories consumed, but drought-tolerant crops, including cassava, sweet potatoes, sorghum and millet, are widely grown. Other important food crops include rice, wheat, beans, bananas and a variety of vegetables, fruits and other root plants.

The United Republic of Tanzania's main export crops are arabica and robusta coffee (currently accounting for 31.5 percent of total export earnings), cotton (roughly 20 percent), sisal, tobacco, tea, cashewnuts and pyrethrum. A number of minor crops, including horticultural crops, cotton seeds, simsim (sesame), cassava, cardamon and oilseeds are also exported.

The livestock sector contributes 10 percent to GDP, with smallholder livestock owners accounting for 99 percent of national stock. Much of the mainland is infested by the tsetse fly, however. Fisheries (mainly inland) contribute about 50 percent to the domestic consumption of animal protein.

Woods (*miombo* woodlands) and forests cover approximately one-half of the total land area. Between the time of independence and 1985, the overall forest area declined by 6

percent, a much slower rate than in Kenya and Uganda, but the deforestation rate is increasing.

Post-independence economic policies and performance

In the decade following independence (1961), small farmers were producing 83 percent of agricultural output, over 60 percent of marketed agricultural production, all the cotton crop and approximately 70 percent of coffee. A three-tier system of cooperative marketing was established for the major crops, based on the primary societies, regional cooperative unions and state marketing boards.

The volume of marketed coffee, cotton, tobacco and cashewnuts doubled during that first decade and the country became self-sufficient in grains by the late 1960s. The expansion of cultivated land and a well-functioning system of extension, marketing and input delivery were the basis of this success. The foreign exchange that was generated enabled the import of essential inputs for the early stages of industrialization.

A major shift in development strategy occurred in 1967 with the "Arusha Declaration" which set the country on a socialist transformation course. Private economic activity was discouraged and tight controls were imposed at all levels of economic activity, including — in 1973 — the compulsory villagization of the population in order to facilitate the provision of services to rural areas. In 1976 the three-tier marketing system was replaced by a system of crop authorities which acted as monopsony buyers of marketing surpluses, applying prices set by the government.

The monopolistic marketing structure proved to be inefficient in performing basic functions such as crop collection and timely payments to farmers. The parastatals' continuous demands for credit were a major factor behind domestic credit expansion, imposing a major burden on the financial system. The instability of marketing systems and agricultural institutions (the discouragement of private traders and the establishment, abolition and later re-establishment of cooperatives) created uncertainty for producers and disruptions in the provision of agricultural services.

The f.o.b. real (shilling) export prices increased by 17 percent at the marketing board level between 1970 and 1980, while the same prices were decreased by 36 percent at the producer level as a result of the increased absorption of margins by parastatals.[8] The overvalued exchange rate imposed an additional implicit tax on agricultural exports. The combined effect of these factors resulted in a sharp reduction in incentives for export crop production.

With donor support, the villagization programme achieved notable but unsustainable successes in improving education, health and access to clean water and other services in the rural areas. On the other hand, the programme has been associated with efficiency losses, as farmers had to travel long distances to their farms and the selection of village sites was often inappropriate.

The period 1976-1984 was one of severe economic downturn. Annual average growth of real GDP between 1977 and 1985 registered 1 percent, meaning a per caput decline of about 2 percent per year. US dollar export earnings decreased by 8 percent per year between 1976 and 1985 while shortages of foreign exchange for raw materials and spare parts caused manufacturing activity also to decline. Reduced inflows of foreign resources on a concessional basis meant that the United Republic of Tanzania had to borrow on harsher commercial terms and increasing government deficits had to be covered by internal borrowing. The public sector, until then a net lender, became a net borrower. Physical infrastructure could not be maintained, as increases in nominal expenditures were significantly below inflation rates.

A critical factor behind the economic decline was the collapse in foreign exchange earnings and the concomitant reduction in imports necessary for manufacture and for infrastructure expansion and maintenance. Declines in international prices of the country's exports, adverse weather conditions in some years and an anti-export policy bias contributed to a sharp decline in the output of sisal, cotton and cashewnuts. Despite moderate increases in the output of tea and coffee, official sales of export crops declined by almost 5 percent per year between 1977 and 1985. By 1982, the import purchasing power of total agricultural exports was reduced to only 30 percent of what it was in 1966. The country's weak economic position prevented it from confronting the effects of negative exogenous shocks such as the two oil crises and the war with Uganda.

[8] J. Sijm: 1990. *Food Security and Policy Interventions in Tanzania.* Tinbergen Institute, Center for Development Planning.

The 1980s: policy reforms and current developments

In an effort to arrest economic decline, in the early 1980s the government initiated a number of policy reforms, including limited devaluations, increases of export crop prices, import liberalization, the abolition of crop authorities and the reintroduction of cooperatives in the agricultural marketing system.

A more systematic approach to policy reform started in 1984 and continued under two economy-wide adjustment programmes, the 1986-1989 Economic Recovery Programme and the 1991/92-1993/94 Economic and Social Action Programme.

To correct external imbalances and restore export competitiveness, a series of nominal devaluations were implemented, resulting in an 85 percent real depreciation of the shilling by 1990. The parallel market premium dropped from 800 percent in 1985 to 50 percent in 1991; the budget deficit was lowered from 7.2 percent to 4.2 percent of GDP; and reduced deficits and the resumption of foreign resource flows caused a reduction in the government's recourse to bank financing from 3.7 percent to 0.2 percent of GDP.

Marketing of domestic food crops has been completely liberalized. The marketing of grains was gradually decontrolled and, starting in the 1990/91 growing season, farmers could sell freely to private traders. Grain prices are now determined by market forces. The role of major parastatals has been reduced: the National Milling Corporation (NMC), for instance, has been turned into a milling company without a trade brokering activity. Guarantee credit lines to the NMC have been cut and its losses are limited to interest payments on accumulated debt. Cooperative unions that market grain have also been deprived of guarantee credit lines and they are also required to repay old loans before new loans may be extended.

The trade of minor export crops has also been liberalized. Exporters can keep up to 35 percent of export proceeds under the export retention scheme which can, in turn, be used to finance imports of inputs or consumer goods under the "own funds" scheme. Producers' terms of trade for non-traditional export crops have increased sharply since liberalization.

Reforms in the marketing of major export crops were not introduced until the 1990/91 marketing season. Marketing boards have ceased to buy and sell coffee, cashewnuts and cotton and are being restructured to perform basic marketing services for cooperatives at a fee, administer auctions and control quality. As a result, personnel and operations of the Coffee and Cotton Marketing Boards have been reduced.

The monopoly of cooperatives has been abolished and estates, primary societies and farmer associations (and, in the case of cashewnuts, private farmers) are eligible to participate in the auctions. For cotton, the government is encouraging cooperative unions and the private sector to establish commercial ginning companies. Tea, sisal and pyrethrum marketing have not been liberalized, however.

Although fertilizers have been decontrolled and private agents are free to import, only the Tanzanian Fertilizer Corporation (TFC) can effectively import fertilizers (all of which are imported under an aid-in-kind programme) because it receives an implicit subsidy.[9] The TFC is currently selling fertilizers wholesale to small-scale local traders who then distribute it to producers. In 1990/91, about 90 percent of fertilizer distribution was handled by private agents.

At present, farmers pay approximately 45 percent of the import price of fertilizers whereas the plan is for an 80 percent payment (20 percent subsidy) by 1994.

Agricultural response to policy changes

There seems to be a positive response of the economy to policy reforms, although the extent to which changes can be attributed to policy is hard to estimate because of the interplay of exogenous events — mainly weather and international price changes.

Overall GDP grew by 3.9 percent per year between 1985 and 1991, faster than the 2.8 percent population growth rate. Agricultural growth, which averaged 1 percent between 1978 and 1985, accelerated from 3.5 percent in 1986 to 4.4 percent in 1987 and to approximately 5 percent per annum in 1988-90.

Food production increased continuously between 1985 and 1989, with maize output reaching an all-time record of 3.125 million tonnes in the 1988/89 season. Increases in production of maize occurred despite falls in real prices at the farmgate by almost 7.15 percent per year between 1984 and 1988. Favourable weather was certainly an important

[9] The TFC is not required to pay the Treasury a cash cover for the fertilizers it imports.

factor for the bumper crop. Despite the fall in real prices, real returns to farmers may have increased as a result of timely payments and improved product collection. The availability of consumer goods in the rural areas following import liberalization acted as an additional incentive to the production of marketed surplus.[10]

Maize production declined during the next two years, albeit from a very high baseline. Difficulties in collecting the record 1988/89 crop from remote areas acted as a disincentive to farmers in 1989/90 while drought, mainly affecting the central areas, reduced the 1990/91 crop. In addition, improvements in the marketing and availability of consumer goods acted as a one-time shift to supply, but the conditions could not be maintained in the face of declining real prices. The reported reduction in interseasonal and interregional price spreads indicates that, with the exception of the areas that are poorly served by existing transport, an increasing market integration is in process.[11]

Changes in the marketing of traditional export crops began only in July 1990 and thus the old monopsonistic system of marketing prevailed through most of the reform period. The terms of trade facing marketing boards increased by 110 percent between 1985 and 1988, mainly in response to the real devaluation of the shilling. Producers' terms of trade, however, apart from an initial increase of 28 percent in 1985, failed to follow the changes in the terms of trade of marketing boards. The producers' share of the export price fell from more than 80 percent in 1986 to 35 percent in 1989 before increasing to 50 percent in 1990. The net effect of the real devaluation and a low producer share was a discrete increase in the producer terms of trade for export crops in 1986, while its subsequent gradual erosion resulted from losses by marketing boards.[12]

Official purchases of export crops increased significantly in 1986/87 and 1987/88 (recording an increase of 19 and 8 percent, respectively, on the official purchases index), registering a recovery after ten years of downward trend. Cotton purchases doubled in 1986/87 and reached a record in 1987/88. Coffee purchases declined drastically in 1986/87, mainly as a result of the untimely deliveries of fertilizer, and recovered in the following three years to reach a seven-year record in 1988/89. Export crop purchases declined by a total of 11.1 percent between 1988/89 and 1989/90, mainly because of a sharp decline in cotton deliveries caused by bottlenecks in the transportation and ginning of cotton. On the other hand, as a result of devaluation, freely traded non-traditional and minor export crops experienced a sharp increase in producers' terms of trade, followed by significant increases in production.

So far, the problem of foreign exchange shortages has not been successfully addressed. Although the volume of agricultural exports has increased, a deterioration in the international terms of trade has caused a decline in agricultural export revenues. Total export revenues have not kept pace with increases in (mainly donor-funded) imports. Although almost 75 percent of all imports are accounted for by capital and intermediate goods that are necessary for this stage of economic growth, the present imbalance cannot be sustained.

Expanding agricultural development: current policy issues

A clear legal framework for the reforms already undertaken is needed. Substantial institutional measures have been undertaken without appropriate changes in the legal code. Under the old legal framework, various bodies (the NMC, local and regional authorities) have the right to suspend private trading, while no general legal basis exists for the current trade in food crops at present.

Marketing reforms for export crops need to be expanded further to widen farmers' options for marketing their product. The government's present plan to extend the foreign exchange retention scheme to traditional export commodities will improve productivity by facilitating the speedier importation of necessary inputs and spare parts through the own funds scheme.

The reform of cooperative unions is a priority item on the government's policy agenda.[13] Weak management, high operating costs and indebtedness make cooperative unions

[10] For a detailed analysis see *World Bank. Tanzania Economic Report: Towards Sustainable Development in the 1990s. Vol. II: Background Papers. Report No. 9352-TA.*

[11] J.G. Grey. *Tanzania Agricultural Adjustment Programme (TANAA): Report on a Supervision Visit.* Prepared for the World Bank.

[12] Based on World Bank calculations.

[13] See Ministry of Agriculture, Livestock Development and Co-operatives. 1992. *Tanzania: Agricultural Sector Memorandum. Issues paper.*

uncreditworthy, reduce their capability to provide producers with remunerative prices and make them a heavy burden on the government budget. The new Cooperative Act adopted by the government allows for voluntary membership and requires adherence to stringent management and accounting rules. If managed properly, cooperative unions could exploit scale advantages and compete successfully with other economic agents in product collection, processing and marketing.

Policies have so far been effective in improving the incentive structure for farmers and reducing price distortions. For long-term sustainable growth, however, a number of structural impediments have to be overcome. Some of these are identified in the government's ongoing review of the National Agricultural and Livestock Policy, which will serve as a basis for the design of an agricultural strategy for the 1990s.

There is an urgent need for the *rehabilitation of rural infrastructure*. Since the United Republic of Tanzania's high-potential areas are scattered around the country's borders, inadequate and uneven transport networks severely impede movements of produce from surplus to deficit areas and discourage the production of a marketable surplus. High transport costs put distant producers at a great disadvantage, prevent market integration and encourage parallel export activities, thereby depriving the government of valuable tax and foreign exchange revenues. Fish from Lake Victoria and maize from the southern highlands are typical examples.

A lack of market infrastructure, communication facilities and market information discourages storage by traders and restricts marketing activities to spot transactions. The problems are exacerbated by the lack of a *commercial credit mechanism*. It is estimated that, in June 1990, only 8 percent of total domestic lending went to agricultural production.[14] Commercial banks lack the network necessary to meet the needs of individual producers. Reductions in credit subsidies to agriculture and the ongoing liberalization of the financial system, while improving efficiency, may limit small traders' access to working capital credit for crop purchases, as commercial banks will be reluctant to accept mobile stocks that are subject to deterioration as collateral. Alternative mechanisms of providing credit to smallholders and traders within a liberalized financial system are currently being studied.

The growth of food production and the achievement of national self-reliance has not assured a high level of *household food security*. The Tanzanian Food and Nutrition Centre estimates that about 50 percent of Tanzanian children are moderately malnourished and that 5 percent suffer from serious malnutrition. Food shortages in food-deficit areas, low incomes, inappropriate feeding practices and women's heavy workloads are the basic causes. The liberalization of food marketing and prices may limit access to food by some segments of the population in distant deficit areas, especially given the transportation problems in the country. FAO is assisting the government in management of the Strategic Grain Reserve, established to confront temporary emergencies, and in the establishment of a comprehensive national food security programme.

In food security terms, the current period will be a difficult one for the country, as cereal production has been affected by below-average and delayed rainfall in some areas. Reductions of 40 percent in rice production, 10 percent in maize and 25 percent in wheat will cause domestic availability to fall short of domestic needs, despite the 12 percent expected increase in the sorghum and millet crops. In July 1992, FAO forecast import requirements of 300 000 tonnes of cereal.

Uganda

Uganda is a land-locked country, with a total area of 241 038 km^2, of which 41 440 km^2 are lakes and rivers. According to the 1991 census, the population had reached 16.6 million and was growing at a rate of 3 percent per year. About 80 percent of land is potentially arable but only 30 percent of it is actually under cultivation. Plentiful rainfall and varying altitudes create suitable conditions for a wide range of food and export crops.

Agriculture is the dominant sector, contributing about 68 percent of GDP and about 95 percent of total export earnings. Close to 90 percent of the population and 92 percent of the labour force resides in rural areas. With the exception of tea and sugar cane, agricultural production is dominated by 2.2 million smallholders with average holdings of about 2 ha. Food production accounts for 75 percent

[14] World Bank. 1991. *Agriculture in Tanzania: Strategic Issues for the Nineties. Issues paper.*

of agricultural GDP and for 90 percent of cultivated area.

Uganda's food crops are more diverse than those of its East African neighbours. Bananas are the main staple, followed by plantains, cassava and sweet potatoes. Millet is the main grain, followed by maize and sorghum, while small amounts of wheat and rice are also produced. Food crops not entering the monetary economy accounted for 57 percent of real agricultural GDP in 1990.

Cash crops account for 4 percent of real agricultural GDP (both monetary and non-monetary). The major cash crop is coffee (94 percent robusta), currently accounting for 70 percent of total export earnings.[15] Other traditional cash crops include simsim, accounting for 6 percent of export earnings; cotton, accounting for 4.5 percent of export earnings; tea; and tobacco.

Cattle, goats and sheep are an integral part of the agricultural system in most arable areas, accounting for 16 percent of agricultural GDP. Dairying is based mainly on pasture, with 98 percent of the country's cattle belonging to indigenous breeds that give low milk yields.

Fish comprise 54 percent of the animal protein consumed by Ugandans, while registered fish exports accounted for about 1.2 percent of total export earnings in 1990.

Uganda has 2.97 million ha of forest reserves and national parks. Forest reserves supply about 96 percent of the country's energy consumption. The area of forest cover fell by 40 percent between 1970 and 1986.

1962 to 1985: progress and destruction

At the time of independence in 1962, with excellent potential, Uganda had one of the strongest economies in sub-Saharan Africa. The health and transportation systems and the quality of education were among the best in the region.

The advent of a military government in 1971, however, marked the beginning of 15 years of political instability, civil strife and economic and social regression. Large numbers of skilled personnel fled the country, the public sector lost efficiency, the government's revenue base was undermined and public expenditure went out of control. The situation was exacerbated, on the one hand, by a world recession which led to declining terms of trade for Uganda's exports and, on the other, the breakup of the East African Community which deprived the country of major markets for its manufactured products. Much of the country's infrastructure was destroyed during the 1978-79 war which liberated the country from military rule.

The effects of 15 years of instability were devastating: per caput GDP fell by 40 percent between 1970 and 1986; declining export crop producer prices and the widespread destruction of the processing, marketing and transport infrastructure led to the collapse of export agriculture; cotton production fell from 470 000 bales in 1970 to 22 000 bales in 1980/81 and coffee production declined by 50 percent during the same period. Most of the area planted to tea was abandoned after the 1978 war and processing plants were looted.

Food production also fell, although it suffered less than export agriculture because the rural population reverted to subsistence production in response to the collapse of the processing and marketing infrastructure. The number of cattle fell from 5.2 million in 1979 to 3.9 million in 1986 as a result of theft, the abandonment of farms and the disruption of veterinary services and tsetse control.

Recovery under the National Resistance Movement

A series of macro-economic and price liberalization reforms implemented by a new government between 1981 and 1983 resulted in a short-lived recovery, but increasing tensions and insecurity subsequently plunged the economy into distress.

The National Resistance Movement (NRM) which took over in 1986 found an economy with shattered infrastructure, rampant inflation, acute foreign exchange shortages and an overstaffed but severely underpaid civil service. After re-establishing law and order, the government started rebuilding the nation's shattered economy. In 1986 the Emergency Relief and Rehabilitation Plan was initiated to provide urgent support to war-damaged areas. In May 1987 the government launched the Rehabilitation and Development Plan, which was initially to cover the period 1987/88 to 1990/91 but was later extended to 1993.

A number of policy reforms to revitalize the economy have been made since 1987. At the macro-economic level, the government

[15] This share varies widely depending on prices and volume. During the period of political instability, coffee export receipts reached 95 percent of the total while, in 1970, they accounted for only 50 percent.

devalued the Ugandan shilling (USh) by 77 percent in 1987 and again by 41 percent in 1989, followed by monthly adjustments. In 1990 foreign exchange bureaus were licensed and, in January 1992, an auction system was established for the allocation of foreign exchange. Improved fiscal policies resulted in a shift from dependence on coffee export receipts as a major revenue source to a more diversified revenue base, including customs duties and sales taxes.[16] In addition, the government has successfully controlled the growth of credit to crop marketing agencies which, in 1986, had absorbed 92 percent of total agricultural credit. The major result of austerity policies was a decline in the inflation rate from 230 percent in 1988 to 30 percent in 1990.

A pragmatic approach to *agricultural pricing and marketing* has been adopted. For coffee, the principal problem had been the extremely low farmgate-to-world price ratio even at the official, overvalued exchange rate. Real farmgate prices declined from 1972 until the early 1980s and again between 1986 and 1991. In a reversal of policy, 1991 real farmgate prices were raised to about 60 percent of world prices (at the official rate). In 1991 the government allowed cooperative unions and licensed private export firms to compete in the export market with the Coffee Marketing Board (CMB). The regulatory activities of the CMB were separated from its commercial ones and the Coffee Marketing Board Limited (CMBL) now handles export marketing activities. The CMBL is principally a private company and, although all shares are currently owned by the government, the plan is to broaden ownership in the near future. Since March 1992, exporters are allowed to convert their export earnings at the rate provided by the bureaus. Farmgate prices are determined by market forces and export taxes[17] have been replaced with a 5 percent tax on the full realized price.

For cotton seed and lint, state marketing boards continue to have a monopoly in both the domestic and export markets. The Lint Marketing Board (LMB) is the sole buyer and exporter of cotton. Although procurement of seed cotton at the primary level has been liberalized, it is still dominated by primary societies and cooperative unions. Cooperative unions and the LMB have a monopsony in ginning and exporting, respectively, while farmgate prices are set by the government. Low prices in the past have reduced the attractiveness of cotton *vis-à-vis* food crops, which are substitutes in production. In 1990 the government allowed the conversion of export receipts at the market exchange rate. Farmers currently receive about 50 percent of the world price equivalent but payment delays continue to be a big problem.

Tea production is struggling to recover from the devastating effects of the 1979 and 1985 wars, when tea fields were abandoned and factories were destroyed. In an effort to revive the industry, the government has liberalized the export market by abolishing the export monopoly of the Uganda Tea Authority, allowing the conversion of export receipts at the market exchange rate and granting foreign exchange retention accounts for exporters. Tea estates (government and private) with factories can process and export tea freely. Small farmers and estates without factories deliver green leaf tea to the Uganda Tea Growers Corporation (UTGC) which has a monopsony power in green leaf collection and pays prices calculated on the basis of the production costs. Five out of eight factories of the UTGC, together with four factories belonging to government estates, have been rehabilitated under a World Bank project.

In US dollar value terms, simsim was the second largest export crop after coffee in 1991. Together, non traditional exports (simsim, horticultural commodities, maize, hides and skins) generated more foreign exchange than the combined exports of cotton, tea and tobacco. The market for non-traditional export crops is free of controls.

Bananas and plantains constitute 50 percent of all food crop tonnage and one-third of all cultivated land in food crops. Beans, millet, maize, cassava, groundnuts and sorghum are other important food crops. There are no marketing or pricing policies affecting food crops. The Produce Marketing Board competes with both private traders and cooperatives at all stages of the marketing process.

Sugar production collapsed from 154 000 tonnes in 1970 to 2 400 tonnes in 1980, mainly as a result of destroyed processing capacity. Since 1986, rehabilitation of sugar factories with donor support has been rapid. In 1991, the

[16] The share of coffee export taxes in total recurrent revenues was reduced from a high of 66 percent in 1985/86 to about 2 percent in 1991.

[17] The combination of an explicit export tax and margin determination at all levels resulted in a marginal tax rate of 100 percent, according to World Bank calculations.

government abolished the system of administered producer and consumer prices. Competition between farmers, factories, importers and sugar producers now determines prices at all levels of the marketing chain.

Agriculture's response to policy reform and rehabilitation

As a result of the increased security and the policy reforms and rehabilitation undertaken, the economy was characterized by impressive growth rates in the late 1980s and early 1990s. Agricultural GDP grew by 6.2 and 6.4 percent in 1987 and 1988, respectively, but growth declined to 3.5 percent in 1990, mainly because of a reduction in food production. Given the weight of the agricultural sector, aggregate GDP growth followed a similar pattern. Both total and agricultural GDP recovered from a very low base, however, with agricultural output only recently exceeding the levels reached in the late 1970s. The agricultural growth achieved after 1986 is largely a result of the improved security situation, the restoration of rural marketing systems, some improvements in transport and a more liberalized marketing system.

The recovery of the food subsector was the main factor behind agricultural recovery, given the importance of the sector in both area cultivated (over 90 percent) and total output (74 percent). Cereal production increased by more than one-third between 1985 and 1990, and the output of plantains by more than 20 percent. Increases in food output are mainly a result of increases in the area cultivated (abandoned lands were brought back into production), while yields have remained largely constant. Real prices of food have fluctuated widely, rising sharply during periods of upheaval (1979-80 and 1985-86). Excluding those years and 1989, real prices have remained roughly constant, as shifts in supply caused by non-price factors (security, marketing improvements, etc.) have been counterbalanced by increases in demand resulting from increases in population and incomes. Assuming that relative prices remain constant and that the food sector's needs have been met, growth in domestic food demand exceeding that of population growth will depend on the growth of incomes in non-food sectors.[18]

GDP for the livestock subsector registered an average annual growth of about 5 percent between 1986 and 1990, significantly higher than the 1 percent annual growth rate of the previous two decades. The strong recovery of the dairy industry (with the reopening of processing plants and the resumption of formalized milk collection) was the major factor behind this recovery.

Coffee production, on the other hand, has registered no net growth, and output fell in 1990 in the wake of low world prices. Although world prices have been falling, farmgate prices have been falling even faster, as margins between export and farmgate prices were increasing. This resulted in neglect and premature ageing of robusta trees which, in turn, caused declines in yields and a deterioration in quality.

Cotton production has been increasing continuously, rising from 10 370 bales in 1987/88 to an estimated 70 000 to 80 000 bales in 1991/92. The increase is mainly a result of the Emergency Cotton Production Programme as well as improved pricing incentives with the possibility of conversion of export receipts at the market rate. Price incentives are still below potential as the farmgate price remains about 50 percent of the international price.

Tea is recovering from the collapse in production caused by the war in 1979. Increased incentives such as 100 percent retention rights for export proceeds and the rehabilitation of tea plants and factories has contributed to the recovery in black tea output from 1 700 tonnes in 1981 to 6 800 tonnes in 1990.

Sugar production has made a slow recovery, following the rehabilitation of sugar factories and price decontrols. Total output is still only a fraction of what it was in 1970. Tobacco production increased strongly from 940 tonnes in 1987 to more than 4 000 tonnes in 1990.

Growth prospects, constraints and policy issues for the 1990s

With some of the best natural resources in sub-Saharan Africa, Uganda has a great potential for expanding agricultural production. Agriculture has responded positively to the restoration of peace and security as well as to the market-oriented policy reforms effected since 1986. Agricultural growth, however, has been unbalanced, with a rapid increase in food

[18] The International Food Policy Research Institute (IFPRI) has estimated the income elasticity of food demand to be between 0.95 and 1.05. The figures are reported in the 1992 World Bank document, *Uganda: Agricultural Sector Memorandum.*

crop production leading the recovery of the whole sector (and, to a certain extent, the whole economy) but less or no growth in export and import-substituting crops such as sugar.

Further expansion of food crop growth will be determined by the growth in incomes from non-food sectors and by population increases. As a large part of the population produces its own food, national markets for food are thin and unlikely to expand unless cash incomes of the rural (and urban) populations increase. It is doubtful that the food sector can itself become the source of increased smallholder and sectoral incomes. Although possibilities do exist for expansion of some food crops to regional markets (mainly maize), the geographical location of Uganda does not leave much room for large-scale expansion of exports — mainly because of the high transport costs relative to the value of food. In addition, regional market demand is unstable and depends on local weather conditions.

The first signs of food market saturation appeared in the early 1990s when continuous increases in food production led to declines in real prices, as the growth in demand was unable to absorb continuous increases in production.

The revival of the export crop sector will be necessary to increase the cash incomes of rural populations, generate foreign exchange and continue the growth of the agricultural economy. Given the depressed world prices for traditional export commodities, increases in productivity will be critical for increasing market share and export earnings. A common constraint to coffee and cotton are depressed world prices and slim prospects for a major, sustained world price recovery. Nevertheless, both crops have a lot to gain from productivity increases. Coffee yields are 60 percent to 75 percent below potential. Improvements in agronomic research and extension services as well as in nursery management are necessary if yields are to be increased.

A major requirement for accelerating the growth of export crop production is sustained improvement in the *macro-economic environment*. The liberalization of the *exchange market* will go a long way towards improving export production incentives. A pragmatic monetary policy will be crucial in containing inflation and maintaining a competitive real exchange rate. Indeed, in 1992, a reduction in revenues that was not matched by reductions in expenditure caused a sharp increase in the budget deficit and the resurgence of inflation.

Reform of the civil service is of paramount importance for the implementation of policy reforms. Salaries of public sector employees, even at high grades, are only a fraction of the "minimum living wage" calculated by the government, and this results in low productivity within the civil service. A programme of civil service reform is currently being studied and is

BOX 2

Lake Victoria fisheries

It is not by accident that some people in the Tanzanian interior call the Nile perch of Lake Victoria *imcombozi*, the Kishwahili word for saviour. Its introduction to the lake in the late 1950s and early 1960s had a significant impact on the diets of the surrounding countries (Kenya, the United Republic of Tanzania, Uganda) and, to a lesser extent, on their foreign exchange earnings.

Currently, Lake Victoria fisheries provide an important supply of fish for local consumption and supply filleting and freezing plants for export. In addition to Nile perch, Nile tilapia is also in high demand, while the indigenous *Haplochromis* and the small pelagic *Rastrenobola* species are less so.

The present catch from Lake Victoria is estimated to be 500 000 tonnes, with 120 000 tonnes from Uganda, 186 000 tonnes from Kenya and 205 000 tonnes from the United Republic of Tanzania. Of the total catch, about 300 000 tonnes is Nile perch and 150 000 tonnes is *Rastrenobola*. The overall value of the catch is estimated to be around $100 million.

There is evidence that a large amount of unrecorded cross-border trade is taking place. Tanzanian fishermen, unable to transport fish to the country's interior because of the bad condition of the roads, especially during the rainy season, export their fish to Kenya where they also buy their fishing supplies.

to be implemented with assistance from the donors.

The lack of a *rural credit system* is a major constraint to the expansion of most agricultural activities. Social disruption, high inflation and poor economic performances resulted in a withdrawal of commercial financial institutions (mainly foreign banks) from rural areas. Government-owned banks became practically insolvent by the end of the 1980s. Although large sums of credit are made available for trading operations within the cooperative system (crop finance), no formal rural credit system exists to provide production finance to smallholders apart from occasional lines of credit provided by donors. Such schemes have run into difficulties, mainly because of the insolvency of the executing institutions, which are now being restructured with donor support.

The *rehabilitation of the national research and extension systems* and strengthening of the links between them is a prerequisite for increasing yields. The government has prepared action plans for the reorganization and development of its research and extension services under a common umbrella organization (the National Research Organization). The plan is now being carried out with donor assistance.

For cotton, the government has expressed its willingness to reform the marketing system in order to increase participation of the private sector in ginning and export operations. This will probably improve the level and timing of farmgate prices. The reintroduction of ox-drawn ploughs in cotton cultivation is considered a crucial step towards increasing productivity. Cattle rustling and a lack of credit have seriously reduced the use of oxen. The rehabilitation of ginneries, the purification and reissue of seeds and improvements in seed distribution are some of the problems currently being addressed by the government, with donor support.

For tea output and exports to grow at the rate required, a major restructuring of the industry is needed, including: improving leaf collection and extension services for smallholders; restructuring or privatizing inefficient and insolvent parastatal tea factories; resolving the ownership of expropriated tea estates; and improving tea roads, many of which are currently impassable.

In addition to the former established export crops, fish products, beans, lentils, edible oils and hides and skins also have export potential, as do a range of high-value and non-perishable commodities such as cardamom, cashewnuts, vanilla and black pepper. Uganda has the opportunity to develop new exports that were not traded in the past, including sunflower, pineapples and passionfruit.

Aided by Uganda's naturally fertile soils, households were able to survive the social upheaval of the war by stepping up their small-scale food output and minimizing their reliance on the disrupted transport and marketing

---

There are three freezing and filleting plants in the United Republic of Tanzania, 20 in Kenya and seven in Uganda. According to the records of the respective national fishery departments, Kenya exported 6 479 tonnes of Nile perch in 1990, valued at $11 million, while Uganda exported 697 tonnes for $1.8 million in the same year.

It is estimated that the number of fishermen around the lake increased from 52 800 in 1975 to 105 500 in 1989. As a result of the increased catch, especially of Nile perch, the catch per canoe has increased from 7.91 tonnes to 23.06 tonnes per annum. Fishing provides the livelihood for an estimated 1.26 million people. Thus, recorded exports and catch may deviate significantly from actual figures.

Lake Victoria presents an interesting case of conflict between socio-economic and environmental objectives. The paramount importance of Nile perch in the three countries' national diets is undeniable. In the United Republic of Tanzania and Uganda, more than 50 percent of animal protein is derived from fish. The importance of Nile perch as a protein source has been more pronounced in Uganda where the livestock sector was destroyed by civil war. On the other hand, the introduction of Nile perch has contributed to the elimination of a large number of species of smaller fish that existed beforehand. FAO has estimated that 200 species out of the 300 that existed prior to the introduction of Nile perch have disappeared or are threatened by extinction.

systems. In 1985, severe and moderate protein-calorie malnutrition only affected approximately 1 and 5 percent, respectively, of the population under five years of age. Malnutrition is most commonly the result of the low energy density and low protein content of weaning diets based on plantains, bananas and cassava. The other major cause is the deterioration of basic health services and the increased incidence of infectious diseases such as measles, malaria and gastro-enteritis.

Despite the progress made in rebuilding the shattered agricultural economy, the task facing the Government and people of Uganda remains daunting. However, the determination of the government to tackle the task through positive growth-oriented policies means there is a real chance that, after two wasted decades, the Ugandan economy may grow at a sufficient pace not only to offset the increase in population but also to lead to positive growth in per caput income.

ASIA AND THE PACIFIC

Regional overview

The Asia and Pacific region was affected less by the stagnation of the world economy and the adverse impacts of the Persian Gulf conflict than other developing regions. The Asian Development Bank (AsDB) estimates that the region's average economic growth rate in 1991 was 5.8 percent, down only slightly from the 1990 rate of 6.2 percent. While the impact of the world recession varied among individual countries, two developments help explain the general resilience of Asian economies to external shocks.

First, domestic demand has become more important than exports as the primary source of growth in much of the region. Rising personal and business incomes are resulting in higher domestic consumption and investment in manufacturing and construction. At the same time, governments are expanding expenditures on economic infrastructure to ease transport and communication bottlenecks. In 1991 this growth in consumption and investment led to a slight rise in the region's investment ratio and a slight decline in its savings ratio.

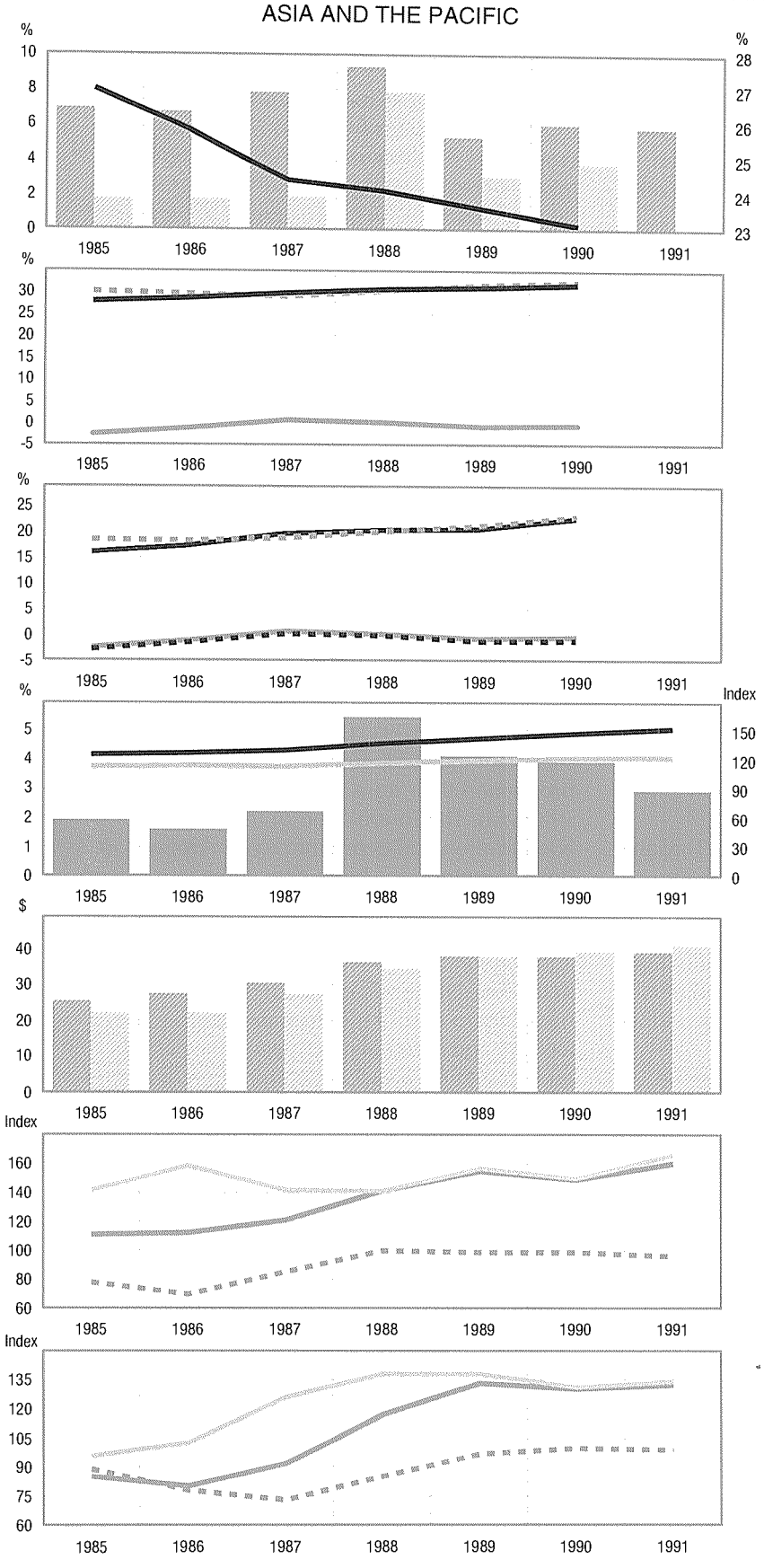
Second, Asian countries are diversifying their export markets. In contrast to the situation in 1981 and 1982, when the region's exports were adversely affected by recession in the developed countries, in 1991 Asian exports increased by 14 percent (nearly five times the growth in world trade). This was largely because intraregional trade is expanding faster than total trade at present. High income growth in most of the region, a shifting comparative advantage (especially in labour costs) and currency realignments after the 1985 Plaza Accord are the three major influences behind the continuing intraregional trade growth.

According to the AsDB, short-term prospects for the region remain promising. The projected improvement of the world economy towards the end of 1992 and 1993 should provide an even more favourable trade and investment environment for Asian countries. Assuming that domestic demand and intraregional trade continue to improve, the annual average growth rate is projected to increase to 6.5 percent in 1992 and 6.7 percent in 1993. Rapid growth could be constrained, however, by infrastructural bottlenecks, environmental concerns and labour shortages.

Following are some individual country experiences in 1991:

Figure 14

ASIA AND THE PACIFIC



TOTAL AND AGRICULTURAL GDP GROWTH

- Total GDP
- Agricultural GDP
- Agricultural GDP as % of total GDP (right scale)

SAVING AND INVESTMENT
(Share of GDP)

- Gross domestic investment
- Gross domestic savings
- Saving-investment balance (GDS-GDI)

TRADE AND CURRENT ACCOUNTS
(Share of GDP)

- Total imports
- Total exports
- Trade balance
- Current accounts

AGRICULTURAL AND PER CAPUT FOOD PRODUCTION

- Agricultural production growth (%)
- Agricultural production index (1979-81 = 100)
- Per caput food production index (1979-81 = 100)

AGRICULTURAL TRADE
(Billion US$)

- Exports
- Imports

AGRICULTURAL EXPORTS
(Index: 1979-81 = 100)

- Value
- Unit value
- Quantity

AGRICULTURAL IMPORTS
(Index: 1979-81 = 100)

- Value
- Unit value
- Quantity

Source: FAO, World Bank and IMF

- In China, a recovery in industrial production and strong export growth contributed to the 7 percent growth rate in GNP. Agricultural growth, however, fell to 3 percent from 7.6 percent in 1990. Total grain output was 2.5 percent lower than the previous year, in large part because of summer floods. Cotton production increased by 10 percent, and production of sugar, tobacco, livestock and aquaculture all improved.
- The agricultural sector still accounts for more than 65 percent of India's employment and 30 percent of its GDP. In 1991, agricultural GDP stagnated. A lack of rain in some grain-producing areas and excessive rain in southern regions contributed to this flat performance. Overall, GDP grew by only 2 percent as industrial production slowed as a result of import restrictions and tighter credit regulations, among other reasons.
- The other countries where agricultural growth stagnated were Viet Nam, Malaysia, Sri Lanka and the Philippines. In Laos, poor weather caused a 17 percent drop in rice production, resulting in a 2.5 percent reduction in agricultural GDP. Mongolia also registered a 4.5 percent decline in agricultural production because of poor harvests, a shortage of inputs and uncertainty about price liberalization and procurement policies.
- The growth in agricultural GDP for Thailand, Myanmar and Nepal was 3 percent. The Asian country with the strongest agricultural GDP growth, however, was Pakistan, with a rate of 5.1 percent. In Pakistan, production increased for cotton, sugar cane and rice, reflecting good weather, higher procurement prices and ample water supplies.
- The Pacific Island economies performed well, with a 6.1 percent average growth rate. Papua New Guinea's agricultural sector grew by 3.4 percent; the Solomon Islands' by 4 percent and Tonga's by 7.4 percent. In Tonga, squash and vanilla production for export accounted for most of the increase in agricultural growth. In Vanuatu, the agricultural GDP decline of 1.3 percent is attributed to lower procurement and export prices for copra.

Current policy issues

Trade and trade policy. Growing external economic linkages and relationships have created greater interdependence and continue to influence the economic performance in the Asia region. Trade and trade policy issues have become crucially important, especially in members of the Association of Southeast Asian Nations (ASEAN). The outcome of the Uruguay Round of MTNs, the recent initiatives towards the formation of a single European market and the possible expansion of the North American Free Trade Agreement (NAFTA) are therefore being followed with considerable interest. A rapid and successful conclusion of the Uruguay Round, ensuring a freer flow of raw materials, finished products, capital and technical expertise, together with continued regional cooperation in trade, investment and technology transfer, are seen as key factors for a high and sustained rate of economic growth in the future. The drift towards trade blocks and closed regionalism in other parts of the world has stimulated interest in the potential benefits of closer regional cooperation and integration, as indicated by the recently proposed initiative to create the ASEAN Free Trade Area (AFTA) within 15 years.

Transition from centrally planned to market-oriented economies. The economic liberalization of the centrally planned economies (CPEs) within the region gained considerable momentum in 1991. China, Laos, Mongolia and Viet Nam initiated, quickened and/or broadened their transition to market-oriented strategies. The formulation of market liberalization and economic reform policies in these countries has been difficult because there is no historical precedence for the process and constraints are difficult to anticipate. The timing and sequencing of reform measures are crucial in the face of resource constraints and the necessity to ensure a reasonable degree of internal and external macro-economic stability and growth for a successful transition. Given that the countries concerned have followed different strategies and are in different stages of transition, the sharing of experiences and lessons learned can be very useful in this regard. Such experiences will be valuable also to the new central Asian states (Kazakhstan, Kyrgyzstan, Tazikistan, Turkmenistan and Uzbekistan) and to Cambodia and Afghanistan, once they are ready to initiate economic transition.

Structural adjustment measures. In the market-oriented economies, various structural adjustment policies are being implemented to remove price distortions caused by inefficient and unsustainable subsidies and protection and to open up the economy to external

competition. Policy reforms aim at a much greater reliance on the market forces, with minimum market interventions to promote efficient resource allocation. This implies eliminating most subsidies, dismantling most trade and investment restrictions and protection, liberalizing foreign exchange and interest rate regimes and increasing the private sector's role in economic activities. Over the past decade, there has been an increasing convergence within the macro-economic policy framework of the countries in the region.

Poverty alleviation. Despite substantial economic growth, particularly in East and Southeast Asia and China, per caput income remains low throughout the region. With approximately 800 million people living in poverty and about 500 million in extreme forms of absolute poverty, poverty alleviation remains the main development challenge in many developing Asian countries.

The alleviation of poverty has been one of the core elements of national development efforts of the countries in the region. While intercountry comparisons are difficult because of differences in methods of measurement and data reliability, it is clear that achievements and experience of past efforts in poverty alleviation differ across the countries concerned. For example, studies show that, although both the Republic of Korea and Thailand achieved remarkable rates of economic growth, the proportion of population living in absolute poverty was drastically reduced in the former but not in the latter. In the Philippines, the proportion of the rural poor declined but their absolute number increased. Income distribution worsened in Pakistan and Thailand.

The nature and degree of poverty as well as the means chosen to tackle them differ widely among countries. The problem is particularly serious for the low-income countries in South Asia and the Pacific Islands where growth performance has been lagging. While country-specific policies differ, however, three broad strategies are followed in common: *i)* growth-oriented programmes; *ii)* investment in social sectors; and *iii)* target group-oriented employment and income generation programmes. With the general accent on economic growth, more attention is now being paid to decentralized development and concern is being shown for a regional balance in public investment in infrastructure, education, health and population planning as well as direct support measures for target groups.

This year's regional review of Asia and the Pacific examines how Indonesia and the Philippines are addressing poverty and rural development issues.

Indonesia

In the early 1980s, agricultural policy-makers in Indonesia faced a number of difficult problems. First, poverty was heavily concentrated in agriculture. Around 55 million Indonesians lived in absolute poverty and 75 percent of households in this category depended on agriculture for jobs, income and food. Second, rice yields were among the lowest in Asia. Even though rice production accounted for 70 percent of the food crop area and 40 percent of agricultural employment, Indonesia still imported more rice than any other country in the world between 1976 and 1980.

The country's overall socio-economic structure presented a third set of problems. Over 60 percent of the total population (186 million — the world's fourth largest at present) was concentrated on just 7 percent of Indonesia's total land area. Two islands, Java and Sumatra, accounted for more than 80 percent of total food production, with Java contributing 60 percent of rice output and 70 percent of maize and soybean output. Finally, most farms in Indonesia are very small, even by Asian standards. For example, only 2 percent of the farms in Java are more than 2 ha in size and an estimated 18 million farm households have access to less than 1 ha of land.

In an attempt to resolve these problems, the Indonesian Government designed and implemented agricultural programmes and economic policies aimed at improving rural incomes, increasing agricultural exports and, most important, making the country self-sufficient in rice.

The results have been impressive. From the world's largest rice importer, Indonesia evolved into a self-sufficient rice producer by 1984 and a net exporter by 1985. Since then, the country has depended on imports only once, between late 1991 and early 1992, when it imported some 700 000 tonnes after a prolonged drought.

While rice received most of the policy attention and financial resources, the entire agricultural sector performed well during the 1980s. Agricultural GDP increased by 4 percent per year and the sector accounted for more than half the total number of jobs created since 1980, which amounted to about 1.3 million jobs

each year. Export crops, livestock production and fisheries all recorded strong performances, growing by at least 4 percent per year. Forestry was the only subsector to decline, which was mostly the result of a ban on log exports in the aim of protecting forest land and increasing value added in the sector. Exports of wood products increased from $1 billion in 1985 to $3.4 billion in 1990.

Moreover, growth in agricultural output rose at a faster rate than employment. This productivity increase contributed to higher real incomes in rural areas and significant improvements in nutrition levels, mortality rates and rural services. The country's poverty rate has dropped to around 15 percent, reducing the numbers of rural poor by more than 20 million since 1980.

This strong performance by the agricultural sector can be attributed to three basic sets of government policies: *i)* structural adjustment policies aimed at stabilizing the domestic economy; *ii)* export-oriented trade policy reforms intended to reduce the economy's dependency on oil; and *iii)* pro-equity agricultural policies focused on smallholders, with rice self-sufficiency as the foremost objective.

While these policies and programmes have been highly successful, Indonesia's economic success is also due, in no small part, to an abundant natural resource base. Oil, natural gas, coal, tin, nickel and gold are all found in substantial amounts, along with one of the world's richest tropical commercial forests. With over 13 000 islands, the country's marine area is six times larger than its land area. Together, renewable and exhaustible primary resources contribute to 40 percent of GDP. Primary sector exports account for 70 percent of total exports, with agriculture contributing about 50 percent of non-oil exports.

Policy reform and the recent economic performance

In the early 1980s, Indonesia faced a series of severe external shocks. The most critical was the 60 percent drop in real oil prices between 1982 and 1986. Oil was the backbone of the economy, providing 80 percent of export earnings and 70 percent of government budget revenues. Two additional external events further hampered the country's development efforts — the worldwide recession in 1981 and 1982 and the depreciation of the US dollar after 1985. First, worldwide demand for Indonesia's primary commodities diminished; next, commodity prices started to fall. This situation led to a growing need for external borrowing as well as to increased debt servicing requirements, thereby making the adjustment process even more difficult. The impact from these external shocks on the terms of trade is estimated to have resulted in an average annual income loss comparable to approximately 10 percent of Indonesia's GNP between 1983 and 1988.

In order to manage these unsettling circumstances, beginning in 1983 the government introduced a series of policy reforms. The initial strategy focused on fiscal and financial reforms to restrain demand, contain inflation, prevent capital flight, mobilize domestic resources and improve the efficiency of financial resource use.

In an effort to restore financial stability, policy-makers reduced public expenditures, deregulated domestic interest rates and increased the flexibility of monetary management. For instance, eliminating and delaying public projects helped to reduce government investment by 30 percent in real terms during the last half of the 1980s. The public budget deficit declined from 5 percent of GDP in 1983 to 3 percent in 1989. Other policy examples included: placing strict limits on non-concessional borrowing; reforming the tax system; restraining civil service employment and salaries (including a salary freeze between 1985 and 1988); and replacing credit ceilings with a system for managing bank monetary reserves.

To promote and sustain long-term growth, a second set of policy reforms focused on reducing Indonesia's dependency on oil. Currency devaluations in 1983 and 1986 resulted in a real effective exchange rate depreciation of 55 percent throughout 1990. A succession of trade policy reforms improved the country's international competitiveness and allowed exporters access to imported inputs at world prices. Examples of trade reforms included: an across-the-board reduction in nominal tariffs in 1985, 1990 and again in 1991; the removal of many import licensing restrictions; an easing of regulatory restrictions on exporters; the reorganization and deregulation of maritime activities, customs, ports and shipping operations to reduce freight costs and cut procedural time; and the relaxation of foreign investment regulations.

While policy reforms and economic adjustments are still under way, Indonesia has experienced an unprecedented surge in

investment, private consumption, economic growth and non-oil exports in recent years. Real GDP growth averaged 7 percent per year during 1989-91, compared with an average of 3.7 percent during 1982-87. Gross domestic investment and gross domestic savings reached 35 and 37 percent of GDP, respectively, in 1991. The country's debt-service ratio fell from 41 percent in 1988 to 28 percent in 1991. Non-oil exports have grown by 20 percent per year during the past five years and the current account deficit fell from 8 percent of GNP in 1982 to 2.5 percent in 1990.

At the same time, economic success has created a second generation of problems. For instance, the rapidly growing economy is outpacing the capacity of its infrastructure, thereby generating high inflation and interest rates and placing new pressures on the financial system.

In addition, deregulation and policy reforms have left some sectors untouched. Non-tariff barriers and complex, non-transparent regulatory procedures are common in the non-traded sector; for instance, public sector procurements and concessionary rights to natural resources such as tropical timber. Domestic markets and international trade in many agricultural products are still regulated.

Agricultural policy reforms and issues

Indonesia's predominant agricultural strategy over the past decade focused on rice self-sufficiency. To achieve this condition, the government established public investment programmes, import restrictions, procurement policies and price controls (see Box 3). Rice intensification projects provided irrigation, fertilizer, pesticides, HYV seeds, credit, extension, technical assistance and related capital improvements. Irrigation alone is credited with contributing to around 50 percent of the growth in rice production through increased yields over the past 15 years. Rice intensification projects introduced HYV technology to an additional 3.5 million ha, substantially increasing yields, production and incomes for some six million farmers. In total, the rice area under HYVs has increased by 75 percent since the late 1970s.

Subsidized inputs and credit, expanded marketing channels and extension services contributed to sharp increases in fertilizer and pesticide use. Fertilizer subsidies kept the retail price 40 percent below its economic value and helped keep Indonesian farmgate prices among the lowest in Asia during the 1980s. Fertilizer applications increased by 500 percent in many areas, with application rates more than twice those in the Philippines and three times those in Thailand.

Subsidy programmes maintained a prominent role throughout the 1980s. By 1987, the fertilizer subsidy alone consumed 35 percent of the government's expenditure on agriculture. The irrigation subsidy cost about $110 per hectare. Together, rice-related subsidies for fertilizers, pesticides, HYV seeds, credit and irrigation amounted to more than $1 billion per year in the late 1980s.

The rice self-sufficiency programmes were not cheap but they were successful. Rice production grew by 6 percent per year during the 1980s. Per caput production increased from 125 to 165 kg and yields are now among the highest in Asia. Today, rice production represents 25 percent of agricultural GDP and 60 percent of the harvested area of food crops. Most importantly for the rural poor, the same policies that led to rice self-sufficiency also reduced poverty dramatically. During the past decade, profitability increased by two-thirds and real incomes doubled for rice farmers. The rural landless also benefited. Even though the farmers' terms of trade steadily improved, real wages for ploughing, hoeing and weeding activities increased consistently.

Once the country became self-sufficient in rice, the primary agricultural policy focus turned towards resource efficiency issues, environmental problems and long-term productivity questions. Policy-makers began considering the economic and ecological importance of agricultural diversification as well as sustainability issues, for a number of reasons. The limits to rice production in Indonesia were being recognized, if not realized; consumption patterns began to change as incomes increased, putting new pressure on livestock, feed grains and related trade and domestic policies; the need to improve export crop performance coincided with the need to develop the economic potential of the outer islands; and two kinds of natural resource degradation and inefficiency began to attract the attention of policy-makers: *i)* pesticide, fertilizer and water mismanagement associated with subsidies; and *ii)* broader sustainability issues related to watershed management, forestry resources and marine and coastal degradation.

Recent policy reforms reflect this new focus. The government phased out pesticide subsidies

in 1989. Indonesia's highly successful integrated pest management (IPM) programme provided farmers with innovative technology aimed at minimizing pesticide and fertilizer use. The majority of the participating rice farmers reduced pesticide and fertilizer use, while maintaining yields. By substituting labour and new techniques for cash inputs, net returns often increased. Most credit subsidies ended in 1990 and a three-year process of eliminating all fertilizer subsidies began in 1991. Cost recovery mechanisms for water delivery are planned for the future.

Recently, the government initiated other new policy approaches to relieve demand pressure on rice. First, market incentives and development programmes are being strengthened to increase production and lower consumer prices of secondary food crops (maize, cassava, sweet potatoes and soybeans) to enable lower income groups to substitute rice with these foods. The government is also permitting more wheat imports and encouraging poultry and aquaculture operations to take advantage of the changing expenditure patterns of the rising income groups.

At present, a great deal of agricultural policy attention is focusing on export crops in general and smallholder tree crop production in particular. Tree crop exports account for 20 percent of non-oil export earnings and food exports have more than doubled in value over the past ten years, with vegetables, vegetable oils, fish and shrimp accounting for most of the increased earnings.

An estimated 11 million to 12 million smallholders cultivate at least one tree crop. Except for palm oil and kernal production, export crop production is dominated by small-scale producers (with less than 3 ha): 98 percent in the case of coconut production, 95 percent for coffee and 85 percent for rubber. Smallholder yields are much lower than those of large plantations and government estates. The lack of research and extension for traditional varieties and practices has resulted in stagnating smallholder yields over the past decade. For instance, for rubber, average yields are twice as high on the large estates, while for oil-palm, cocoa and tea they are more than three times as high. The opportunity for expanding export earnings, improving incomes and increasing employment on the outer islands is the reason why tree crops are attracting even more public investment in infrastructure, research, extension and related services.

Emerging policy issues

Indonesia's rapid economic growth is forcing new changes in the agricultural structure as a result of increasing intersectoral competition for water, land, labour and capital. For example, industrial plants, housing and urban residents are all competing with agriculture for irrigation water and prime crop land. In areas surrounding urban centres, land has a higher value, creates more jobs and income and generates more value added in non-farm uses. Nor is agriculture able to compete with the rapidly emerging manufacturing sector for private investment funds, since returns in manufacturing are greater and involve less risk. The evolving tendency is for both public and private investors to ignore agriculture over time.

The water supply is projected to fall 15 percent short of demand over the next decade. Most of this shortage could be alleviated by ensuring more efficient water use in irrigated areas (the government still provides water virtually free). Even so, the economic return for an additional unit of water used for industrial purposes is often much greater than the same unit used to irrigate rice or vegetables.

More and more rural men are migrating to towns and cities for jobs, increasing the role of women in all phases of agricultural production. This trend, which has accelerated in other industrializing Asian countries during the late 1980s, has important policy implications for research and extension.

Natural resource degradation is an increasingly troublesome problem in Indonesia, since the country depends heavily on its natural resources for economic development. Soil erosion, degradation and shortages of water, deforestation, overfishing, overgrazing and overlogging are frustrating development efforts. Costs of soil erosion in Java are estimated to be around $400 million per year, including both on-site and off-site costs. Rivers, streams and irrigation canals are silted; low-lying areas are flooded; coastal fisheries are damaged; and fertilizer and pesticide runoff is polluting domestic and industrial water supplies.

A recent FAO study estimates that up to 40 percent of the standing forest stock is damaged in logging operations. The same study suggests that deforestation has a strong positive correlation with population density and a negative correlation with agricultural productivity and growth of real income. To date, only regulatory policies, in the form of bans on certain pesticides and resource extraction

licences for forest products, have been widely used. Other policy options under discussion include targeting or removing subsidies; auctioning marketable permits; introducing natural resource taxes; establishing a system of property rights that covers forest and marine resources; and introducing water charges.

Fisheries is an increasingly important subsector in Indonesia. The country is among the top ten largest fish producers and had an output of 3 million tonnes in 1990. Over three million people are employed in fish capture, culture, processing, retailing and ship building.

Recognizing the further potential of the fisheries sector for creating jobs, food and foreign exchange, the government is addressing a number of difficult issues. Among these are the concentration of fishing activities around Java and the lack of investment in the western oceans; the low productivity and large numbers of small-scale fisheries located in poor coastal communities; the deterioration of coastal

BOX 3

Rice price stabilization in the Philippines and Indonesia

Rice is the most important agricultural crop and the main food staple in the Philippines and Indonesia. In both countries, government policies have pursued the long-standing policy of rice self-sufficiency while balancing the often conflicting interests of consumers and producers through price stabilization programmes. The National Food Authority (NFA) in the Philippines and the Bureau of Logistics (BULOG) in Indonesia are the agencies responsible for stabilizing rice prices. The NFA evolved from the National Grains Authority (NGA) which began operations in 1972. Other government agencies with similar functions preceded the NGA; for example, the Rice and Corn Administration and the National Rice and Corn Corporation. The Indonesian Government established BULOG in 1969 but former agencies dealing with price stabilization date back to 1939.

One important objective of rice price stabilization programmes is to shield domestic consumers from the high range of fluctuating prices. Low-income rice consumers are particularly vulnerable to wide-ranging seasonal price variations because the poor spend such a large share of their total budget on rice.

Low-income families are less able to smooth out consumption across crop seasons. A low rice price in one year does not compensate for a high price during the previous year for the poorest consumers, especially if the high price results in malnutrition.

In theory, stable rice prices also offer potential benefits to producers. A guaranteed farmgate price can reduce risk and uncertainty, encourage on-farm investment and help support farm incomes for the poorest farmers.

In the Philippines, the NFA attempts to provide benefits to rice consumers and producers in three ways: *i)* a de facto import monopoly and control over exports to insulate domestic prices from world prices (private trade is subject to a 50 percent tariff); *ii)* a domestic procurement price to support farmgate prices and a market release price to stabilize consumer prices; *iii)* ceiling prices and anti-trading regulations to control millers and traders.

In practice, the NFA has not been fully effective in controlling producer and consumer prices, for a number of reasons.[1] First, insufficient funding has constrained its capacity to influence farmgate prices. The amount and timeliness of funding determine when the NFA enters the rice market. Before initiating purchases, the NFA must receive funding authorization from the legislature, a process which tends to

[1] D. Dawe and C. P. Timmer. 1991. *Rice price stabilization programmes: the case of the Philippines and Indonesia.* (unpubl.)

resources, including mangroves, reefs and water; and the need for better defined fishing rights.

Indonesia's accomplishments in poverty reduction and agricultural development represent some important examples for other developing countries. At the same time, policy-makers still face a number of serious challenges in the 1990s: for example, environmental degradation from irrigation systems; agricultural pollution caused by intensive input use; serious watershed management problems on Java; extensive mangrove destruction and related coastal degradation; and further deforestation on the outer islands.

The Philippines

One of the most perplexing questions facing policy analysts in the Philippines is why economic development in this country is lagging further and further behind the other ASEAN countries. During the 1980s, the growth rates of

vary from year to year. Second, storage facilities are concentrated in just a few major surplus areas (the Cagayan valley, central Luzon and Iloilo).

The NFA also receives a procurement target each year which is expressed as a percentage of total domestic production. Because of its limited capacity to purchase, transport and store rice, the NFA can not always accept all the rice that is offered. The Authority's influence outside these surplus areas is limited and prices consequently adjust to local supply and demand conditions.

In Indonesia, BULOG has been able to defend the stated farmgate price regardless of the quantitative interventions required. The agency does not depend on an annual government budget allocation. Instead, it maintains a permanent line of credit to finance rice purchases, storage, transport and even administrative costs. Rice sales generate sufficient revenue to repay the loans.

BULOG intervenes in the rice market through an import monopoly, procurement policies and price controls. Imported and purchased rice is either released to budget groups (e.g. the military), sold through market operations to defend the ceiling price, or placed in stocks to defend the floor price. Rice is purchased and sold through village-level cooperatives (KUDs) located throughout the country.

BULOG has established the capacity and a reputation for defending floor and ceiling prices regardless of the quantities or the cost involved. Funding flexibility is one important feature that allows BULOG to operate effectively. The NFA does not have similar funding support nor a flexible funding system. In the Philippines, private traders merely wait until after the NFA has exhausted its limited funds, then enter the market to buy and sell at prices that are unconnected to the floor and ceiling prices.

Moreover, BULOG announces floor prices every year in October for the main harvest in May, allowing producers sufficient time to make investment and planting decisions. In the Philippines, the announcement date of floor prices varies from year to year. In addition, the announcement is often made just a few months before harvest, not allowing producers a reasonable amount of time to influence investment decisions. For example, in 1990, floor prices were announced just two months before harvest.

Almost all Asian countries stabilize domestic rice prices. And rice price stabilization programmes offer important potential benefits: an economic cushion for the poor and a guaranteed price for the producer. Stabilization programmes substitute for a welfare structure in countries where it is impossible to set up a social security system. The two country examples outlined above suggest that financial flexibility, a timely entry into the rice market and concentration on price signals instead of quantity targets are important elements in a successful stabilization programme.

overall GDP and agricultural GDP averaged less than 1 percent per year. In 1991, despite the fact that the agricultural sector performed best, it grew by only 0.7 percent. Economic growth was slightly negative for the overall economy — the industrial sector shrank by almost 3 percent, GNP per caput fell by 4 percent and the inflation rate was 18 percent. To make matters worse, a series of natural calamities (a major earthquake, the Mount Pinatubo eruption and a devastating typhoon) plagued the country throughout the year. Ash fall from Mount Pinatubo destroyed more than 100 000 ha of rice.

The Philippines did experience rapid growth — about 5 percent per year — during both the 1960s and 1970s. In fact, the Philippines' average annual growth rate paralleled that of Thailand, Malaysia and Indonesia until 1980. But unlike in these other Southeast Asian countries, as the Philippine economy grew, unemployment expanded while the incidence of rural poverty remained persistently high and income distribution actually worsened.

At present, more than one-half of all Philippine families are classified as poor and about 70 percent of these families live in rural areas (the 1992 population was calculated to be about 66 million). Two-thirds of all farm families are considered poor. Among the poorest groups are rice, maize and coconut farmers as well as landless wage labourers in sugar cane, rice, maize, coconut and forestry activities. Rice producers account for one-fourth of the overall agricultural population living in poverty.

The consensus explanation for this disappointing development experience is that external shocks contributed greatly to the economic stagnation during the 1980s while internal demand and supply limitations restricted a broad-based growth. In the early 1980s the world recession, combined with high interest rates on foreign loans, initiated a turning point for the Philippine economy. The debt service-to-exports ratio increased from 26 percent in 1980 to 43 percent in 1981 and servicing foreign debt became one of the country's most difficult problems.

The structure of the agricultural economy compounded the effects of the external shocks. Even during the 1970s, however, growth had not been spread broadly, primarily because of the highly skewed distribution of agricultural landholdings and income. The Philippines has one of the highest concentrations of large landholdings in Asia. Approximately 70 percent of the farms are less than 3 ha and account for less than one-third of all farmland while less than 4 percent of the farms occupy over one-fourth of the land.

Moreover, most of these small farms are located beyond irrigation systems or in unfavourable areas such as upper watersheds. The lack of access to land and population pressure are forcing more families to clear forest lands in remote upland areas which are characterized by low productivity because of poor-quality soils and steep slopes. The predominantly subsistence agricultural practices carried out are inappropriate for the steep slopes and result in soil erosion and the siltation of streams and rivers. Families in this situation make up one of the fastest-growing and lowest-income groups in the Philippines. More than one-third of the agricultural population now lives in upper watersheds.

A long period of economic policies that discriminated against agriculture has exacerbated income distribution and poverty problems. Trade, exchange rate, fiscal and price policies all promoted an industrialization-led development strategy and contributed to poverty in a number of ways. For instance, the relative price structure allocated too many resources to the manufacturing sector while creating few jobs. The negative real interest rates and rationed credit programmes led to investment decisions favouring capital-intensive projects with low employment capacity. Off-farm employment expanded too slowly to provide enough opportunities for the poorest rural groups.

Fiscal, monetary, investment, trade and price policies also constrained the supply side. Investments and infrastructure favoured the capital, Manila, over rural needs. Regulations, not prices, controlled markets, thereby reducing resource management efficiency and productivity. Trade practices, exchange rate polices and government trade monopolies handicapped labour-intensive exports by promoting capital-intensive and import-substituting industries.

Resources were transferred away from agricultural activities, because price controls on agricultural products, export taxes, and monopolies on sugar and coconut trading adversely affected the agricultural terms of trade. Price interventions and the overvalued currency lowered the domestic price of agricultural products by 25 percent relative to non-agricultural products from the mid-1970s to

1982. In addition, indirect taxation of agriculture was estimated to be about 30 percent in the early 1980s.

Various agricultural programmes did attempt to offset the negative consequences of the country's import-substitution strategy. The government provided subsidized inputs and credit as well as rural services to help promote agricultural production. The large farms and plantations received most of the benefits, however, including greater access to irrigation, electricity and roads. The consumption and investment patterns of large farms did not provide the linkages needed to establish broad-based growth. The relatively few landless and "near landless" who were able to find rural jobs and off-farm employment faced declining real wages during the past two decades.

Recent agricultural policy reforms

Beginning in 1986, a new government started to address these issues by initiating programmes intended to restore economic growth, increase resource efficiency and improve income equality. The government concentrated on three issues: agrarian reform, domestic market deregulation and trade policy reforms.

Agrarian reform. To address the land distribution issue, the government introduced an important new programme known as the Comprehensive Agrarian Reform Programme (CARP). While the previous land reform programme in 1972 was limited to rice and maize farmers, the new programme included a broader range of farmland eligible for redistribution. The CARP includes public lands that had been leased to foreign and domestic agribusinesses, abandoned land, privately owned land and public lands designated as suitable for agriculture. While the 1972 programme distributed only 267 000 ha over 14 years — less than 3 percent of all lands eligible for distribution — the CARP distributed 1.16 million ha in the three-year period from 1987 to 1990.

Both supporters and opponents of land reform criticize the CARP, even though land redistribution has accelerated greatly compared with past programmes. Supporters suggest that critical provisions in the agrarian reform law are preventing proper implementation. First, proponents of land reform argue that the provision allowing plantations to be redistributed as stock shares rather than individual holdings limits incentives to potential landowners because direct landownership combined with small-scale operations is more consistent with the country's factor endowments. Existing evidence suggests that small farms are more productive than large farms for all major crops except sugar cane. Second, in 1990 the Supreme Court exempted livestock and poultry farms from redistribution under certain situations. Third, the law prohibited reform beneficiaries from participating in land market operations (rentals, sales, etc.), thereby eroding an important economic property right.

Opponents of land reform argue that the CARP creates uncertainties that discourage long-term investment, limit access to capital markets, decrease agricultural production, reduce foreign exchange earnings and hinder agricultural employment.

Economic development experiences in other Asian countries confirm that agrarian reform can be one of the most effective policy measures in alleviating rural poverty and promoting growth in agriculture. While the CARP is the most comprehensive agrarian reform effort in the Philippines, a variety of issues are still delaying the programme's full implementation.

Progress in rural development, improved natural resource management and increased employment in the agricultural sector are all likely to depend on a more successful implementation of the agrarian reform in the Philippines.

Market deregulation and trade reforms. Since 1986, the government has implemented economy-wide, market-oriented reforms that indirectly affect the agricultural sector (notably exchange rate and interest rate policy changes). In 1991 policy-makers further deregulated foreign investment procedures, streamlined the tariff structure and decentralized government bureaucracies. In addition, specific policy changes focused directly on the agricultural sector.

Examples of deregulation in agriculture over the past several years include: lifting the copra export ban and removing export taxes on agricultural products, except for logs; abolishing the monopsonistic arrangements in sugar and coconut trading; liberalizing fertilizer imports and distribution; removing retail price ceilings on poultry and pork products; allowing private sector trade in wheat, wheat products and animal feeds; removing non-grain market activities from the domain of the National Food Authority (NFA) and limiting the NFA's primary function to the stabilization of rice and maize

prices; and organizational reforms affecting various government agencies involved in agriculture.

Nonetheless, trade and market restrictions are still enforced for the two major crops: rice and maize. Together, these two commodities account for two-thirds of cropland and more than one-third of rural employment. The NFA intervenes in the rice market through farmgate procurement prices, retail ceiling prices and import restrictions (see Box 3). The NFA intervenes in the maize market in much the same way except that no ceiling price is established.

Maize price and trade policies are currently at the centre of agricultural policy debate. About 20 percent of the population consumes maize as the major staple. White maize is mostly consumed within the farm household while yellow maize is marketed for animal feed. Per caput maize consumption is about 20 kg, while per caput rice consumption is 110 kg.

About 70 percent of maize production is used for animal feed. The quantity of maize purchased by livestock and poultry producers grew by 7 percent per year over the past four years as pork and poultry consumption increased by 8 percent per year during the same period. At present, regulations and price policies inhibit maize production, restrain competition among millers and keep marketing and transportation costs high. This issue is becoming increasingly important because feed represents 50 to 70 percent of poultry production costs. For instance, unlike rice prices which have been maintained close to import equivalent prices, Manila maize prices are 40 percent above world prices. Current policies affecting maize favour producers over consumers and maize producers over rice producers.

All subsectors appear to be affected negatively. The meat processors are adversely affected by the import restrictions, high feed prices and the market concentration of feed millers. The narrow price margins between the farmgate price and wholesale price discourage new investment in storage, transportation and handling. Because maize is mainly grown in regions distant from the major millers in the Manila area, it is more susceptible to government control of inter-island shipping. Recent studies suggest that investment in roads and deregulation of shipping rates could reduce wholesale maize prices by as much as 20 percent. Resolving this intrasectoral issue is one of the important challenges facing Philippine policy-makers today.

Natural resource management

Like Indonesia, the Philippines is grappling with natural resource depletion in its forests, watersheds, rivers and coastal regions. Fisheries is one of the fastest-growing sectors in the Philippines and presents an interesting example of the kinds of problem that are emerging and how policy-makers are addressing them.

The value of fish production grew by more than 16 percent per year during the 1980s, making the Philippines the twelfth largest fish producer and the fifth largest aquaculture producer in the world. Fish products provide one-half of the annual animal protein food available to Filipinos. The sector employs about one million people in small-scale production, 80 percent of whom live below the poverty line.

Unfortunately, population pressure and the dramatic growth in fishing effort are depleting and damaging marine and coastal resources. Illegal fishing activities, including dynamiting, poisoning and fishing with fine-meshed nets are destroying coral reefs and fish populations. Unsound agricultural practices, watershed mismanagement, illegal logging, mangrove destruction and domestic, industrial and solid waste pollutants are rapidly degrading fish habitats.

In an attempt to combat these problems, a Fisheries Sector Programme (FSP) was initiated in October 1989. FSP is innovative in that local communities affected by resource degradation and overfishing helped to design and implement the various project components, including enforcing the regulations aimed at protecting their resources. Local fishing associations are constructing, protecting and managing artificial reef sites to replace coral reefs destroyed by dynamite fishing. Some municipalities and communities in the project area are developing territorial use rights in fisheries, delineating zones for specific types of fishing gear and establishing areas for seaweed, mussel and oyster cultivation.

Individual families are receiving certificates of stewardship to increase land tenure security and use rights on reforested mangrove forests. At the same time, mangrove zoning has established commercial production zones, buffer zones, limited use zones and strict nature reserves in order to manage the mangrove resources better. While it is still too early to assess the full impact of the FSP, initial

successes are attributed to the strategy of involving local communities in both the design and the implementation phases of the project.

Conclusions

Several natural disasters and the world recession contributed to the Philippines' poor economic performance in 1991. At the same time, prospects for steady long-term growth will depend on how well policy-makers address several unsettled development issues. Key among these issues are the adequate promotion and implementation of the agrarian reform programme, the transition from capital-intensive import substitution to a labour-intensive export economy and a renewed emphasis on rural sector services and infrastructure.

In addition, natural resource management issues are likely to play an increasingly important role in rural development efforts during the 1990s. Population pressure, the lack of access to land and the stagnating economy represent three of the most serious threats to the natural resource base. A successful response to these issues is crucial for ensuring the economy's transition to a sustainable growth path.

LATIN AMERICA AND THE CARIBBEAN

Regional overview

The year 1991 saw a marked improvement in the overall economic situation of Latin America and the Caribbean. With economic activity expanding at a rate of about 3 percent, the region achieved the first increase in per caput output in four years. This improvement was all the more remarkable since it took place in a less than propitious international economic environment — with the region's exports rising only slightly in volume and its terms of trade sharply deteriorating. Indebted countries in the region benefited from lower interest rates, particularly in the United States, which also contributed to attracting large inflows of capital.

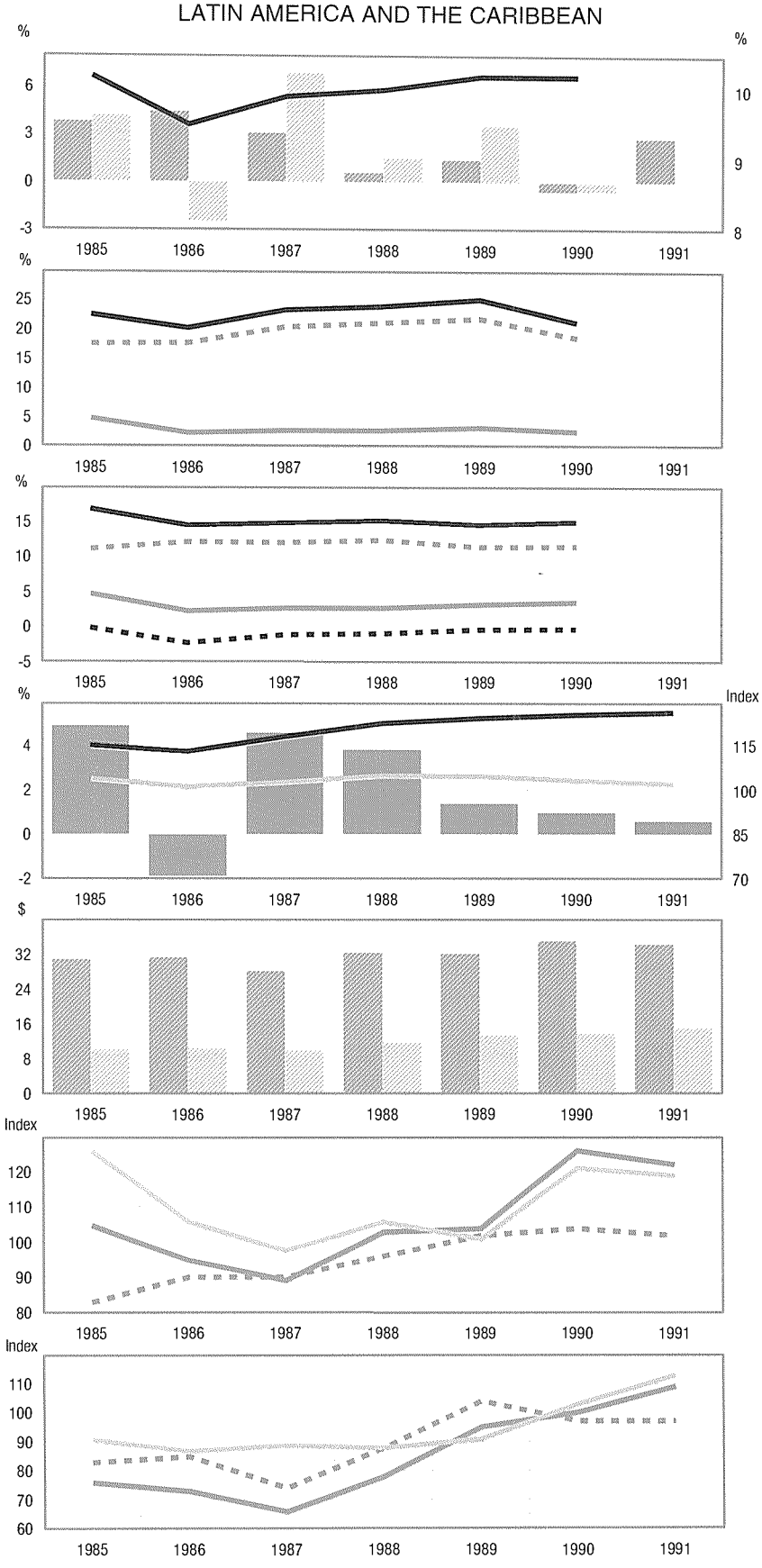
The recent improvement, shared by a large majority of countries, augurs well for a consolidation of the process of stabilization. However, the recovery process is still at a preliminary and uncertain stage and there is a long way to go before the economies fully recover from a decade of depression. Despite the increase in economic activity in 1991, the regional per caput output still remained at the level of 1977.

That the economic revival occurred despite recessionary conditions in several of the region's main trading partners points to the positive role of domestic policies. These policies were generally characterized by less involvement of the public sector in economic activities, a greater export orientation, market liberalization and more prudent management of monetary and fiscal policy.

The contribution of agriculture to the general economic improvement was uneven. In general, the highest increases in economic activities were in oil-exporting countries, which benefited from the temporary surge in oil prices in 1990/91. Performance of the more agriculture-oriented economies was mixed. In several of these, e.g. Chile, Ecuador and El Salvador, high rates of GDP growth largely reflected good agricultural performances. But agricultural production shortfalls were partly responsible for a pronounced decline in GDP growth in Costa Rica and an actual decline in output in Haiti. The economic contribution of the agricultural export sector was equally uneven. Preliminary information for 1991 suggests that export earnings from agriculture may have fallen slightly from the levels of the previous year. Among the major trading countries, Argentina's agricultural exports are estimated to have

Figure 15

LATIN AMERICA AND THE CARIBBEAN



TOTAL AND AGRICULTURAL GDP GROWTH

- Total GDP
- Agricultural GDP
- Agricultural GDP as % of total GDP (right scale)

SAVING AND INVESTMENT
(Share of GDP)

- Gross domestic investment
- Gross domestic savings
- Saving-investment balance (GDS-GDI)

TRADE AND CURRENT ACCOUNTS
(Share of GDP)

- Total imports
- Total exports
- Trade balance
- Current accounts

AGRICULTURAL AND PER CAPUT FOOD PRODUCTION

- Agricultural production growth (%)
- Agricultural production index (1979-81 = 100)
- Per caput food production index (1979-81 = 100)

AGRICULTURAL TRADE
(Billion US$)

- Exports
- Imports

AGRICULTURAL EXPORTS
(Index: 1979-81 = 100)

- Value
- Unit value
- Quantity

AGRICULTURAL IMPORTS
(Index: 1979-81 = 100)

- Value
- Unit value
- Quantity

Source: FAO, World Bank and IMF

changed little while those of Brazil recovered strongly from the 1990 setback.

The overall *policy orientations* of the region continue to be greatly influenced by the structural adjustment programmes implemented by many countries. Within this framework, general objectives of recent agricultural policies have been to diversify production and exports and enhance comparative advantage through productivity gains. Most policy statements emphasize that, whatever the importance of structural adjustment and productive efficiency, small farms and food security concerns should not be neglected. Other policy actions emphasized the creation of institutions and mechanisms that ensure an orderly transition from interventionist to market-oriented economic systems, reduce inequities and alleviate the social cost of adjustment. Finally, intraregional cooperation and integration continue to be a priority in the region.

Within these general tendencies, there have been different levels of commitment to structural reforms and progress in market liberalization. The experiences of the Southern Cone countries reviewed below constitute cases in point. Brazil and Mexico are other illustrative examples of an adjustment process that must be periodically "readjusted" in the light of undesirable developments. Pressed to reactivate agricultural production after two years of poor performances in 1990 and 1991, the Brazilian Government introduced more active farm support measures. In a context of major monetary instability and financial stress in rural areas, the government revived minimum price and rural credit schemes. Producer response to these support measures was immediate, with grain production increasing strongly in 1991/92 to levels that may exceed the 1989 record. To counter sharp price declines following record crop production, in March 1992 the government authorized the transformation of production cost loans from the previous year into loans for the producers themselves to store their production. This measure is intended to stabilize agricultural prices and increase rural incomes without adding to inflationary pressure. At the same time, however, deregulation was pursued in a number of other areas. The first Agricultural Law, introduced in 1991, provided for greater participation of the private sector in agricultural marketing. In particular, the state reduced its involvement in grain imports in favour of the private sector. All import tariffs on agricultural products other than meat and fertilizers were reduced, with further reductions scheduled through to 1994. By early 1992, all non-tariff barriers to trade in rice, maize, soybean and fibres were abolished. Finally, interest rate differentials between rural and market rates were reduced.

Andean countries have continued to enforce structural adjustment measures and to coordinate their economic and agricultural policies towards consolidating the Andean Pact. In order to counter the effects of distortions in international markets, Colombia, Peru and Venezuela adopted price band mechanisms for a number of agricultural products.

Mexico also pursued decisive market-oriented reforms while maintaining a degree of control and gradualism in a number of key areas. Except for maize and beans, staples of major nutritional importance for large segments of the population, all guaranteed prices were abandoned, resulting in domestic prices nearer international market prices. Tariffs on all agricultural imports were reduced, while non-tariff restrictions on imports other than maize and beans were abolished. The considerable subsidies formerly granted on credit, inputs and services were abolished. Large parastatals involved, *inter alia*, in tobacco and coffee production and manufacturing were privatized, while operations of other public agencies such as the Rural Credit Bank were downscaled.

A particularly important area of reform in Mexico was the privatization of the *ejidos*. Under the new (1991) legislation, members of an *ejido* are now allowed to rent or sell their plots as well as enter into agreements with private enterprises to use their land for productive activities. Private enterprises are legally authorized to own and exploit up to 2 500 ha, i.e. 25 times the legal maximum size of an individual private property. *Ejido* reform aims at reducing land fragmentation, fostering a national land market, creating stable conditions conducive to investment and modernization and consolidating economic viability in medium and large farms.

Among smaller countries, a noteworthy example of dualism in the implementation of structural adjustment measures is that of Nicaragua. On the one hand, strong measures of stabilization and adjustment were introduced, including drastic cuts in public sector employment, privatization and a reduction in average external tariffs from 80 percent in early 1990 to 20 percent in 1991. On the other hand, the government maintained strong market

intervention, particularly in agricultural markets (agricultural price freezing, control over basic food imports and exports). Despite its contradictions, the policy package succeeded in reducing hyperinflation, while the government is actively pursuing structural reform in agriculture, including tenancy reform and the privatization of state-owned agricultural enterprises.

In the area of regional cooperation and integration, recent developments include the adoption of a common external tariff by the Caribbean Common Market (CARICOM) and the Organization of Eastern Caribbean States (OECS) in January 1992. These organizations are pursuing adoption of a coordinated policy framework for expanding and diversifying agricultural production and exports. A Plan of Action for Central American Agriculture, approved in July 1991, included provisions for the liberalization of intraregional trade of yellow maize, rice, sorghum and soybean by 31 December 1991 and other agricultural products by 30 June 1992. It was also decided to adopt a Central American common system of price bands for imports, which replaced the national price band systems from 31 December 1991. Negotiations to consolidate NAFTA have continued, despite a growing body of political doubt and some opposition from private sectors. Fears have been voiced that maize farmers in the central and southern parts of Mexico may suffer major losses as a result of competition from highly efficient farm systems in the United States. On the other hand, some vegetable growers in the United States are concerned about possible market losses from competition with Mexico.

The following review focuses on past experiences of macro-economic and agricultural policy reform in three countries in Latin America's Southern Cone: Argentina, Chile and Paraguay. Included is a brief account of the efforts made by the countries in the subregion to harmonize policies within the framework of the Southern Common Market (MERCOSUR) agreement (see Box 4).

Argentina

Despite having high educational levels, a well-developed industrial and service base and one of the world's richest natural resource endowments for agriculture, Argentina has shown a poor record of economic and agricultural progress over the past 15 years. Many reasons have contributed to this disappointing performance: distortions bequeathed from the old import substitution/industrialization model, political instability, a series of unsuccessful policy reforms and the protracted effects of external shocks of the early 1980s.

By the late 1980s, the country confronted unmanageable levels of inflation (annual rates were more than 4 900 percent in 1989 and 1 344 percent in 1990), with speculation becoming a dominant activity among households and enterprises; per caput GDP had fallen a cumulative 20 percent between 1981 and 1991; the real average wage index (1980 = 100) had fallen to 76 percent in 1990; and, despite a significant decline since the mid-1980s, the interest due on external debt still accounted for 39 percent of exports of goods and services in 1990 (estimates from the Economic Commission for Latin America and the Caribbean [ECLAC]).

Nevertheless, significant improvements have been made since early 1991 in reducing macro-economic imbalances and reactivating growth. The experience of previous, short-lived success stories in policy reform calls for caution in the assessment of the likely turn of events under current policies; however, the recent improvements, achieved in a remarkably short period, augur well for the country's prospects of sustained recovery.

The following discussion focuses on the experience of overall economic and agricultural policy reform since the late 1970s as a background for the review of current issues and prospects for the country's agriculture.

The historic context

Until the mid-1970s, Argentina's development strategy was generally characterized by an industrial bias at the expense of agriculture. Domestic industries were protected from external competition through tariffs and overvalued exchange rates that lowered prices and encouraged the imports of equipment and industrial inputs. However, these measures also penalized exportables, particularly from the highly export-oriented agricultural sector.

Agricultural policy had a predominantly compensatory character, designed to offset the adverse effects of macro-economic policies on the sector. The major policy tools used to this end were subsidized credit, support prices, production quotas, production and consumption subsidies and special trade regimes for certain products (maté, sugar, tobacco, wine).

An initial phase of economic adjustment corresponded to the period of military rule from 1976 to 1980. The main features of that policy were widespread market liberalization and the external opening up of the economy.

A period of high earnings and sustained investment seemed about to begin for the pampean agricultural sector, which benefited from export tax exemptions, improved competitiveness — arising from currency devaluation — and massive credits. Indeed, a rapid positive production response was recorded in 1976/77. However, a new strategy was launched in late 1978, based on an almost unrestricted opening up to trade and capital movements and a mechanism to establish and forecast exchange rates, minimum salaries and tariffs. The gap between devaluation and inflation rates, however, led to a substantial revaluation of the local currency, once again leading to an anti-export bias, an increase in imports and a growing capital inflow caused by high real interest rates. The net results were a reduced trade surplus, a shift in the balance of current accounts from a surplus of $1.5 billion in 1977 to a deficit of $4.8 billion in 1980 and an increase in the external debt from $12 billion to $27 billion during the same period.

In the midst of a major economic, political and military crisis (the Falklands [Malvinas] war) from 1980 to 1983, the main principles of the model were abandoned. When a democratic regime took over again in 1983, GDP had fallen back to the 1975 level; industrial production was 12 percent lower; employment in the manufacturing sector had fallen by 30 percent; real wages were down by 33 percent compared with 1975; and the external debt ($45.5 billion) had sextupled. Agriculture was the only sector that had progressed, thanks to the major

BOX 4

MERCOSUR

On 26 March 1991, Argentina, Brazil, Paraguay and Uruguay signed the agreement that launched the Southern Common Market (MERCOSUR). General objectives of the initiative include the free circulation of goods, services and production factors among member countries. This will be effected by the elimination of tariff and non-tariff restrictions; the establishment of common external tariffs; the coordination of trade policies *vis-à-vis* other countries or groups of countries; and the coordination of macro-economic and sectoral policies. MERCOSUR members agreed to eliminate, by the end of December 1994 at the latest, all tariffs and other restrictions to their mutual trade. However, Paraguay and Uruguay will benefit from some exceptional clauses in this general commitment.

The economic potential of MERCOSUR member countries is considerable. Their combined population in 1990 was about 190 million, their aggregate GDP $380 billion and their average per caput income more than $2 000. Exports amounted to $46.2 billion and imports to $24.3 billion, with Brazil accounting for about three-fourths of the total trade of member countries.

Even considering the differences in size, the degree of development and resource endowments of the four economies, their integration is seen as a major opportunity to develop economies of size, intensify exchanges and enhance common welfare.

The process of MERCOSUR consolidation must, however, overcome major obstacles. In the short term, the differences in macro-economic situations, in particular the Brazilian macro-economic imbalances, are factors of instability and uncertainty for the process. Some relatively uncompetitive sectors, mostly in Brazil and Paraguay, are expressing resistance to the process of integration. Other problems relate to variations in macro-economic management and the different stages reached in the process of market liberalization. In particular, Brazilian entrepreneurs who had supported integration on the grounds that losses of some sectors — particularly primary

technological changes introduced in the Pampas region and, to a lesser degree, to the conversion of traditionally pastoral land into cropland.

After an initial period of uncertainty, the new government launched a stabilization programme, called the Austral Plan, in June 1985. It was designed as an anti-inflationary package based on fiscal adjustment, the control of money supply and the freezing of public sector tariffs, wages and exchange rates.

The plan did have a stabilizing effect for the first nine months and inflation fell from over 30 percent per month to an average of 3.1 percent per month. However, the improvement was not consolidated. The combination of external and internal factors (in particular, the debt burden, the pronounced decline in international agricultural prices and serious floods in the Pampas region) had serious adverse effects on economic growth, agricultural production and exports. With total exports falling sharply in 1986 and 1987, the trade balance surplus shrank and the current accounts deficit, already extremely large because of external debt servicing, widened further.

Shrinking exports also resulted in reduced agricultural export duties and a widening of the fiscal gap. In 1987 inflation spiralled and gained further momentum in the three following years while the economy entered an acute phase of destabilization which lasted until the early 1990s.

Recent economic adjustment measures

The new government put a fresh adjustment programme into effect in 1990. Basing its action on the Global Economic Emergency Act, the government began taking steps to close the fiscal gap through the privatization of public enterprises. It announced a plan for the gradual

agriculture — would be more than offset by gains for others — mainly in the industrial sector — now perceive radical liberalization in Argentina as a threat to their interests. The governments of the four member countries are cooperating to overcome these problems.

Regarding agricultural trade among MERCOSUR countries, an additional problem is that most farm products are competitive rather than complementary. Furthermore, apart from some minor crops such as tomatoes, garlic and onions, the seasonal productive cycles coincide in the four countries, thus reducing complementarity further. This applies particularly to grains and oilseeds. Intersectoral implications add to the complexity of the process. For instance, wheat and soybean are complementary crops in southern Brazil where an important agro-industrial complex has developed around these commodities. With Argentine wheat producers being relatively more competitive, a free market in the area would affect the whole soybean/wheat complex in southern Brazil. Soybean and wheat producers in Paraguay would confront similar problems. There are also large differences in productivity across countries, not only because of variations in efficiency at the farm level, but also because of uneven taxation systems and levels of development of services and infrastructure. A number of agro-industrial systems, such as those linked to cereals and sugar, that are crucial to the economies of several subregions in the four countries, are likely to be severely affected by integration. This would be all the more worrisome, as only limited alternative development opportunities exist for farmers in these subregions. For instance, sugar production, a major small farm activity in northern Argentina, would greatly suffer from competition with the Brazilian sugar industry.

As regards Uruguay, MERCOSUR represents a major opportunity for developing agriculture, as the country enjoys efficient production systems for a variety of products, including rice, meat, dairy products and fisheries.

Solutions to the above problems are sought through the technical negotiations that are being held in the various commissions. The MERCOSUR organization includes a working subgroup on agricultural and agro-industrial policies which covers: reconversion; technological policies, the harmonization of agricultural policies; competitiveness; small- and medium-scale farmers; sustainability; and trade barriers. The future of MERCOSUR and its impact on agriculture will depend on the compromises that will result from these negotiations. The key challenge will be to strike the right balance between, on the one hand, pragmatism and flexibility in the treatment of specific situations and, on the other hand, the maintenance of a critical core of integration principles.

removal of export duties on agricultural products and set a time schedule for the reduction of import duties.

The adjustment programme was expanded in March 1991 through the so-called Convertibility Plan, the basic strategy of which included: free convertibility of the austral to the dollar at a rate of exchange set by law; reduced tariffs and free external trade; a balancing of fiscal accounts (cutting back public expenditure, stricter control of tax evasion, removal of subsidies); the liberalization of the domestic market (including the labour market); the privatization of public enterprises; and the removal of all types of economic indexation (including wages). These measures achieved remarkable results, as shown in Table 17.

The considerable expansion in economic activity marked the end of a long period of declining or stagnating GDP. Furthermore, in addition to the pronounced decline in inflation, there was a reduction in the fiscal deficit thanks to a marked rise in revenues (tax collection rose by about 35 percent in real terms through stricter controls and expanded production and trade) and a reduction in expenditure (public sector employee cut-backs and transfer of services to the provinces).

On the other hand, there was a sharp fall in the trade surplus from the record levels of 1990, reflecting a doubling in the value of imports and a 10 percent decline in exports. This was a result of both a real appreciation of the currency and tariff reductions. The continuation of these influences foreshadows a trade deficit for 1992 and possibly subsequent years. Another negative development was a decline in real average wages.

TABLE 17

Effects of Argentina's adjustment programme, 1990-1991

Item	1990	1991[1]
GDP *(Percentage change from previous year)*	**0.4**	**5.0**
Industrial production *(Percentage change from previous year)*	**- 2.1**	**5.7**
Trade balance[2] *(US$ million)*	**8 237**	**4 000**
Average monthly wage *(US dollars)*	**580**	**529**
Retail price inflation *(Annual accrual)*	**1 349.9**	**84.0**
Total revenue for Treasury *(US$ million)*	**8 810**	**11 785**

[1] Estimate.
[2] More recent estimates suggest that the surplus was considerably smaller in 1991.
Source: Clarin Económico, 29/03/92.

Agricultural performance

Argentina's agricultural sector has performed well in recent decades, mainly reflecting the technological improvements introduced in the Pampas region and, to a lesser extent, the conversion of pastoral land into cropland. Between 1970 and 1990, agricultural GDP rose by 1.6 percent annually — four times faster than the manufacturing sector — thereby increasing its share of total GDP from 13.6 percent in 1970 to 16.7 percent in 1990. In particular, grain and oilseed production strongly expanded until 1984/85 when the harvest reached 44 million tonnes — about 60 percent more than in the early 1970s.

Growth in the agricultural sector slowed sharply during the second half of the 1980s, bringing the average growth for that decade down to an annual 1 percent compared with 2 percent in the 1970s. The livestock sector suffered a major setback, losing ten million head of cattle (almost 20 percent of the national herd) between 1977 and 1990 as a result of depressed international market conditions.

The slower agricultural growth reflected both internal and external policy and market factors. In the 1980s international real prices generally declined and protectionism for agricultural products exported by Argentina increased. On the domestic front, farmers' incomes and production decisions were adversely affected by the economic crisis, high inflation and macro-economic and sectoral policy instability.

Agricultural performance has improved in recent years, however, reflecting favourable climatic conditions; farmers' more optimistic expectations following the change of government in the second half of 1989; the introduction of foreign trade liberalization measures; and a firming of international grain prices. According to the Department of Agriculture, Animal Husbandry and Fisheries, the volume of agricultural output in 1991/92 was the highest ever.

As regards the external sector, agricultural

exports represented more than 70 percent of the country's total export value during the 1980s. However, export earnings from agriculture varied widely in line with fluctuations in world market prices: from $5.83 billion in 1985, these fell to $3.79 billion in 1987, rising again to $5.58 billion in 1988 and further to $7.15 billion in 1990.

The transformations that have occurred in Argentina's agricultural sector in the last two decades are also reflected in the composition of agricultural exports. The share of oilseed product exports in total exports of primary and manufactured agricultural products rose from 21.2 percent in 1976/78 to 41.7 percent in 1988/89; while the corresponding shares of cereals and cereal-based products fell from 32.1 percent to 16.6 percent and those of beef from 11.5 percent to 7.7 percent.

Trade in agro-industrial products showed considerable dynamism. The value of exports of manufactured goods of agricultural origin rose by more than 100 percent between 1976/78 and 1988/90, while the value of agricultural exports increased by only 22 percent during the same period.

Recent policy reform and agriculture

Efforts towards the opening up and deregulation of the economy have been intensified and intervention in agriculture further reduced since 1990, particularly following the implementation of the 1991 Convertibility Plan.

In November 1991, as a supplement to the Convertibility Plan, the government issued a decree on the "deregulation" of the economy. This decree annulled most of the earlier provisions regulating a wide range of activities related to production, trade and services. For the agricultural sector, the deregulation decree signalled, *inter alia*, the end of state intervention in price fixing and the provision of inputs, the state's withdrawal from production or commercial activities and the disappearance of numerous state agencies involved in production regulation or the provision of services. The agencies regulating the production, marketing and incomes of farmers associated with a number of major products were either dismantled or had their roles redefined. As a result, all the regulations concerning maté, sugar, tobacco and wine became null and void. Furthermore, the National Grain and Meat Boards and the National Forestry Institute were abolished and their mandates either cancelled or transferred to the Department of Agriculture, Animal Husbandry and Fisheries. Another important provision of the deregulation decree was the privatization of the state-run grain storage infrastructure, formerly in the hands of the National Grain Board. Other provisions included the removal of all export duties on agricultural products and the introduction of a value added tax (VAT). In an effort to reduce costs and increase competitiveness, the government also lifted the road tax levied by the provinces. It has likewise decentralized the port authorities and deregulated port and export procedures, which should result in lower shipment costs.

Steps have also been taken to improve animal and plant health and agricultural product quality control. To this end, the government began to coordinate animal and plant health programmes and harmonize quality and health standards within the framework of MERCOSUR in order to ease the movement of agricultural products within the region.

On the export side, the government put into effect a programme, FRUTAR, to promote non-traditional exports in 1991, while the National Meat Board is implementing a programme to promote Argentine meat abroad. In addition, the elimination of all agricultural export duties has been significant for farmers' returns.

The new economic programme involved a radical change in the overall environment for agricultural development. Indeed, virtually all the major policy tools which influenced agricultural prices (credit, taxes, exchange rate, price policy) have now been abandoned. However, the dismantling of the former instruments of agricultural policy gives rise to many uncertainties for the future. Indeed, the new rules set by the Convertibility Plan fail to define any coordinated strategy for agricultural development or the place of agriculture in the overall development effort.

Current issues and prospects

Even though the reforms under implementation since 1990 have helped reduce intersectoral distortions, agricultural development remains hampered by macro-economic and sectoral policy shortcomings. In the short term, a drawback at the macropolicy level is the exchange rate lag which is adversely affecting the country's export capacity. At the sectoral level, agriculture will no doubt benefit from the currently more liberal economic environment as well as the ensuing less distortive resource allocation, enhanced competitiveness in

international markets and the removal of export duties.

While the role of the public sector may have been less than propitious to agricultural development in the past, it did provide developmental, compensatory and coordinating mechanisms. By eliminating both the positive and negative aspects of public intervention, the state has placed agriculture in an uncertain situation with regard to its prospects for sustainable and equitable development. In particular, more vulnerable farm economies in non-Pampas regions and, more generally, small farmers, are likely to encounter difficulties in adjusting to the new situation. Indeed, deregulation has negatively affected such typical non-pampean small farmer activities as tobacco, sugar, maté and wine production. These farmers have lost the control mechanisms that regulated supply (quotas) and prevented the common pitfalls associated with supply and price fluctuations. Also, the withdrawal of the public credit institutions and the reluctance of private banks to finance small-farm activities in the medium term have deprived small farmers of the financial support they need, for production conversion in particular. This is likely to be a considerable hindrance to the much sought-after process of agricultural export diversification and it may impede progress towards achieving the long-time goal of improving incomes of small- and medium-sized operators.

Finally, the outlook for Argentina's agricultural sector will be largely determined by the international agricultural market situation. Indications are that agricultural trade liberalization and the easing of protectionist policies will be a slow process — as suggested by the long and, at the time of writing, still inconclusive Uruguay Round of GATT negotiations.

Nevertheless, the external sector offers the best opportunities for sustainable agricultural development and economic growth. There are several reasons for this. On the one hand, a positive impulse can be expected from the domestic market, as both incomes and population increase and income distribution is improved. However, since the population's food requirements are already largely fulfilled, the prospective positive impact of increased domestic demand on agriculture is bound to be limited. On the other hand, Argentina's extremely rich natural resource base places it in a pre-eminent competitive position on international markets. Even moderate improvements in international market prices and quantitative access can translate into major gains for the export industry. Moreover, there is ample scope for the industry to enhance competitiveness and profitability further through improvements in the domestic marketing, transportation and storage infrastructure and services. These have been severely degraded during the country's long period of economic depression. A significant step towards reducing bottlenecks and inefficiency has already been made with the abolition of the monopolies which formerly had a decisive influence over the functioning of the ports.

Chile: evolution and impact of macro-economic and agricultural policies

The past two decades have witnessed major changes in Chile's general policy orientation and approach to macro-economic and sectoral management. These changes have profoundly affected the production and trade patterns of agriculture. Extensive structural adjustment was initiated during a *first period* of "orthodox neoliberalism" (1974-1984), when radical price and trade liberalization was introduced throughout the economy. Major transformations took place in the fiscal, financial and labour fields as well as in international economic relations and public ownership of means of production while, later, a major reform in social security was also introduced. The results of these policies were mixed and must be assessed in the context of the shocks caused by the 1974-1975 oil crisis and the sharp decline in copper prices during much of the period. The external shocks associated with the recession in the early 1980s caught the economy in a weak position. The deficits in current accounts were extremely large, as was the stock of debt as a share of GDP. In those conditions, the 1982/83 crisis reached proportions that had not been experienced since 1930. Production, employment and incomes fell dramatically, external accounts deteriorated sharply and the banking system collapsed.

In the agricultural sector, this period saw major falls in agro-industrial inputs and agricultural production, particulary production for the domestic market. This situation led to a producer debt equivalent to 70 percent of the 1981 sectoral GDP. Another area of major significance for the sector was the transfer of ownership. After 1973, about 30 percent of expropriated land was returned to former owners and 20 percent was auctioned among

non-rural dwellers. Scarcely 30 percent of the expropriated land was kept by peasant farmers. The new ownership patterns emerging from the agrarian reforms stimulated creation of a dynamic land market which facilitated the consolidation of the modern small- and medium-sized entrepreneurial farms during the 1980s.

The intensity of the crisis led to a *second period* of structural adjustment (1984-1989) with greater government intervention in various aspects of the economy. During this period a series of devaluations were effected (of the order of 30 to 50 percent in real terms) and tariffs were increased (from 10 percent to 35 percent, with a subsequent reduction to 15 percent). At the same time, the interest rate was kept at more reasonable levels than the very high pre-crisis rates while the private sector debt was liquidated and renegotiated and the banking system was rescued at enormous public expense.

These changes contributed to: a pronounced acceleration of GDP growth from 1986, which brought per caput output in 1991 up to a level 16 percent higher than in 1980; a gradual but systematic reduction in urban unemployment to 7 percent; increases in average income; an increasingly positive commodity trade balance; and a sharp reduction in the debt/export ratio.

The change in macro-economic policies during this phase, combined with greater government intervention, led to the introduction of price ranges or tariff increases for wheat, sugar beet, dairy products and oil as well as to preferential government procurement from the domestic market. The agricultural debt was renegotiated and dollars were granted at preferential rates for dollar-contracted debts, with the possibility of mortgage credit for farmers without other forms of security. A number of export incentives were also introduced.

This change in policy contributed to an average increase in agricultural output of 5.6 percent for the period 1985-90, led by exports whose contribution to the sectoral value added has increased from 20 percent to 75 percent in the last ten years. The contribution of the agricultural sector (including fisheries) to foreign exchange earnings, which had been a marginal 6 percent in the early 1970s, amounted to almost one-third of the total in the late 1980s. A high degree of domestic self-sufficiency was achieved during this period through broadly based increases in yields, with a corresponding reduction in the share of imports in the food supply from 13 percent to 5 percent. The broad base of agricultural development during this period refutes the often debated dilemma between agriculture for export and production for the domestic market.

A *third phase* began in 1989 with the return of democracy. Macro-economic equilibrium was maintained and greater focus placed on social factors. Public expenditure was increased, particularly for health and education, a comprehensive tax reform was implemented and labour legislation was changed to permit trade union activity and increased union bargaining power. As in the previous period, sectoral economic decisions have been governed by the need to maintain macro-economic equilibrium and particularly to reduce inflation. The agricultural share of the GDP remained at approximately 8.5 percent; agricultural employment reached 20 percent (against approximately 16 percent at the beginning of the 1980s); and agricultural unemployment fell to under 3 percent, significantly less than the urban unemployment level (7 percent), thereby reducing rural out-migration.

The reasons for success

The success of Chile's agriculture has become the focus of international attention in recent years. There were many natural and human-caused factors that contributed to this success story. Although government policies undoubtedly played a major role, development action found particularly fertile ground in the natural endowments of the country. Chile enjoys unique conditions with regard to its geographic characteristics, soil and water resources. These enable a wide range of fruit, vegetable, forestry and fishery products to be produced and exported during long seasonal periods. The export sector was well established in large markets, particularly in the United States, and benefited from strong links with transnational agro-industries.

As regards the policies that contributed to realization of the country's rich agricultural potential, the sector benefited from measures which were introduced by previous administrations and which set the basis for the successful catalytic effect of more recent strategies.

Examples include the establishment of capital and technological infrastructure; the training of national technicians and experts in fruit growing and forestry; the implementation by the

Corporation for the Development of Production (CORFO)[19] of the Fruit Growing Plan from 1966; the setting up of the Forestry Institute in 1961 and the Institute for Fisheries Development in 1963 (both with FAO assistance); and the launching of the agrarian reform process (1965-1973) which changed the long-established large estate system and permitted the subsequent restructuring of the land tenure distribution system.

Against this background, a change in economic and agricultural policy took place in 1985. The 1985 policy changes led to the maintenance of macro-economic equilibrium, realistic exchange and interest rates and confidence in regulatory stability. In addition, a reassessment of the role of entrepreneurs and an increasing export orientation provided the basis for the recent positive performance of the agricultural sector.

Sectoral strategy and policies

The general agricultural objectives of the present government are the harmonious expansion of production for the internal and external markets, increased productivity, the reduction of rural poverty by increasing peasant farmer production capacity and the adoption of processes that ensure agricultural sustainability.

Accordingly, sector-specific measures have been introduced for modern commercial agriculture and the small farmer sector.

Commercial agriculture. As with macro-economic policy, there have been elements of continuity and of change in this sector. The elements of continuity are basically those that already benefited mainly the large- and medium-sized farms (approximately 35 000 to 40 000 producers): price ranges; the subsidization of private investment in forest plantations (equivalent to 75 percent) and in small irrigation schemes; the expansion of technology transfer to medium and large farms; the promotion of afforestation, with exemptions from land and capital tax and a 50 percent reduction in forestry taxes; promotion of non-traditional exports, with the reimbursement of 10 percent of the f.o.b. cash value and the refunding of VAT on imported inputs used; and the deferred payment of customs duty on capital goods. Foreign investment is encouraged by legislation converting the external debt into capital stock paying short-term dividends.

The modernization process has also been helped by the establishment of the Fundación Chile and PROCHILE. The former promotes enterprises and technological development in a wide range of agricultural and agro-industrial activities such as salmon farming and berry growing. PROCHILE studies external markets and advises exporters, also providing support in the form of market diversification and the negotiation of bilateral agreements, some of which are directed towards trade liberalization (e.g. with Mexico and the United States).

However, some government measures are causing concern within the sector: labour reform; the proposal to introduce taxation on actual income instead of presumed income and to align the taxation system with the other sectors of the economy; and a recent revaluation of the Chilean peso which is negatively affecting agricultural exports.

The small farmer sector. Here, the emphasis is on providing more funds for rural development, with important increases in the programme for technology transfer (which already received a fund increase of 56 percent between 1989 and 1991); changes in the programme of the National Institute for Agricultural Research (INIA) to include small farmer projects; an expansion of the lending programme of the National Institute for Agricultural Development (INDAP) which has more than doubled its loans, modified its practices and reduced real interest rates from 7 percent to 5 percent.

A programme to develop rural agro-industry has been formulated with the establishment of new enterprises through peasant farmer associations and increased linkages with existing agro-industries, while wheat-purchasing bodies have been established for small farmers and their organizations. Both of these initiatives have focused on the development of peasant farmer cooperatives, the number of which has increased over the past year from 62 to 96, with an additional 31 in the process of being formed.

Provisions for the subsidization of forest plantations and irrigation have been amended to include small- and medium-scale farmers, with forestation subsidies on holdings of less than 2 ha and irrigation subsidies to small farmers.

The programme to settle landownership problems has continued, particularly in areas with ethnic minorities. Small farmer debts have been adapted to repayment capacity, benefiting 15 000 farmers.

[19] CORFO, in existence for half a century, has been the initiator of large-scale plants for oil, cellulose, sugar, electricity, refrigerators, balers, etc.

Finally, INDAP has introduced a production training project for rural women and is developing a youth support programme through the establishment of agro-industrial and marketing microventures.

Outstanding problems

Despite the favourable performances of recent years, the agricultural export sector is faced with macro-economic problems and a number of sectoral weaknesses. With regard to the former, the success of Chilean exports — from agricultural as well as other sectors such as mining — has produced a sustained trade surplus which, together with an increasing flow of foreign investment, is constantly raising the value of the peso and therefore reducing export profitability. Agricultural, forest product and fisheries exporters will have to offset this increase by constantly enhancing productivity.

The most serious sectoral weaknesses regard environmental sustainability and social equity in export agriculture. There is also a need to diversify agricultural exports and markets.

With regard to environmental sustainability, the increase in fruit and vegetable exports has also led to salinization; the excessive use of agricultural chemicals, water-table contamination and, in the case of ground water irrigation, a drop in water-table levels. The development of forest exports and the logging of natural broad-leaved forests have led to deforestation. The government has therefore submitted a bill to parliament providing for the regulation of logging and forest sustainability. The recommended fishing limits for certain fish and shellfish species have been exceeded. These problems have been compounded by the limited government resources available to regulate and control agricultural, forestry and fishery activities and also by the consequent suppression of certain government functions.

With regard to the lack of social equity, it is to be hoped that the policies for rural development and the elimination of poverty will help to correct the distortive and divisive tendencies of agricultural modernization. A large number of farmers and regions have remained marginalized and much remains to be done to improve the conditions of more than 140 000 landless peasants as well as approximately 60 percent of the small farmers whose productivity differs from the commercial sector by between 20 percent and more than 65 percent in the case of irrigated areas.

The need to diversify fresh fruit products and export markets is evidenced by the fact that table grapes account for more than 50 percent of the exports, with 70 percent being shipped to the United States — mainly the east coast — a market which is showing signs of saturation.

Paraguay

After 30 years of isolation and stagnation, the Paraguayan economy opened up extensively in the 1970s and began to grow strongly. Average annual GDP growth between 1970 and 1981 was more than 8 percent, one of the highest levels in the world at the time. Although much of the economic buoyancy during this period was a result of the Brazil-Paraguay agreement to construct the Itaipú hydroelectric plant, the agricultural sector played a significant role, with an annual growth rate of 8.8 percent between 1970 and 1980.

The exceptional performance of the agricultural sector during the 1970s resulted from a combination of internal and external factors. Internally, the availability of fertile state-owned land and the opening up of road networks accelerated the agricultural expansion process both for small and large farmers. Spontaneous population transfer and government land distribution policies (for peasant settlements and commercial farming) brought new areas into the national economy.

External macro-economic stability, higher international agricultural prices and a significant increase in credit for the agricultural sector strongly stimulated expansion.

However, this trend came to an abrupt halt in 1982. GDP fell from 8.7 percent in 1981 to -1 percent in 1982 and -3 percent in 1983. There was a recovery in 1984 but without reaching the levels of the previous decade. The factors that reduced the dynamism of the Paraguayan economy in the 1980s included the completion of the main stage in the construction of the Itaipú hydroelectric dam; the adverse impact of weather conditions on agriculture in 1982/83; the general fall of international prices for agricultural commodities; and the problem of the external debt. Nevertheless, the Paraguayan economy still recorded one of the highest growth rates in Latin America and the Caribbean for the 1980s (the cumulative growth was 41 percent in 1981-91 compared with 16.3 percent for the region as a whole).

Macro-economic management in the 1980s presented uncertain and, in some cases, contradictory features. A complex system of

multiple exchange rates[20] was introduced which, despite devaluations in the real exchange rate from 1984, heavily penalized exports and encouraged smuggling with Argentina and Brazil. Even so, exports grew by 11.2 percent in value and 17.9 percent in volume between 1981 and 1989. The export performance seems to indicate that the negative effects of the overvalued exchange rate on production were partially offset through unrecorded exports. However, the negative impact on international reserves could not be avoided, with a fall from $780.6 million in 1981 to $304 million in 1988.

The expansionary fiscal and monetary policies adopted to counter the recessionary trends were partially successful but created additional inflationary pressures beyond those produced by real exchange rate devaluations.

Contrary to the rest of Latin America and the Caribbean, which became indebted in the 1970s, the Paraguayan external debt only increased from 1982. This was perhaps the most important negative consequence of macro-economic management in the 1980s. Although external indebtedness never reached the proportions of other countries in the region, its impact on public investment and importation capacity was considerable.

Agricultural production performances do not appear to have been particularly affected by macro-economic policy. Agricultural production grew at an average of 5.7 percent per year between 1981 and 1989, despite severe weather-related shortfalls in 1982, 1983 and 1986, while population growth for this period was 3.1 percent. Nevertheless, the generally good performance of the agricultural sector was not sufficient to counteract the worsening macro-economic and social situation: inflation rose from 14 percent in 1983 to 44 percent in 1990 before falling back to an estimated 14 percent in 1991; external public debt increased from $941 million in 1982 to $2 076 million in 1989; and the net tax burden, already traditionally low in Paraguay, fell from 10 percent of GDP in 1977-80 to 6.7 percent in 1988, with a consequent increase in the public deficit. The economic slow-down coupled with increasing inflation reduced levels of income and increased unemployment, from 2.1 percent in 1980 to 11 percent in 1988.

Stabilization and structural adjustment, 1989-1992

Upon entry into office in 1989, the new government[21] designed a National Plan for Economic and Social Development (1989-1990), entailing a reorientation of the national development strategy and changes in macro-economic management.

The new government opted for a social market economy in which growth patterns and resource allocation are primarily determined by private initiative and market forces within a framework of macro-economic stability, free competition and external openness. However, the state also provides a series of safeguards to protect the weakest population groups and to attenuate social differences and injustices.

With regard to development strategies, the National Plan for Economic and Social Development prioritizes social issues as well as agricultural and agro-industrial development which are considered essential elements for self-sustained economic growth. The plan also promotes commercial and family farming and comprehensive agrarian reform to solve the problem of landless farmers and broaden the base for agricultural expansion.

The changes in macro-economic management were radical. The first measure of the new administration was the introduction of a single, unrestricted exchange rate for imports, exports of goods and services and capital transfer. As the Paraguayan exchange market is relatively small, the exchange rate is prone to sharp fluctuations caused by Argentine and Brazilian exchange policies. The Central Bank of Paraguay was appointed to regulate the Fluctuating Free Exchange System to cushion these changes, but without altering prevailing market trends.

The government also modified customs duties, reducing and simplifying tariffs to reduce the degree of protection and discourage unofficial exports. The list of prohibited goods was reduced; a flat rate of 7 percent was applied for tourist sector imports; a 10 percent charge on assessed value was applied to imports from neighbouring countries; and the list of raw materials and capital goods subject to

[20] The multiple exchange rate system fixed different official rates for exports, government oil imports, agricultural inputs and the servicing of external debt. It also permitted free market negotiation of exchange rates for other imports and the remittance of profits abroad.

[21] The new government took over from Alfredo Stroessner who had ruled the country for more than 30 years.

customs duties varying between 3 and 12 percent was broadened.[22]

Alongside the free exchange rate, the export reference price system was replaced by an export tax of between 1 and 10 percent of the export value of certain commodities.

Tight monetary and fiscal policies were introduced from the end of 1989 to accompany trade liberalization. Interest rates were increased, credit was restricted and efforts were made to reduce the public deficit through a reduction and rationalization of expenditures and an increase in government charges[23] and taxation. Efforts were also made to streamline the financial system and improve its capacity to attract savings by withdrawing restrictions on the movement of interest rates. Credit was also increasingly directed to the priority sectors, including the production of certain agricultural commodities for export (soybean and cotton) and import substitution (wheat and sugar cane).

The agricultural setting

Despite a strong process of industrialization in the 1970s and early 1980s, agriculture is still the most important sector in the Paraguayan economy. The sector accounts for about 27 percent of GDP (37 percent in the mid-1960s), generates virtually all the foreign exchange from exports (98 percent) and employs almost half the economically active population. The agricultural contribution to the GDP increased by 2 percent in the 1980s, consolidating its position within the national economy.

The economic importance of agriculture is even more evident considering the heavy dependence of industry on agricultural production. In 1990, agro-industrial production accounted for more than 60 percent of total industrial output, the main items being food, drink and tobacco (40 percent), textiles (19 percent) and wood (15.8 percent). These industries contributed more than 50 percent of the industrial value added during the 1980s.

In 1990, 57 percent of the total population lived in rural areas and approximately 43 percent of the work force were engaged in agriculture. The production role of the peasant farmer sector is very important not only because of its contribution to production and employment — except for soybean cultivators, farmers with less than 20 ha accounted for over 50 percent of production in 1981 — but also because peasant farmers are less vulnerable than the commercial sector to price variations and therefore provide stability of food supply.

The preliminary findings of the national agricultural census of 1991 indicate an increase in small and large farms at the expense of medium-sized holdings. However, while the average area of the larger holdings increased, the size of the smallholdings decreased, indicating growing pressure on already occupied land.

The vitality of the Paraguayan economy as a whole is closely tied to the agricultural situation. This dependence on agricultural activity places the Paraguayan economy in a position of vulnerability in the event of adverse weather conditions and fluctuations or unfavourable changes in the international agricultural commodity market. Thus, when agricultural output fell in 1983, 1986 and 1991, both industrial GDP and overall GDP were adversely affected. In contrast, the growth of the agricultural sector from 1987 and, particularly, in 1988/89, boosted the economy as a whole and produced annual growth rates of more than 6 percent. That the Paraguayan economy basically depends on agricultural, livestock and forestry activities — both in terms of production and employment — reinforces the need for policy-makers to place high priority on the agricultural sector as the driving force behind the economy in general.

Agricultural performance in recent years

The adjustment policy applied since January 1989 has already shown some successful results. As mentioned above, inflationary pressure was significantly reduced in 1991. The public external debt fell by 18 percent between December 1989 and December 1990, amounting to $376 million. International reserves totalled $980 million towards the end of 1991, compared with $304 million in December 1988, despite a reduction in exports and an increase in imports.[24]

[22] Decree Law No. 19/18, Incentives for Economic Development, established tax incentives for investment. The most important were the tax-free importation of capital goods and raw materials for six months and exemption from 95 percent of tax on earnings for five years.

[23] After a general increase in 1989, government charges were frozen and remained practically unchanged until March 1992.

[24] The increase in international reserves was partly a result of accumulated arrears in payment of the public external debt, amounting to $520 million at the end of 1991.

Despite the implementation of a policy package, which produced a strong initial recession in other countries of the region, the Paraguayan economy registered positive growth in 1989-91, albeit at a reduced pace (5.8 percent in 1989, 3.1 percent in 1990 and 2.5 percent in 1991). This slow-down was heavily influenced by the poor performance of the agricultural sector in 1990 and 1991 (0.9 percent and -4.4 percent, respectively), despite the dynamism of the livestock subsector which increased by more than 5 percent annually in 1990/91. Although poor weather conditions adversely affected the agricultural sector in 1991, its loss of impetus was also a result of economic factors.

Indeed, the conditions that had led to spectacular agricultural growth in 1989 — relatively high international prices, expansionary fiscal policies, initial effects of the exchange rate liberalization — began to change in 1990. The positive effects of the real devaluation of the exchange rate, produced by the introduction of a floating exchange rate,[25] were erased by the subsequent increase in prices. While the rate of inflation between March 1989 and December 1990 was 105 percent, the nominal exchange rate underwent a nominal devaluation of only 22 percent. During this same period, there was a sharp fall in cotton, soybean and wheat prices on the international market, which had an even greater impact at the farm level — especially in the case of cotton — because of the inadequacies of the domestic marketing system and its extensive network of intermediaries.

The deregulation of the financial sector and monetary policy, adopted from the end of 1989, reduced credit and increased the interest rate which reached 43 percent in the middle of 1991. Despite the fact that the real lending rates were nil or slightly negative, the mere increase in the nominal rate negatively affected the expectations and profitability of farmers who were already suffering losses because of lower international prices and a growing exchange lag. The Central Bank of Paraguay began to ease monetary policy in July 1991, leading to a sharp fall in interest rates, to 24 percent in the development banks in December 1991 and 28 percent in the commercial banks. Nevertheless, real interest rates moved from nil or negative in 1990 to positive in 1991 when the inflation rate fell to 14 percent.

Moreover, domestic agricultural demand appears to have been adversely affected by the reduction in real incomes and the high level of urban unemployment which, in 1990, reached 6.6 percent of the economically active population in Gran Asunción against 4.7 percent in 1988. Finally, unofficial imports of agricultural commodities from Brazil and Argentina are believed to have increased since the end of 1990, particularly with regard to wheat, sugar and dairy products, thereby reducing domestic prices and demand for domestic output.

In this context, sectoral policy was unable to counter negative producer expectations and prevent an intensification of the sector's difficulties. The reference prices for cotton and soybean and the minimum prices fixed by the government for wheat and sugar cane have not had any real impact to date because there are insufficient means to monitor their enforcement.

The special credit allocations[26] for the promotion of soybean, cotton, wheat and sugar cane cultivation were insufficient for the sector's needs. In addition, they benefited the medium and large commercial farmers, not the small farmers. In the case of cotton, the main cash crop for Paraguayan peasant farmers, the loans went to the buyers and ginners who absorbed most of the benefits of the initial cheap credit.

The adverse effects of the relatively depressed economic situation on agriculture were compounded by drought. The reduction in production in 1990 and 1991 resulted both from a fall in yield because of adverse weather and a reduction in sown area because of unfavourable economic conditions. For example, in 1991, while the government envisaged more than 1 200 000 ha of soybean cultivation (906 000 ha in 1990), only 843 000 ha were actually cultivated. There were also reductions in areas cropped with sugar cane, wheat and cassava. Many farmers found

[25] According to IMF estimates, the single exchange rate represented a real devaluation of the actual exchange rate of approximately 25 percent. However, the devaluation may have been even more significant for the agricultural sector. In February 1989, the rate of exchange for exports was 550 guaraníes per dollar while, in the months following the exchange reform, the exchange rate was 1 200 guaraníes per dollar.

[26] The Central Bank of Paraguay periodically provides special discount rates, generally two or three points below the normal rate, to promote selected activities. However, in accordance with the macro-economic adjustment policy, these rates are higher than inflation.

themselves unable to pay back their debts and had to take out new loans to fund the 1991/92 agricultural season under relatively unfavourable terms.

Preliminary data for 1992 indicate a subsequent deterioration of the sectoral crisis. In March 1992, the situation for the two main agricultural commodities — cotton and soybean — was worrisome. After a slight recovery, the price of Paraguayan cotton (c.i.f. Liverpool) was 54 US cents per pound against 86 cents in March 1990. Producers were receiving 270 guaraníes per kilo, while the estimated average production cost for 1991/92 amounted to 570 guaraníes per kilo. The average international price of soybean was 13 percent lower in 1990 than in 1989 and fell by an estimated 25 percent between March 1991 and March 1992. The Association of Paraguayan Cereal Producers (AGROCEPAR) estimated that the price in March 1992 would not even be enough for producers to recover their production costs.

The government therefore set a minimum price of 450 guaraníes per kilo at the ginnery for premium cotton and decided on a maximum sum of 73 billion guaraníes to subsidize the cotton price.[27] Considering the exchange rate and the international price of cotton in March, this is sufficient to subsidize the acquisition of 85 percent of production, estimated to be 650 000 tonnes. However, it was feared that only a small portion of the subsidy would reach the producers, mainly peasant farmers.

With regard to soybean, the government set a special discount rate of 12 percent per year, while studies were made into the possibility of eliminating the 5 percent charge on soybean exports and reducing the other export taxes levied. These measures are no doubt necessary to mitigate the impact of the crisis but they are clearly limited and do little to overcome the structural and market problems affecting the sector.

Agriculture at a crossroads

Paraguayan agriculture is currently facing a dual temporal and structural crisis. The temporal problems are linked to the fall in international prices for agricultural commodities and to the adjustment policy adopted since 1989, particularly the overvaluation of the exchange rate and monetary policy. However, the mid-term market situation for soybean and cotton may improve. Although the Uruguay Round negotiations are bogged down, once the world recession of 1991-92 is overcome, the overall outlook for these commodities does not appear bleak.

With regard to the adjustment programme, the positive results obtained since 1991 have already begun to pave the way for a more flexible handling of the macro-economic policy instruments, particularly the expansion of credit and the reduction of interest rates — both trends that emerged in late 1991. Also, the scope of macro-economic policy should broaden with the consolidation of the institutional and tax reforms — VAT became effective on 1 July 1992 — and privatization.

The negotiation of the external debt will affect international reserves in the short term but will also provide the country with access to new international loans from official funding agencies (the IMF, the World Bank and the Inter-American Development Bank [IDB]) and the commercial banking sector. The regularization of external debt payments and a more flexible monetary policy will enable the exchange rate to stabilize at a level that is more favourable to agricultural production and exports.

The structural problems are a more serious challenge that the country will have to face in the longer term. Agricultural development had mostly been based on extending the agricultural boundary. Despite the intense modernization of the past decade, productivity is still very low and the decisive factors behind the growth of Paraguayan agriculture were the addition of almost 2 million ha to agriculture between 1960 and 1990 and the intensive use of labour.

Can agriculture maintain its past level of growth on the basis of this extensive approach to land use? A recent study by FAO and the government of Paraguay revealed that, without technological innovations, an annual production growth of 3 percent — the minimum needed to maintain the present nutritional status and the current share of exports in domestic agricultural production — would require an 80 percent growth in cropland and pasture over the next 20 years. In the past, the extension of the agricultural and livestock boundary led to the destruction of most of the forests in the country. This was compounded by the degradation of agricultural soil because of water and wind

[27] On 3 April 1992 the newspaper *ABC Color* reported that cotton farmgate prices at the end of March ranged from 340 guaraníes per kilo in the department of San Pedro to 430 guaraníes per kilo in Paraguarí. The average price was 400 guaraníes per kilo.

erosion and compaction by machinery. Over 1 million ha have been abandoned in the last 30 years because of loss of fertility and another 1 million ha, giving very low yields, continue to be used by small-scale resource-poor farmers, thus aggravating the problem further. A continuation of horizontal growth is therefore hampered by less available cropland and unavoidable environmental problems.

The model is also economically and socially unsustainable. The increasingly smaller holdings brought to light in the preliminary findings of the 1991 census, the greater competition for land — including considerable squatting in recent years — the marked impoverishment of the peasant population, increasing migration and urban underemployment are all symptoms of the social deterioration involved in the horizontal growth model.

There are two crucial problems on the economic level. First, the Paraguayan economy is very vulnerable because of its high dependence on the export of soybean and cotton. Second, competition on the international market is becoming increasingly fierce and the natural comparative advantages are ceding to efficiency gains based on technology, organization and management. The days of competitiveness based on the overexploitation of labour and natural resources appear to be numbered. Paraguayan farmers will also soon be faced with direct competition from Argentina, Brazil and Uruguay, which are currently more competitive in certain subsectors such as soybean, wheat, sugar cane and dairy production.

With this in mind, the sustained expansion of the agricultural sector will only be possible if it is based on more equitable land distribution and the diversification and greater efficiency of agricultural production. These objectives will require considerable efforts in terms of rural development, research, extension services, the transfer of technology to farmers, policies to promote agricultural and agro-industrial production and the establishment of infrastructure. Beyond the problems related to the current market situation, these are the main challenges that the country will have to face in the future.

NEAR EAST AND NORTH AFRICA

Regional overview

The Persian Gulf conflict caused a sharp deterioration of the economic conditions of many countries in the region. The region's combined GDP stagnated in 1991, reflecting the heavy output losses in the war-devastated economies of the Islamic Republic of Iran, Iraq and Kuwait which offset increases in other oil-exporting countries. Lower income energy importers were badly hit by losses in trade, tourism and workers' remittances. Many countries experienced a deterioration in their already pronounced macro-economic imbalances and nearly all of them faced soaring budget deficits as a result of an unprecedented rise in government outlays.

Despite increased government spending, price increases remained relatively moderate in most oil-exporting countries but the inflation rate accelerated to 20 percent on average in the net energy-importing countries.

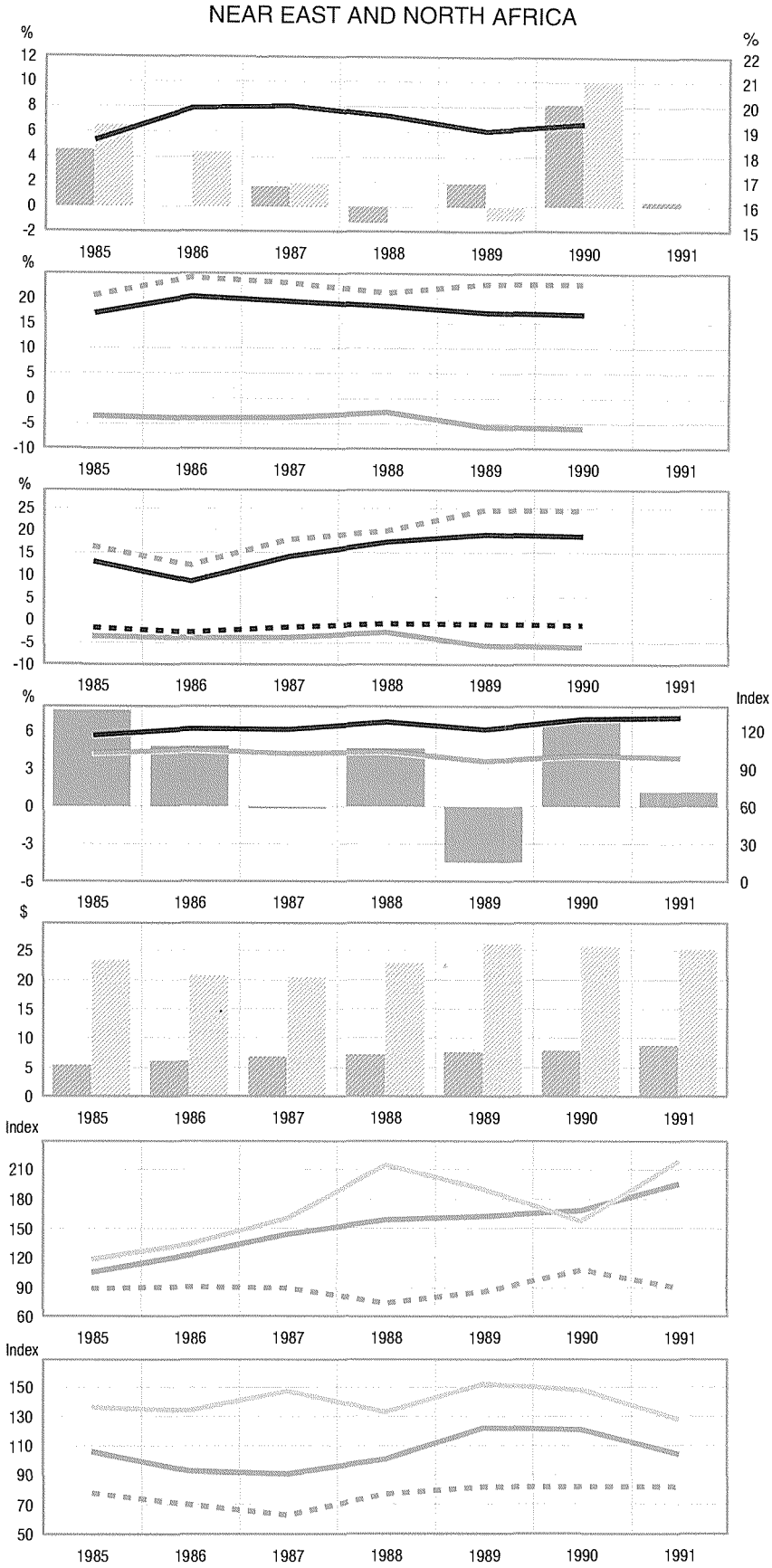
As normal output and trade patterns were restored, economic growth began to recover in the second half of 1991 and was expected to expand sharply in 1992. Economic prospects for the longer term, however, are subject to considerable uncertainty. The oil sector provides limited scope for further expansion; macro-economic imbalances and political instability are undermining the climate for domestic and foreign investment; and the public sector is facing a difficult task in adjusting to the recent loss of workers' remittances and the return of redundant workers from the Persian Gulf region.

Against this background, the agricultural situation in 1991 was characterized by good to excellent harvests in North African countries, enabling significant gains in per caput food production; sizeable increases in agricultural production in Cyprus, the Sudan, Iran and the Kingdom of Saudi Arabia; and, on the other hand, poor harvests in most other main agricultural producer countries in the region. Particularly heavy production shortfalls were recorded in drought-affected Yemen and Jordan, while Iraq's agriculture may have fallen 30 percent below the previous year's bumper crop. An alarming situation has developed in the latter country, where food prices have risen well above the purchasing capacity of large segments of the population and prospects for food production in 1992 are again poor.

As regards trade, a significant expansion in agricultural export earnings was estimated to

Figure 16

NEAR EAST AND NORTH AFRICA



TOTAL AND AGRICULTURAL GDP GROWTH

- Total GDP
- Agricultural GDP
- Agricultural GDP as % of total GDP (right scale)

SAVING AND INVESTMENT
(Share of GDP)

- Gross domestic investment
- Gross domestic savings
- Saving-investment balance (GDS-GDI)

TRADE AND CURRENT ACCOUNTS
(Share of GDP)

- Total imports
- Total exports
- Trade balance
- Current accounts

AGRICULTURAL AND PER CAPUT FOOD PRODUCTION

- Agricultural production growth (%)
- Agricultural production index (1979-81 = 100)
- Per caput food production index (1979-81 = 100)

AGRICULTURAL TRADE
(Billion US$)

- Exports
- Imports

AGRICULTURAL EXPORTS
(Index 1979-81 = 100)

- Value
- Unit value
- Quantity

AGRICULTURAL IMPORTS
(Index: 1979-81 = 100)

- Value
- Unit value
- Quantity

Source: FAO, World Bank and IMF

have occurred in 1991, contrasting with a decline in the value of agricultural imports. Despite the resulting improvement in trade balances, the region as a whole remained a heavy net food importer, the value of agricultural imports being about three times that of exports.

Concerning *agricultural policy developments*, water management and utilization was at the forefront of the governments' concerns in 1991. In all countries of the region water is priced below its economic value and, in many countries, is considered a free commodity. This has resulted in a serious misallocation and inefficient use of this scarce resource. In many countries of the region, the absence of an appropriate charge on the use of water remains the single most important factor distorting the choice of cropping pattern. A number of countries have initiated thorough investigations into means and measures for pricing water or introducing water utilization charges.

For example, the governments of Egypt, Yemen, the Sudan and Jordan are currently investigating the economic and social feasibility of alternative means for bringing the economic value of water into the decision process of users in the medium term. Actually, a lack of these measures and the adoption of inappropriate agricultural policies in the past have caused the degradation and unsustainable use of water and other natural resources in the region.

In 1991, the countries of the region continued efforts to reduce government intervention in pricing agricultural production and subsidizing and controlling the distribution of inputs and output. Many countries are redirecting their agricultural planning and policy functions away from those required for centrally directed economies to those required to support the efficient operation of markets. Many transformations in the agricultural institutions and policy decision-making mechanisms have been made to support this general trend.

Policy reforms are being implemented both as a part of a well-defined structural adjustment programme (SAP) as in the cases of Egypt and Turkey and as specific measures aimed at correcting the misallocation of resources and inefficiencies that resulted from previous policies, as is the case in the Syrian Arab Republic, the Sudan and Yemen.

Certain countries have freed agricultural prices for major crops and relaxed controls on production and marketing. In Egypt, all crops have been freed except cotton and sugar cane while, in the Sudan, wheat, sorghum and vegetable oil prices have increased to near world market prices. In the Gulf Cooperation Council (GCC) (comprising Bahrain, Kuwait, Oman, Qatar, the Kingdom of Saudi Arabia and the United Arab Emirates), producer and consumer subsidies have been reduced further for major agricultural crops such as wheat, barley, some vegetables and fruits and poultry meat.

Implicit taxation of agriculture through administered prices is being abandoned, as countries realize that the practice not only distorts the allocation of resources but is also extremely expensive in terms of maintaining a public sector enforcement system.

The agricultural policy reforms taking place require a restructuring of agricultural institutions. Efforts are under way to privatize many government agencies and parastatals in the region. In the Sudan, many governmental agricultural schemes have been offered for sale to private companies. In Egypt, agricultural holding companies are being transferred to the jurisdiction of the new Public Enterprise Office, which reports to the prime minister, and about 2 000 enterprises owned by local governments are to be sold to the private sector. The privatization process is proceeding slowly in some countries, such as Jordan, while the decision to privatize is still under consideration in other countries, such as the Syrian Arab Republic and Yemen.

Many countries in the region have continued liberalization of agricultural trade. Turkey has completed its liberalization programme for the major agricultural products, while cotton and sugar are the only agricultural commodities not yet liberalized for Egypt. Member countries of the Arab Maghreb Union (AMU) have liberated many agricultural commodities from export taxes in 1991. The Syrian Arab Republic, Iraq and Yemen are taking measures to reduce import subsidies for wheat and export taxes for citrus, fruits and vegetables and cotton. These liberalization policies have helped to expand agricultural exports and improve the region's net agricultural trade balance.

The Kingdom of Saudi Arabia and Yemen

The following discussion focuses on two countries which are very different with regard to their past overall and agricultural development experiences. Relatively well endowed with agricultural resources — the country in fact shows the most promising potential for

agricultural development on the Arabian Peninsula — Yemen has nevertheless faced a dramatic fall in food self-sufficiency; a deterioration of farm incomes leading to land abandonment; and a declining role of its agricultural sector in economic growth. By contrast, the Kingdom of Saudi Arabia, beset by severe climatic, soil and water constraints, has developed a dynamic agricultural sector, achieved or approached self-sufficiency in a number of staples and become an exporter of wheat and other products. This has been achieved, however, at very high cost.

Behind the diverse circumstances that led to these opposing experiences, the two countries have a major problem in common: a water shortage, including concern about the sustainability of past patterns of ground water exploitation.

The Kingdom of Saudi Arabia

The remarkable progress achieved by the Kingdom of Saudi Arabia in food and agriculture during the past decade has attracted worldwide attention. Severely deprived of natural resources for agriculture, the country has nevertheless achieved self-sufficiency in wheat, some poultry products and most vegetables. In addition, for a number of products — wheat, eggs, certain vegetables and dates — production now exceeds domestic demand.

Two factors have rendered such achievements possible: the strong political will of policy-makers and the availability of financial means to subsidize the sector generously. The process has not been without difficulties, however. The country is facing a number of issues related to the financial cost of this effort as well as the massive water requirements of agricultural development and its national and international market implications.

Agricultural setting and performance

The economic importance of agriculture increased significantly during the past decade, although remaining minor in relation to oil-related and manufacturing industries (agriculture's share of GDP rose from 3.4 percent in 1984/85 to 8 percent in 1989/90). In 1990, the sector employed about 10 percent of the total labour force, compared with 40 percent in the early 1970s. Employment in agriculture only rose by about 1 percent annually during the 1980s. The comparatively faster growth of agricultural output resulted from strong gains in labour productivity, brought about by technological and managerial progress.

Despite formidable climatic, soil and water constraints, value added in agriculture expanded at the spectacular yearly rates of 8.7 percent during the Third Development Plan (1980/81 to 1984/85) and 10.4 percent during the Fourth Development Plan (1984/85 to 1989/90). The index of agricultural production (1979-81 = 100) stood at 351 in 1990.

The increase in agricultural production was relatively broad-based, although efforts were more concentrated in basic food crops, particularly wheat. Significant gains were also achieved in vegetables, fruit, milk and poultry.

Wheat cultivation has developed primarily in the Hail and Qasim "belt" to the northwest of Riyadh. Cultivation is based on an irrigation system that draws on underground aquifers and uses a central pivot and rotating watering-pipe. With the development of this system, thousands of crop units of a perfect circle shape, some covering 100 ha or more, have given a distinctive appearance to the desert landscape.

The escalation of wheat production took place from a very modest base. In 1978, the Kingdom of Saudi Arabia only produced about 3 300 tonnes of wheat. The following year, production was multiplied fivefold and two years later tenfold. By 1985, more than 2 million tonnes were produced annually — more than enough to satisfy domestic demand. In 1990 output rose to 3.6 million tonnes and a similar (perhaps larger) amount was estimated to have been produced in 1991. These levels of production largely exceeded domestic consumption requirements, which are estimated to be about 1.25 million tonnes, as well as the country's storage capacity, estimated to be about 2 million tonnes. Consequently, the Kingdom has exported an estimated 9 million tonnes of wheat to 40 countries since 1987, emerging as the world's sixth largest wheat exporter.

Along with the quantitative increase in wheat production, there was a parallel improvement in product quality as well as in the supporting marketing, storage and processing infrastructures. The quality of Saudi hard wheat now compares favourably with the best internationally traded wheats.

The other products for which the Kingdom is already self-sufficient are eggs, most vegetables and dates — the country is one of the world's largest date producers, with an output exceeding 500 000 tonnes in recent years. Egg

production is currently close to three billion, allowing surplus exports to neighbouring countries. The country is also nearing self-sufficiency in the production of broilers and milk. More than 200 million litres of milk are produced annually under advanced systems of production and industrial processing.[28]

As referred to above, such results were achieved through a decisive food security policy thrust, initiated in the mid-1970s, which involved massive subsidization. Support was extended to farmers through: *i)* short- and medium-term soft loans by the Saudi Arabian Agricultural Bank — the number of these loans rose from 645 to 23 800 over the 20 years ending in the mid-1980s; *ii)* production input subsidies, covering 50 percent of the costs of engines, pumps and concentrated feeds, 45 percent of agricultural machinery, 20 to 30 percent of poultry equipment, and fully refunding costs of transporting dairy cattle from abroad; *iii)* the free distribution of land to farmers and agricultural companies — up to 400 ha were allowed per investor, with land distributed reaching a total of about 1 241 000 ha in 1989; *iv)* substantial price support for agricultural crops such as wheat ($533 per tonne for small farmers and $400 per tonne for agricultural enterprises in 1991), barley ($267 per tonne) and dates; *v)* tariffs on eggs, broiler meat and dairy products in order to protect and promote domestic production.

Problems and issues

A review of past performances suggests that the primary food security and other agricultural objectives of the government appear to have been largely achieved. The country's population has access to adequate levels and a varied composition of food. Average daily energy intake is approximately 2 820 kcal per caput. Past strategies have also enabled agriculture to become a sizeable contributor to the GDP; large desert zones have been turned into arable land; a dynamic farm sector has developed, with well-trained technicians, farm managers and entrepreneurs; a considerable degree of integration has been achieved with upstream and downstream industrial activities linked to agricultural production; and the country has become a significant presence in world food markets. However, there are also negative aspects to this bright record that raise the issue of the sustainability of past policies and strategies.

First, the financial cost of agricultural subsidies was extremely high. For wheat alone, the government authorized payments to farmers amounting to $2.1 billion for their bountiful 1991 crop. Procurement prices for wheat in 1991 which, as mentioned above, ranged from $400 to $533 per tonne, were about four times the international price levels in 1991.[29] The marginal profitability of wheat production is considered to be very high, tentative estimates indicating that government procurement prices for wheat are about three times higher than farm production costs. However, considerable gains in production efficiency and reductions in costs have been brought about by modernization.

The mounting costs of farm subsidies gave rise to concern in the context of the large government budget deficits of recent years. However, for a country possessing almost one-quarter of the world's total known reserves of oil, the continuation of such high levels of farm support may not represent an unsustainable burden. A more fundamental medium- and long-term concern relates to water requirements and the depletion of underground water resources. Agriculture is by far the largest consumer of the country's scarce water supplies. The sector's annual water requirements in 1987 were estimated to be 14 billion m^3, representing 90 percent or more of total water consumption. Of this total, water consumption by wheat was estimated to be 5.3 billion m^3 which means that, to produce 1 tonne of wheat, about 2 000 m^3 of water are required. Other subsectors are equally demanding: to produce 1 litre of milk, for instance, an estimated 1 500 litres of water are required for feed irrigation, animal spraying, cleaning, etc.

Given the country's very low rainfall and the economic and technical limitations to the use of desalinated water in agriculture, the bulk of water for irrigation comes from underground aquifers. Current rates of water consumption are considered extremely high relative to the country's reserves of fossil water. The precise size of these reserves is not known and research

[28] The Al Safi dairy farm, one of the world's largest, has a herd of 20 000 Holstein cattle and a daily milking capacity of 1.25 million litres.

[29] Monthly average f.o.b. wheat prices in 1991 were $125 per tonne for US No. 2 Hard Winter ord. prot. and about $100 per tonne for Argentina Trigo Pan.

is under way to determine their current and prospective volume. However, some unofficial estimates indicate that, at the current rates of extraction, known reserves could be depleted in three or four decades. Even though these estimates are subject to caution and there is always the possibility of new underground water discoveries, the government recognizes that a further large spatial expansion of agriculture would lead to a critical imbalance between water demand and sustainable water supply. This process, together with the associated increasing costs, might considerably reduce agricultural production profitability in the long term.

Another issue that is raising government concern is the unbalanced pattern of agricultural development which has unevenly centred on a single crop; wheat. It is obvious that, because of the high cost of water and as a result of other natural constraints, the Kingdom has no comparative advantage in producing wheat. Furthermore, the effect of price support for wheat on general terms of trade has been unfavourable for other crops and has consequently limited production diversification and run counter to expected changes in the structure of food demand. Indeed, while the demand for vegetables and fruits is expected to grow at an average annual rate of about 4.5 percent during the period 1990-95, and that for white meat at 5.5 percent, the demand for wheat should only increase by 1.9 percent.

Agricultural development strategies

The Fifth Development Plan, 1990-1995, addresses the above issues and outlines general and subsectoral policy lines and objectives for agriculture. A 7 percent annual real growth rate for the sector is aimed at throughout the plan's duration (twice the targeted growth rate for the economy as a whole). Beyond this general objective, a gradual production shift is envisioned away from crops that require excessive inputs of scarce water resources and towards products with a higher value added. Water consumption is anticipated to be reduced, mainly through a decline in agricultural consumption from 14.6 billion m^3 per year at the beginning of the plan to 12.7 billion m^3 at the end of the period.

In order to reduce pressure on water demand while achieving the objective of agricultural diversification, a gradual shift from wheat to barley should be encouraged. The rationale for such a shift would be the easier and less water-intensive production requirements of barley in relation to wheat as well as the country's strong and growing demand for animal feed.[30] In line with this policy, adjustments have been made in the relative prices and other forms of support in favour of barley, new moves have been made to introduce quotas in the volumes of wheat procured by the government while farmers are required to obtain licences to produce wheat. The Fifth Development Plan goals include a 6.9 percent yearly decline in wheat production during the plan period and an annual increase of 4 to 8 percent production of meat, vegetables, fruit and fish.

However, developments to date raise doubts regarding the feasibility of significantly reducing wheat production, at least in the short term, as the marginal profitability of this commodity is still higher than that of barley. Although the plan provides for a regular review of agricultural support prices to promote optimum cropping patterns and production diversification, wheat procurement prices have not been lowered so far.

Another issue addressed by the plan relates to private sector participation. While the government will continue to play an important role in agricultural development, the private sector will be encouraged to assume a major role in production, investment and the application of modern and appropriate technology. In particular, the government will reduce its share in the equity of the National Agricultural Development Company.

Finally, the problem of foreign trade is also addressed. It is felt that the development of certain products is adversely affected by the absence of tariffs and severe foreign competition, particularly for vegetables. Thus, consideration is given to the imposition of tariffs. A related issue concerns the expansion of meat production which is primarily based on imported raw materials and feed. Some analysts have suggested a revision of the import regime for feeds so as to provide incentives for domestic barley production.

On the export side, the policies pursued by the country have international implications. The fact that the surplus wheat production is being

[30] The annual demand for barley as animal feed was estimated to be approximately 4.3 million tonnes in 1989 and was expected to expand by 6 percent annually in the medium term. Domestic production of barley, estimated to be 280 000 tonnes, only met a minor part of this demand.

exported at prices that are about one-third of their estimated subsidy rate[31] has caused trade diversion and distortion and has been the cause of concern for other wheat producers and exporters with a greater natural comparative advantage.

Yemen

Despite the complex problems involved in merging entirely different economic, political and administrative systems, the unification of the former Yemen Arab Republic and the People's Democratic Republic of Yemen in May 1990 was widely seen as a promising event for the new state's populations. The potential for growth and development was enhanced by a larger domestic market, allowing economies of scale, and the integration of two largely complementary sets of resources. With an estimated 12 million people, the new state's population exceeded that of the rest of the Arabian Peninsula. The north (the Yemen Arab Republic) was contributing a dynamic private sector, rapidly expanding tourism, oil and gas reserves and — despite land and water constraints — an agricultural sector with a good potential for development and product diversification. The south (the People's Democratic Republic of Yemen) enjoyed rich - although underexploited - fishery resources, a relatively highly educated civil service and the strategically located and economically active port of Aden. Optimistic expectations were further enhanced by the relatively orderly establishment of a central government in Sana'a, with a multiparty parliamentary system and the adoption of market-oriented economic principles.

However, since unification there has been a dramatic aggravation of the economic problems inherited from both the former countries. For economies that were heavily reliant on external aid and remittance inflows, the reduction in

[31] The subsidy rate is calculated as the difference between average procurement prices and f.o.b. border prices for Saudi wheat exports.

BOX 5

The Food and Processing Company

The Food and Processing Company is an example of integrated action in three priority areas defined by Saudi policy-makers: product diversification, the development of agro-industry and private sector participation. This newly established private industry expects to become the country's largest company for a wide range of processed food products (e.g. pasta, with a planned annual capacity of 8 000 tonnes; date products, 8 000 tonnes; dairy and egg products, 6 000 tonnes; frozen vegetables, 6 000 tonnes; infant food, 6 000 tonnes; animal feed, 100 000 tonnes and with expansion capabilities of twice that amount; etc.).

The company's integration with domestic farm production is sought through the statutory mandate to use only domestically produced raw materials. This is expected to boost demand for a wide variety of farm products and help develop and diversify domestic agriculture. Such an imposition represents a considerable financial constraint for the company, however, given the high prices of domestic raw materials in relation to imported ones.

On the other hand, the company benefits from a variety of support measures and a very liberal tax regime which ensures its financial viability and competitiveness *vis-à-vis* imported products.

external financing resulting from the Persian Gulf crisis was a devastating blow. The most damaging impact was the return of 800 000 Yemeni expatriates. Remittances from expatriates formerly accounted for around one-fifth of the country's foreign exchange earnings. Losses associated with the Persian Gulf crisis were estimated to have been $1.8 billion in fiscal year 1990/91 and a similar amount in the following year.

Agriculture suffered from these problems in many ways: a number of programmes and projects were abandoned, downscaled or postponed; domestic demand was constrained by depressed incomes and high unemployment; and the massive return of expatriates raised the unemployment rate to about 25 percent while also creating severe food shortages. These problems were further aggravated by an unusually severe drought and a sharp fall in food production in 1991.

Government policy options appear particularly limited under the current circumstances. The scarce financial resources available are needed to satisfy pressing short-term requirements — consolidate unification, reduce macro-economic disequilibria and integrate the returnees into an ailing economy. On the other hand, administrative difficulties linked to the process of transition have caused delays in policy formulation, adoption and implementation.

Economic and agricultural setting

Only a few decades ago, both the Yemen Arab Republic and the People's Democratic Republic of Yemen were among the poorest and least-developed countries in the world. The former had an entirely agriculture-based economy with a predominant subsistence component. Deprived of natural resources, with the notable exception of the fisheries sector, the People's Democratic Republic of Yemen also suffered from a lack of national integration and a concentration of economic activity in the western part of the country. For both countries, the introduction of economic planning, high levels of investment (sustained by external assistance and expatriate remittances, particularly during the oil boom years) and the discovery of oil reserves in the 1980s allowed extremely fast growth during most of the 1970s and 1980s.

With a per caput GDP estimated to be about $670 in 1989, more than double that of the early 1970s, the Yemen Arab Republic emerged as a lower middle-income country — although progress remained slow according to other social indicators. Economic growth was relatively slower in the People's Democratic Republic of Yemen and actually turned negative during 1985-88. In particular, civil strife in 1986 dramatically reduced economic activity that year. Economic growth was sustained at the cost of huge macro-economic imbalances in both countries. Current account deficits in 1989 were about 7.5 percent of GDP in the Yemen Arab Republic and 45 percent in the People's Democratic Republic of Yemen, while their respective budget deficits were 9 percent and 45 percent of GDP. External debt, particularly heavy in the former People's Democratic Republic of Yemen, was equivalent to 78 percent of unified Yemen's GDP in 1990. In 1991, the newly unified country was only able to honour about one-fifth of its debt-service obligations, which were estimated to be about $1 800 million.

The economic contribution of agriculture was uneven in the two former republics. Despite the recent emergence of oil, agriculture was traditionally the dominant economic sector as well as the most important support for industrial development in the former Yemen Arab Republic. Prior to unification, the sector accounted for about 28 percent of GDP and the agricultural labour force represented 63 percent of the total labour force.

Despite serious constraints in land and water resources and inefficient use of irrigation water, northern Yemen offers the best agricultural potential of all regions on the Arabian Peninsula. A large diversity in soil, climate and altitude as well as a relatively abundant rainfall in the country's high central plateau permit a large variety of crops to be produced. Northern Yemen also enjoys rich fishery resources and has the potential to export high-value species.

In the south, by contrast, less than 1 percent of the land area is considered cultivable, with only up to 100 000 ha being of any agricultural value. About one-third of the total labour force was employed in agriculture prior to unification. However, the fisheries sector presents a major source of economic potential. About 10 000 people are currently employed in southern Yemen's fishing industry. The fish catch expanded considerably during the 1980s, chiefly through the participation of foreign vessels.

Despite the disparity of resources, the two former Yemeni republics have shared in disappointing agricultural performances and a

declining role of the sector as a factor in growth and food security. In both republics, the sector's share of GDP fell markedly during the 1980s, reflecting both the rising economic weight of the oil industry and the weak growth of agriculture itself.[32] Agricultural production in the Yemen Arab Republic rose by only 1 percent yearly during the first five-year plan period (1977-1981) instead of by the 5.5 percent targeted growth rate; and by 2.4 percent during the 1982-1986 second plan period, about half the targeted growth. In the south, the overall picture was one of stagnation or very low growth in the production of most main crops, with the notable exception of vegetables.

These trends resulted in a rapid deterioration of the food self-sufficiency position. Estimates for the two former republics suggest that combined domestic production accounted for 80 percent of total food supply in the mid-1970s, 64 percent in 1980 and 56 percent in 1990. Conversely, food imports rose in volume by about 8 percent per year during the 1970s and 4 percent per year during the 1980s. The cost of such imports rose out of proportion with the country's revenues from trade (their value almost equalled that of total merchandise exports in 1988/90) and also absorbed a major share of foreign exchange from invisibles (the value of the Yemen Arab Republic's food imports were equivalent to about 40 percent of remittances in 1983 when the latter were at their highest; and 120 percent in the late 1980s). Although the country received significant volumes of food aid, these only accounted for a minor part of total food imports.[33]

The strong expansion of food imports was still insufficient to offset the decline in per caput domestic food production and secure adequate levels of food supply. Per caput calorie intake levels increased slowly during the past decade to approximately 2 250 kcal per day in recent years (compared with 2 980 kcal per day for the Near East region as a whole). The incidence of malnutrition, already high, is believed to have increased dramatically in 1991 when a severe drought caused the production of cereals to fall by 60 percent, vegetables by 12 percent and legumes by 30 percent.

Constraints to agricultural development

Among the numerous structural and temporal factors that adversely affected agricultural performance, perhaps the most negative single influence during the 1970s and 1980s was competition from oil. The oil bonanza in the region and, subsequently, the discovery of oil in Yemen itself, were not a blessing for agriculture. Migration to neighbouring oil-rich countries deprived many rural communities of up to one-third of their active labour force during the past two decades. On the other hand, the sector benefited from gains in income from oil to the extent that they stimulated demand for agricultural products and generated resources for developmental action, including in agriculture.

Rural migration profoundly modified the structural characteristics of the sector. A casualty of the process was the system of terrace cultivation that had been developed over thousands of years in the mountain chain running the length of the country. This traditional farming model, which holds and slows rainfall and prevents erosion, had ensured successful indigenous farming and represented an element of food security over the centuries. Indeed, many key products, including the traditional staples sorghum and millet, are chiefly produced in rain-fed terraced areas. With the abandonment of land over the past decades, these terraces have undergone severe degradation to the point that the whole system is threatening to collapse.

Another major impediment to agricultural development has been the inefficient use of available water. Along with rural migration, there was a shift from rain-fed to irrigated farming, and from subsistence to market agriculture, particularly for fruits and vegetables. This process led to a rapid increase in the demand for water as well as pressure for ground water exploitation. About 70 percent of the water used in commercial agriculture is currently estimated to come from ground water resources. However, available information suggests that aquifer withdrawal is taking place at a faster rate than its natural recharge.

[32] Production of *qat*, a mild stimulant shrub, is not recorded in national accounts. However, it accounts for a significant part of farm incomes, is traded openly and represents a source of sizeable tax revenues to the government. Although deprived of nutritional value and in competition with other crops, *qat* production has at least helped to limit rural migration.

[33] Food aid in cereals fluctuated from a low of 20 000 tonnes in 1979/80 to a high of 190 000 tonnes in 1987/88 and averaged about 80 000 tonnes from 1988/89 to 1989/90. By comparison, cereal food imports were in the order of 1.4 million tonnes in 1989 and 2 million tonnes in 1990.

Furthermore, water-use practices are inefficient and wasteful. Farmers tend to overirrigate their crops; irrigation practices generally ignore the physical characteristics of the soil and land grading, resulting in water losses through evaporation, run-off and seepage; and, in the absence of adequate legislation and enforcement, no economic incentives are provided to encourage the efficient use of water.

The structural characteristics of the farm sector have also limited progress in agriculture. About 55 percent of farmers own less than 1 ha of land. Despite greater market orientation for a number of products since the early 1980s, only half of the total agricultural production is marketed. Educational levels and extension services, particularly for women who do the bulk of the work in rural areas, are extremely low. Past macro-economic policies have generally been biased against agriculture. These factors have discouraged farmers from adopting new crops and techniques.

Finally, the sector has received insufficient support from public sources. Financial, technical and administrative shortcomings have limited the government's capacity to develop infrastructure, provide fertilizers and other production requisites and services, and mobilize operating funds for project implementation. Inadequate statistics and information services have been major obstacles to the effective planning, organization and monitoring of policy action and private decision-making. Emphasis has been put on regional development without a parallel effort to centrally coordinate and provide supportive services to regional development agencies. The fragmentation of farm units has made it difficult to diffuse field extension, farm incentives and marketing services.

Strategies for agricultural development

Since independence in the 1960s, both the former Yemen Arab Republic and People's Democratic Republic of Yemen have launched three national development plans which have emphasized the role of agriculture as a major contributor to growth, food security and employment. Common general themes in these plans were the pursuance of food self-sufficiency, the improvement of production efficiency and the substitution of imports.

Consistent with the importance attached to agriculture, the sector's share in planned investment has been relatively high. In the former Yemen Arab Republic, planned investment in agriculture as a share of the total was 14.3 percent for 1977-81, 15.8 percent for 1982-86 and 8 percent for 1987-91 — although the share of actual public investment in the sector is reported to have been approximately 12 percent. Although other sectors were accorded higher priority in public investment allocations — namely diversification of the industrial base and development of the transport, communications and service sectors — agriculture was also expected to benefit indirectly from these efforts.

Development strategies and plans for resource allocation are still largely undefined in the current transition period. Upon unification, a transitional government programme was issued, defining general priorities for each sector, including a specific reference to agriculture as the leading sector in the economy. A mid-term plan for 1993-95, currently being prepared, is expected to be integrated into a longer-term plan to the year 2000. While its operational aspects are still uncertain, some indications of policy direction for agriculture are known from public statements. These are: the adoption of market-oriented principles, with progressive deregulation and price liberalization except for some monitoring of the prices of basic commodities and services; encouragement of private sector investment in agriculture through, *inter alia*, the establishment of private stock companies and cooperatives; better utilization of water resources, with priority on rural areas suffering water shortages; and the promotion of enterprises linking agriculture with the food, textile and leather industries.

In fisheries, government efforts are expected to focus on the provision of services through cooperatives; the development of national stock companies to encourage domestic and external investment; and the promotion of fish-canning factories. On the institutional side, efforts will be made to upgrade the planning and assessment capabilities of government agencies so as to ensure that development action is in line with long-term objectives.[34]

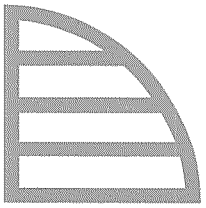
Considerable uncertainty surrounds the prospect of a successful implementation of these measures. The financial constraint, at least

[34] An agricultural sector review is being carried out with the assistance of FAO as an important preliminary step towards defining and rationalizing policy action in agriculture.

partly responsible for failure to meet targets in past plans, is more acute than ever. The integration of the two former Yemeni economies, the statist south and the market-oriented north, is a complex and costly process. Improvements on the external front can be expected as the political problems associated with the Persian Gulf conflict subside, foreign investment and aid resume at pre-war levels and normal trade, labour and financial flows are re-established in the area. However, normalization may take time.

Moreover, the role of oil as a source of income and foreign exchange may diminish. At the current and projected extraction rates, proven oil reserves may be nearly depleted by the end of the 1990s — although the possibility of significant new oil reserve discoveries cannot be ruled out. Such limitations in resource availability will necessarily impose high selectivity in resource allocation and extreme care in the definition of priorities. In any case, agriculture will remain the direct and indirect source of income and employment for the majority of Yemenites for a long time to come and any successful development effort must focus on upgrading this key economic sector.

Agricultural policy-makers will have to make difficult decisions on such intensively debated issues as: for which products does Yemen have a comparative advantage; to what extent and for which products should the country pursue self-sufficiency, export promotion or import substitution policies; what are realistic objectives for agricultural growth — bearing in mind the disappointing results of previous plans; how can returnee migrants become an opportunity rather than a burden — in other words, how can returnees be reintegrated into the economy, particularly the farm sector; what are the sustainable limits of ground water extraction and what legislative, enforcement and conservation action should be taken to optimize the use of water; and how can the degradation of the monumental terrace system, a major contributor to environmental and rural sustainability, be arrested?



REGIONAL REVIEW

II. Developed country regions

EASTERN EUROPE AND THE FORMER USSR

Eastern Europe

During 1991/92, the East European countries continued the complex process of transforming their economies to more market-oriented systems. In its initial phase, this transition has involved heavy economic losses. In 1990 and 1991, all East European countries registered declines in real GDP, strong inflationary pressure and falling employment. Most of these countries also recorded pronounced external imbalances (Table 18). The decline in output and incomes has been much greater than originally anticipated.

While the macro-economic outlook for these countries is uncertain, the IMF currently expects the decline in economic activity to bottom out in most East European countries in 1992 while it projects growth to start picking up in 1993.

Trade flows and patterns have been significantly affected by reforms. Regional trade has declined significantly following the dismantling of the Council for Mutual Economic Assistance (CMEA), the switch to settlements in convertible currencies at world market prices and the collapse of the former USSR market. Despite some efforts by countries of the Organisation for Economic Cooperation and Development (OECD) to open their markets to reforming countries, major obstacles must still be overcome if significant market access is to be gained in the West, particularly for East European agricultural products.

Like other sectors, agriculture is affected directly and indirectly by the economic reforms and related market developments. The price and credit market reforms, together with the reduction or removal of subsidies on agricultural products, are resulting in a new set of relative prices for inputs, outputs and capital. Over time, these reforms are intended to improve resource efficiency by promoting market-induced adjustments in production levels, output composition, input use and production techniques. Despite the significant shock involved in introducing market-determined relative prices, the reforms are considered a prerequisite for improving efficiency in the farm sector.

Nevertheless, the immediate consequences of the reforms have been unsettling for agricultural producers. In most countries, farmgate prices have tended to increase at a much slower rate than farm inputs and overall consumer prices. In addition, many agricultural producers have been hit hard by positive real interest rates linked to overall high inflation rates.

Trade liberalization policies are placing additional pressure on the agricultural sector. The extent to which East European agriculture can face the full impact of international competition and the extent to which some type of protection (which is likely to be costly) should be used, are major current policy issues. With world market prices depressed at present, the initial effects of opening the domestic market to subsidized exports from Western countries has already prompted some governments to re-erect protective barriers.

A number of agricultural subsectors linked to food processing, distribution, marketing and input supply are also affected directly by privatization efforts. Privatization is proving to be a complex and lengthy process, in particular for the larger state-owned companies; privatization of small businesses and shops are generally proceeding at a much faster pace.

Land reform, another enormously complex political, legal and administrative process, is proceeding much more slowly than the price and trade reforms. One problematic issue concerns the rights of original owners whose land was confiscated. Other related issues include: how property rights should be allocated among members and employees of existing production cooperatives; how cooperative farms should be transformed into new forms of voluntary associations; and how the state farms should be privatized.

TABLE 18

Eastern Europe: recent changes in macro-economic indicators

	Real GDP		Consumer prices		Employment		Current account[1]	
	1990	1991	1990	1991	1990	1991	1990	1991
	(.....Percentage change.....)						(.....Percentage of GDP.....)	
EASTERN EUROPE[2]	**- 7.1**	**- 16.6**	**149.1**	**134.7**	**- 1.6**	**- 5.8**	**- 0.5**	**- 0.4**
Albania	**- 10.0**	**- 21.1**	**...**	**40.0**	**0.2**	**...**	**- 7.1**	**- 18.1**
Bulgaria	**- 10.6**	**- 25.0**	**26.3**	**460.4**	**- 6.5**	**- 13.9**	**- 5.3**	**- 12.1**
Czechoslovakia	**- 0.4**	**- 16.4**	**10.8**	**58.7**	**- 0.1**	**- 6.6**	**- 2.9**	**2.1**
Hungary	**- 4.0**	**- 7.5**	**33.4**	**33.0**	**- 0.7**	**- 1.1**	**1.2**	**1.4**
Poland	**- 11.6**	**- 8.0**	**585.8**	**70.3**	**- 2.6**	**- 2.4**	**4.0**	**- 2.1**
Romania	**- 7.4**	**- 12.0**	**4.7**	**164.3**	**- 1.0**	**- 2.5**	**- 8.7**	**- 7.7**

[1] Current account in convertible and non-convertible currencies.
[2] Excluding Albania.
Source: IMF. *World Economic Outlook*, April 1992.

While these issues involve a lengthy process of policy formulation and implementation, the uncertainty surrounding future property rights has in the meantime had an adverse effect on agricultural production and farm management decisions.

The following discussion focuses on the status of economic and agricultural reform in three central European countries: Hungary, Czechoslovakia and Poland.

Hungary

Hungary has continued implementing its gradualist economic reform programme. By the end of 1991, price liberalization encompassed 90 percent of consumer prices and 93 percent of producer prices. Agricultural producer prices have been freed since January 1990 and consumer subsidies were phased out during 1990. Foreign trade has been substantially liberalized, although licensing requirements still exist for some agricultural products.

The more gradual approach to reducing subsidies and liberalizing prices has enabled Hungary's agriculture to be somewhat less affected than in other reforming countries. Still, price movements continued to be unfavourable to agricultural producers in 1991. During the year, food prices increased by an average of 24 percent, output prices of the food industry by 14 percent and overall consumer prices by 36 percent. Over this same period, agricultural producer prices declined by about 1.5 percent while agricultural input prices increased by around 28 percent. Overall, the farm sector's profits were estimated to have declined by two-thirds, with numerous cooperative farms experiencing heavy losses. The food processing sector was also affected negatively by the contraction of markets, with 1991 production declining by 6 percent and industry profits falling by more than 50 percent.

Hungary is actively reforming the property rights systems and restructuring agricultural organizations. The country's agriculture is based largely on cooperatives which occupy about 70 percent of agricultural land. In 1990, the country's 1 268 cooperatives averaged 4 000 ha in size and employed an average of 377 individuals each. The 171 state farms controlled about 15 percent of agricultural land, with an average size of about 7 000 ha and average work force of 850. Some 1.5 million small-scale producers cultivated the remaining 15 percent of farmland.

About 35 percent of the cooperative land is privately held by the members, while the majority of the land is collectively owned by the cooperative. Since 1968, privately owned land farmed by cooperatives was not passed on to potential heirs in the event of a member's death, but became collective property of the cooperative.

Settling landownership, is one of the objectives of the Compensation Act passed by parliament in mid-1991. The Act aims at providing compensation for individuals who have had property confiscated since June 1949 and creating funds for the acquisition of property at present owned by the state or cooperatives. Compensation is only partial and regressive, with an absolute ceiling on indemnification. Compensation is provided mainly in the form of bonds which bear interest

for three years and can be used for purchasing state-owned property.

Both cooperatives and state farms are obliged to make a sufficient quantity of land available to meet the potential demand for land from bond holders. By December 1991 (the deadline for compensation claims was 16 December 1991), 800 000 applications had been received. Meeting all claims would shift 2.4 million ha, approximately 35 percent of land farmed by cooperatives and state farms, to private holders.

Legislation for the *transformation of cooperatives* was passed by parliament in January 1992. One piece of legislation defines the rules for the future operation of cooperatives, while a second one, valid until 31 December 1992, establishes the interim measures regulating the transition of cooperatives into the new structures.

The essential objective of the interim rules is to transfer the land and other assets (together with debts) of the existing cooperatives as private property of the individual members. This includes restoration of property rights on 2 million ha of land already nominally held by cooperative members as well as privatizing land owned by the cooperatives. Land claims from bond holders must be met from the total 3.4 million ha of cooperative land. Whatever collectively owned land remains available will be distributed among individual members.

For other cooperative assets, members will receive their portion in the form of share certificates which they will be able to convert and redeem in kind if they so wish. After 31 December 1992, individuals will be free to use privately, or otherwise dispose of, their property.

State farmland will be divided in three ways. Some will be made available to citizens willing to purchase land with compensation bonds. Other farmland will be subdivided into small land parcels to be given to employees of state farms. What remains may be sold over the next few years.

How the changed ownership pattern will affect farm structures in the future is still uncertain. The future roles of individual farming, cooperatives and other forms of business associations cannot be foreseen, but a variety of different productive forms is likely to emerge. The complete collapse of production cooperatives is not expected in the short term, since most existing technical facilities are more appropriate for large-scale farming.

Recognizing that the restructuring of the agricultural sector also depends on the creation of an efficient land market, parliament was expected to debate legislation on land mortgages and the creation of a rural credit institute during the second half of 1992.

Because of the importance of food processing to the Hungarian economy, the successful privatization of this sector is receiving high priority. Special emphasis is placed on attracting foreign capital to the sector. By early May 1992, 24 of the 142 food processing companies had been sold off fully or partially — 20 of which were sold to foreigners. Issuing compensation bonds during 1992 is expected to provide a boost to the privatization process.

Another important issue relates to the outlook for agricultural exports. In 1989, agricultural exports represented 32 percent of agricultural production and 20 percent of total exports. Hungary had already significantly shifted exports from the CMEA countries towards Western markets during the second half of the 1980s (see Developments in East European agricultural trade, p. 115) and this tendency was further strengthened in 1991. Reductions in export volumes to former CMEA countries were compensated by increases in exports to Western markets. Record agricultural exports of $2.7 billion were achieved in 1991, with agricultural trade yielding a surplus of $1.7 billion.

The question of the long-term competitive position of Hungarian agriculture is, however, of crucial importance. Export subsidies, at present averaging around 10 percent of the final price, are expected to decline. This implies that, to maintain or improve competitiveness in international markets, greater efforts towards product quality improvement are required. Modernization of the processing and packaging industries — with the participation of foreign capital — is seen as a key issue in this context.

Poland

The problems confronting Polish agriculture differ in many respects from those of the other East European countries in transition. Polish agriculture is still dominated by private farms which cover 76 percent (in 1988) of the cultivated area and provide employment for 82 percent of the 4.6 million people employed in agriculture. State farms cover about 20 percent of the cultivated area, employing 500 000 people.

Unlike other countries in the region, the cooperative farms have played only a marginal

role in Polish agriculture, covering less than 4 percent of the cultivated area. On the other hand, cooperatives often assumed a monopolistic or monopsonistic position in purchasing and processing agricultural products as well as in lending credit to agriculture.

Despite these differences in farm structures, the initial impact of the economic reforms on the farm sector has been similar to that of reforms in Czechoslovakia and Hungary. Since 1989, real incomes in agriculture have deteriorated dramatically. In 1990, farmers' input prices and overall consumer prices rose to seven or eight times their 1989 levels, while farmgate prices increased only fourfold. This negative trend continued, although it was somewhat less pronounced, in 1991.

Agricultural value added in constant prices increased slightly since price liberalization. This was achieved despite a reduced use of inputs, suggesting some efficiency gains, although good weather conditions also contributed to the improved performance. Nevertheless, access to good-quality and an adequate quantity of inputs remains an important issue.

The difficulties facing the farm economy have prompted some policy-makers to ease pressure on the sector. Import tariffs on food products were increased significantly in 1991 to protect farmers against external competition. Furthermore, subsidized credits for mineral fertilizers have been introduced to the extent permitted by the tight budgetary situation.

Although the government abandoned direct price setting, it did introduce certain market interventions for farm products through the Agricultural Markets Agency beginning in mid-1990. Until mid-1992, the agency has been operating on a zero-profit basis with the objective of stabilizing price fluctuations through procurement/sales and import/export interventions. Most of the agency's funds have been allocated to intervention in the grains market. In 1990, grain purchases amounted to 20 percent of the market, rising to 65 percent in 1991.

The Agricultural Markets Agency has also intervened in the sugar and potato starch markets, purchasing major quantities for exports. For sugar, this operation involved significant subsidies. In the case of other farm products, such as butter, meat, wool and honey, the agency's interventions have been relatively minor.

Guaranteed minimum prices for wheat, rye and milk were to be introduced in June 1992. Because of budgetary constraints, however, prices are unlikely to be maintained at or above world market levels for prolonged periods.

In the area of farm structures, a major issue is how to modernize and consolidate the dominant private farm sector which is still predominantly small scale. Almost 50 percent of the total number of 2.2 million farms are smaller than 5 ha and only 8 percent of private farms are more than 15 ha, as a total covering only 24 percent of the cultivated area.

Much of the Polish farming community generates little or no surplus production for the market. About 80 percent of marketed production originates in only 30 percent of all farms. Part-time farming, which had been increasing since the early 1970s, had spread to almost one-third of all farms by 1984.

The new market orientation of the economy should create a more favourable environment for expanding the size of farms. There are, however, serious obstacles in the short term. The recession accompanying the economic reform process has been much deeper and the resulting unemployment rates much higher than expected. This implies limited possibilities for alternative employment and sources of income outside agriculture, a fact that is inhibiting land consolidation.

The government has indicated that it is not its goal to force radical changes in farm structures but to encourage natural transformation processes. In order to do so, the government has instituted a Restructuring Fund for Agriculture and the Rural Areas which will support the modernization of farms and small food processing companies as well as the development of technological infrastructure for agriculture.

An important parallel task is to reform the cooperative sector. The complete legal framework for this task is not yet in place. However, in early 1991, an amendment to the Cooperatives Law called for the election of new representatives in all primary-level cooperatives and liquidated all regional and national cooperatives' unions. Although the initial objective of restructuring was to restore rural producers' control over the cooperatives, uncertainties associated with the process have dampened the interest of cooperative members.

The process of privatizing the 3.5 million ha of state farms is still in its initial phase. A special agency, the Agricultural Property Agency of the state Treasury, has been established for this purpose. The agency assumed the assets and

liabilities as well as the responsibilities of the state farms. Its main task is to sell or lease state farmland to private entrepreneurs. Alternatively, it may continue administrating state farms or negotiate management contracts. Removing land from cultivation or afforestation programmes is another alternative.

Furthermore, the agency fulfils socio-economic functions, such as regional development and job creation programmes, in regions where the state farm sector is dominant while maintaining infrastructure previously supported by the state farms. Funding for such purposes is, in part, to come from selling and leasing farmland.

The state farms are heavily concentrated in the northern and western parts of the country. Demand for land in these areas is low because of relatively poor soil and climatic conditions as well as inadequate infrastructure. However, simply dismantling the state farms could create socio-economic difficulties in areas where these farms are the primary employment source.

The heavy indebtedness of the state farms (aggregate debt being in the order of $600 million to $700 million) also represents a serious problem. In addition, private funds for the purchasing of state farmland and other assets remain scarce. The privatization of state farms is therefore likely to be a long and difficult process.

Czechoslovakia

Although Czechoslovakia started its economic reform programme after Hungary and Poland, it has achieved significant progress through 1991 and early 1992. Thus, the economic environment for agriculture has already changed significantly. While general price liberalization was introduced in January 1991, the government had already begun removing consumer subsidies in 1990. Price controls are still enforced for firms with a monopolistic or dominant position. By mid-1992, price liberalization affected 85 percent of all marketed products.

Former state procurement monopolies have been restructured and are now responsible for specific crops. Each republic, however, still has one dominant enterprise for each product. In the food processing industry, the former large, centrally managed enterprises have been split into smaller independent ones which are now being privatized under the Large Privatization Programme, initiated in May 1992.

As in other transition economies, the increase in food prices resulting from the elimination of consumer subsidies, coupled with the contraction of incomes accompanying the reform process, led to a reduction in demand for food and downward pressure on farmgate prices. To counter the negative impact on producers, state intervention purchases were initiated in 1991 and market regulation funds were established at the federal level and at the level of the Czech and the Slovak Republics. In 1991, state purchases included live animals, milk, wheat, rye and potatoes (the latter in the Slovak Republic), for which minimum prices had been established. The state also intervened to reduce surplus domestic market supplies through exports.

Since 1989, farm support policies have shifted from generalized subsidies towards targeted intervention and market regulation such as privatization, farm restructuring, the promotion of entrepreneurial activities in small-scale food processing and services, research and development and land transformation. The reduction in farm subsidies is reflected by the smaller budget allocations, reduced from 34.4 billion korunas in 1989 to 23.5 billion korunas in 1991 and 21.6 billion korunas in 1992.

Agricultural producers have been heavily penalized by the relative price changes following price liberalization. While agricultural producer prices rose by about 4 percent between 1989 and 1990 and remained broadly stationary in 1991, prices for most major agricultural inputs in 1991 were from 40 to 175 percent higher than in 1989. At the same time, consumer prices rose by 11 percent in 1990 and 59 percent in 1991.

Profitability indicators in both cooperative and state farms turned negative in 1991, with 80 percent of agricultural enterprises reporting operating losses. State farms appear to have been more affected than cooperative farms. There were, however, differences in business conditions in the Czech and the Slovak Republics. The financial situation of state farms and, in particular, cooperative farms was much worse in the Slovak Republic.

The pressure to reduce expenses in agricultural enterprises has already affected agricultural employment, as enterprises have sought to reduce labour costs. Employment has also been affected by industrial companies' reduced demand for other supplies and services traditionally provided by agricultural enterprises. Overall, agricultural employment in 1991 declined by 18 percent relative to 1990.

Czechoslovakia is also engaged in reforming landownership and production organizations. Prior to reforms, the agricultural sector was dominated by cooperative and state farms, with private farming playing only a marginal role. In 1989, cooperative farms covered about 65 percent of agricultural land and state farms 30 percent, while the share of private farms was no more than 4 percent. The 1 700 cooperative farms have an average size of about 2 500 ha. In 1991, the 250 state farms averaged 5 700 ha.

During the period of communist rule, formal private ownership of farmland had been retained but most landowners had to concede rent-free use of the land to either state farms or cooperatives.

This introduced a clear distinction between formal ownership of land and the right to use it. Still, major areas of land had also been confiscated — mainly from larger landowners — and transferred to state farms or cooperatives. This process constituted the main source of state farmland, while cooperatives had been using mainly — but not exclusively — privately

BOX 6

Forest damage from pollution in Eastern Europe

Airborne pollutants have significantly damaged the forests of some countries in Eastern Europe. Most of the forests affected are found in the Silesian coal belt which includes the mountain forests of northern Czechoslovakia, southern Poland and parts of the eastern zone of Germany (New Länder). Much of the coal used by industries in this area is brown coal, or lignite, which has a much lower energy yield than hard coal. As a result, emissions of sulphur dioxide (SO_2) and oxides of nitrogen (NO_x) have been among the highest in the world on a per caput basis.

The degree of defoliation, regarded as the main indicator of forest damage attributed to air pollutants, exceeds 30 percent of standing coniferous trees both in Czechoslovakia and Poland while the volume of affected trees is estimated to be some 220 million m^3 in Czechoslovakia and more than 300 million m^3 in Poland. With the exception of Belarus, the latter is the most extensively damaged area in the continent.

In the northern part of Czechoslovakia, large areas of old-growth coniferous forests have died completely and others have suffered declines for 15 years and more as a result of permanent air pollution stress and other secondary factors. At least 60 000 ha of coniferous forests out of 600 000 ha of total forest area have been severely damaged and are being subjected to regeneration efforts. Damaged forests are being replanted with pollution-resistant species in the aim of protecting soil, water and microclimates and safeguarding the recreational services provided by the forests.

In Poland, wood harvesting declined by 27 percent between 1986 and 1990, partly because of the adverse effects of air pollution on the country's forest resources.

held land. Approximately 60 percent of cooperative farmland is estimated to be owned by non-members, mostly urban residents.

Under the Land Use Law, passed in April 1990, farm cooperatives were given the right to continue using land but the principle was laid down that rent should be paid to individual title holders. This was intended to serve as interim legislation until land reform was implemented. When introduced, land reform was embodied in two pieces of legislation: the Land Law, passed in May 1991, and the Transformation Law, passed in December 1991.

The Land Law defines rules for the restitution of confiscated land and non-land assets to the original owners or their heirs. A limit of 150 ha per individual is the maximum that can be restituted. Although land offices are actively searching solutions to the many legal and administrative problems involved in owner identification and land restitution, numerous cases are having to be solved in the courts.

The Transformation Law provides for distribution of the net value of the "unrestituted" property of cooperative farms and for the transformation of cooperatives into new entities. The net value of unrestituted assets is to be distributed among owners of land farmed by the cooperative (50 percent), contributors of other property to the cooperatives (30 percent) and former cooperative workers (20 percent). Each cooperative is expected to prepare a plan for its transformation into a new entity. Owners of land or non-land assets transferred to the cooperatives had until 28 April 1992 to apply for participation in the transformation process and vote alongside cooperative members on transformation plans. Cooperative farms can be transformed into various new types of enterprises: individual farms; a group of small cooperatives; a new cooperative on the same scale as the previous one; a joint-stock company; or any possible combination of the above. Cooperatives must have completed the transformation process by 28 January 1993.

Although the Land and Transformation Laws have laid the basis for radical changes in farm structures, the outcome of the process remains uncertain. Opinion polls indicate that a large number of people who will regain control of land would rather rent it than actively work on it. The extent to which farm workers will be interested in taking up individual private farming is uncertain. In any case, the success of transformation depends on the response of farmers to the opportunities that may arise from government reform; their capacity to adapt to the new circumstances, particularly their ability to move away from the often overspecialized nature of their former cooperative work; and their resilience to the shocks and disruptions involved in what is likely to be a lengthy transition.

The former USSR and the emergence of the CIS

In December 1991, the Union of Soviet Socialist Republics (USSR) ceased to exist. Of the 15 former Soviet republics, the three Baltic states (Estonia, Latvia and Lithuania) had already declared independence in early 1990, although official recognition from the international community arrived only in the second half of 1991. In December 1991, the remaining 12 former republics, with the exception of Georgia, agreed to create the Commonwealth of Independent States (CIS).[35]

The process of political and economic integration among CIS members is encountering major difficulties. The constitutional basis of the Commonwealth is still uncertain and the economic cohesion that is needed between the states has yet to emerge. Instead, a process of decentralization rather than consolidation seems to be under way, with a possible outcome being the Commonwealth's transformation into a system of regional trading blocks. The agreement on "cooperation in material and technical supply in agriculture", signed early in April 1992 by the six Asian states (Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan), was a clear step in that direction. Furthermore, in mid-March, a first move towards the creation of a common customs union and policy in the CIS had been decided by only five (Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Uzbekistan) of the 11 states. The newly sovereign states still have to develop the political and economic structures needed to manage and overcome the chaotic situation resulting from the fragmentation of a single interdependent economy into a series of "independent" economies. However, the new states remain heavily interdependent because of the former,

[35] This report refers to the 11 former republics that have joined the CIS: Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

centralized system's tendency towards an excessive specialization in production, both in agriculture and in the industrial sectors supplying inputs to agriculture.

Agrofood issues

As the emerging states seek to find their way towards market-based economies, their ability to ensure an adequate supply of food to meet their populations' needs in the short term could, to a large extent, influence the outcome of the transformation. Moving away from more than 60 years of centralized agricultural and economic policies is obviously not an easy task. On the other hand, successful market-oriented agricultural reforms that meet consumers' food expectations could underpin popular support for reform throughout the whole economic system.

The weight of the agricultural labour force and rural population varies widely among the different states of the former USSR. At present, between 27 percent and 62 percent of the approximately 290 million people in the 15 states of the former USSR are living in rural areas, while between 45 percent and 54 percent of the total labour force depends primarily on agriculture for a livelihood.

BOX 7

Calorie intake in the former USSR

Estimates of daily per caput calorie intake, as obtained from official USSR food consumption data in volume terms, vary greatly within the former USSR. Several republics experienced significant declines in average levels of per caput calorie intake during the 1980s, the most pronounced fall being recorded in Georgia, where calorie intake in 1990 was only 78 percent of what it was in 1980. Several other republics also experienced significant falls, including Uzbekistan and Tajikistan where per caput calorie intake levels were already relatively low in the early 1980s.

The overall tendency emerging from these changes was a widening gap between states with higher and lower calorie intakes. In 1990, the daily intake of [the current Republic of] Moldova was 37 percent higher than that of Tajikistan while, in 1980, the difference between calorie intakes in Ukraine and Kyrgyzstan, at the two extremes, was less than one-third.

Estimated per caput dietary energy supplies in the former USSR

State[1]	1980	1985	1990
	(kcal per caput/day)		
Russian Federation	3 035	3 018	3 153
Ukraine	3 325	3 303	3 363
Kazakhstan	2 904	2 927	3 025
Belarus	3 277	3 338	3 212
Moldova, Rep.	3 303	3 407	3 485
Armenia	2 776	2 747	2 578
Azerbaijan	2 673	2 687	2 704
Uzbekistan	2 735	2 730	2 635
Kyrgyzstan	2 553	2 581	2 710
Tajikistan	2 724	2 753	2 546
Turkmenistan	2 608	2 652	2 757
Georgia	3 212	3 291	2 494

[1] Although the data predate the USSR's dissolution, the current state names have been used.

Source: FAO estimates based on official sources.

Agriculture, especially food, is therefore the crucial sector to which the newly independent states' policy-makers must give much of their attention when transforming and restructuring their economies in the short term. However, the dominant role of the agrofood sector in the former USSR's economy was transmitted, to the new states with different impacts, in view of their wide diversities, but with the same urgent need for reform.

The food problem

By the end of 1991, the former USSR's agrofood sector was in disarray. The 1991 crop was planted in the context of an existing Union but harvested when the USSR was in the process of disintegrating. Old and recurring problems of the agrofood sector were compounded by the new and extraordinary situation.

Agricultural production fell by about 12 percent, with a particularly pronounced decline in cereal output (27 percent relative to the large harvest of 1990). Strong declines were also recorded in the production of meat and milk (-10 percent), potatoes (-8 percent), sugar (-3 percent) and oilseeds (-8 percent). Food access problems caused by production shortfalls were accentuated by an acceleration of inflation (estimated to be 86 percent in 1991). Family budgets, especially those of most vulnerable groups, were drastically reduced. Food shortages were further aggravated by the fact that many collective and state farms ignored state orders and refused to market products at controlled prices, while a worried urban population hoarded food. Alternative markets were created to trade at liberalized prices, thereby increasing quantities of products when legal restrictions on private trade were still in force. Food imports fell by 21 percent, as foreign exchange earnings from oil exports declined. CMEA trade collapsed and the former USSR was unable to obtain credit for imports. The former republics did not allow movements of foodstuffs across their borders. Input supply and services, on one side, and transport, storage, processing and distribution, on the other, were inadequate to respond to the exceptional situation.

Issues underlying food problems. Shortcomings in the former USSR's agrofood system have always existed. However, the main problem was not that of producing enough food but rather delivering it to consumers efficiently. Formerly, the command system was operated by the USSR, with the cooperation of the constituent republics. The central government required the producing units to supply output at given procurement prices. Supplies were then distributed to processing enterprises and state shops throughout the USSR. This system resulted in levels of daily per caput caloric intake well above world averages and comparable with many other developed countries. Qualitatively, however, the pattern of food consumption was characterized by a higher consumption of grains, potatoes and sugar compared with the EEC, but with much lower levels of meat, milk and egg consumption — although product consumption levels in the EEC were significantly higher than in other countries with comparable income levels. In addition, the diet did not conform to consumer preferences, as it was influenced by the relatively low and heavily subsidized retail prices for certain foods. As a result, even after the major increase in state retail prices in April 1991, rapidly rising disposable money incomes coincided with the stagnating or declining availability of animal products and other preferred foods. This resulted in longer queues at the state retail outlets, a rapid growth of uncontrolled prices in collective farm markets and an expansion of state-controlled food sold through parallel markets.

However, the sharp increases of procurement and retail prices of food commodities in 1990 and 1991 were not in themselves sufficient to induce a stable flow of these products through the formal system. In a context of accelerating inflation and the expectation of yet higher food prices (following their liberalization), food commodities were withheld by major agents of the food distribution system, including farm managers and owners of individual plots. Mistrust of the old command system and the exercising of new rights by the republics were also responsible for their withdrawal from former commitments.

Food distribution will remain a problem in the CIS until competitive wholesale and retail food trade systems can be established to replace the former state-run distribution system which is still operating, particularly in larger cities and food-deficit areas, and on which consumers remain highly dependent. In addition, some food-deficit states face food output constraints while others have limits on products to trade for food products. At the same time, the various states will be exposed to a wider range of market alternatives in contrast to the barter trade system operated in the former USSR.

Recent policy developments affecting agriculture

Agrarian reform. The scarcity of information on the "war of laws" — the numerous decrees and laws promulgated by the newly independent states to transform their societies — precludes a comprehensive analysis of price liberalization and agrarian reform. For this reason, the following discussion concentrates on the process under way in the Russian Federation.

At the end of 1991, Russia began implementing a broad programme of actions aimed at the radical reorganization of the agricultural sector. The first major step was the Russian Federation's presidential decree on "urgent measures to implement land reform" with the aim "to improve land relations, privatize land and simplify the procedure for assigning plots of land to individual citizens". There was also a series of decrees promulgated by the Russian Government: *i)* on "the procedure for the reorganization of *Kolkhozes* [collective] and *Sovkhozes* [state farms]", the main objective of which is "to increase the efficiency of agricultural production and create conditions for entrepreneurship in the countryside"; *ii)* on "reform of the state management system of the agro-industrial complex of the Russian Federation" in order "to create a system of state management ... corresponding to the tasks relating to its function under the conditions of the agrarian reform"; and *iii)* on "priority supplies of material and technical resources for the agro-industrial complex".

According to the decree on land reform, state-owned and municipal land should be privatized and decisions on the redistribution of land should be taken by local administrative bodies. These local bodies should also supervise the right of collective farm members and state enterprise personnel to leave farms and enterprises freely and set up peasant (individual) farms. The maximum size of land plots to be allocated for peasant farms is determined by the council of ministers of the republics in the Russian Federation and the executive bodies of the territories, regions and autonomous units. Local administrations should ensure certification of the right to own the land. The farm managers are given full responsibility for apportioning the plot of land to the farm household. They are also obliged to assign land for the establishment of a peasant farm within one month of the request. Land thus becomes exchangeable and can also be leased once the citizens withdraw from collective and state farms. Nevertheless, the decree only allows the landowner to sell the land in specified cases (e.g. for investment in processing, trading, building and service enterprises in rural areas). For the first time, peasant farms are allowed to mortgage land with banks and, in turn, banks are allowed to issue credit on mortgaged land.

Price liberalization. A presidential decree on "measures of price liberalization" was issued in December 1991 and became effective from 2 January 1992. Following the resolution passed by the Congress of People's Deputies on the "socio-economic situation in the Russian Federation", the decree was issued in order "to make a general transition to the use of applying free (market) prices and tariffs which are being established under the influence of supply and demand for industrial and technological products, public consumption goods ...". The decree provides for free (market) prices to be applied to, *inter alia*, state purchases of agricultural production. It also instructs the government "to define price and tariff limits for specific types of industrial and technological products, basic consumer goods and services". Prices of specified brands of bread, milk, yogurt, low-fat cottage cheese, baby food and vegetable oils were limited to a maximum threefold increase.

The full impact of these price liberalization measures cannot yet be assessed. Although the effect was considerable at the consumer level, as seen above, it is not yet known at the farm level, as the current crop is the first to be planted under the new conditions.

Problems of agricultural adjustment in the Baltic states

The three Baltic states are facing major problems in adjusting their agricultural production and trade patterns to the new situation that emerged after independence. All three are embarking on agricultural reform programmes with the aim of breaking up the old state farm monopolies and boosting their declining production.

During the time of the USSR, the Baltic states had become overspecialized in meat and milk production (producing about 1 million tonnes of meat and 5 million tonnes of milk products per year). A large share (35 to 40 percent) of this output was exported to other republics of the former USSR. Over half of the Baltic states' output of these products was produced by Lithuania, the largest and most agriculture-

oriented of the three Baltic economies. The three states were exporters of agricultural products to the West during their interwar period of independence. Their subsequent incorporation into the USSR's food economy led to specialization in their pattern of agricultural production and, consequently, increased their reliance on imported food other than livestock products and animal feed.

In 1990 and 1991, drastic declines in meat and milk production occurred as a result of the disruption in the supplies of feed grain for cattle. Under the Soviet centralized planning system, the agricultural sector of the Baltic states had become heavily dependent on feed grain imported from other republics. Together, the three states imported more than 3.5 million tonnes of feed grain annually. In 1991, they only imported between 50 and 70 percent of these volumes, partly owing to the poor grain harvest in the former USSR but also to the breakdown in their trade relations with the latter.

The excessive specialization of agricultural production and the close integration of their economies within the former USSR left these countries highly dependent on imports of food, feed grain, fuel and other sources of energy. However, prices of such imports from the former USSR are now aligned to world market levels and most of them have to be paid in hard currencies which the Baltic states lack. They also have great difficulty in disposing of their surplus livestock products on already saturated and highly protected world markets, while their industrial products, also highly specialized in a few lines of production, are geared to satisfying the former USSR's requirements and are generally unsuited to non-Soviet markets.

Quite drastic steps have been taken either to break up the collective and state farms into small farm holdings, generally of less than 50 ha, or to turn them into shareholding enterprises. By the end of 1991, Latvia, Lithuania and Estonia had established 12 500, 3 000 and 4 000 holdings, respectively. However, it is not clear how many of these are operational because "new" farmers lack management experience, credit and access to inputs and markets. The continued operation of some state farms as input distribution and market collection points may be useful to the new private farms, especially the smallest among them. This situation could lead to forms of farm cooperative institutions similar to those in the West. Nevertheless, low state-controlled prices for meat and milk held back production while the liberalization of prices in 1992 has not yet had a significant impact. The Baltic states could theoretically benefit from large and unsatisfied demand in neighbouring CIS states but, with the breakdown of trading relations between these newly independent states, transaction costs are now prohibitively high. Furthermore, the rather low level of technology used and the inefficiency of food processing and marketing currently make it difficult for the Baltic states to compete in world food markets.

Developments in East European agricultural trade

East European trade patterns, trade regulations and terms of trade were altered significantly during 1991 and will continue this transformation over the next few years. The two most important factors affecting East European trade are the move to trade among the former CMEA countries at "world market prices" in convertible currencies and the EEC's association agreements with Hungary, Poland and Czechoslovakia. A look at trading patterns in the recent past will allow a greater understanding of what may lie ahead.

Shifting trade patterns. During the last years of communist rule, the East European countries in the aggregate were net importers of agricultural products. Most of their agricultural trade was conducted with other member countries of the CMEA as well as other centrally planned economies (CPEs) and in an inconvertible currency, namely the transferable rouble. However, countries of the region's northern tier — Poland, Czechoslovakia and Hungary — had made considerable headway in orienting their agricultural trade to hard currency markets by the mid-1980s. In 1985, more than 60 percent of these three countries' agricultural exports went to non-CMEA countries. The share was even larger for livestock, meat and dairy exports. For exports of fruits and vegetables, grains and oilseeds and sweeteners and alcoholic beverages, the northern countries remained more dependent on the CMEA market. This dependence was highest for the largest exporter of the three, Hungary. In 1985, more than 75 percent of Hungary's total exports of grain, oilseeds, fruits, vegetables and wine went to the CMEA. On the import side, only 30 percent of the northern tier's agricultural imports came from the CMEA and other CPEs in 1985 (although the CMEA's share of Czechoslovakia's agricultural imports was more than 60 percent).

TABLE 19

Origin and destination of agricultural trade of Poland, Czechoslovakia and Hungary

Trade	Poland		Czechoslovakia		Hungary	
	1985	1990	1985	1990	1985	1990
	(Percentage shares of total)					
EXPORTS						
Total agricultural exports	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
To: *EEC*	**37.4**	**53.3**	**...**	**24.3**	**25.2**	**37.0**
Other market economies	**41.1**	**40.1**	**71.5**	**56.2**	**25.2**	**37.6**
CMEA and socialist countries	**21.5**	**6.6**	**28.5**	**19.5**	**49.6**	**25.5**
- of which USSR	**11.6**	**3.7**	**...**	**6.6**	**35.1**	**17.4**
IMPORTS						
Total agricultural imports	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100**
From: *EEC*	**27.3**	**50.2**	**...**	**...**	**16.7**	**18.8**
Other market economies	**56.5**	**41.1**	**53.7**	**65.1**	**71.2**	**66.2**
CMEA and socialist countries	**16.2**	**8.7**	**46.3**	**34.9**	**12.1**	**15.0**
- of which USSR	**9.2**	**1.3**	**...**	**...**	**2.1**	**6.3**

During the late 1980s, some members of the CMEA, chiefly Hungary and Poland, were dissatisfied with the terms of trade with the USSR and the growing surpluses in transferable roubles that they were consequently accruing. This prompted the northern countries to concentrate on marketing more of their goods outside the CMEA group.

With the loosening of bilateral trade agreements with the USSR, an event that accompanied economic reform in 1990, the share of East European agricultural trade taking place with the CMEA and the socialist group fell significantly (Table 19). In 1990, only 17 percent of the northern tier's agricultural exports went to the CMEA and the socialist group, while only 24 percent of their agricultural imports came from the CMEA group. This move away from the CMEA market accelerated in 1991 as hard currency shortages in the USSR drastically cut imports of all product types, especially livestock products.

Because of the drought in 1990, the East European countries had to import grains, oilseeds, livestock and other products to meet domestic demand and Western countries were willing to grant aid and loans to purchase the needed imports. The initial result was an increase in agricultural import levels from western countries. This shift in trade contributed to the dissolution of the CMEA trading framework and the beginning of hard currency-based trade among the former CMEA countries on 1 January 1991.

The effects of this change on East European trading patterns were profound. While the region's countries had hoped the transition would be favourable for their terms of trade with other CMEA members and that it would fuel economic growth, it soon became clear that their terms of trade were eroding as prices of USSR oil and gas increased to what was then a relatively high world market level during the Persian Gulf crisis. Moreover, world prices for these countries' agricultural products were depressed and the former USSR market, now operating on a hard currency basis, was weak. After an excellent harvest in 1991, coupled with declining demand in most East European countries, surplus stocks of many agricultural commodities developed. Beset by severe economic problems, in late 1991 the former USSR was unable to buy excess East European agricultural production. To resolve this problem, barter agreements, aimed at helping the former USSR to import food, were signed by some East European countries and a triangular aid programme involving the former USSR, the EEC and the East European countries was developed.

The barter agreements were the most popular means of exporting Eastern Europe's surplus agricultural commodities in exchange for USSR oil and gas, needed to keep the industrial and processing sectors of their economies running.

Much of the agricultural trade between East European countries and the former USSR was conducted through barter agreements during 1991 and the beginning of 1992. While barter trade may seem somewhat primitive, it was important during 1991 in helping to bolster an otherwise desperate trading relationship.

The triangular trade agreement involved ECU 500 million of EEC loan guarantees to the former USSR (then transferred to the Russian Federation) for the import of agricultural goods. Up to one-quarter of these funds can be spent on agricultural imports from East European and Baltic countries. Any quantity of agricultural products purchased in this manner from Poland, Hungary and Czechoslovakia is to be counted against the Russian Federation's import quotas to the EEC (if the product is subject to the variable levy and quota mechanism). As of April 1992, roughly ECU 40 million of these loans had been spent on agricultural products from Czechoslovakia, Poland and Hungary (200 000 tonnes of soft wheat and 50 000 tonnes of barley from Czechoslovakia, 5 700 tonnes of sunflowerseed oil from Hungary, 3 000 tonnes of Polish barley, 45 000 tonnes of Polish wheat flour and 18 700 tonnes of Polish milk powder).

Although the triangle trade agreement may seem to be a beneficial solution for all parties concerned, it could become a setback for East European exporters striving to orient themselves towards established market economies. East European meat exporters are likely to remain dependent on an underdeveloped Russian Federation market which will, in turn, retard the development of Eastern Europe's marketing channels in the more stable West European markets. In addition, East European exporters will be subject to the terms of the triangular transactions as negotiated by the EEC and the Russian Federation.

EEC association agreements. The shift in trade patterns from CMEA to Western markets also provided the impetus for the negotiation of association agreements between the EEC and Hungary, Poland and Czechoslovakia. The trade elements of these agreements, which were signed in December 1991, became effective on 1 March 1992 in the form of interim agreements. They provide for the expansion of trade relations between the EEC and these three countries and entail trade concessions concerning a wide range of products, including many agricultural commodities. Overall, the agreements call for quotas with tariff reductions for all agricultural products exported from these three countries to the EEC in recent years as well as the free trade of some "non-competitive" agricultural products.

TABLE 20

Agricultural tariff quotas under the association agreements on East European exports to the EEC

Product and exporter	Year 1 (1992)	Year 5 (1996)
	(.....Tonnes.....)	
BEEF		
Czechoslovakia	3 000	4 000
Hungary	5 000	6 600
Poland	4 000	5 600
SWINE (LIVE AND MEAT)		
Czechoslovakia	4 700	6 400
Hungary	22 000	30 000
Poland	8 000	11 200
Total	34 700	47 600
COMMON WHEAT		
Hungary	170 000	232 000
BUTTER		
Czechoslovakia	1 000	1 400
Poland	1 000	1 400
BEEF CATTLE (LIVE)		
Hungary, Poland and Czechoslovakia	217 800	297 000

For agricultural goods whose import into the EEC is subject to a variable levy or tariff, with a few exceptions, the accords provide for a 60 percent reduction of tariffs and levies (20 percent per year for three years) and 50 percent increases in the tariff quota quantities (10 percent per year of base-year levels for five years). In addition, the agreements contain a safeguard clause allowing for consultations between the parties "in the event of serious disturbance of the market on either side following application of the concessions in the agreement, leading to appropriate arrangements of trade protection measures".[36] The exports of some products from the EEC to Czechoslovakia, Hungary and Poland will benefit from tariff reductions, but both the tariff reductions and product coverage are much more limited than in the other direction.

[36] *Agra Europe*. 13 September 1991.

The main advantage of the association agreements for Czechoslovakia, Hungary and Poland is that the accords symbolize a commitment by the EEC to help develop and integrate these countries into the Community, although not necessarily via full membership. Furthermore, the agreements will provide economic benefits over the next five years. The accords will serve as a model for the association agreements that are being negotiated with Bulgaria and Romania, and under which concessions of a similar magnitude to those given to the first group are likely to be granted.

Table 20 lists the major agricultural commodities and their quotas in *year one* (1992) and *year five* (1996) of the association agreements. As a result of annually increasing levels of tariff quotas, East European agricultural exports to the EEC will be allowed to expand gradually. Considering the magnitude of increases for live animals, meat and dairy products and grains, the gains from expanded trade for Poland, Hungary and Czechoslovakia are estimated to be $689 million over the five-year phasing-in period of the association agreements. This amounts to $176 million for Hungary, $96 million for Poland and $30 million for Czechoslovakia for exports of meat and dairy products and grains. The remaining $387 million will be shared among the three countries for the export of live beef cattle to the EEC. Since live beef cattle quotas have been set for the three countries together, the allocation of the gains from these increased quotas cannot be made individually.

It is clear that the East European countries aim to reorient their trade to the West. Already, the amount of trade with the states of the former USSR has declined dramatically, largely reflecting the breakdown of its economy and consequent inability to pay for East European goods. Moreover, if and when the states of the former USSR stabilize, their agricultural import requirements are likely to decrease and possibly even reverse. As a result, the East European countries have been increasing their exports to Western developed countries, especially Western Europe.

OECD COUNTRIES

United States agricultural policies: present legislation in a historical context

While the worldwide agricultural market conditions in the 1970s were almost opposite to those in the 1980s, the degree of divergence in the United States was even greater, partly because of policy interventions. The United States' 1990 agricultural legislation was a continuation of the agricultural policy adjustments begun in the 1970s. For this reason, it is useful to view the country's present policy in that historical context.

The past two decades have seen a major shift in the orientation and mechanisms of United States agriculture policy. The seeds of this change were sown during farm policy debates in the 1960s, along with the evolution of a price system involving a higher price for domestic use than for export. The 1973 farm legislation solidified the move away from high price supports and tight production controls towards determined market prices, with farm income support provided through target prices and deficiency payments. As a result, United States agriculture became competitive in world markets at the very time that those markets began a period of unprecedented growth. While world trade in wheat and coarse grains doubled during the 1970s, United States exports of these commodities increased by 187 percent.

The rapid growth in agriculture trade during the 1970s was, above all, a result of the former USSR entering the world market to augment domestic production shortfalls instead of rationing food and slaughtering livestock. It was also a result of the rapid increase in world liquidity owing to the recycling of petrodollars generated by the first oil price shock of 1973, which permitted developing countries to maintain growth and living standards.

In 1981, when the farm legislation renewal came before the United States Congress, the annual increase in agricultural exports over the past decade had been unprecedented (from $7.5 billion in 1970, agricultural exports rose to a peak of $45.1 billion in 1981), real interest rates were low and the inflation rate was in double digits. This meant that land prices were rising and land debt was being paid off with ever cheaper dollars. The drafters of the 1981 legislation, taking these trends into account, scheduled into the 1981 farm legislation annual increases in support prices (loan rate) and target prices for the four-year duration of the Act.

With the tightening of monetary policy by the United States and other developed countries following the second oil price shock in 1979, the inflation rate dropped; real interest rates rose; global growth rates slowed and, in some countries, turned negative, thereby resulting in a reduced global import demand for, *inter alia*, agricultural products. Exacerbating the situation in the United States, the dollar strengthened in foreign exchange markets, world commodity prices fell below the United States' price support levels (loan rates) and, as a consequence, the country's agricultural exports dropped precipitously. Government stocks built up rapidly as farmers forfeited their crops in lieu of paying off commodity loans. The loss of export markets, together with low commodity prices, brought on a serious financial crisis in the United States' farm sector, as land values fell and many farmers could not meet debt obligations.

In this economic environment, the 1985 farm bill — the Food Security Act (FSA) — was passed with three main objectives: *i)* to restore the competitiveness of United States agriculture on world markets; *ii)* to maintain income support to the debt-burdened sector; and *iii)* to minimize government budget outlays. Competitiveness was restored by sharp reductions in loan rates and the use of export subsidies under the Export Enhancement Programme (EEP). Farm income was maintained by freezing target prices at 1985 levels for the first three years and reducing them by about 10 percent during the last two years of the bill. The budget objective was not met, as annual average spending under the 1985 FSA was $15.6 billion and reached an all-time high of $25.8 billion in 1986. (See *The State of Food and Agriculture 1986* for a discussion of the Conservation Reserve Programme (CRP) introduced in the 1985 FSA.)

A little-noticed but important provision in the 1985 FSA was the freezing of programme yields which, together with a farmer's base area, are used to determine production that is eligible for deficiency payments. This severed the link between actual yields and production eligible for support. With this partial "decoupling", some argued that the incentive for farmers to push towards ever-increasing yields was substantially weakened.

The 1990 farm bill — the Food, Agriculture, Conservation and Trade Act (FACT) — was passed by Congress in an economic environment in which United States agricultural exports had begun to recover, farm incomes were near an all-time high and farmers were generally content to see the provisions of the 1985 FSA extended into the 1990s (see *The State of Food and Agriculture1991*).

The major change in agricultural legislation in 1990 came, not in the 1990 FACT, but in the Omnibus Budget Reconciliation Act following intense pressure to reduce the federal budget deficit. Faced with the choice of reducing target prices or reducing the amount of production eligible for support benefits, Congress chose the latter course. They adopted the so-called "triple base" which, in addition to allowing greater planting flexibility in response to relative market prices, limited eligibility for deficiency payments to 85 percent of the area permitted to be planted.

With the 1985 FSA having frozen programme yields, implementing the "triple base" put a cap on future budget outlays and, in effect, "decoupled" United States commodity programmes at the margin. United States farmers must now view the world market price rather than the target price as their incentive when making production decisions, and early evidence suggests that a reduced use of fertilizer and chemicals has resulted.

Under the flexibility provision of the "triple base", the international agricultural market will have a greater effect on the planting decisions of individual farmers (see *The State of Food and Agriculture1991*, Regional review). The intent of the flexibility provision, along with reducing federal spending at a time of budget constraints, was to make farm programmes less rigid. Prior to the 1990 legislation, farmers who participated in a farm programme could only plant the designated crop on their crop area base. (Exceptions to this occurred in 1989 and 1990 when wheat and feedgrain producers could plant up to 25 percent of their base to soybean or minor oilseeds.) Now, a farmer can plant any crop, except fruit, vegetables or other crops designated annually by the secretary of agriculture.

In 1991, there was only a small shift away from original programme crops under the flexibility provision. The late implementation of the legislation and farmers' inexperience with the provision kept them from taking advantage of different planting options. Furthermore, winter wheat producers had the option of not using the provision for their 1991 crop.

In 1992, more farmers are expected to plant alternative crops on the 15 to 25 percent of their area that falls under the flexibility

provision. Farmers are now more familiar with the programme and have had more time to make decisions in response to both domestic and international market conditions. They will also have begun to feel the effects of the decrease in their income support through deficiency payments and may need to look for other crops as a means to make up for possible income losses which could result from the reduced support.

The Acreage Reduction Programme (ARP) levels for 1992 were set lower than in the previous year for all programme crops except upland cotton. The wheat ARP was reduced the most, from 15 percent in 1991 to 5 percent in 1992. Less area was required to be set aside in 1992 because commodity stock levels have fallen as a result of droughts in 1988 and 1989, less land is being planted to programme crops in response to the flexibility provision and more land has been taken out of production as part of the CRP.

Moreover, the EEP has been using government-held stocks aggressively in recent years to keep United States agricultural exports competitive with those of other major producing countries. As United States farmers respond to the lower levels of government support and the new planting flexibility, fewer surplus stocks are likely to be produced and at least some tightening of global food security should therefore result.

Effects of the new Conservation Reserve Programme

Under the 1990 FACT, the CRP and a new Wetlands Reserve Programme (WRP) now make up the larger Environmental Conservation Acreage Reserve Programme (ECARP). The legislation mandates that from 16.2 million to 18.2 million ha be enrolled under ECARP during the period 1986-1995 (FACT extended the enrolment period by five years from the original 1986-1990 period provided for by the 1985 FSA). FACT also emphasizes enrolling watersheds in the CRP to maximize water quality and wildlife habitat benefits.

Wetlands, which under the 1985 FSA were included in CRP enrolments, can now only be enrolled in the WRP. The enrolment goal for the WRP is about 243 000 ha over the next five years.

As of 1990, 13.7 million ha were enrolled in the CRP, leaving about another 2.2 million ha for the CRP and 243 000 ha in the WRP to meet the original minimum goal of 16.2 million ha.

Use of export programmes

A key development in United States export programmes in 1991 was the extension of government export credit guarantees (the GSM-102 programme) to the newly independent states of the former USSR. Prior to 1991, the USSR purchased United States commodities on a cash basis, without the aid of the United States government programmes for assisting exports to other markets. In 1991, the CIS became the largest participant in the GSM-102 credit guarantee programme. Many GSM-102 exports to the CIS have also benefited from bonus assistance under the EEP.

Under the 1991 EEP, the United States Department of Agriculture (USDA) awarded exporters $916.6 million in generic commodity certificates to for wheat, wheat flour, barley malt, barley, frozen poultry, rice, table eggs and vegetable oil sales. Relatively large supplies and increased competition caused world grain prices to fall for much of 1991. The total EEP bonuses awarded rose to almost three times the 1989 and 1990 levels but still remained lower than the $1 billion awarded in 1988. Much of the increase in bonuses was attributed to increased wheat sales because of large supplies in 1990/91. Wheat, the major EEP commodity, accounted for 84 percent of total bonuses in 1991.

For 1992, Congress put no limit on EEP spending. EEP bonuses, which are usually paid in generic commodity certificates that are redeemable for Commodity Credit Corporation (CCC) stocks, have been awarded in cash since November 1991 because of lower CCC inventories. In spite of tight supplies, the USDA appears committed to assisting exports. At about 6.6 million tonnes, food assistance under Public Law 480 is expected to remain unchanged, as are export credit guarantees.

Humanitarian assistance (Public Law 480) was provided to the CIS and Baltic states for the first time in fiscal year 1992. The emergency food assistance, valued at $165 million, included such commodities as butter, non-fat dry milk, vegetable oil, green peas and beans as well as transport support.

While the United States' agricultural policy has retained the basic mechanisms developed in the 1970s — loan rates, target prices and deficiency payments — the evolution in their application has moved more towards a market orientation. In addition, budget exposure has been capped and the level of support reduced substantially from its peak of the mid-1980s.

BOX 8

Agricultural policy reform in the United States and the EEC — is there hope for GATT?

Both the EEC and the United States have made substantial changes in their agricultural policies, largely prompted in both instances by strong pressures to contain agricultural support budgets.

An important question is whether the reforms undertaken by the EEC and the United States will positively affect their abilities to be more flexible in the GATT negotiations. Two recent analyses suggest an affirmative, if tentative, answer.

An analysis by the National Center for Food and Agricultural Policy in April 1991, *inter alia*, estimated in terms of producer subsidy equivalents (PSEs) the reduction to be made in domestic support levels in 1995 in compliance with the United States' 1990 agricultural legislation. Table A shows the actual level of support in 1990 and the level required in 1995 by United States legislation as a percentage of the support level in the base years[1] for selected commodities.

For wheat, maize, cotton, rice and soybean, by 1995, United States legislation requires a larger reduction than the 20 percent reduction in domestic support stipulated in the GATT Draft Final Act of 20 December 1991. However, additional steps would be necessary for dairy products.

TABLE A

1990 and 1995 United States support levels for selected commodities

Commodity	1990	1995*
Wheat	**67**	**55**
Maize	**60**	**38**
Cotton	**63**	**58**
Rice	**96**	**63**
Soybean	**0****	**0****
Dairy products	**84**	**96**

***Estimates**
****The market price in 1990 was above the support level (loan rate) and is expected to remain so.**
***Note:* 1986-88 base = 100.**

TABLE B

Estimated 1997 EEC support levels for selected commodities

Commodity	1997
Wheat, barley, maize	**57**
Soybean, rapeseed	**71**
Beef	**83**
Pork, poultry	**38**
Dairy products	**77**

***Note:* 1986-88 base = 100.**

A comprehensive analysis of the EEC's CAP reform proposal (which was approved by the Council of Ministers on 30 June 1992) was carried out in November 1991 by the Centre for Agricultural and Rural Development at Iowa State University. This analysis also estimates, *inter alia*, the PSE relative to the 1986-88 base for selected commodities. The estimated levels of domestic support for selected commodities, as measured by the PSE for 1997 when the reforms should be fully implemented are shown in Table B. Compensation payments are included in the PSE calculations.

For wheat, barley, maize, soybean, rapeseed, pork, poultry and dairy products, the EEC's CAP reform is estimated to reduce domestic support further than would be required by the GATT Draft Final Act. Additional measures would need to be taken for beef.

[1] 1986-88, the base year average proposed by GATT.

Recent developments in the EEC: the farm economy

Following the significant improvement in 1989, 1991 was the second consecutive year in which the overall situation of EEC agriculture was characterized by a worsening market situation and a major buildup of stocks. As far as weather conditions, productivity and levels of production were concerned, 1991 was a good agricultural year but not exceptional. Nevertheless, low prices in some markets kept agricultural incomes depressed. This underscored the need for agricultural policy reform and the restoration of a greater market balance in EEC agriculture.

A consequence of growing market disequilibria was the growth of stocks of major commodities in 1991 following their significant reduction during 1988 and 1989. Cereal stocks rose from 12.8 million tonnes at the end of 1990 to 16 million tonnes at the end of 1991. Stocks of butter and skimmed milk powder, which had virtually disappeared by the beginning of 1990, reached peaks of 400 000 and 500 000 tonnes, respectively, in July 1991. A major export programme had reduced butter and skimmed milk powder stocks to 260 000 and 434 000 tonnes, respectively, by December 1991. Stocks of bovine meat also increased through 1991 in spite of large exports.

Agricultural revenues[37] in 1991 in the EEC declined by an average of 2.5 percent in real terms, following the 2.3 percent decline recorded in 1990. These two consecutive years of decline partially offset the exceptional 12.2 percent increase in 1989. In spite of a deterioration over the past two years, the level of agricultural incomes is still slightly above the average of the 1980s. The most important element depressing farm incomes over the ten-year period has been the growing disequilibria on international markets both at the EEC and global levels. Another negative element has been the slow-down of agricultural restructuring, rendered more difficult by a less favourable general economic environment than in the past.

Reform of the Common Agricultural Policy

In May 1992, after several months of negotiations, EEC ministers of agriculture reached a political agreement on a reform of the Community's Common Agricultural Policy (CAP), which is the most far-reaching since the inception of the CAP. The reform received formal approval by the ministers on 30 June 1992; its main principles are:

- price reductions;
- supply control measures in the form of set-aside requirements and cuts in production quotas;
- compensatory measures in the form of direct payments to producers decoupled from production;
- structural measures to encourage less intensive and more environmentally friendly production practices and to promote afforestation of agricultural land.

For the main market organizations, the specific elements of the agreement can be summarized as follows:

- *Cereals*
- price cuts of 29 percent;
- withdrawal of the coresponsibility levy on producers beginning in 1992/93;
- abolishment of stabilizer mechanisms (which ensure automatic price reductions when total EEC production exceeds certain predetermined levels);
- decoupled compensatory direct payments (not linked to production) on a voluntary basis for all producers;
- land set-aside requirements in order to qualify for compensatory payments (15 percent of land on a rotational basis) with an exemption for smaller producers (whose annual production is less than 92 tonnes). A form of quota-leasing system is foreseen, allowing producers to transfer their set-aside obligation to other farmers.

- *Milk*
- price cuts of 5 percent for milk and butter;
- withdrawal of the coresponsibility levy on producers;
- annual reviews of milk quotas, beginning in 1993/94 in the light of the market situation.

- *Beef*
- price cuts of 15 percent;
- compensatory increases in premiums for beef producers, limited to the first 90 animals of every herd and in premiums for male bovine and suckler cows. The premium increases are conditional to extensive production practices being adopted (specific stocking rates in terms of animals per ha);

[37] Net value added at factor costs per full-time employed unit of labour.

- intervention purchases of beef will be reduced from 750 000 tonnes in 1993 to 350 000 tonnes in 1997.

In addition, changes were agreed regarding: market regulations for sheepmeat, with the introduction of individual producer limits on the number of ewes eligible for full premiums; and the tobacco sector, with quotas on production eligible for premiums.

Most of the agreed market organization reforms are to be phased in gradually over a three-year period beginning with the marketing year 1993/94. The reform covers some 75 percent of the EEC's output of products regulated by common market organizations. The main market organizations not affected are those for olive oil, fruit, vegetables and wine. The sugar regime is to be reviewed before the expiry of the existing market organization at the end of 1993.

The reform of the common market organizations is accompanied by structural measures in three areas:

- environmental protection;
- afforestation of agricultural land;
- improvement in the early retirement scheme.

At the centre of environmental protection measures is the recognition within the CAP of the double role played by farmers who are, on the one hand, producers and, on the other hand, guardians of the natural environment and countryside. The scheme envisages aid measures for farmers in order to promote environmental objectives and encourage more extensive production practices. The afforestation programme foresees aid to farmers for afforestation and maintaining plantations as well as compensating for lost agricultural revenue. The retirement scheme, affecting full-time farmers over 55 years of age, is aimed at promoting the rationalization of landholdings as well as their use for non-agricultural purposes.

In some respects the agreed reforms represent quite a significant departure from past policies. One novel element is the introduction of aid to producers decoupled from production and, instead, linked to supply control requirements (e.g. set-aside). Another novel element is the emphasis put on environmental concerns, both through the new environmental and afforestation programmes and through certain market organization reforms designed to promote less intensive farming methods. The price cuts can be expected to bring EEC prices significantly closer to world market levels and should certainly have some impact on production. However, the basic mechanism generally remains a double price system in which an internal price level is set independently of world market prices and maintained by means of variable import levies and export subsidies. As long as this system is preserved, EEC producers and consumers will continue to be insulated from price movements on world markets.

Recent experiences in regulatory reform: Australia and New Zealand

Against the background of a depressed economic environment in the early 1980s, mounting external trade imbalances and declining terms of trade, New Zealand and Australia undertook radical processes of market liberalization. For Australia, this was an acceleration of the policy reforms which began in the 1970s while, for New Zealand, there was a marked shift in policies to a less regulated economy. Broadly, the policy reforms included: lowering tariffs and other import controls; reducing government ownership and control in many transport, mineral and communications enterprises; dissolution of many forms of market control over commodities; the floating of exchange rates and freer capital and merchandise flows. After several years of declining farm incomes and exports in New Zealand, more efficient resource allocation arising from reforms seems to have put the country's agricultural economy on the road to recovery — as suggested by recent improvements in farm incomes and new investments. In Australia, farm incomes have recently been heavily depressed by low world prices and droughts in major agricultural areas.

Agriculture plays an important economic role in both countries — more so in New Zealand which has a less rich and diverse resource base — and both agricultural sectors depend strongly on export markets. Given the high exposure to international markets and high capital requirements in both countries, macro-economic deregulation has probably had an even greater impact on their agriculture than have sector-specific reforms. Because of the long distances from other world markets, transport reforms have also had a strong impact on agriculture.

In the area of trade, both countries are

original members of the Cairns Group and have endorsed the overall thrust of the agricultural reform forwarded by the Uruguay Round Negotiating Group on Agriculture in July 1990. In general, effective rates of assistance for agriculture in Australia and New Zealand are the lowest among the developed countries. In the Uruguay Round, both countries have taken a very active role in forwarding and promoting proposals aimed at reducing domestic support measures that distort production and trade, improving market access and reducing export subsidies.

New Zealand and Australia have entered a process of bilateral trade liberalization under the framework of the Closer Economic Relations (CER) trade agreement, signed in 1988 and accelerated in 1991 (see Box 9). At present, almost all trade restrictions between the two countries have been eliminated. Major stumbling blocks have been in the communications and services areas but, taken as a whole, CER can be viewed as a precedent-setting case-study of trade liberalization and its likely effects for other countries. Reforms under CER translate into a greater specialization of production in both countries, allowing greater economies of size and lower shipping costs.

Despite Australia's having very low PSEs in the early 1980s — at only one-third of the OECD average — reforms were introduced to reduce any remaining assistance to agricultural industries, while other reforms are in progress to reduce these PSEs further.

Australia

Major policy reforms were introduced at both the Commonwealth and state levels during the late 1980s, affecting almost every sector in the Australian economy. At the Commonwealth

BOX 9

Australia and New Zealand: Closer Economic Relations (CER)

What is it?

- An agreement between Australia and New Zealand to liberalize their bilateral (trans-Tasman) trade in goods.

Timetable:

- Initiated in 1983, CER set 1995 as a target date to liberalize trade. By 1988, the date had been brought forward to July 1990.

Purposes:

- Both Australia and New Zealand wanted access to much larger markets than their respective domestic markets. Furthermore, both countries wanted to rationalize service industries, particularly shipping.

Achievements:

- All tariffs and quantitative restrictions on goods originating in the other member country were removed by 1 July 1990. Business laws and product codes were harmonized; trade in all agricultural products was freed up except for specific provisions covering rebates or bounties on sugar and sugar products. This contributed to an increased flow of livestock trade.
- Dairy trade between the two countries was liberalized, despite some initial concern on the Australian side.
- New Zealand eliminated monopoly import licensing arrangements on fresh apples, pears and bananas originating in Australia and lifted the freeze on Australian investment in New Zealand.
- Australia eliminated subsidies for products exported into New Zealand; protection was lifted on the more protected industries such as automotive components, footwear, clothing and New Zealand carpets. From 1 June 1989, New Zealand suppliers had access to contracts worth billions of dollars on the same basis as their Australian counterparts.

level, reforms included the devaluation and subsequent floating of the Australian dollar as well as deregulation of the financial system. These were accompanied at both the state and Commonwealth levels by a broad policy thrust to improve the efficiency of and, if necessary, privatize government business enterprises. Sector-specific measures were also introduced in agricultural and non-agricultural industries. Important specific reforms were made or are being undertaken in the wheat, wool, sugar, dairy and egg industries. In addition, government adjustment assistance programmes were extended to help the farm economy adjust to the marked downturn in world prices for many of Australia's major agricultural exports, which was partly the result of high assistance levels in other countries. Tax deductions were extended for expenditures on environmental improvements.

Australia's large land mass and long distance from international markets make cost-effective transport a key to international competitiveness. Rail transport alone accounts for 1 percent of GDP and represents more than 10 percent of costs in some industries. Recent Commonwealth government policy measures addressing the transport problem include: opening domestic air transport to competition from new entrants; moves to streamline the user fees on heavy vehicles throughout the country; establishing a national freight initiative to increase the efficiency of interstate rail transport; and worker-management reforms to improve shipping and handling. There has also been a wide range of reforms by state governments, such as reduced staffing levels in rail transport and modifications in electricity and other service charges to reflect more closely the actual costs of providing those services. The general consensus is that these changes have helped spur domestic airline activities and lower air fares; reduce average water transport crew sizes; and streamline practices for loading bulk grain, i.e. state reform of port operations.

The Australian Wheat Board has estimated that total savings to the grains industry resulting from waterfront reforms could be around A$10 million per year.

The most publicized commodity-specific reform in 1991 was the suspension and subsequent abolition of the reserve price scheme in the wool industry. The government reorganized the industry by replacing the former Australian Wool Corporation (AWC) with three new statutory bodies (responsible for marketing and quality control; wool research and development; and management of the stockpile, including repayment of the industry's debt). On 1 July 1991, sales from the stockpile, which had been frozen in February, were resumed, with proceeds serving to pay the former AWC's back debt. Provisions were made to pay back, over the next seven years, the Commonwealth-guaranteed debt that had been incurred in support of the reserve price scheme. Some short-term assistance (under the Supplementary Payments Scheme and grants) was also introduced to help offset an expected reduction in prices incurred by growers as the stockpile is reduced.

Sugar import tariffs were lowered in 1991 and again in 1992, after having replaced quotas in 1989. The 1989 tariff rate of A$115 per tonne was lowered to A$76 per tonne on 1 July 1991 and further to A$55 per tonne on 1 July 1992. The sugar industry still maintains a high degree of regulation through state controls in Queensland, where 95 percent of Australia's sugar is produced. Queensland marketing arrangements allow the 20 percent or so of Australia's sugar that is used domestically to be priced up to import parity plus freight.

Measures that were previously in place to aid individuals and communities in the adjustment process were extended and new measures introduced. Programmes to assist individual farmers experiencing financial difficulties took the form of interest subsidies, loans and/or grants under the Rural Adjustment Scheme (RAS). Funding under the RAS almost tripled in 1991/92 but still remains a small part of overall assistance provided to agriculture. Most of the increase was intended to assist farmers in recovering from the very low world prices for grains and in restocking after the recent severe drought. The newly created Debt Reconstruction with Interest Subsidy (DRIS) programme is a short-term programme and accounts for a major part of the increased budget. Other programmes are also operational to assist farmers in leaving the industry. Two new schemes were introduced in 1991 to assist rural communities: the Business Advisers for Rural Areas (BARA) and the Rural Industries Business Extension Service (RIBES) programmes. The budget for each programme, A$2 million per year, appears modest.

Low prices for wheat and relatively higher prices for wool led to a shift from wheat to wool production, with some increases in production occurring also for other broad-hectare crops and

beef. Although assistance reductions have not been as drastic as they have in New Zealand, many agricultural product prices and asset values have been sharply depressed by lower world prices for wheat and, more recently, wool. Recent positive production responses appear to have also occurred in the case of sugar, as shown by the increase in the number of growers in 1991, for the first time since 1965, as well as increases in planted sugar area.

New Zealand

Far-reaching market-oriented policy reform was also introduced in New Zealand during the 1980s, affecting every sector in the economy. In agriculture, reform measures cut New Zealand's overall PSE from an average of 25 percent over the 1979-86 period to an estimated 5 percent in 1989,[38] and made New Zealand farmers the least government-assisted among the OECD countries. Recent policy changes of particular interest to agriculture mainly relate to work practices resulting in lower labour costs, particularly in the meat processing sector and to transportation, as new commodity-specific reforms have been marginal.

In the area of transport, reforms in labour and management are believed to have yielded significant efficiency increases. Incorporation of the port authorities has increased competitiveness between different locations in New Zealand. Furthermore, shipping crew numbers were reduced by 25 percent during 1989 and 1990 alone while export licences for some products have been increased.

Recent agricultural policy changes have been marginal compared with those introduced a few years ago. With the exception of poultry and eggs, all agricultural sectors are fully exposed to international market signals, although marketing boards still operate for dairy, certain horticultural products, wool and meat. The year 1991 saw the final stages of the elimination of interest concessions on subsidized loans held by the Rural Banking and Finance Corporation; the end of the minimum price scheme for wool, following similar action by the Australian Wool Corporation; and the move towards full cost recovery for inspection and quarantine services.

Substantial environmental policy reform occurred in 1991 when the Resource Management Act came into effect. The new act replaced more than 20 major statutes. Taxation disincentives, which had previously discouraged tree-planting for erosion control and shelter, were removed. The new Act also provided for regional management of policies affecting land, air and water resources. It established the principle of equal treatment among sectors, including agriculture.

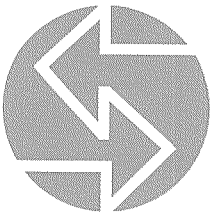
Agricultural reform and sector performance

Farm incomes and land values have undergone a severe depreciation since 1985. For example, average real net income for sheep and beef farms in 1989 were only 60 percent of the 1980 levels, while farmland values plummeted by more than 60 percent in real terms between 1982 and 1989. Like Australia, New Zealand farmers have increasingly shifted from sheep to beef production, but with different timing. The removal from 1984 to 1987 of supplementary minimum prices which had favoured sheep production in New Zealand saw beef and dairy numbers rise at the expense of sheep numbers. For example, current New Zealand sheep numbers have declined to 1966 levels while beef numbers show annual increases of 3 to 5 percent. A signal of adjustment in production processes for beef was seen in August 1991 when the first major beef feedlot opened in New Zealand, with all its beef production being exported to Japan. This new injection into the agricultural economy was seen as a positive step towards recovery. General increases in beef and dairy cattle numbers have resulted in a 22 percent increase in beef exports in 1991/92 compared with 1980/81.

Changes in tax treatment are expected to encourage the growth of agroforestry — the combined use of land for timber production and livestock grazing. This could, in turn, spur additional beef production or increases in deer and goat production, which are areas where some livestock farmers have found "niche" markets.

[38] OECD. *Agricultural Policies, Markets and Trade. Monitoring and Outlook 1991.*

PART III
MARINE FISHERIES AND THE LAW OF THE SEA: A DECADE OF CHANGE



MARINE FISHERIES AND THE LAW OF THE SEA: A DECADE OF CHANGE

I. Introduction

Ten years ago, the United Nations Convention on the Law of the Sea was signed, marking the end of an era of freedom of the seas. For fisheries, however, the era of freedom had ended de facto during the 1970s when a majority of coastal states claimed jurisdiction over the resources within Exclusive Economic Zones (EEZs), i.e. waters within 200 nautical miles from their shores. The formal passing of the freedom of the seas provided the basis for the special chapter, Marine fisheries in the new era of national jurisdiction, in *The State of Food and Agriculture 1980*. As noted in that chapter: "The opportunity exists, as never before, for the rational exploitation of marine fisheries. Realization of the opportunity, however, will require major adjustments to the redistribution of benefits from the seas' wealth and improvements in the competence of the coastal states to exercise their newly acquired authority. The 1980s provide the threshold for a new era in the enjoyment of the oceans' wealth in fisheries."

Twelve years have passed since this was written and ten since the signing of the UN convention. It is an appropriate time to take stock of the changes that have occurred in marine fisheries and examine the adjustments that have been made and the challenges that have been met. This chapter attempts to do just that.

In general, the redistribution of the seas' wealth has proceeded as anticipated, with a few coastal states gaining large benefits and a few distant-water fishing states incurring large losses. Several developments were not foreseen, however. Most notable are the continued investment in large-scale fishing vessels capable of fishing great distances from port, and the significant growth in fishing effort on the high seas beyond the 200-mile limits.

With regard to improvements in the competence of nations to exercise their newly gained authority, developments in the 1980s have proceeded more slowly than anticipated. Coastal states with resources of interest to foreign countries have generally made considerable gains in managing their resources and extracting benefits from the foreign users. But improved management of domestic fisheries still has a long way to go. The task is difficult and many states are reluctant to take the necessary steps to assign and allocate exclusive use rights among their own fishermen.

In addition, environmental issues have become increasingly significant during the decade, posing difficult challenges. The major problems lie in the coastal zones where disparate uses from diverse sources are in conflict and where fisheries receive the brunt of the damage. The problems are particularly urgent for small-scale fishing communities in developing countries.

In general, the 1980s might be considered a period of adjustment to the dramatic changes that occurred in the law of the sea during the 1970s as well as a period of transition to the eventual achievement of substantial benefits from the oceans' fisheries. Many tasks have to be completed before those benefits can be fully realized, but the size of the rewards justifies a significant increase in the world community's concern for the problems of fisheries management.

BOX 10

From freedom of the seas to national jurisdiction

The era of freedom of the seas was initiated in the sixteenth and seventeenth centuries when the struggles to dominate the oceans and profitable trade routes were resolved by a mutual accommodation of interests. Fisheries provided one of the important arguments used to advance the principle of the freedom of the seas. Hugo Grotius, in his treatise *Mare Liberum* (1608), made two points: first, that fishery resources were so abundant that no benefits would accrue to exclusive jurisdiction; and second, that the resources were so extensive that national jurisdiction could not be effectively defended. Although the first point was somewhat specious, Grotius' arguments ultimately prevailed and the freedom of fishing became a major element in the freedom of the seas.

Under this principle, the fishermen of all countries had free and open access to the resources beyond the relatively narrow limits of coastal state jurisdiction; generally within three to twelve nautical miles from shore. The fishermen of Western Europe were the initial beneficiaries. When the herring stocks of the North Sea declined, fishermen moved to the Grand Banks off Newfoundland. As these stocks came under pressure, they moved south to the banks off New England, following the advice of Captain John Smith who, in 1610, reported that the Grand Banks are "so overlaide with fishers as the fishing decayeth and many are constrained to return with a small fraught".

And so the pattern was set. With declining catches per vessel in the traditional grounds, the fishermen either moved to new areas or adopted more intensive techniques. All that was required was the capital to invest in larger and more sophisticated vessels and gear. In more recent years, the pace of exploration and exploitation was expedited by the development of automotive power, synthetic fibre nets and refrigeration.

Until the Second World War, the distant-water fishing fleets came mostly from Western Europe and Japan. They were followed by the fleets of the former USSR, countries of Eastern Europe and a few developing countries, most notably Cuba, Ghana, the Republic of Korea and Taiwan, Province of China. United States fishermen extended their activities into the Antarctic for whales during the 1800s and, more recently, into the South Pacific for tuna.

During this era, the seas' wealth in fisheries was essentially appropriated by a few states, mostly the developed maritime countries which had the capital and the technology to take advantage of the opportunities offered by open access to the natural resources. Developing countries generally gained little and, in some cases, were harmed by foreign fleets decimating the fish stocks off their coasts. Even where there was no damage, the growing presence of large foreign fishing vessels off their coasts made them increasingly aware of the inequitable distribution of the wealth of the seas.

The end of the era was presaged in 1947 when Chile and Peru announced claims of extended jurisdiction up to 200 miles from their coasts. They were joined by Ecuador in 1952. The claims, partially a response to the appearance of United States tuna fleets off their coasts, remained largely a local matter between these states and the United States until 1958, when the issue of extent of jurisdiction was raised at the first UN Conference on the Law of the Sea. However, neither this conference nor the second one in 1960 resolved the issue, although a majority of states at that time favoured narrow limits of control.

During the 1960s and 1970s, positions changed dramatically. It became much more evident that the supplies of fish stocks were limited and that depletion was becoming more prevalent. Attempts to manage resources through international bodies were proving to be largely ineffective. Many coastal states, developed and developing, felt increasingly threatened by the large fleets of the distant-water states off their coasts. Simultaneously, the issue of control over the mineral resources in the deep ocean beds raised the demands of developing states for a more equitable distribution of ocean wealth.

In 1967, the UN General Assembly established a Committee on the Peaceful Uses of the Sea-bed and the Ocean Floor beyond the Limits of National Jurisdiction. The mandate of the Committee expanded rapidly to cover all uses and resources of the sea, including fisheries. Interest in the work of the committee led to a rapid increase in membership and, eventually, to the convening of the third UN Conference on the Law of the Sea in 1973.

Concurrently, more and more states unilaterally extended their jurisdiction over fishery resources so that, by the mid-1970s, a majority of coastal states had asserted claims out to 200 nautical miles. The choice of 200 nautical miles as a limit for fisheries jurisdiction has no relevance to the habits of fish. Some species (e.g. oysters and clams) are sedentary while others (e.g. tuna and salmon) swim vast distances and are found both inside and outside 200-mile limits. There is also no direct connection between the size of fisheries zones and the wealth of their resources. The sea is not a vast bouillabaisse containing uniformly distributed treats, but an ocean of disparity with areas as barren as the Sahara and others as fertile as a rain forest. Among the latter are the continental shelves which are rich in demersal stocks (groundfish, such as cod and haddock) and the upwelling currents, inhabited by pelagic species (those feeding on the surface, such as sardines and anchoveta). Temperate zone waters tend to contain large populations of relatively few individual species while tropical waters have small populations of a large number of species. On the open ocean, the stocks are diffused. Some high sea species have schooling habits but require high search costs for their location. Others seldom aggregate and can only be caught using gear that filters great quantities of water.

The establishment of 200-mile Exclusive Economic Zones (EEZs) constitutes an accident of geography and has only limited relevance to the achievement of a more equitable distribution of wealth. Its most important function has been to provide coastal states with the authority to manage the resources within these zones.

MARINE FISHERIES AND THE LAW OF THE SEA: A DECADE OF CHANGE

II. The decade's developments

FISHERY RESOURCES

Marine catch and changes in production patterns

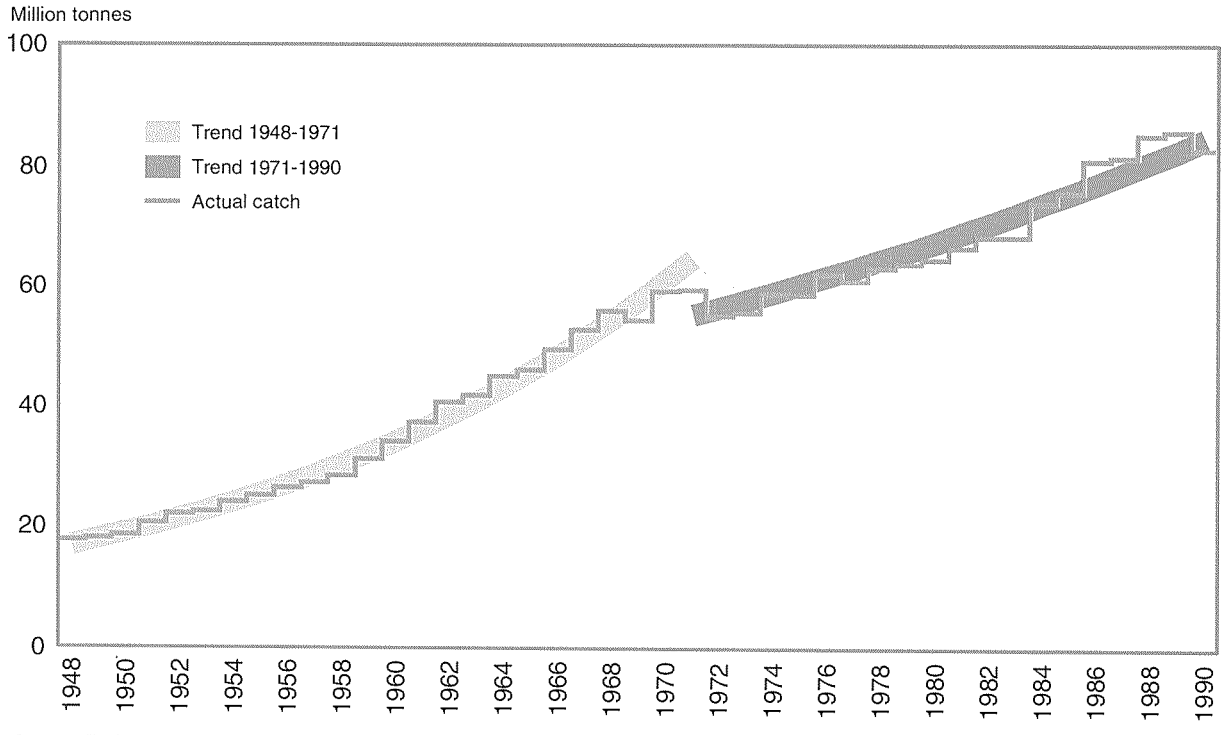
World marine fisheries production has increased almost fivefold over the past 40 years, rising from around 18 million tonnes to more than 86 million tonnes by 1989. Estimates for 1990 indicate a decline to 83 million tonnes but, at the trend rate of the past 20 years, the total catch would exceed 100 million tonnes by the year 2000.

Prior to 1970, the world catch of marine fish rose at the rapid rate of 6 percent per year but the collapse from 12 million to 2 million tonnes in Peruvian anchoveta fishing between 1970 and 1973 reduced the total catch of all marine species and marked a major break in the growth rate. Over the ensuing two decades, global marine catch rose by only 2.3 percent per year (Fig. 17).

Institutional, environmental, socio-economic, biological and technological factors were all influencing this pattern of expansion in world fisheries during this initial decade of EEZs. For example, technological advances, including the introduction of on-board freezing and processing, enabled fishing fleets to exploit fish stocks far away from home ports. The advent of synthetic twines and the mechanization of

Figure 17

GROWTH IN GLOBAL MARINE CATCH



Source: FAO

hauling gear led to the design of bigger and more durable nets while electronic fish detection and navigational aids increased the efficiency of the deployment of both fishing vessels and gear.

Five species accounted for most of the production increase during the 1980s. The catch of Alaska pollack, Chilean jack mackerel, Peruvian anchoveta, Japanese pilchard and South American pilchard increased from 12 million tonnes in 1980 to 25 million in 1989 (Fig. 18). The Japanese and South American pilchard share with the Peruvian anchoveta the characteristic of widely fluctuating yields as a result of natural variability. These stocks are expected to decrease in the future. Indeed, Japan's catch of Japanese pilchard dropped from 4.49 million tonnes in 1988 to 3.68 million tonnes in 1990.

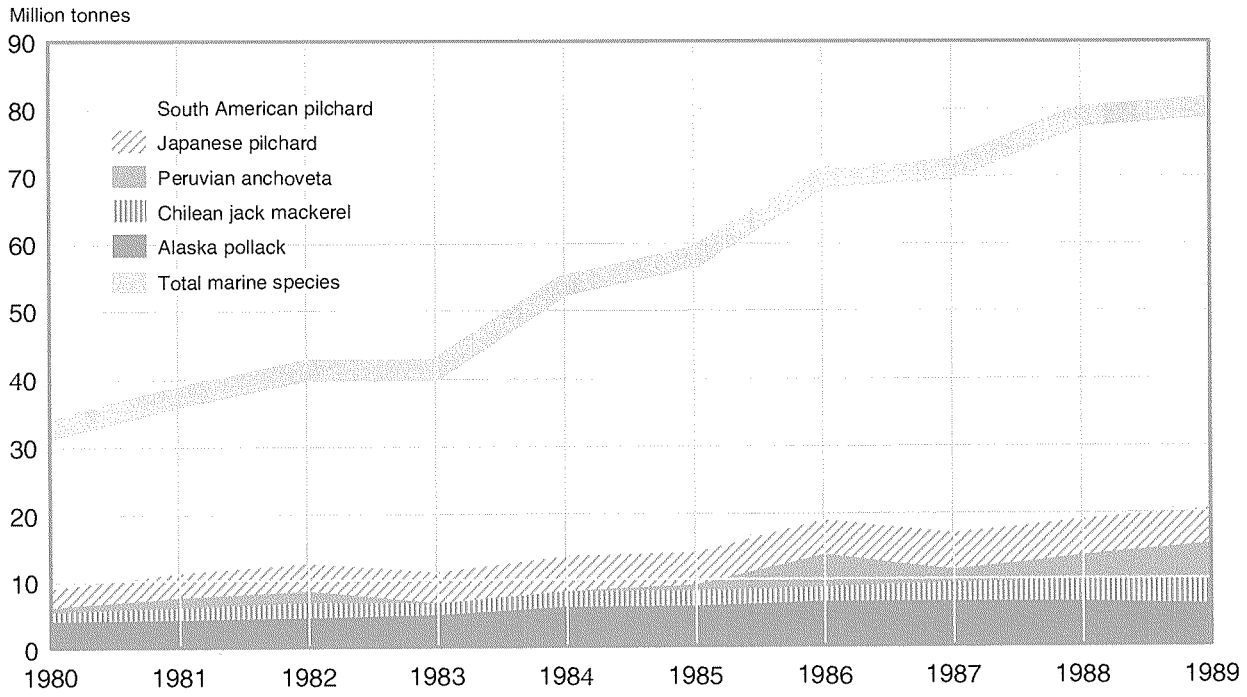
These are also five relatively low-valued species. Alaska pollack has an average unit value of about one-third that of all other species. The average unit values of the other four species are about 10 percent of the overall average value while, together, the five species only contributed about 6 percent of the total value of production in 1989. Thus, the increase in the total catch of these five species makes a relatively low economic contribution to the growth in output.

Catch has also increased for higher-value species which are facing increased demand. The catch of all tuna increased fairly steadily during the past two decades, adding 1 million tonnes to the total annual catch between 1980 and 1989. The catch of skipjack and yellowfin tuna have increased at a rate of 5.4 percent and 4.5 percent per year, respectively, since 1970.

Skipjack stocks throughout the world are apparently abundant and have high rates of reproduction, which may allow significant increases in the global catch. Similar increases are less likely for yellowfin tuna and unlikely for the other major market species (albacore, northern and southern bluefin and bigeye). There have, however, been recent increases in the catch of albacore, particularly by Taiwan, Province of China, whose catch rose from an average level of about 60 000 tonnes during the period 1977-1985 to almost 140 000 tonnes in 1989. This was a result, at least in part, of the expanded use of large driftnets, a fishing technology capable of filtering great quantities of water on the high seas.

Figure 18

GROWTH IN CATCH OF MAJOR SPECIES



Source: FAO

Shrimp are another group of species contributing to the increase in total marine catch. Total catch from all sources (marine and inland, capture and culture) rose from 1.1 million tonnes in 1970 to 1.7 million in 1980 and 2.4 million in 1989. The most dramatic increase occurred in China where total shrimp production rose fivefold over the two decades to reach more than 500 000 tonnes, or about 20 percent of total world output. In 1989, aquaculture accounted for about one-third of Chinese shrimp production. World production of shrimp by aquaculture in both fresh and marine water grew rapidly, reaching a total of 509 000 tonnes in 1989 (Fig. 19).

Salmon production was about 400 000 tonnes during the 1970s, reaching 600 000 tonnes in 1980 and rising to more than 1 million tonnes in 1989. This was a result of both the recovery of stocks through more effective conservation measures and production through aquaculture. Salmon production by acquaculture mainly began in Norway in 1980, with several other countries quickly following suit. Norway currently accounts for more than 25 percent of total salmon production. Prices of salmon have declined markedly in response to increased production from both capture and culture fisheries (Fig. 20).

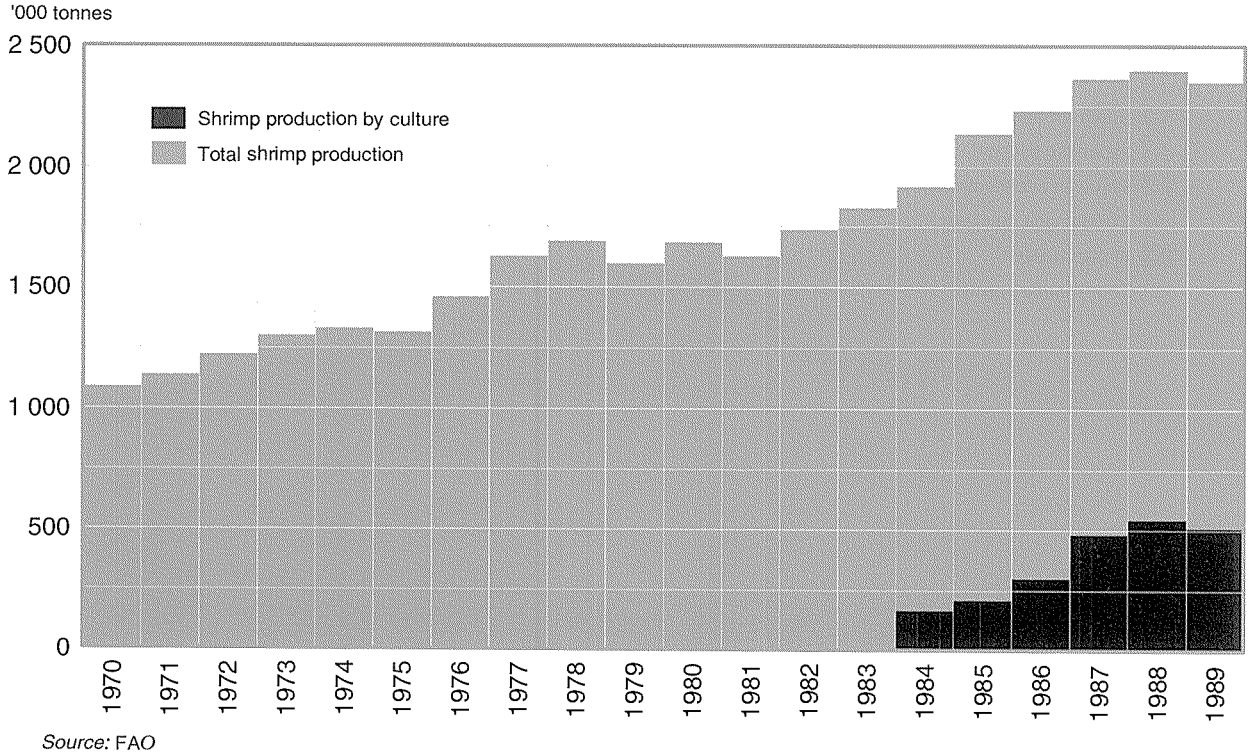
The significant overall increase in the global marine catch during the 1980s obscures a number of features that give cause for concern. First, there is little reason to believe that the global catch can continue to expand, except for increases that might occur through more effective management of stocks. The stocks that have accounted to a large extent for the recent growth are the small shoaling pelagics, such as sardines, pilchards and anchovies. These stocks are subject to wide fluctuations in biomass. Some of them are at the peak of their cycles and can be expected to decline in the future although, since others may increase to take their place, the aggregate catch is not likely to change.

Moreover, these species are mostly used for the production of fish-meal and have a low value, thus making a relatively small contribution to the global economy.

An aspect raising more concern is that of the continued overfishing of many individual stocks of fish. Although there are instances of stock rehabilitation through the adoption of conservation measures, these are relatively

Figure 19

WORLD SHRIMP PRODUCTION



Source: FAO

scarce in most areas of the world. The more general situation is one of depletion. The catch of four important species of groundfish (Atlantic cod, Cape hake, haddock and silver hake) dropped from 5 million tonnes in 1970 to 2.6 million tonnes in 1989 (Fig. 21). Because of overfishing, there have been significant drops in catches of Atlantic redfish, Pacific Ocean perch, yellow croaker, atka mackerel, Atlantic herring and Atlantic mackerel.

Most shrimp stocks throughout the world have been fished beyond the point of maximum sustainable yield (MSY). In many cases, the small size of the individuals harvested is not only leading to a lower total catch but also to considerable economic losses because of the lower prices received. In addition, the shrimp trawlers often take large quantities of trash fish, frequently accounting for up to 90 percent of their hauls. Some of the fish taken in these hauls are juveniles of species that would be of high value if landed as adults.

The depletion of various stocks of fish has occurred in virtually all coastal states throughout the world. Indeed, as discussed below, this is an inevitable outcome unless appropriate controls are adopted.

Catch by major fishing areas

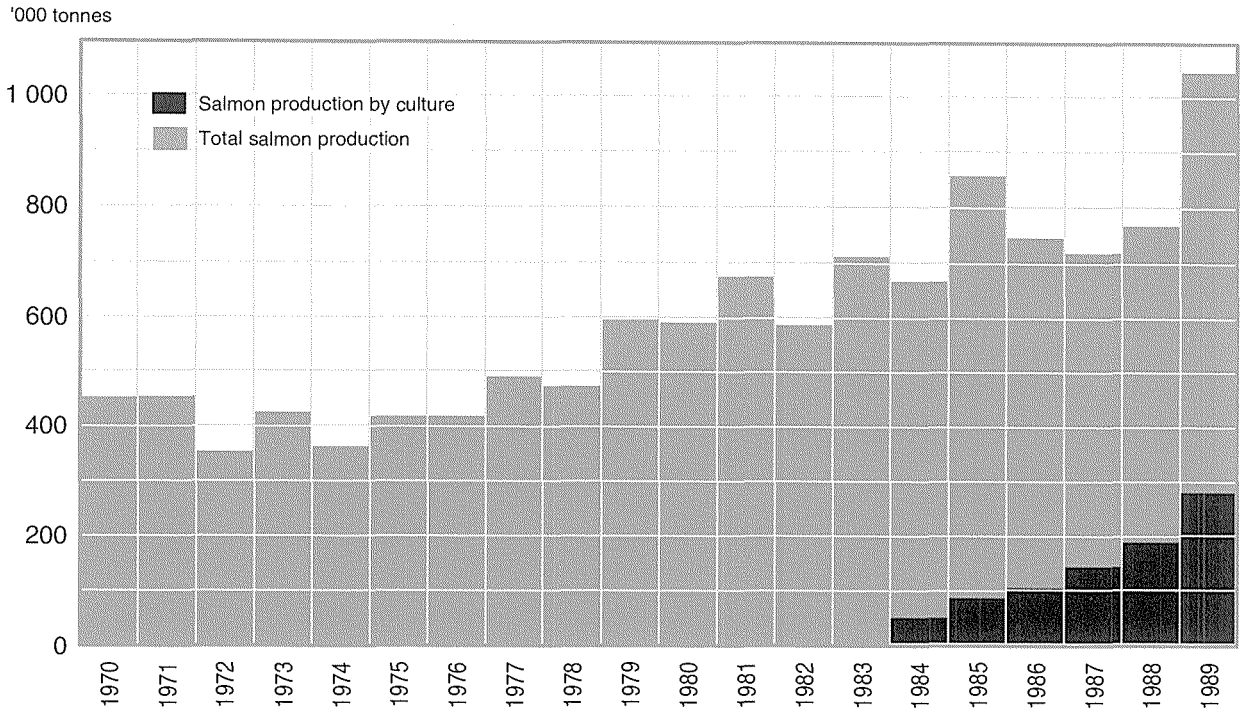
Three types of areas attract distant-water fleets: *i)* areas of upwellings where deep, cold ocean waters rise to the surface, bringing with them abundant nutrients; *ii)* areas of extensive continental shelves (e.g. northeastern America); and *iii)* areas where tuna stocks may be found. Most of the tropical zones (e.g. the Indian Ocean, the South China Sea and the Caribbean Sea) are of lesser interest to the distant-water states because of the large diversity of species and relatively small size of individual stocks. The relative importance of the various fishing areas is shown in Fig. 22.

Rich areas of upwellings which have attracted the distant-water fleets are found in the eastern central Atlantic (off northwestern Africa), the southeast Atlantic and the southeast Pacific. In the eastern central Atlantic, the catch by developing coastal states has shown a consistent increase over the two decades. However, much of this catch has been taken under joint ventures with foreign fishermen who have avoided access negotiations and costs by adopting coastal state flags.

The southeast Atlantic contains similar stocks of shoaling pelagic species in addition to large

Figure 20

WORLD SALMON PRODUCTION



Source: FAO

quantities of demersal stocks of Cape hake. The coastal state catch has declined over the past two decades. A large portion of this region is off the coast of Namibia which did not claim extended jurisdiction until it acquired independence in 1990. This region has been marked by considerable overfishing of the Cape hake and pilchard stocks.

Until the mid-1970s, Peru dominated the southeast Pacific region. The Chilean catch then took off, growing from 1 million to almost 7 million tonnes by 1989. The former USSR entered the area significantly in 1979.

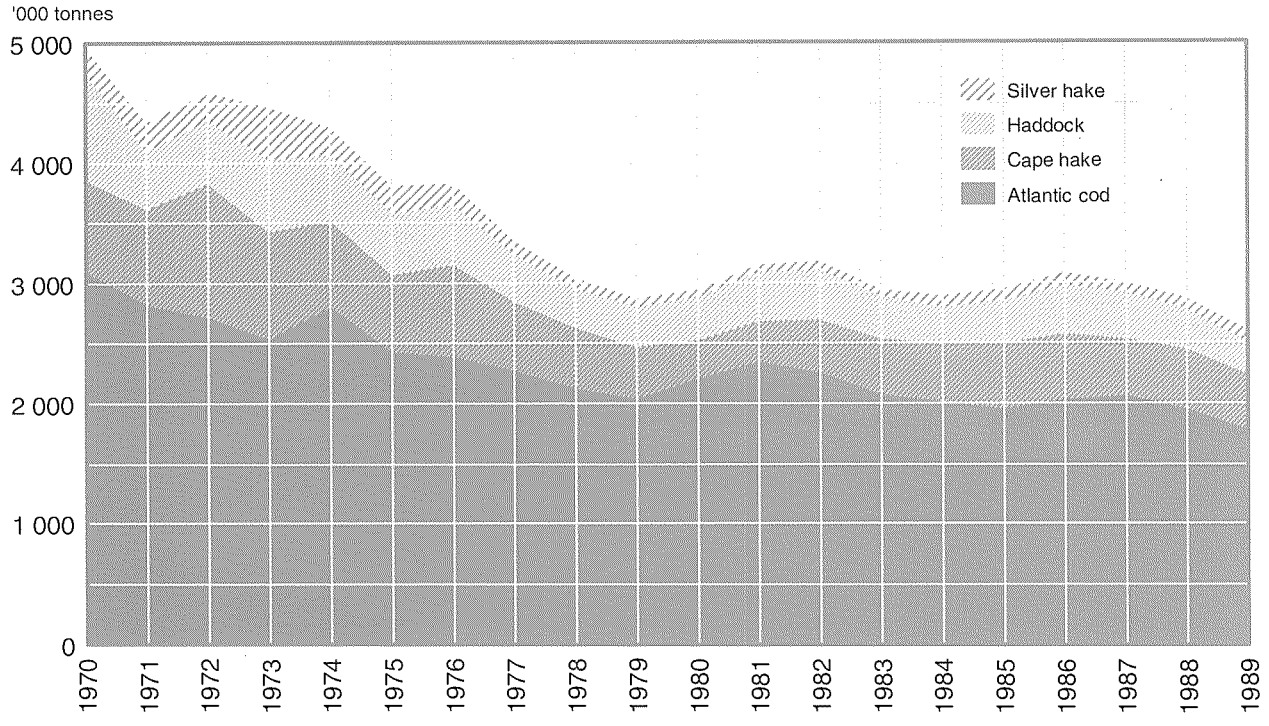
The coastal state catch is most significant in the southeast Pacific. In the eastern central and southeast Atlantic, the coastal state catch declined in the 1970s and increased in the 1980s. The increase was only moderate, however, and to some extent a result of the transfer of flags from the developed states.

The major areas of large continental shelves of interest to the distant-water states include the northwest and southwest Atlantic and the northeast Pacific, all of which experienced dramatic changes. In the northwest Atlantic, although total catch in this region has declined, the catch by the coastal states of Canada and the United States has increased since the 1970s.

In some regards, on the west coast of North America, the developments are similar to those on the east coast. To a large extent, the distant-water states have been replaced (in the catching sector) by the coastal states, particularly the United States. Here, however, there was a strong increase in the total catch during the 1980s, mostly made up of Alaska pollack. The former USSR's fleet virtually ended fishing operations by 1980 while the Japanese fleet continued into the 1980s, although with ever-decreasing catch levels. The former USSR and Japanese fishery activities remained, although in a different form. The former USSR, until recently, operated joint ventures under which its processing vessels purchased fish caught by its United States partners, while the Japanese have invested in joint ventures as well as in shore processing facilities.

In the southwest Atlantic, an opposite development is taking place. In this region, the coastal states dominated fisheries during the 1970s. However, from about the middle of that decade, distant-water states entered the area and increased their catch from a negligible amount to 1 million tonnes, amounting to over

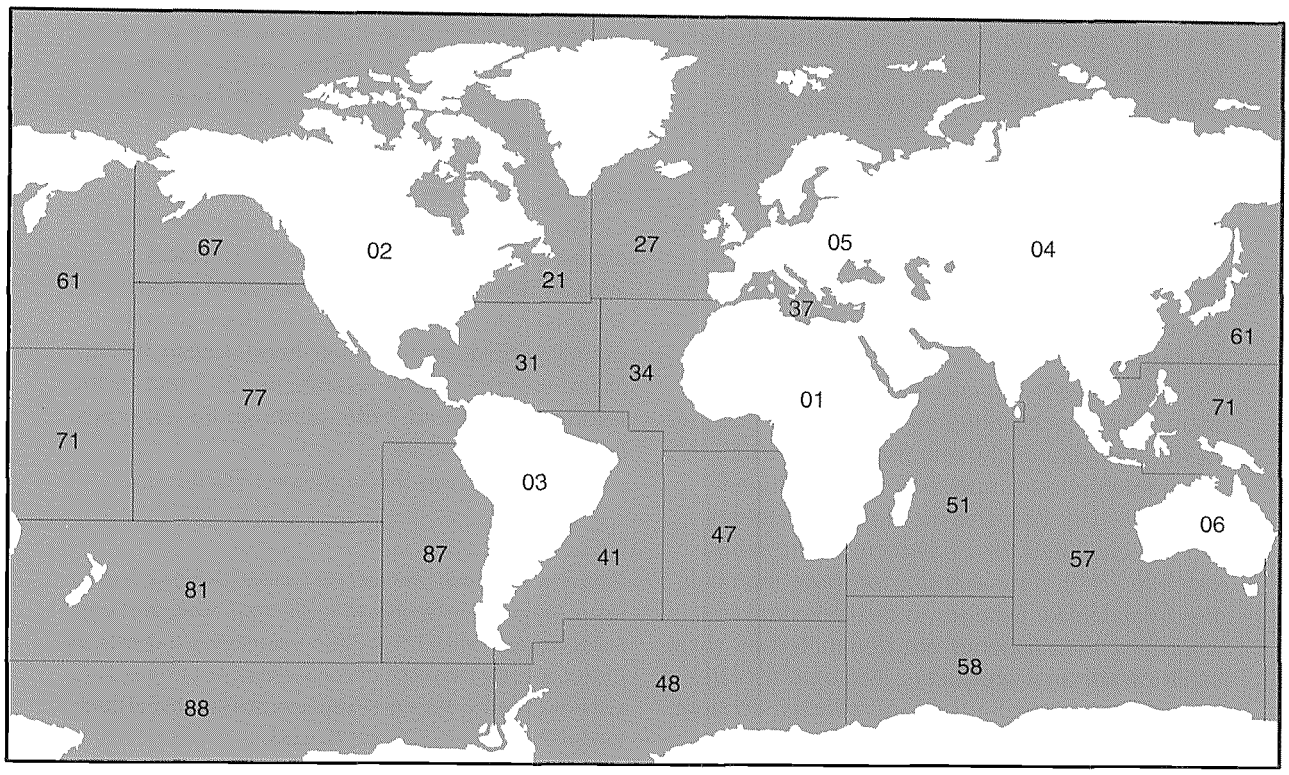
WORLD CATCH OF SELECTED MAJOR GROUNDFISH



Source: FAO

Figure 22

NOMINAL WORLD FISH CATCH BY MAJOR FISHING AREAS



AREAS	INLAND FISHERIES	WORLD CATCH IN 1990 ('000 tonnes)
01	Africa	1 905
02	North America	537
03	South America	333
04	Asia	10 197
05	Europe (including former USSR)	1 448
06	Oceania	24
	TOTAL INLAND	14 444
	MARINE FISHERIES	
21	Atlantic, northwest	3 221
27	Atlantic, northeast	9 183
31	Atlantic, western central	1 697
34	Atlantic, eastern central	4 098
41	Atlantic, southwest	2 029
47	Atlantic, southeast	1 530
37	Mediterranean and Black Sea	1 489
51	Indian Ocean, western	3 376
57	Indian Ocean, eastern	2 828
61	Pacific, northwest	25 688
67	Pacific, northeast	3 428
71	Pacific, western central	7 311
77	Pacific, eastern central	1 519
81	Pacific, southwest	1 031
87	Pacific, southeast	13 945
88, 48, 58	Antarctic	428
	TOTAL MARINE	82 801
	GRAND TOTAL	97 245

Note: Including aquaculture but excluding aquatic plants
Source: FAO Yearbook Fishery Statistics: Catches and Landings 1990, Vol. 70

40 percent of the region's total catch. Over two-thirds of this distant-water catch is of newly discovered squid stocks and is taken by several distant-water states. The phenomenal increase in squid catches during the mid-1980s levelled off in the last three years as maximum limits were reached and controls were established over the catch.

Changes have occurred in other regions as well, although not generally of the same significance, with regard to distribution patterns between distant-water and coastal states.

Developments among regions and main fishing countries

Globally, *developing countries* have been increasing their marine catch (since the collapse of the Peruvian anchoveta fisheries in 1972) at a considerably faster rate than the developed countries (Fig. 23). The developing countries, which accounted for 27 percent of the world catch in 1950, now account for more than half the total. Unlike fisheries in the industrialized countries, their fisheries are dominated by small-scale or artisanal producers. Artisanal fisheries, typically using small boats and canoes, account for more than 25 percent of the world catch. They are the source of more than 40 percent of the fish used for human consumption.

Among the 20 countries with the largest catch during the two decades, nine are developed and 11 are developing.[1] In each case there are three states with significantly larger catches than the others: Peru, China and Chile; and Japan, the former USSR and the United States.

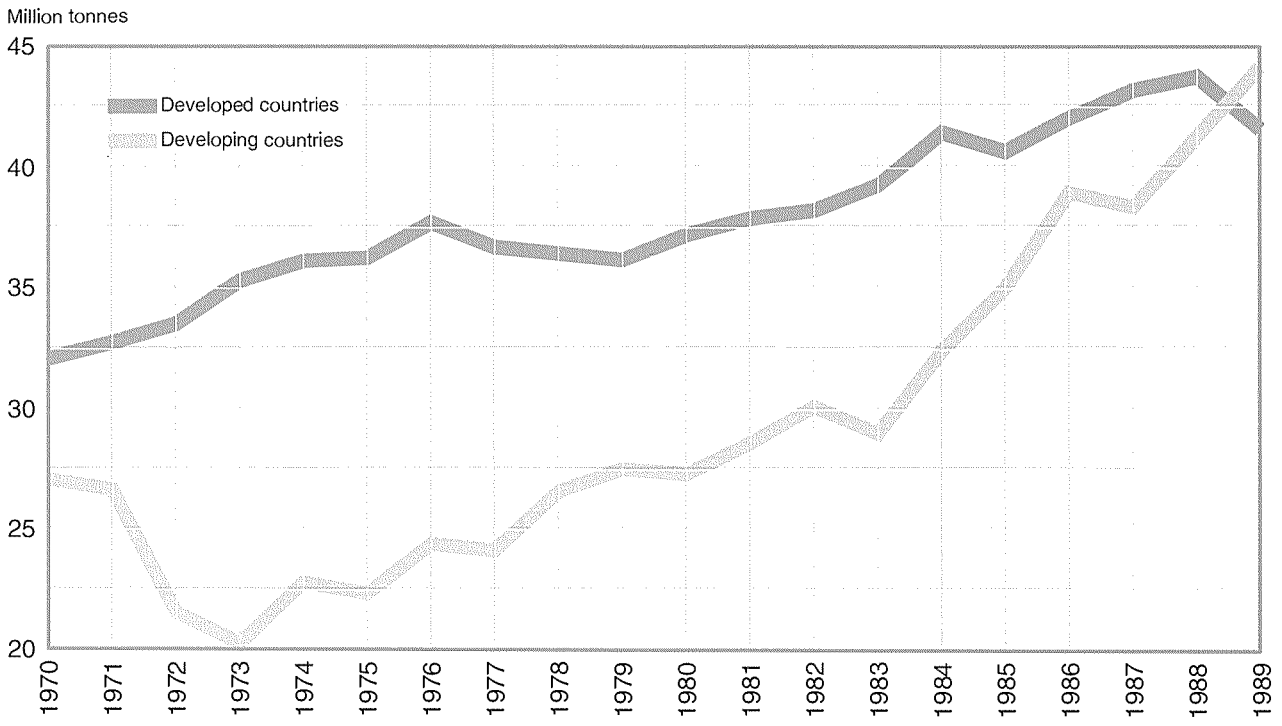
With the significant exceptions of the Republic of Korea and Taiwan, Province of China, the catch of the developing countries is almost entirely within their EEZs. Thailand initially fished heavily in the zones of other Southeast Asian states but now does so only slightly. China, on the other hand, began fishing in the eastern central Atlantic in 1985 and in the northeast Pacific in 1986, although the amounts caught are still small.

China's catch in the northwest Pacific has

[1] The nine developed countries are Canada, Denmark, Iceland, Japan, Norway, the Republic of South Africa, Spain, the United States and the former USSR. The 11 developing countries are Chile, China, the Democratic People's Republic of Korea, India, Indonesia, Mexico, Peru, the Philippines, the Republic of Korea, Taiwan, Province of China and Thailand.

Figure 23

TOTAL MARINE CATCH BY DEVELOPED AND DEVELOPING COUNTRIES



Source: FAO

grown rapidly, particularly since 1985 when its total catch rose from 3.9 million to 6.4 million tonnes. This resulted, at least to some extent, from the relaxation of domestic price controls and the consequent incentive to deploy excess fishing capacity from national waters.

The Republic of Korea and Taiwan, Province of China take the greatest proportion of their catch in the northwest Pacific. Both, however, have increasingly extended their efforts into distant waters, reaching 20 and 25 percent, respectively, of their total marine catch. Most of the Republic of Korea's northeast Pacific catch, which peaked in 1986, is Alaska pollack. Both states have recently been taking large quantities of squid in the southwest Atlantic and tuna in the eastern and western central Pacific.

Among the *developed countries*, Japan maintains the lead but only because of the extremely large increase in its pilchard catch, which currently makes up 37 percent of the country's total marine catch. Japan's catch in distant waters has shifted significantly among the different regions over the past two decades, particularly since 1980. There was an extremely large decline in catches off the Pacific coast of North America but some increases occurred in other areas of the Pacific and the southwest Atlantic.

In terms of total tonnage, the former USSR continued to be the largest distant-water fishing country through 1989. Preliminary estimates indicate a decline in its total marine catch of about 1 million tonnes in 1990 and most analysts expect a continuing decline (see Box 11).

Similar patterns of decline have occurred for the East European countries. Their catches off North America declined significantly (although there were two periods of relatively high catches in the early and mid-1980s). In other regions, as in the case of the former USSR, there were large variations, with significant increases in the South Atlantic and northwest Pacific and declines in the eastern central Atlantic and northeast Atlantic. The mobility of the East European fleet is also indicated in the large changes in the composition of the catch.

It is apparent that the United States and Canada have taken advantage of the EEZs and significantly increased their proportion of the catches taken off their east and west coasts. On the east coast, although their share of the total rose from about 30 percent to about 40 percent each, there was only a moderate increase in absolute terms. In the Canadian part of the region, conservation controls to allow the rehabilitation of overfished stocks explain the moderate increase in catch.

On the west coast, the combined catch of the United States and Canada rose from about 20 percent of the total to more than 90 percent and there was a sixfold increase in tonnage, from 500 000 to 3 million tonnes, of which the United States accounted for about 90 percent. The United States also takes an additional 1 million tonnes from the western central Atlantic and smaller amounts from the eastern and western central Pacific. For the United States, gains on the west coast accounted almost entirely for the doubling of its marine catch during the two decades. Virtually all of this increase occurred from 1980 onwards. Although the major gain was in Alaska pollack, an almost equivalent increase occurred in catches of various whitefish (cod, hake, halibut, sole).

Spain remains one of the largest distant-water fishing nations. The proportion of its total marine catch taken outside the northeastern Atlantic and the Mediterranean remains at about 50 percent. During the 1970s, the significant declines in catches from the northwest Atlantic were made up by increases from the eastern central Atlantic. In the southeast Atlantic, large catches of Cape hake were maintained throughout the two decades but were curtailed in 1990 and 1991 by Namibia's acquisition of independence and its extension of jurisdiction and controls over foreign fishing. This should allow the overexploited stocks of Cape hake to recover.

In general, distant-water fishing declined during the 1970s but increased during the 1980s. Changes in catches by the major distant-water states are shown in Fig. 24. Although the Japanese non-local catch has diminished, catches by the other states either remained level or increased, particularly during the 1980s. This was achieved by significant shifts in areas of activity, i.e. moving to zones of developing coastal states where they could acquire access rights or to areas beyond national jurisdiction. Their major targets have become various species of tuna; cephalopods, particularly squid; and certain species that can be caught in large quantities at a low cost.

Fish resources distribution during the 1980s

Although the extension of national jurisdiction was critically important for all coastal states, in that it provided them with the exclusive right to manage the resources within their zones, it had

BOX 11

The likely decline of the former USSR fleet

Although the political breakup of the former USSR is bound to have major consequences for fisheries, a much more significant development for the sector is the departure from a centrally planned economy. It is not yet clear which of the newly independent states will acquire the fishing vessels. Although the Russian Federation may maintain the lion's share of around 80 percent because of its ports in Murmansk, Kaliningrad and Vladivostok, other states have placed their flags on vessels based in the Baltic and Black Seas. In all cases, however, it is the change in the economic regime that will dominate developments in the sector. Some speculation regarding its likely effects is worthwhile because of the significance of these states' catches for particular regions.

The decision to expand the former USSR fishing fleet during the 1960s was based on a resource allocation methodology that was very different from an allocation system based on market prices. In the former USSR, policy-makers compared the quantities of fish protein that could be obtained per unit of labour and capital with the quantities of protein that could be obtained from meat. The analysis concluded that the production of fish would use about half as much capital investment, one-third of the production costs and one-quarter of the labour requirements compared with those required for the production of an equivalent amount of meat.

Over time, this decision process led to an increasingly uneconomical fishing sector. By 1989, estimates indicated that operating expenses were around $10 billion to $13 billion per year.[1] The marine catch of 10 million tonnes, over half of which is composed of low-value pelagic species, would indicate gross revenues of perhaps $5 billion at the most. Thus, the annual operating deficit would amount to $5 billion to $8 billion, which would be considerably greater with the inclusion of capital costs. Although the fleets of many other countries are also operating with large deficits, their economies (for better or worse) can sustain high subsidies.

The demand for fish as a source of animal protein is high in the former USSR. Subsidies may continue, although most likely at a greatly diminished rate. It is likely that the subsidies will go to the smaller vessels operating in relatively near shore waters and that the costly, high fuel-consuming distant-water vessels will largely disappear. Since there are few opportunities to increase catches in the Baltic Sea, the Black Sea and the Mediterranean, any future effort will probably focus on the northern part of the North Sea and the northwest Pacific. Some distant-water fishing may continue to take place through joint ventures with developing countries.

A large part of the decline is likely to take place in three areas: the eastern central and southeast Atlantic and the southeast Pacific, where the USSR catch in 1989 amounted to about 3 million tonnes. In the eastern central Atlantic, the coastal states (particularly Morocco) should benefit to some extent by the diminution of the former USSR fleet. Since most of the stocks are currently fully exploited, the gains would come in the form of increased catches per unit of effort. Any attempts by the coastal states to expand their capacity in order to replace that of the former USSR

---

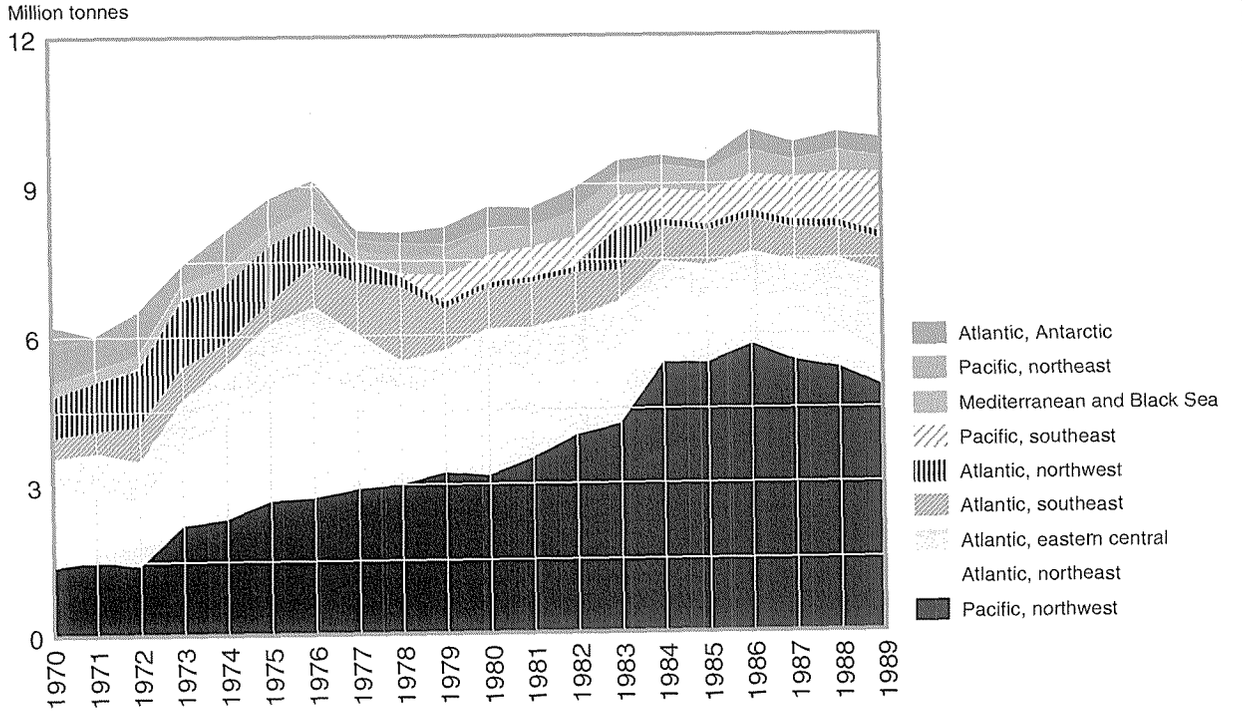
[1] See S.V. Mikhailov. 1962. On the comparative efficiency of production of some products of the land and sea. *Okeanologiia*, 2(3): 385-392. Translated by W.G. Van Campen, Bureau of Commercial Fisheries, United States Department of the Interior. Paper prepared "in connection with a discussion of decisions on the 22nd Congress of the CPSU".

should proceed with extreme caution in view of the low prices of the species and wide variability in size of the stocks.

Thus, in the southeast Atlantic, the stocks of horse mackerel are in relatively good shape but the replacement of the former USSR fleet by domestic vessels is likely to be a slow process because of market constraints. Increases by the Republic of South Africa and, eventually, Namibia are possible. For the southeast Pacific, Chile has rapidly expanded its catch of the jack mackerel and could probably replace the former USSR catch in the next few years.

Overall, assuming a 75 percent decline in the former USSR catch in distant-water areas, a total drop in the catch from 10 million to 7 million tonnes could be expected. Pressures to increase catches in local waters will be intense but the opportunities to do so, particularly for Alaska pollack, are limited. Therefore a significant decline in the availability of animal protein to the former USSR and other countries, particularly in West Africa, is likely to occur. The likely increase in prices for small pelagic species could induce a more rapid development of coastal fisheries in West Africa.

FORMER USSR MARINE CATCH IN NINE MAJOR AREAS



Source: FAO

a limited effect on the distribution of the seas' wealth because of the relatively few countries affected. Although some observers considered that the extension of jurisdiction would lead to a major redistribution of the seas' wealth in fisheries, the results have been mixed.

Fishery resources are of considerable local importance to a large number of countries but more than 80 percent of the global catch is taken by 20 countries (Fig. 25). In 1989, two states alone (Japan and the USSR) took 25 percent of the total marine catch; the next four countries took 30 percent; and the following 14 another 25 percent. The remaining coastal states shared less than 20 percent of the total marine catch.

In the special chapter of *The State of Food and Agriculture 1980* it was noted that potential gains would accrue to the relatively few states whose zones contained large or valuable resources that attracted the vessels of distant-water fleets; and to a number of coastal states whose zones contain tuna stocks (mostly the South Pacific island states). Among the dozen coastal states that stood to gain large resources by the extension of jurisdiction, the United States emerged as the single largest gainer (although all coastal states achieved gains in terms of management authority). Furthermore, for those states that have acquired jurisdiction over large fish stocks, the gains varied greatly according to the value of the species.

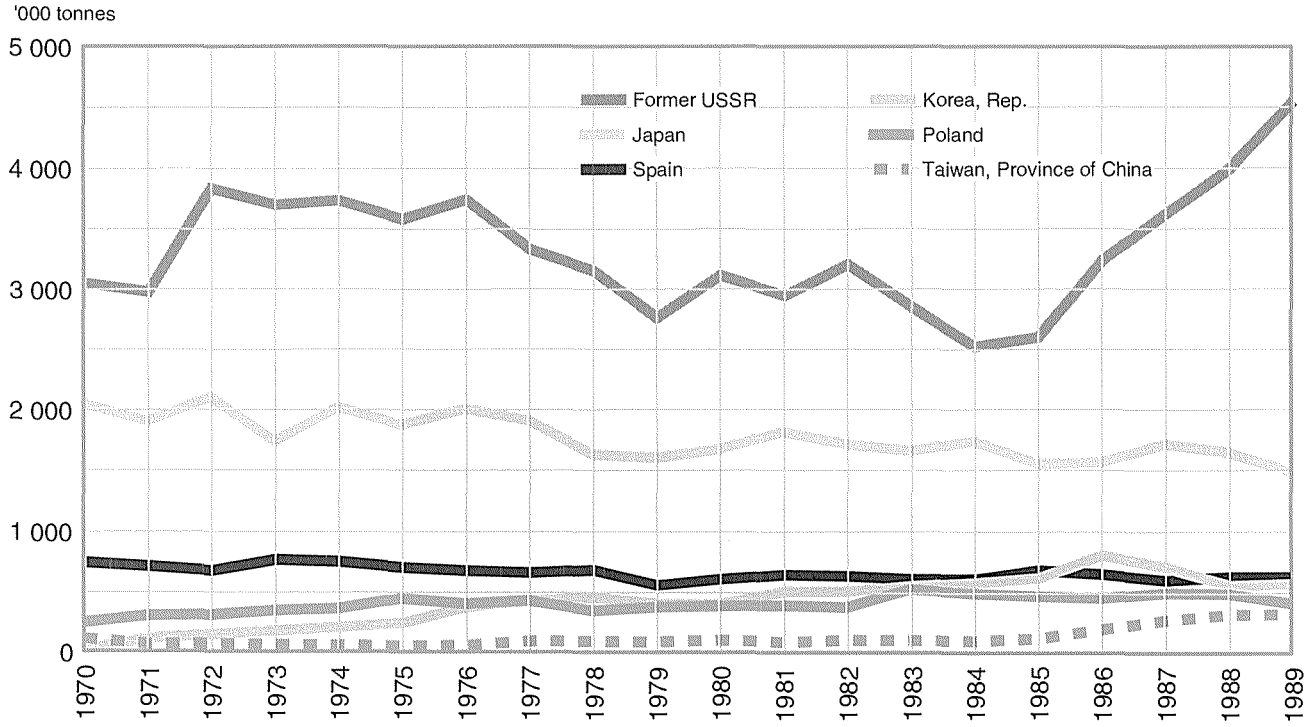
Whatever the impact of the establishment of EEZs, however, changes in the distribution of the seas' wealth in fisheries cannot be considered solely in terms of quantities of catch. As discussed below, a country's benefits or losses should be measured in terms of the net profit to the national economy.

For several developing countries, however, the extension of jurisdiction did represent significant gains in terms of economic revenues and other benefits extracted from the distant-water states. For instance, under an agreement with the EEC, Morocco received about $80 million per year for three years for allowing Spanish vessels to fish in its EEZ.[2] EEC payments to African countries for 1991 include $20 million to Senegal, $12.9 million to Mauritania and $12 million to Angola. The

[2] *Official Journal of the European Communities.* L 99, 16 April 1988, Vol. 31, p. 61. Protocol No. 1.

Figure 24

NON-LOCAL CATCHES BY SIX MAJOR DISTANT-WATER STATES



Source: FAO

South Pacific states have received $60 million from the United States to allow that country's vessels to fish for tuna within their region for a five-year period. However, the great majority of developing countries have not received financial payments for access to their EEZs, since the resources within their zones have been of little interest to distant-water states.

Similar to two decades ago, only a few countries are currently engaged in extensive distant-water fishing. In 1970, six states – the USSR, Japan, Spain, Poland, Portugal and the Federal Republic of Germany – took over 85 percent of the total catch by states in FAO statistical areas outside their own.[3] In 1989, the six largest distant-water fishing states took almost 90 percent of the total non-local catch. They were the same states, except that the Republic of Korea and Taiwan, Province of China, replaced Portugal and the Federal Republic of Germany. The USSR, Japan and Spain alone accounted for three-fourths of the total in both periods. The total non-local catch by all states rose from 7.5 million to 9 million tonnes from 1970 to 1990 but dropped as a percentage of global marine catch from 13 to 11 percent. There have been, however, mixed effects among the major states and a generalized increase in the costs of distant-water fishing.

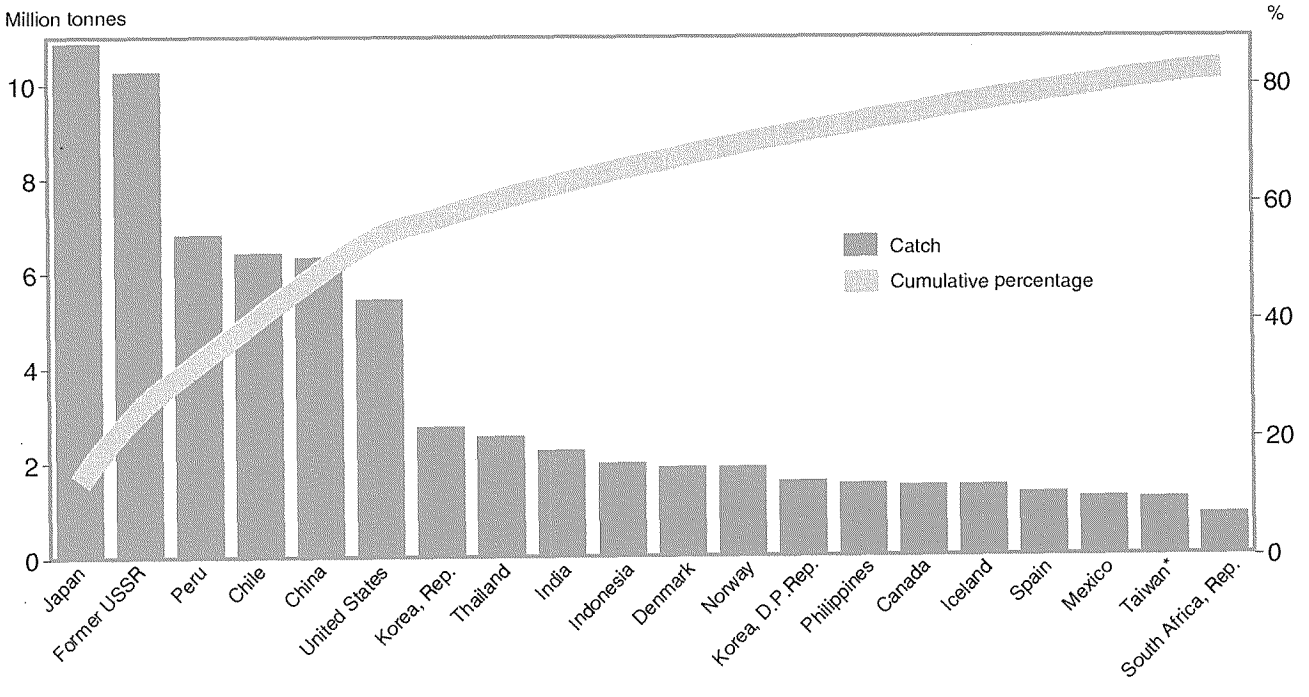
For Japan, retrenchment of distant-water fishing began to take place prior to the extension of jurisdiction, primarily in response to rising labour and fuel costs. Instead, joint ventures were formed with the processing sectors of other countries. In addition, as a result of extensions in jurisdiction, the Japanese have reduced the number of vessels authorized to fish in order to maintain catches per vessel. In the North Pacific, for example, the number of large mother ships and trawlers dropped from about 260 to 100 between 1983 and 1987 while the catch per vessel rose from 4 600 to more than 9 000 tonnes in order to allow for increased operational costs.[4]

[3] This is measured in terms of catch by states in FAO statistical areas other than those on which they border. It does not, therefore, fully reflect catches in foreign EEZs.

[4] O.S. Stokke. 1991. Transnational fishing: Japan's changing strategy. *Marine Policy*, 15(4): 235.

Figure 25

CATCH BY 20 MAJOR STATES
AND CUMULATIVE PERCENTAGE OF TOTAL MARINE CATCH IN 1989



Source: FAO

* Province of China

For the USSR, Poland and other East European countries, the extensions meant the loss of free access to a large quantity of stocks. This forced these countries either to negotiate financial arrangements with coastal states or to move to underexploited stocks on the high seas, such as Chilean jack mackerel and Antarctic krill. While the extension of jurisdiction added to their fishing costs, the major problem they now face is a big reduction in financial resources to pay the subsidies that were necessary to support their distant-water operations. Romania has scrapped 20 of its 46 distant-water trawlers while Bulgaria has scrapped five out of 15.

The distant-water catches of Spain and France have not changed significantly. Spain's catch in non-local areas in 1989 was only 15 percent less than that of 1970. The catch by French vessels dropped during the 1970s but increased during the 1980s, the net result being an overall increase of 19 percent for the two decades. A large part of this increase was a result of the expansion in tuna catch in the western Indian Ocean. For both of these countries, the costs of acquiring access to foreign (mostly African) zones are to a large extent borne by the EEC which negotiates agreements on their behalf. Among the other European states, Italy's non-local catches did not change significantly during the two decades while those of both the Federal Republic of Germany and Norway declined sharply from about 200 000 tonnes to about 10 000 tonnes and those of Portugal were halved from 200 000 to 100 000 tonnes.

With its small coastline, the Federal Republic of Germany was particularly hard hit by the extension of jurisdiction. Domestic production as a share of domestic consumption fell from 77 percent in 1970 to 43 percent in 1980 and to 28 percent in 1989. The tonnage of deep sea vessels with freezing and processing facilities fell from 117 000 gross registered tonnage (GRT) in 1970 to only 21 000 GRT in 1990. This major structural adjustment was accomplished with government support for the retirement of vessels.

Coastal states

Losses in quantitative terms are not necessarily equivalent to losses in economic terms, not only because of differences in value of the species harvested but also because the open access condition that previously existed induced wasteful fishing practices. Where stocks have been fully fished, controls by coastal states to reduce the number of foreign fishing vessels can lead to increased average catches for those vessels that are allowed to remain in the fishery. For example, the cephalopod (squid, cuttlefish and octopus) fishery off Morocco has been so heavily overfished that a reduction in the number of vessels (and total costs) would allow the rehabilitation of stocks and, ultimately, higher total catches as well as revenues. This would lead to considerably higher catches per vessel that remained in the fishery. At the same time, an estimated $250 million per year in surplus profits could be extracted by Morocco in the form of fishing fees.[5] In essence, it is in the interest of both the coastal states and distant-water fishing fleets to reduce excess fishing capacity and thereby achieve greater economic efficiency.

The coastal states could levy user fees directly on the foreign vessel owners to obtain greater economic benefits. However, when the costs of access are not borne by the fishermen but are paid by their governments (e.g. the EEC and the United States), distant-water fishermen have no incentive to discontinue overfishing the coastal states' stocks. If a coastal state negotiates access agreements that include the authorization of numbers of vessels, by limiting the number of vessels, those who acquire licences may receive higher catches per unit and obtain higher profits.

Much of the existing European distant-water fleet is the product of high subsidies together with increasing restrictions on overfished stocks in the domestic European waters. This has resulted in a surplus fishing capacity and pressure for access to foreign zones. The problems facing these fleets may, therefore, result as much, or more, from the failure to achieve rational fisheries management than from the extension of national jurisdiction.

[5] FAO. 1989. *La pêcherie céphalopodière marocaine: modélisation bio-économique et propositions d'aménagement.* Projet PNUD/FAO MOR/86/019. Rome, FAO.

FISHING COSTS AND REVENUES

As referred to above, an assessment of the state of economic health of the industry cannot be confined to changes in physical outputs but must include an evaluation of costs and revenues. Such an evaluation is difficult to do, however, because of data limitations (see Box 12). Nevertheless, the general perception that the industry is incurring massive deficits on a global basis underscores the need to quantify the scale of the problem.

Fishing costs

Over the past several years, FAO has requested fishing countries to provide information on the size of their fishing fleets.[6] Most developed countries with large fishing fleets provide data showing the numbers of vessels by size class and gear type. For these countries, the estimates are believed to be relatively accurate for vessels over 100 GRT in size, but much less so for smaller craft. For many developing countries, the task of acquiring the information is even more difficult and the estimates are less certain. Since there are a few significant gaps in the provision of information by developed countries (e.g. from the United States) as well as general deficiencies in the data from developing countries, the totals are considered to underestimate the full fishing capacity. Therefore, the calculations of costs are likely to be quite conservative.

Appendix 1 provides detailed information outlining how costs have been calculated for the construction of fishing vessels, replacement costs of the global fishing fleet, fuel costs, maintenance and repairs, insurance, supplies and gear, labour and capital.

The total annual operating costs of the global fishing fleet for 1989 is $92.2 billion, without including returns to capital or allowances for debt servicing. Annual routine maintenance is estimated to be $30 billion, insurance is $7 billion, supplies and gear $18.5 billion and fuel costs $14 billion. Appendix 1 provides two estimates for annual labour costs with a lower estimate of $22.7 billion.

Based on 1989 gross revenue of around $70 billion (see Table 21), the annual operating deficit is estimated to be approximately $22 billion without considering the cost of capital.

[6] See *Bulletin of Fishery Statistics. Fishery Fleet Statistics 1970, 1975, 1980-89*. No. 30. Rome, FAO. 1991.

TABLE 21

Estimated total landed value of marine catches, 1989

Species/species group	Marine catch	Average unit value	Total value
	('000 tonnes)	*($/tonne)*	*($ million)*
Salmon and salmonoids	876	3 500	3 410
Flatfish (flounder, plaice, sole, etc.)	1 193	2 900	3 459
Atlantic cod	1 783	1 068	1 904
Alaska pollack	6 259	331	2 072
Norway pout	350	87	30
Blue whiting	663	66	44
Other cod, haddock, hake	3 776	918	3 467
Sand eel	1 135	90	102
Other redfish, bass, conger	4 705	1 890	8 893
Capelin	898	100	90
Jack mackerel	3 655	90	329
Other jack, mullet	4 548	720	3 275
Japanese pilchard	5 112	203	1 038
South American pilchard	4 196	90	378
Atlantic menhaden	357	101	36
Gulf menhaden	583	90	53
Japanese anchovy	313	200	63
Anchoveta	5 408	90	487
Other herring, sardine	8 630	200	1 726
Tuna	3 985	1 700	6 775
Chub mackerel	1 671	260	434
Atlantic mackerel	626	270	169
Other mackerel	1 519	370	562
Shark	684	750	513
Miscellaneous marine	10 019	760	7 615
Crab	1 164	3 600	4 189
Lobster	202	11 270	2 275
Squat lobster	5	3 350	15
Shrimp	2 351	4 000	7 370
Other marine crustaceans	70	3 000	209
Abalone	85	4 960	423
Oysters	80	3 026	242
Mussels	213	1 260	269
Scallops	529	2 760	1 461
Clams	993	1 025	1 018
Squid, cuttlefish, octopus	2 545	2 100	5 344
Miscellaneous marine molluscs	216	950	205
TOTAL	85 758		69 941

Source: FAO.

While some debt servicing costs can be at preferentially low rates, particularly those provided through international finance institutions and bilateral assistance, in most cases the debt servicing charges are at least equal to commercial rates, and have been high. With a replacement value of $320 billion, the return to capital would at least have to equal opportunity costs, which, since there are limited opportunities for converting fishing vessels to other uses, may be lower than other maritime practices and can be set at 10 percent for this exercise. The resulting costs for the fleet would increase by $32 billion for a deficit of about $54 billion. In general, an allocation of 17 percent of revenues is the minimum required to cover debt servicing, depreciation and profit margins.

Revenue

Estimates of the gross revenues received by fishermen are also difficult to make. On the basis of scattered information, FAO has derived rough indicators of the average unit values in 1989 for the major species and species groups

BOX 12

Fisheries data

Collecting fisheries data is extraordinarily difficult. Several special characteristics distinguish the task from that of collecting data on other natural resource industries. Fish in the sea are not readily countable both because of the opacity of the medium and their tendency to move.

Another basic problem is the sheer number of species and countries involved. FAO currently collects data on 995 species from 227 countries and administrative or political entities (including small islands such as the Christmas and Norfolk Islands). Data on catches are collected in 30 statistical regions (inland and marine).

The information on catches is provided to FAO by individual countries, many of which are unable to devote the resources necessary to perform the task adequately. A large portion of many developing countries' catches is landed on isolated beaches along extensive coastlines. The coastline of the state of Kerala in India is only 600 km long (about 8 percent of the total Indian seaboard) but has 220 recognized landing places. Indonesia stretches over a distance of some 5 000 km and has more than 13 000 islands.

In addition to the difficulties of collecting catch data, there are also problems concerning the falsification of data, mostly, although not entirely, by fishermen of developed countries. Fishing operations often take place far out to sea where they are not readily observable. Certain management measures, particularly those limiting the quantities of catch, induce fishermen to underreport their catch or take other measures to avoid compliance. The enforcement of such measures is extremely difficult. There are other situations where overreporting of catches has been known to take place in attempts to increase the importance of fisheries to the national economy.

Aside from the simple measuring of quantities of catch, there are also considerable difficulties in estimating revenues. Individual species vary widely in value, ranging from species used for fish-meal, at less than $100 per tonne, to luxury species such as lobsters, at more than $10 000, or bluefin tuna for sashimi, at $20 000 per tonne. Furthermore, for any particular species, prices vary with regard to size, quality, points of landing, season and even time of landing during the day. Many of these variations are a result of the high degree of perishability of most fish species. Accurate information on fish prices at points of landing is rare.

It is equally difficult to obtain accurate information on fishing costs. Simply in terms of numbers of fishing units, the problems are difficult. For example, in the state of Kerala, a detailed survey carried out in the early 1980s estimated about 30 000 fishing craft, mostly

(Table 21). Where possible, estimates for individual species caught in large quantities are provided and they are believed to be relatively reliable (e.g. Atlantic cod, Alaska pollack, Norway pout, sand eel, capelin, Japanese pilchard). For several of the other groups, there is a degree of uniformity in the unit value of the dominant component species (shrimp; salmon; tuna; squid, cuttlefish and octopus; lobster; clams and other molluscs). Other groups, however, contain numerous species for which there are extreme differences in price (redfish, jack, mullet and mackerel). In these cases, an attempt has been made to provide a weighted average unit value.

An additional caution needs to be expressed: the estimates are based on 1989 information. Since prices vary from year to year, the degree to which they represent the present situation may be questioned. It is known, for example, that prices of salmon have declined significantly in the past two years because of the large culture production and abundant catches in the North Pacific. For the most part, however, the

non-mechanized types, and about 3 000 mechanized gillnetters and trawlers.[1] These included 22 different combinations of vessels and gear.

In addition to the large numbers involved, there are problems in obtaining costs of the various inputs. Estimates of capital costs are obscured by the informal credit markets in many developing countries and the high and diverse kinds of subsidies in developed countries. Labour costs are difficult to estimate because most fishermen are paid through a system under which total catch is divided into shares for the boat, the gear, the operating costs and the crew members' wages according to their position. The costs of fishing gear, supplies, insurance, fuel and maintenance can be obtained for the large-scale vessels of developed countries but are not readily available in most developing countries.

FAO, with the help of regional fisheries bodies, has made a considerable contribution to developing standardized reporting forms and providing these to states, often with training programmes. The Organization is the sole repository of information on global fisheries. However, its efforts have been primarily (although not entirely) focused on quantities of catch and, only recently, has it attempted to expand the acquisition of data on costs and revenues, which are vital for implementing improved fisheries management.

FAO, however, must rely on individual states to provide the necessary data. Fisheries cost and price information is not a high priority for most states at present, largely because the value of such information is not readily evident to administrators. In the absence of controls over access, very little can be done to improve the contribution of fisheries to national economies while the resources themselves have no marketable value. The demand for economic information is relatively low compared with the costs of supplying it.

However, where access controls are in place, demand increases. For example, in the northern Australian prawn fishery, managed by a limited entry programme, the fishermen, themselves, pay for information that tells them when to move from one area to another in order to focus their efforts on the larger and higher-priced prawns.

As in the case of catch data, FAO can play a useful role in providing advice and training on the collection of economic data. This, together with advice and training on improved fisheries management practices, will lead to greatly improved fisheries data.

Current difficulties in the acquisition of fisheries information indicate that the estimates of catches, values and costs contained in this chapter must be considered as imprecise. However, for some of the more important points made, the estimates may be relatively reliable since they relate to a few countries taking a large percentage of the total production and value and involve a small number of species. Furthermore, although absolute figures may be rough estimates, the relative values and overall trends are considered satisfactory for evaluating major issues.

[1] FAO. 1982. *Economics of artisanal and mechanized fisheries in Kerala. A study on costs and earnings of fishery units.* FAO/UNDP Project in Small-Scale Fisheries Promotion in South Asia. Working Paper No. 34. Madras, FAO.

TABLE 22

Estimated landed value of major species and species groups, 1989

Species group	Landed value	Percentage of total
	($ million)	
Shrimp	**7 370**	**11**
Tuna	**6 775**	**10**
Cephalopods	**5 344**	**7**
Crab	**4 189**	**6**
Salmon	**3 410**	**5**
Lobster	**2 275**	**3**
Alaska pollack	**2 072**	**3**
Atlantic cod	**1 904**	**3**
TOTAL	**33 339**	**48**

estimates presented are believed to be a fair reflection of relative values.

Given these words of warning, it is still possible to make a general point: a relatively few species account for a large proportion of the total value of the marine fisheries catch.

Table 22 shows that eight species and uniform species groups make up almost 50 percent of the total value. Moreover, with the exception of Alaska pollack, all of these have high unit values — more than $1 000 per ton. These species are also the ones for which there is likely to be the largest amount of economic overfishing, as discussed in the section Fisheries management, p. 174.

It is noteworthy that, on a global basis, the fishing industry shows evidence of high concentration. A few countries account for the greatest amount of catch and incur the largest proportion of costs while a few species make up the largest amount of value. There is no evidence, however, of a general concurrence of these concentrations. The vessels of the former USSR, for example, contributed greatly to the total fishing costs and harvested a large share of the total world catch but their catch was mostly made up of low-valued species (including Alaska pollack). Furthermore, shrimp, which is the most valued species group, are caught by a large number of countries, only a few of which have industrial fleets.

A comparison of estimated gross revenues of marine catch with the estimated costs of the global fishing fleet produces a remarkable conclusion. These calculations indicate that the *annual operating costs of the global marine fishing fleet in 1989 were in the order of $22 billion greater than the total revenues*, with no account being taken of capital costs. Although the calculations are tentative, they still suggest that global marine fisheries may be incurring very significant losses.

There are several reasons why this situation may be possible. One is the condition of open access which still persists on the high seas and, in most states, for the domestic fleets within national economic zones. Where this condition exists, fleet size (and capital investment) will tend to be greater than that required to take optimum yields from the stocks. Open access provides an incentive to overcapitalize (see Box 13). Although, with the extension of limits, foreign fishermen no longer have free and open access, overcapitalization may still be significant because access fees are generally paid by governments rather than by the fishermen. Fishermen therefore have no incentive to reduce their fleets.

Overcapitalization is exacerbated by the ease of entry into fisheries and the difficulties of exit. When prices rise or stocks are abundant, new vessels are built, but when prices or yields drop and there are no alternative opportunities for employment of the vessels, they remain in the fisheries as long as they are able to cover their direct operating costs. When the owners can no longer cover such costs, they often sell their vessels to fishermen in other fisheries or in other countries.[7] The scrapping of fishing vessels tends to be delayed well beyond the time of scrapping in most other maritime industries; that is generally not until refit costs approach the costs of a new vessel.[8]

This situation may be particularly significant for the large vessels of many distant-water fleets. These fleets have been sufficiently mobile to move from one ocean region to another as the abundance of the stocks has changed because of overfishing or natural variations. Yet, such alternative opportunities for the employment of the fleets have become increasingly restricted as overfishing has become more pervasive.

Another reason for the large deficit is that the fishing industry is heavily subsidized in many countries. It has already been noted that massive subsidies supported the former USSR

[7] Several countries have legislation preventing the import or export of used vessels.

[8] Refit costs are defined as the costs required to bring the vessel back into full operational service.

fleet as well as the fleets of East European countries. These subsidies account for only a portion of the total deficit when capital costs are included, however. In Japan, the Japan Fisheries Association noted that "the current credit balance extended to fisheries from both the commercial and government sectors is about $19 billion".[9] It also stated that, "in order to support business entities in financial difficulties, the government financing system will assume their liabilities. The amount of liability taken over by the government has been substantial in recent years due to the severe economic status of the fisheries industry".

EEC fisheries also receive substantial support. Between 1983 and 1990, EEC support rose from $80 million to $580 million, about 20 percent of

[9] Japan Fisheries Association. 1991. *Fisheries of Japan.*

BOX 13

The economic consequences of open access

The economic theory of common property natural resources explains why an uncontrolled fishery tends to attract excessive amounts of capital and labour and why it may be fished beyond the point of maximum sustainable yield (MSY), a biologically determined quantity. At different levels of fishing effort (numbers of vessels or fishermen) maintained over the long term, a particular stock of fish will produce different levels of sustainable yields (Diagram 1, p. 150). The yields increase in response to greater amounts of fishing effort up to the point of the MSY. For some stocks, fishing beyond that point depletes the stock so that subsequent yields are lower than the maximum, although the fishing effort has increased. For other stocks, depletion may not occur so rapidly and the msy can be achieved over a wide range of fishing effort. However, excessive amounts of capital and labour will still be employed.

The total catch curve can also represent total revenues to the fishery on the assumption that varying sizes of catch do not affect average prices received. The total cost curve is shown as a straight line, based on the simplified assumption that every additional unit of effort has equal costs.

With open access, the fishery reaches equilibrium when total costs and total revenues are equal (at point E). At any amount of fishing effort below that point, average revenues are greater than average costs, thereby attracting other fishermen into the fishery.

The principle of economic efficiency suggests that the fishery operate at the point of maximum net revenue (MNR), where the cost of the additional unit of effort is equal to the additional revenue it produces; that is, where marginal costs and marginal revenues are equal.

With the extension of jurisdiction, many stocks now come under the sole ownership of a single country. That country, if it wishes, can control the amount of fishing effort through various techniques. Such controls could be used to increase the earnings per fisherman by reducing the number of fishermen. The fact that earnings per fisherman in a fully utilized fishery can be increased over the long term only by reducing or limiting the number of fishermen constitutes the essential dilemma facing fishery administrators.

In many situations, policy-makers attempt to increase earnings per fisherman without limiting entry into the fisheries. They may do this by providing price supports or other devices that increase the revenue per unit of fishing effort, thereby raising the total revenue curve as shown in Diagram 2. In the short term, subsidies produce additional profits for the fishermen, attract more fishermen into the fishery and raise total costs until they reach total revenues again. Average earnings per fisherman decline to their former level but more fishermen are employed (at point A' instead of

which was for the construction of new vessels and modernization of old ones (Fig. 26). This amount does not include substantial subsidies provided by the national governments. Elsewhere in Europe, Norway also provides significant fisheries support, which amounted to about $150 million per year during the second half of the 1980s.[10]

Fisheries are directly or indirectly subsidized in a variety of ways. Traditional kinds of subsidy are: import restrictions and tariffs (including limits on landings of foreign vessels); export support; price control systems; fuel subsidies; and low-cost loans or outright grants for the construction of vessels or the purchase of gear;

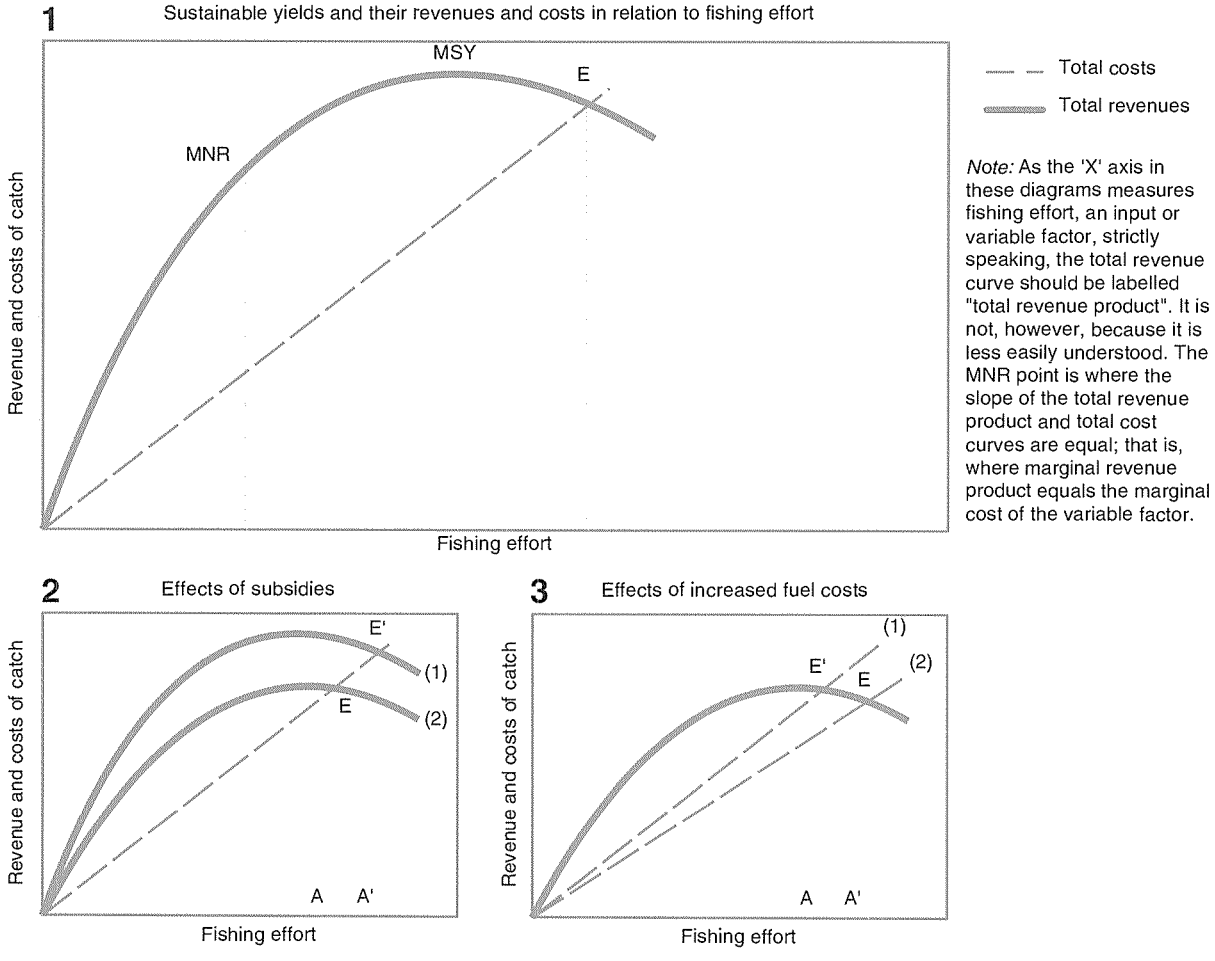
[10] P. Salz. 1991. *The European Atlantic fisheries: structure, economic performance and policy.* The Hague, Agricultural Economics Research Institute.

point A). In some cases, the subsidy may also lead to greater depletion of the stock. It can be noted that a rise in prices through increased demand also has the same result. Over a 30-year period in the Alaskan salmon fishery, rising prices made it economically feasible for twice as many fishermen to be employed catching half as many fish.

An increase in fuel costs clearly has a negative effect on fisheries but the result, after a period of adjustment, tends to be a drop in employment in the fishery rather than a decrease in average earnings. The increase in costs forces some of the fishermen out of the fishery but,

Figure

REVENUES AND COSTS IN A COMMON PROPERTY FISHERY



Source: The State of Food and Agriculture 1980

the construction of ports, marketing facilities and other infrastructure.

In addition, there are fishery-specific subsidies such as the payments made by governments to coastal states for access to their zones and the waiving of payments by domestic fishermen for access to their national zones. Free access to a natural resource constitutes a subsidy to the users since no payments are being made for the resource. Under a system of controlled access, economic rents are captured by the government through taxes or licence fees.

The reasons for granting such subsidies are as manifold as the types of support schemes. In many cases, financial help is given to the fishing sector — and less frequently to the post-harvest sector — for social reasons; for example, to sustain employment in sometimes sparsely inhabited coastal districts. Subsidies might also be given for general policy reasons, since the

as they leave, those remaining increase their average catches and revenues because of reduced competition. The new equilibrium (point E' in Diagram 3) comes with fewer fishermen (at A' instead of A) receiving the same average net earnings as they did before. If the stock is depleted, the higher fuel costs could actually lead to higher total catches by removing some of the excessive fishing pressure.

Thus, countries' attempts to protect their fishermen in fully utilized fisheries by subsidizing fuel often serve to maintain employment levels and preserve the excess capacity already in the fishery as well as supporting high levels of fuel consumption. The introduction of fuel-saving devices and techniques may have the same consequences. Cost reductions and increased profits attract more fishermen and thus increase the use of fuel. Where fisheries are already fully utilized, the most effective technique for reducing fuel consumption is through a reduction in the number of fishing vessels.

In other cases, the cost may be so high (or the prices so low) that the equilibrium point occurs before the point of MSY. Although total levels of catch could increase, a reduction in fishing effort would still be desirable in order to achieve increased net revenues from the fishery.

The diagrams represent typical stylized fisheries but not, of course, all fisheries. In some cases, a fishery may be just developing so that there are opportunities to increase total catches and total revenues at greater rates than those of the increases in total effort and total cost. Many such opportunities are occurring where coastal states can replace foreign fishing effort by developing their own domestic capacity. But even in these cases, the growth in domestic fishing effort should be promoted with restraint so that excess capacity is avoided.

These economic principles have been tested in numerous empirical studies. One example is the yellowtail flounder fishery in the United States where it was found that the net revenue to the fleet could increase from zero to more than $6 million per year by removing 87 to 132 fishing vessels.[1] However, these principles are based on simplified assumptions that do not accommodate the high degree of complexity existing in most fisheries. Fishermen generally take several different species of fish, either simultaneously or at different periods during a season. The species may be interrelated so that the yields of all may not be maximized at the same time. Yields may also fluctuate widely and, in some cases, may grow or decline in response to shifts in environmental conditions. In addition, economic factors may vary widely over time as well as among fishermen using different techniques and gear for the same stock. However, although these various elements may obscure or change the timing and significance of the consequences, they do not prevent them from occurring where the condition of open access is left uncontrolled.

Where a coastal state has complete control over a fully utilized stock of value to foreigners but has no interest in developing its own fishing capacity, it can prevent excess effort by levying taxes on foreign fishermen. These taxes deter some foreigners from fishing but those who pay receive greater catches because of the reduced competition.

Where the coastal state has exclusive control over the resource and a fully developed capacity to harvest the stocks, it may have to choose between the alternative objectives of maximizing employment opportunities or maximizing incomes.

[1] J.M. Gates and V.J. Norton. 1974. *The benefits of fisheries regulation. A case study of the New England yellowtail flounder fishery.* Marine Technical Report No. 21. Kingston, University of Rhode Island, USA. 35 pp.

competing agricultural sector enjoys similar support on a large scale. In other cases, particularly in the former centralized economies in Eastern Europe, food policies were designed to ensure an adequate supply of fish to the population and fish was calculated to be cheaper than other animal protein if produced domestically. Even larger, vertically integrated corporate enterprises, whether privately or state-owned, have often accepted losses in the fishing sector because such losses were compensated by profits in processing and marketing operations.

The amounts of these subsidies (or dissipated economic rents) are not reflected in the above calculations on global costs and revenues. That they are extraordinarily large is indicated in the discussion below with regard to the cephalopod fishery off Morocco and the groundfish fishery off New England.

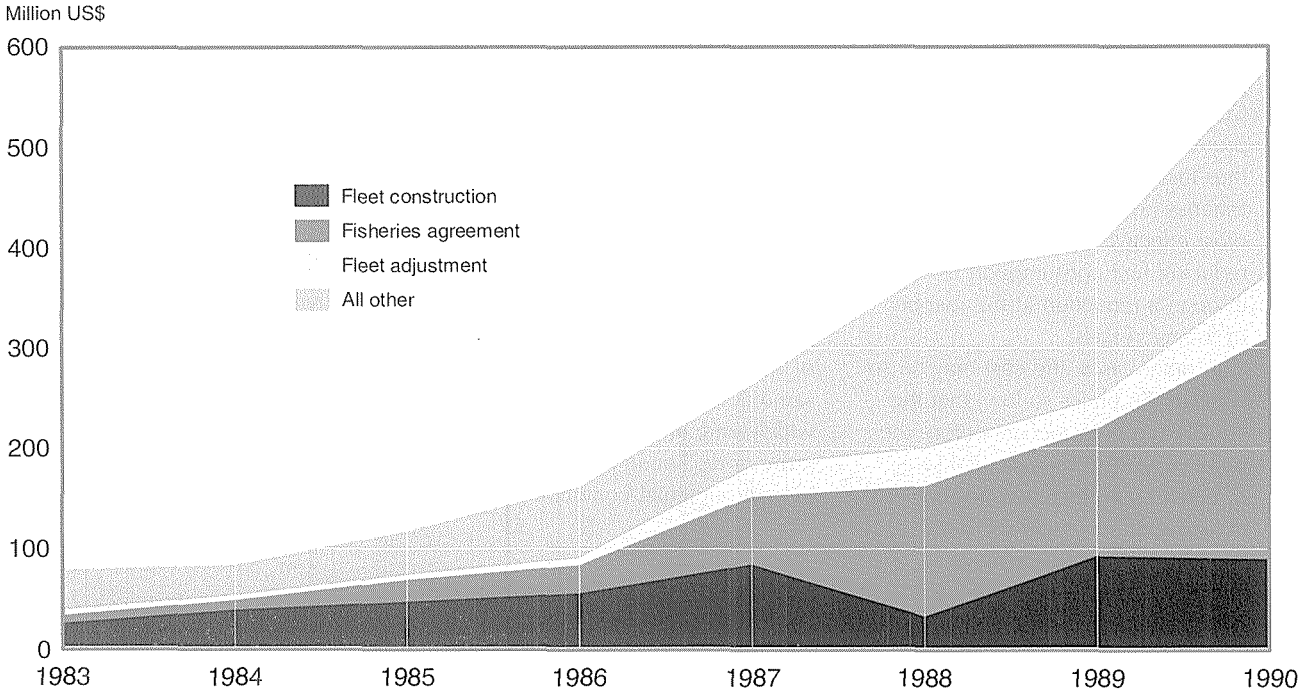
Such massive recourse to subsidies arises from governments' efforts to preserve employment opportunities in the ship building as well as the fishing industries and may be a response to the general economic plight of fisheries. However, as the opportunities for an increased catch from fishery resources have declined considerably, a continuation of the high subsidies can only lead to greater and greater economic distress as well as a further depletion of stocks. There is also the assumption that significant quantities of fish are not reported to governments, either as a result of infrastructure weaknesses in the administration of fisheries — with vessels underreporting their catches in order to circumvent management measures — or as a result of "on the grounds cash sales".[11]

Prices

Trends in the real prices of fish are critically important for evaluating the significance of economic scarcity of the resources. However, price information on fisheries remains difficult to acquire and, as a result, there are very few consistent, long-term documents on the movement of fish prices. Estimates of prices received by fishermen have been derived for a few countries (Fig. 27). For these, the real prices of fish generally rose very rapidly during the 1970s: by 80 percent for the United States and

[11] The underreporting of actual catches, if the quantities are significantly large, would also mean that the sustainability of the stocks being fished may be threatened.

EEC SUPPORT FOR FISHERIES



Source: P. Salz. 1991. *The European Atlantic fisheries: structure, economic performance and policy.* The Hague, Agricultural Economics Research Institute

Canada and by 60 percent for the United Kingdom. Significant drops occurred in the early 1980s, primarily as a result of large increases in catches and sharp declines in prices of cod and haddock during that period. Real prices of all fish species increased again in these countries in the latter part of the 1980s. Overall, the long-term trend is upward. From the base year of 1971, real prices in 1988 were 20 percent higher in Japan, 35 percent higher in the United Kingdom and 75 percent higher in the United States.

Similar documentation is not readily available for other countries. However, the information that is available on prices of individual fish species generally indicates that they are rising more rapidly than prices of other food and non-food products as well as the costs of fishing inputs. This is to be expected in view of the supply limits of wild fish stocks and the continued increase in demand. Typically, as the yield from a particular species of fish reaches its maximum, prices increase. This induces consumers to substitute other, lesser-known and lower-priced species which, in turn, become fished at their maximum levels. Prices continue to increase until reaching levels commensurate with other substitutable products.

To a large extent, the rapid increase in real fish prices in the 1970s and previous years reflected the fact that fish prices were extremely low relative to prices for other sources of animal protein. However, the gap in relative prices is closing and continued increases, particularly for some of the higher-valued fish species, may be restrained. For example, increases in the prices of tuna are constrained because of competition in the market place with chicken meat.

Other developments are also affecting the movement of fish prices. As noted above, the culture of certain species is producing sufficiently large quantities to affect the markets. In the case of salmon, real prices fell by more than 50 percent between 1988 and 1990 in the United States market. The drop in 1991 was even greater, although it was in response to an abundance of supply from wild stocks. Shrimp prices are also falling as a result of large amounts of cultivation.

Several other species are currently being cultivated (e.g. carp and catfish in inland waters; oysters, clams, mussels and other shellfish) while still more are likely to be cultivated in the future. However, the total quantities from aquaculture are still small compared with the global demand for fish.

REAL PRICES RECEIVED BY FISHERIES IN SELECTED COUNTRIES

(Index: 1971 = 100)

Source: FAO

A different kind of development is the processing of low-valued fish into products that substitute for high-valued ones. Restructured protein, largely from Alaska pollack, is being formed into products that resemble crab meat.

International trade

Trade in fisheries has been characterized by buoyancy during the past decades, particularly during the 1970s. The value of world trade expanded at an annual rate of about 18 percent during the 1970s and nearly 10 percent during the 1980s. The expansion in exports by developing countries exceeded that of developed countries throughout the past two decades. On the other hand, the slow-down in import growth during the 1980s was significantly more pronounced for developing countries (Table 23).

The developed countries have accounted for a very high and constant share of total world imports during the past decades (88 percent of the total value in 1970 and 86 percent in 1989). There have, however, been some major shifts among developed countries. Japan's share of the value of total imports rose from 8 to 28 percent, reflecting the decline in its own catch of food fish. The most significant relative drop occurred in the United States (from 25 to 16 percent), reflecting gains through the extension of jurisdiction and its increased catch on the west coast. While the United States remains a major importer, the EEC is the largest importing region, although its imports include intra-EEC trade.

In the case of Japan, half of the imports in 1989 came from four groups of high-valued species: shrimp, tuna, squid and salmon. In the United States, shrimp make up the largest proportion of imports (29 percent in 1989). In addition, 20 percent is from frozen fish fillets and more than 10 percent from tuna. Between 1980 and 1989, there was a decline of 35 percent in imports of frozen tuna and a fivefold increase in imports of canned tuna, marking a major shift away from domestic processing, largely to processing in Thailand.

Significant shifts in market share have also occurred on the side of exports. Thailand contributed about 6 percent to the total value of exports in 1989, compared with less than 1 percent in 1970. Shares by the Republic of Korea and Taiwan, Province of China, also rose significantly from negligible amounts in 1970 to 5 percent each in 1989. Other changes among exporting countries are the declines in contributions from Peru, Norway and Japan and the increase in that of the United States.

TABLE 23

Annual changes in value of trade in fisheries, developed and developing countries

Country group	1971-80 average		1981-90 average	
	Exports	Imports	Exports	Imports
	(%)			
Developed countries	**17.0**	**17.2**	**8.3**	**10.2**
Developing countries	**20.0**	**20.0**	**10.5**	**8.4**

Source: FAO.

The increase by the United States was almost entirely the result of acquiring jurisdiction over Alaska pollack resources as well as the development of joint venture operations under which United States flag vessels sold their catch over the side to foreign processing vessels. These sales, counted as exports, rose from 400 000 tonnes in 1983 to almost 1.5 million tonnes in 1987 before dropping to less than 400 000 tonnes in 1990 as domestic processing took over.

Overall, the developing countries increased their share of exports between 1970 and 1989 from 32 to 47 percent of the total, with major relative increases by China, Chile and Thailand (Fig. 28). Thailand's exports rose from 2 to 13 percent of the total value of developing countries' exports, partly because of a dramatic increase in its exports of canned tuna, which rose from 5 000 tonnes in 1981 to more than 225 000 tonnes in 1989. Most of this increase resulted from the processing of imported frozen tuna. Thailand also increased exports of frozen shrimp, mostly produced by culture, by almost four times over the same period. At the same time, Thailand's exports of fish-meal declined by more than two-thirds as they were diverted to use in domestic shrimp culture.

China dramatically increased its exports of frozen shrimp, from 22 000 tonnes in 1985 to 120 000 tonnes in 1989, which accounted for over half the total value of its fish exports in the latter year.

For Chile, the increase came mostly in the export of fish-meal. Although the Peruvian share of developing countries' exports fell from 35 percent in 1970 to 3 percent in 1989 (a result of the collapse of the anchoveta fishery), together with Chile, Peru accounted for about two-thirds of the total quantity of fish-meal exports in 1989.

Figure 28

WORLD FISHERY EXPORTS BY VALUE FOR DEVELOPING AND DEVELOPED COUNTRIES

Source: FAO

LEGAL, INSTITUTIONAL AND ENVIRONMENTAL DEVELOPMENTS

In addition to the developments taking place in fishing activities and marketing, there have been several other developments of significance for the sector. These include changes in the law of the sea, in international arrangements for fisheries and in the marine environment.

The law of the sea

After more than a decade of discussions, the UN Convention on the Law of the Sea was opened for signature at the end of 1982. When it was closed for signature at the end of 1984, 159 states had signed it. Among the few members of the United Nations that did not sign the convention are the United States, the United Kingdom and the former Federal Republic of Germany. As of 31 March 1992, 51 states had ratified the convention, nine short of the 60 required for the convention to enter into force. Although the convention has not yet come into force, many of the provisions relating to fisheries have been adopted unilaterally and can be said to be part of customary international law.

Most important is the extension of national jurisdiction, as mentioned earlier. This occurred during the 1970s through claims to EEZs or to Exclusive Fishing Zones. These claims are generally to 200 nautical miles from shore but, in many cases, are more narrowly limited because of the proximity of adjacent states. The great majority of these claims were made in 1977 and 1978, when more than 60 states announced their claims.

The generalized extension of jurisdiction has had several effects. Most important has been the provision to coastal states of the authority necessary for effective management of their resources. Even though, at present, only a relatively few states (Australia, New Zealand and Namibia) have used that authority to exercise controls over access to the resources by domestic fishermen, there is an opportunity to do so that did not really exist under the era of freedom of the seas.

A second effect has been the redistribution of the seas' wealth in fisheries. This effect, however, has been of major importance for only about a dozen states.

International arrangements

Adjustments in multilateral arrangements for the management of fisheries have also occurred as a result of jurisdiction extension. During the period of narrow limits of jurisdiction, many regional fishery bodies were created for various purposes, including the acquisition of data; coordination of research; sharing of information; and recommendation of conservation and management measures. In most cases, the bodies included both coastal states and non-coastal states with an interest in the region. They were generally successful, at least initially, in improving the collection of data on catches and in sharing information. They provided a general forum for the discussion of issues but were never particularly effective in resolving problems. With a few exceptions, they had only limited success in preventing the depletion of stocks and no success in preventing economically excessive fishing efforts.

During the 1970s, as jurisdiction was extended, some regional fishery bodies were abolished. Others changed their functions and methods of operation and new bodies emerged to replace old ones. In general, the FAO bodies continue to operate, although with severely diminished funding in most regions. These bodies attempt to provide fora for the exchange of information and guidance for technical assistance projects.

Non-FAO bodies that have been abolished as a consequence of extended national jurisdiction include the International Commission for the Northwest Atlantic Fisheries (ICNAF) and the International Commission for the Southeast Atlantic Fisheries (ICSEAF). New bodies which have arisen either to replace those abolished or to deal with new situations include the Northwest Atlantic Fisheries Organization (NAFO) and the North Atlantic Salmon Conservation Organization (NASCO).

Since 1980, other international bodies have been created, including the South Pacific Forum Fisheries Agency (FFA). This body is instructive in several ways. Its superior body, the South Pacific Forum, was created by the South Pacific Islands in order to provide a regional organization with membership restricted to countries of the region, unlike the South Pacific Commission whose members include non-local states. The South Pacific Forum created the FFA to facilitate fisheries management, particularly the management of tuna species that migrate through the extensive EEZs of its members and to provide support to its members in the implementation of management measures.

The FFA has operated relatively effectively in coordinating the negotiations of its member

states with the foreign countries whose vessels wish to gain access to the region and also in establishing minimum terms and conditions. It has also established a regional register for fishing vessels. Through these measures, the agency has been able to increase the revenues extracted from foreign fishermen and reduce the costs of surveillance. It is noteworthy that a recent agreement between the Pacific Islands and the United States stipulated that the payment of fees by the United States should cover the total area of the agreement, including high sea areas surrounded by the EEZs of the island states. Certain special circumstances have facilitated the work of the FFA. The vast region falls largely within the extended zones of its members who are mostly small states with only a limited capacity for tuna fishing and who consequently have much to gain by coordinating their controls over foreign fishermen. Although these conditions do not exist to the same degree elsewhere, some of the FFA's approaches might be adopted elsewhere. Eastern tropical Pacific countries, for example, are currently considering the idea of a regional register for foreign vessels.

Generally, the trend over the past two decades has been to increase the strength of coastal states within regional arrangements and to decrease the role of the non-regional states, although attempts to stem this trend are still being made by distant-water fishing countries. Beyond this, it is difficult to discern any generalized developments, largely because of the disparities among the different regions' situations. There is, however, a general question being raised that may have significant implications for future regional fishery bodies; that is, the degree to which they will acquire authority to govern the use of resources beyond the 200-mile limit. This issue is being raised not only with regard to the high sea enclaves in the South Pacific but also with regard to the "doughnut hole" in the Bering Sea, the Grand Banks in the northwest Atlantic; and the use of driftnets on high sea areas in the Pacific.

Environment

By far the most significant environmental change related to fisheries is that resulting from the overfishing of stocks. It was estimated more than 20 years ago that an additional 20 million tonnes of catch could be achieved by rehabilitating overfished stocks. Although there are a few instances where rehabilitation has occurred, such gains have been more than counterbalanced by the increased depletion of other stocks.

With limited supplies and rising demand, there is an increase in the pressure on fish stocks. Where there are no controls over access to the stocks, individual fishermen have the incentive to intercept stocks at earlier stages in their life cycles which generally occur close to shore and when fish are smaller. Furthermore, the gear used in this competitive race is generally less selective and takes greater quantities of by-catch.

It has been shown above that the 1989 marine catch of 85 million tonnes had a gross value at the fisherman's level of about $70 billion dollars. If management measures are implemented to allow stock rehabilitation, the 20 million tonnes of increased catch that could eventually occur would add more than $16 billion to the gross revenue, *ceteris paribus*. This estimated foregone loss, however, is only a portion of the economic waste in global fisheries, since total world catch could be taken with considerably lower amounts of fishing effort and considerably lower total costs.

Depletion of stocks occurs not only because of the overfishing of target stocks but also because of the large by-catches of other species. With a few minor exceptions (e.g. harpoons) all types of fishing gear take other species in addition to those intended. The amounts and kinds of by-catch vary with the kinds of gear. Bottom trawls (particularly for shrimp but also for groundfish in general in coastal areas) are perhaps the most in need of improvement for environmental reasons. In the tropical waters of developing countries, the shrimp taken in trawls may be only 10 to 20 percent of the total haul, with the rest made up of other aquatic species. Most of this is trash fish which may be thrown overboard or sold for fish-meal, for processing into fish paste or as feed for aquacultural operations. Some is sold to low-income consumers. Much of this by-catch is made up of juveniles of species which could be sold at high prices as adults.

Increased intensity in shrimp trawling in the past two decades has led to increases in the proportion of by-catch. Although real prices of shrimp have probably declined in the past two or three years because of increased production from aquaculture, this has not necessarily led to a decreased intensity in trawling, since there has been a rise in demand for trash fish for use as feed in aquaculture. In fact, in some countries, shrimp farmers are now investing in trawls with

small mesh nets to target trash fish. This is considered a form of "biomass fishing".

Another development in recent years has been the move to areas far from land. Certain species have been fished in the high seas for many years, including tuna, salmon and squid. In the last decade, however, some distant-water fleets, facing declining stocks and increasing difficulties and costs in gaining access to EEZs, have increased their efforts in areas beyond 200 miles from shore. Squid and tuna remain major targets but high sea fishing for pollack and horse mackerel is also taking place. The amounts and associated by-catches are sufficient to raise issues concerning the management of these high sea resources.

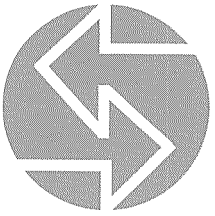
Another pervasive and damaging change in the marine environment has been the increasingly severe degradation of the coastal zone. It has been estimated that two-thirds of marine fish production comes from stocks which pass the first and most vulnerable stages of their life cycles in coastal areas.

Coastal zone damage is particularly acute in developing tropical countries where both natural and economic conditions contribute to the high vulnerability of these areas. In these countries, the growth in population and migration to coastal cities and regions are leading to increases in municipal and industrial discharges and landfill, mangrove clearing, coral mining and other construction-related damages. In some countries, siltation is becoming severe as a result of deforestation, the construction of lumber roads and land clearing. Intensified agriculture is contributing increasing amounts of pesticides and herbicides to coastal waters.

Intensive forms of aquaculture are themselves a source of pollution. The release of excess feeds and faeces in semi-enclosed environments has already generated eutrophication problems and oxygen deficiencies which are directly detrimental to farming enterprises. In shrimp farming, the clearing of mangroves, the extensive harvesting of wild larvae and the indiscriminate use of antibiotics to control diseases are negatively affecting other important commercial marine fish stocks.

In addition, certain fishing practices are having severe environmental effects. Such practices include the use of dynamite and poisons as well as techniques in which fish are driven into nets by swimmers pounding the coral reefs with rocks, for example the *muro ami* fishing in the Philippines. Local populations resort to these highly destructive techniques when faced by increasingly scarce resources and a lack of alternative opportunities for employment.

In the past two decades, the degradation of the marine environment has increased significantly, mainly through exacerbated overfishing and coastal zone pollution. The trend is highly disturbing, since fish are one of the major sources of animal protein and are of critical importance to the increasing populations in developing countries.



MARINE FISHERIES AND THE LAW OF THE SEA: A DECADE OF CHANGE

III. Current and future issues

The developments of the past decade have significant implications for the future management of fisheries and raise issues with regard to achieving increased benefits from existing resources. Many of the major challenges of the past decade will continue into the future, requiring significantly increased attention in order to prevent continued waste and conflict. Other developments are still emerging and are likely to lead to changes in various elements of fisheries, with positive outcomes in some cases and possibly negative ones in others.

THE FUNDAMENTAL PROBLEM OF OPEN ACCESS

The single most important issue that must be resolved to deal with the current massive waste in fisheries is controlling open access. The extension of jurisdiction was a necessary, but insufficient, step in this process. Today, open access continues to exist within the common property zones of most coastal states as well as on the high seas.

The consequences of maintaining open access are extraordinarily damaging. As has been pointed out, they include the depletion of marine stocks, the dissipation of economic rents and increased conflict among users.

Conflict often occurs because of the lack of valuation of the resources. In the absence of exclusive use rights, the same stock of fish or same area of the sea can be used by different types of users. Users may be high sea fishermen from different countries, or fishermen from different villages, fishing in coastal waters; fishermen using different kinds of gear, such as trawlers and stationary gillnets or traps; they may be people with different values, such as commercial or recreational interests and fishing or mammal protection interests; or they may be groups using the environment for different purposes, such as waste disposal, coral mining and landfill. Conflicts between the different interest groups are becoming increasingly pervasive and severe.

Several studies of the amounts of rent being dissipated have been carried out on fisheries within national zones. "These estimates show that extraordinarily large economic returns are currently being wasted because of the open access condition, on the order of billions of dollars annually in resource-rich areas."[12] The losses of $250 million per year in the Moroccan cephalopod fishery have already been mentioned. In the United States, the National Marine Fisheries Service has estimated that the current gross revenue from New England groundfish is about $170 million. With proper management controlling capital investment in the fishery, the gross revenue could be $200 million and the net revenue, which is currently dissipated, could be about $130 million per year, or 65 percent of the gross revenue.

A summary of economic analyses of the amounts of potential or actual rents in Australian fisheries showed that the rents ranged from 11 to 60 percent of the gross revenues, with a weighted average of 30 percent.[13]

Some speculation can be made about the global economic waste in fisheries, based on the rough estimates of present costs and revenues and economic rents that might be produced under efficient fisheries management. As discussed in the section, Fishing costs and revenues (p. 145), the current total costs in

[12] J.-P. Troadec and F.T. Christy, Jr. 1990. *A diagnosis and a strategy for international cooperation on fishery research.* (unpubl.)

[13] D. Campbell and J. Haynes. 1990. *Resource rent in fisheries.* Canberra, Australian Bureau of Agricultural and Resource Economics.

fisheries are estimated to amount to about $124 billion per year, producing a gross revenue in the order of $70 billion per year. Subsidies are presumed to cover most of this deficit. Estimates suggest that proper management of depleted stocks could increase global marine catch by about 20 million tonnes. With stock rehabilitation, gross revenues could rise to $85 billion at current prices. If the ratio of gross revenues to rents in the Australian fisheries is applied, it would mean that the annual resource rents for global fisheries would be about $54 billion per year. Removal of the subsidies of $79 billion per year would produce $55 billion in annual global net economic revenues, all of which are currently wasted. This estimate (minus the costs of management) represents the potential global economic benefits that could be derived from the removal of subsidies and the achievement of effective fisheries management.

It should be reiterated that these are rough estimates and are only intended to provide orders of magnitude. It should also be pointed out that nothing has been said about the costs of achieving these rents. These costs include the direct costs of administration, research and enforcement as well as the transaction costs of achieving the necessary adjustments in capital and labour and negotiating agreements among competitive users.

Despite their shortcomings, these estimates clearly indicate that the costs of present mismanagement in fisheries are extremely high. There is an urgent need to address the problems associated with free and open access and review alternative systems of property rights, including exclusive use rights, as are now being applied in a few countries such as Australia and New Zealand, as well as the Japanese community-based management system. It is equally urgent to begin placing appropriate values on the resources as a means

SUPPLY AND DEMAND

Resource effects

One of the particularly important characteristics of fisheries is that supplies of most wild stocks are naturally limited. Although the population of any individual stock may fluctuate in response to natural environmental changes at any time, there is a maximum yield that can be harvested on a sustained basis. Increased fishing effort beyond that point does not increase total catch and may, in fact, lead to lower annual yields. Demand for fish products, however, continues to increase as human populations expand and income levels change. The inexorable consequence is a general rise in the real prices of fish, as has been shown. To the extent that fisheries are unmanaged, the rise in prices may even cause a contraction in supply. This would occur if increasing prices were to push fishing effort beyond the point corresponding to the MSY, reducing future fish stocks even further with increased fishing effort.

On the other hand, when fish stocks are effectively managed through systems of property rights, the higher real prices increase the value of the resource itself, with benefits accruing either to the fishermen or to the management agency. In some cases, introducing more effective management leads to increased supplies and hence reduced prices.

Most major fisheries in the world have experienced significant losses in yields due to the depletion of the stocks. The rise in real prices increases the benefits of such measures but, simultaneously, increases the difficulty of their implementing them because of the incentive it provides to invest in excessive fishing efforts.

Supply increases

Aquacultural markets. Although supplies of fish are limited in general, there are certain opportunities for reducing or removing the constraints. For some species, cultivation is possible through various systems. These range from extensive systems under which the sole intervention is the planting of seeds (as in oyster farming) to highly intensive systems which require interventions in reproduction, nutrition, the gene pool and disease and environmental elements (e.g. shrimp, catfish and carp in ponds and salmon in cages).

Cultivated products can be divided into four main groups. Some production is aimed at the high-income market, primarily, although not

exclusively, in developed countries. This currently includes salmon and shrimp but there is potential for other species such as sea bass, groupers and some marine flatfish. A significant part of total aquaculture production, in quantitative terms, is made up of molluscs, including clams and oysters (which have been farmed since the days of the Roman Empire), largely consumed in high-priced markets; and cockles and mussels, which are lower priced and consumed in developing as well as developed countries. The largest group includes freshwater finfish, mostly various species of carp which are grown in small farm ponds in developing countries. By far the greatest amount is produced in China whose total aquacultural production is estimated to account for 48 percent of the global production of all aquacultural products. The fourth major group includes seaweeds and other aquatic plants.

The total estimated annual production from aquaculture (from both fresh and marine waters) is currently more than 14 million tonnes. This figure, however, is somewhat misleading with regard to supplies of food for human consumption. The estimate for molluscs includes the weight of the shell which is about four times the weight of the meat. Seaweeds and other aquatic plants make relatively small contributions to human consumption. In addition, the production of shrimp and marine finfish uses relatively large amounts of other fish as feed. With regard to freshwater finfish, its contribution to food supplies is very large in Asia and significant in Europe and North America, but of only negligible importance in Africa. It is currently of small but growing importance in Latin America.

The increase in production of shrimp and salmon has been very rapid, leading to adjustments in the market which may restrain growth in the short term. There are also some indirect effects and production problems that need to be solved: for example, disease associated with intensive culture; pollution from excess feeding; obtaining regular supplies of high-quality feed and seed; and the maintenance of genetic diversity.

For shrimp, some of these problems are having major negative effects in several developing countries. Fairly large areas of mangrove swamps have been cleared for shrimp farms. The demand for seed has led to the intensive harvest of planktonic materials (although an increasing amount of seed is now being raised in hatcheries). The demand for feed is leading to biomass fishing. These developments tend to reduce the potential supply of fish that can be used as food for domestic consumption in developing countries, particularly for the low-income consumers. These issues are forcing many developing countries to rethink their policies aimed at expanding shrimp farming.

Overall, the rise in real prices stimulates further increases in aquaculture production. The greatest contribution to future supplies is likely to come from increases in freshwater finfish culture and, to a lesser extent, from the culture of molluscs. In Asia, this will require increased efficiency in present culture practices. In Africa, efforts to develop fish farming have been less successful than anticipated. Improvements will require new approaches that take account of the indigenous social and economic constraints.

Development of new stocks. Demand for fish is generally limited to a few hundred thousand species of marine organisms. There are certain characteristics that are important in affecting taste preferences: size, boniness, oiliness, flesh firmness, taste and colour. There are also important supply characteristics, such as ease of capture, ease of processing and perishability. Most of the thousands of species not consumed or used by humans at present are likely to remain unused, similar to weeds in agriculture. Changes in taste preferences and demand do, however, take place and there are some possibilities for increasing total supplies by the development of stocks of unconventional species and by technological innovations permitting the capture of stocks that are inaccessible to conventional gear.

Within the past two decades, a number of stocks have been brought into production, including: Chilean jack mackerel in the high seas of the South Pacific; several stocks of oceanic squid; orange roughy from seamounts off New Zealand (currently overfished); and Antarctic krill (to a limited extent). These developments have occurred because of changes in taste preferences and technological innovations, such as large driftnets, which make it economically feasible to harvest low-density stocks.

The physical potential for development of unconventional stocks is very large, given the estimated 100 million tonnes from squid and several times that from Antarctic krill and mesopelagic species (deep-swimming species of the outer continental shelves and high seas). Although squid in certain regions offer some opportunity for further economic development,

BOX 14

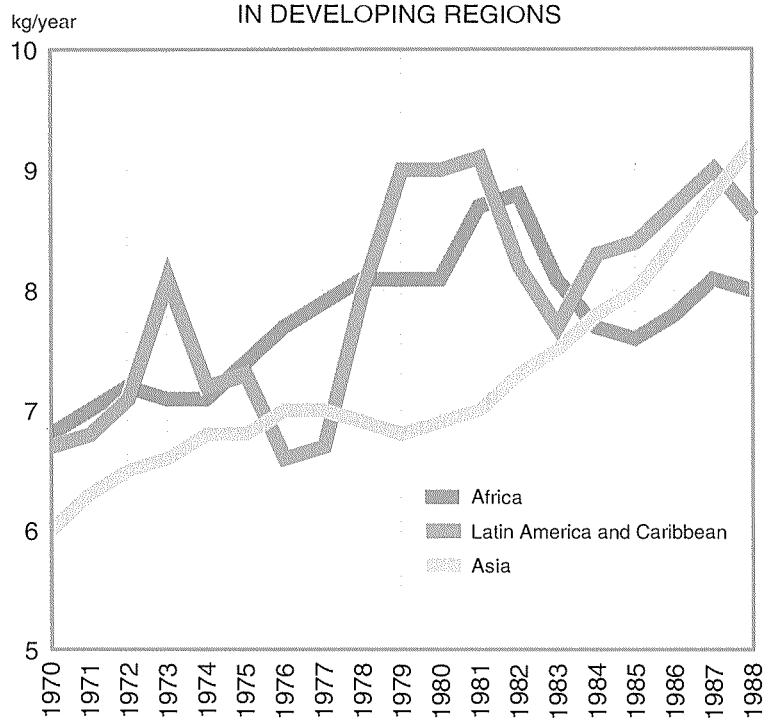
The role of fish in food supply and nutrition

The use of fish as a source of food has increased steadily, rising from 40 million tonnes in 1970 to 70 million tonnes in 1989. Supplies for developing countries have risen more rapidly, at 4 percent per year, than those for developed states, at 1.6 percent per year.[1] Quantities available to developing countries, 36.2 million tonnes, exceed those for developed countries, which stand at 33.7 million tonnes. There are, however, considerable regional differences among developing countries. In 1989, supplies to Asian countries reached 26.4 million tonnes, more than five times those to African (4.6 million tonnes) and Latin American (3.7 million tonnes) countries. On a per caput basis, the developed countries have average supplies of 27 kg per year, as against an average of 9 kg for all developing countries. Fish as a source of food is critically important for developing countries where a large portion of the population receives most of its animal protein from fish. It is, therefore, disturbing to note some recent changes in fish supplies. Although per caput supplies rose in Asia by 33 percent between 1980 and 1988 (largely because of the burgeoning production in China), they fell by 1 percent in Africa and by 4 percent in Latin America and the Caribbean (see Fig. A).

[1] Supplies are estimated on the basis of the production of fish for food purposes from all sources (freshwater as well as marine), plus imports minus exports, and adjusted for changes in inventories.

Figure A

PER CAPUT FISH FOOD SUPPLIES IN DEVELOPING REGIONS



Source: FAO

A source of high-quality protein

Fish plays a vital role in feeding the world's population, contributing significantly to the dietary protein intake of hundreds of millions of people. On a global scale, almost 16 percent of the total average intake of animal protein was attributable to fish in 1988. Recent global statistics reveal wide variations in fish consumption, but people in developing countries are generally much more dependent on fish as a part of their daily diets than people living in the developed world. Only in a few developed countries, most notably Japan, does the population derive more than 20 percent of its total "meat" supplies from fish.

A source of high-quality protein, fish supplies 29 percent of the total animal protein in the diet of Asian populations; the contribution to the diet of Africans is also important, about 19 percent. In Latin America, intake of fish as the main source of animal protein is sharply lower at about 8 percent (Fig. B). Programmes to develop domestic consumption, increase aquacultural development and improve the diets of the rural poor are encouraging consumption of more nutritious, low-cost fish products in this region.

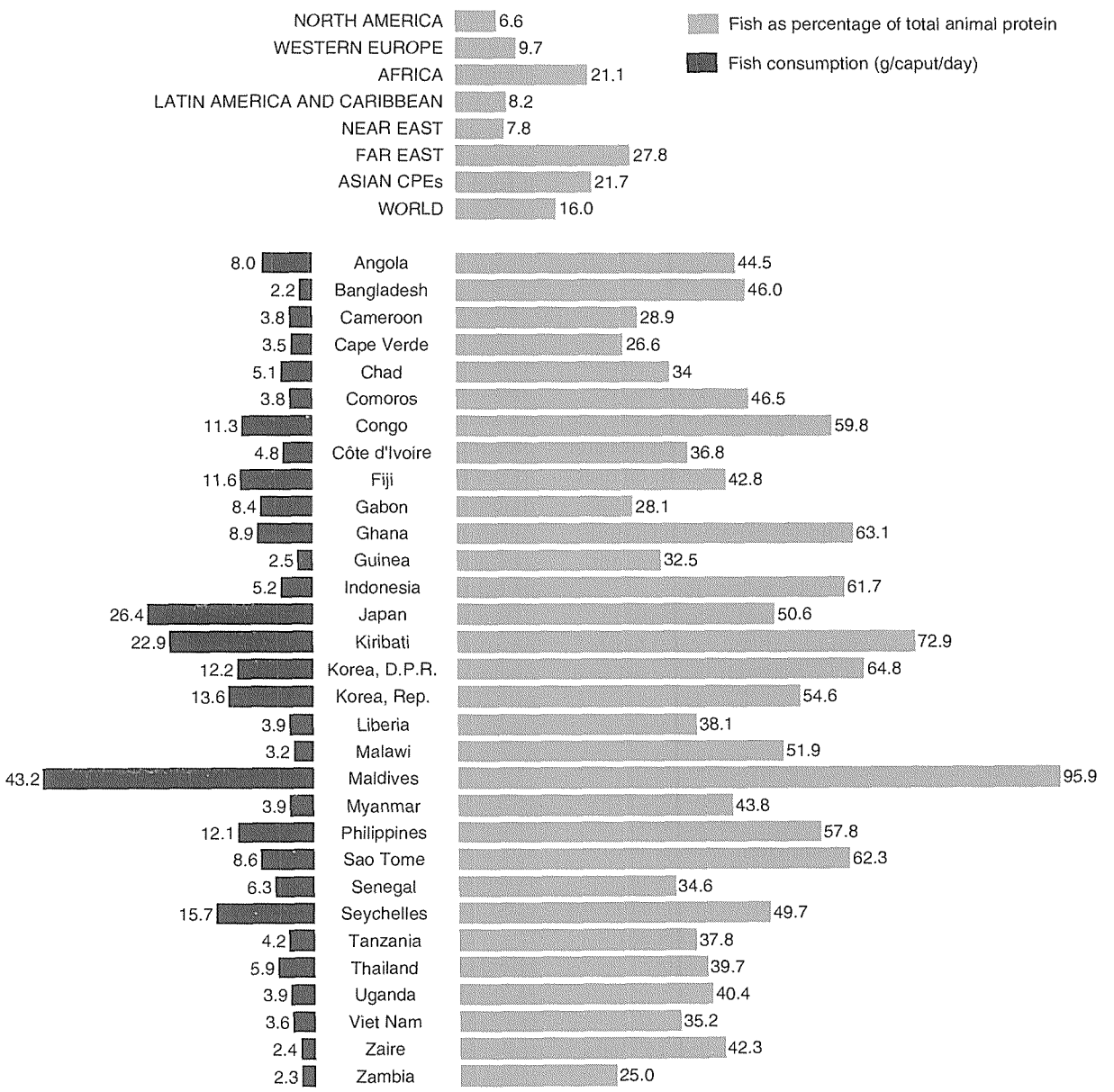
While overall world consumption is on the increase, fish plays a less central role in the diets of developed countries. In North America, it contributes only 6.6 percent of the total animal protein intake; in Europe and the USSR, intake is almost double at 12 percent.

Demand is expected to increase in the developed countries over the next decade as the nutritive and health values of fish — especially its role in lowering blood cholesterol levels and as a low-fat and low-calorie food — are more widely promoted.

Figure 8

CONTRIBUTION OF FISH TO DIET, 1987-89

(Regions and selected countries)



Source: FAO

it is unlikely that significant quantities of catch will be taken from krill and mesopelagic stocks for many years to come. Furthermore, in view of the fact that these are important sources of feed for other, more valuable oceanic fish and for marine mammals, it would probably not be desirable to harvest them in great quantities.

Reduction in post-harvest losses. A large amount of fish protein is lost after it is caught and before it reaches the consumer. With increases in fish prices and more effective price structures, some of these losses may be reduced.

There are several kinds of losses associated with fish harvesting. The large amount of by-catch wasted in shrimp fisheries exists in most other fisheries as well. In addition, the limited capacity for storing fish in both small and large vessels is a source of waste. When fishermen catch more valued species or larger sizes of fish late in the trip, they tend to keep these and dispose of their earlier catch by throwing it overboard. In some cases, certain management practices lead to waste. For example, if there is a limit to the by-catch of certain species, fishermen may dispose of their excess by-catch by throwing it overboard so that they can continue fishing. In the case of the United States Pacific halibut fishery, where the season lasts only one day, fishermen lay out an excessive number of long lines in order to be sure of maximizing their catch. At the end of the day, any lines not hauled will be left in the water and will continue to hook fish, including halibut. Improved management practices are essential. Their achievement would be greatly facilitated by an improved valuation of the resources and by price structures that fully reflect the differences in values of different resources.

The high degree of perishability of fish leads to further post-harvest losses both on-board and in processing and distribution activities. It is estimated that up to 10 percent of total food fish supplies are lost because of insufficient care in handling, insufficient chilling, pest infestation, poor processing and spoilage. The existing technology is generally sufficient to deal with these problems but the costs are high. The increase in real prices and growth in demand for higher-quality products provide a significant incentive to reduce these kinds of losses.

Supply shifts

Certain developments are also leading to shifts in supply of fishery products and may eventually produce increases in total supply. These include the development of substitute products and the possible shift in the use of certain species from fish-meal to food for humans.

Development of substitutes. The demand for certain products can be met, in part, by the conversion of raw fish protein material into products with similar characteristics. As noted, the process of fish flesh extraction, known as surimi, is currently being used to produce substitutes for crab meat from Alaska pollack and is partly responsible for the doubling of catches of that species over the past two decades. For high-income consumers in developed countries, these techniques reduce the importance of species characteristics and allow adjustments in demand and supply by converting low-priced species to high-priced products.

In many developing and some developed countries, it is traditional to convert trash fish and waste products into fish paste or fish sauces used as food additives. This process does not, however, offer much opportunity for expansion. If trash fish is increasingly diverted to fish feed for aquaculture, there may be a loss of such forms of protein for human consumption.

Shift from non-food to food uses. Currently, about 30 percent of the total world catch of fish is used to produce fish-meal, oil and other industrial products. Most of this catch comes from large-scale catches of small pelagic species for which there is little demand as food at present. There have been many past attempts to develop processes for converting this raw material into products for human consumption. Although the technology for doing so is available, the costs are still too high to attract investment, as demand still appears limited.

The effect of generalized fish price increases on such possible shifts in consumption is unclear. One difficulty is that the major market for low-priced fish is Asia, whereas the major sources of the small pelagics are off Latin America and Africa. Another factor is that the growth in aquaculture is creating an increased demand for high-quality fish-meal. Nevertheless, it is possible that the small pelagic species may eventually provide an important supply of fish food for human consumption.

Effects of demand

As a general pattern, taste preferences for fish are continually undergoing change. To begin with, there is low preference for unconventional species which may be sold at low prices to low-income consumers. But as the prices for the

more preferred species rise, middle-income consumers turn to the species consumed by the poor. This causes a shift in the demand curve and an increase in price, eventually removing the species from the tables of the poor who must then turn to other unconventional species. The writer, Charles Dickens, through the character of Sam Weller, noted in the nineteenth century that "poverty and oysters always seems to go together", a remark that would scarcely obtain today.

This pattern, however, is being broken at both ends of the consumer scale. At the lower end of the scale, particularly for the low-income consumers in Asian countries, the pattern is being broken because they are running out of unconventional resources to develop in the near shore waters. This is being exacerbated by biomass fishing, the intensive harvest of seed for aquaculture and the degradation of the coastal zone. The high and growing demand in developed countries is also leading to a diversion of resources towards those markets and away from the low-income consumers, who are the most seriously deprived by the rise in fish prices.

At the upper end of the scale, the pattern is being broken because some fish products are being "priced out of the market". Prices of fish, in general, have tended to be lower than prices of other animal proteins. While this is still true for most fish products, there are some whose prices have reached a point where those of competitive non-fish products are about equal, as in the case of canned tuna and chicken meat in the United States market. When this occurs, the upward movement of fish prices is constrained.

HIGH SEA FISHING

One of the consequences of rising real prices, together with the problems of gaining access to EEZs, has been increased fishing activity on the high seas. This activity has resulted in three types of problem. One is where pelagic stocks migrate both within and beyond 200 miles from shore. The second occurs at the edges of continental shelves, where some stocks of groundfish can be found straddling the 200-mile limit. A third, not strictly pertinent to the high seas, except in a legal sense, occurs where high seas exist just beyond narrow limits of jurisdiction.

High sea pelagic fishing

In the high sea areas away from continental shelves or coastal upwellings, the density of most stocks is generally very low. For the efficient harvest of these stocks, it is either necessary to filter great quantities of water with the use of exceptionally large driftnets or longlines or to make use of natural or artificial aggregation devices (setting purse seine nets on schools of dolphins or on logs which occur naturally or which have been placed in the sea). Such high sea fishing has produced two kinds of reaction: concern about the possible depletion of stocks and concern shown by states about the marine mammals and birds that are taken as a by-catch of the drift gillnets and longlines.

High sea fishing of salmon by Japanese vessels in the North Pacific has long been a concern to the United States, and led to the signing of the North Pacific Fisheries Convention in 1952. Under this convention, Japan agreed to abstain from high sea salmon fishing because the stocks were being managed and were fully utilized by the coastal states (the United States and Canada). More recently (in 1989), apprehensions about the by-catch of salmon in the North Pacific high sea driftnet fisheries for squid resulted in observer programmes for the operating fleets. Bilateral agreements, stipulated between the United States and Japan and between Taiwan, Province of China, and the Republic of Korea, could eventually lead to the adoption of regulations on the use of such nets.

In the South Pacific in November 1989, the developing island states as well as New Zealand and Australia opened for signature a Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific. Under the convention, member states prohibit their vessels

from using long driftnets (in excess of 2.5 km in length), both on the high seas and within their EEZs in the South Pacific, as well as prohibiting the use of driftnets by all vessels within their zones. They also agreed not to allow the provision of services or assistance to driftnet vessels operating in the high seas or to vessels engaged in supplying the driftnetters.

Considerable attention by certain countries (particularly the United States) has recently been devoted to the issue of by-catches by these types of gear since the catch tends to include marine mammals and birds. In December 1989, the UN General Assembly (UNGA) adopted Resolution 44/225, recommending that all nations agree to moratoria on all large-scale driftnet fishing on the high seas by 30 June 1992 unless "effective conservation and management measures be taken based on statistically sound analysis...to prevent unacceptable impacts of such fishing practices in that region and to ensure the conservation of the living marine resources".

In support of this resolution, in October 1991 the United States adopted a ban on the imports of fish caught with large driftnets (more than 2.5 km in length) on the high seas. It listed as the high sea driftnetting nations: France, Japan, Taiwan, Province of China, the Republic of Korea and the Democratic People's Republic of Korea.

The UNGA resolution contains a principle which, if widely adopted, would significantly affect the realization of benefits from fishery and all other natural resources. "The Resolution actually reverses the normal burden of proof to require that conservation measures be in place *before* the available scientific data support specific action and before fishing may begin or be continued."[14] This "precautionary principle" would virtually prevent the exploitation of any new natural resources in international areas since it would be difficult to determine impacts prior to their actual development. In addition, the impacts may not be so much the consequences of the technique that is used as the result of an excessive use of the technique. Any acceptable fishing gear can have damaging impacts on both target and by-catch species when it is used to excess, an issue which is not addressed by the resolution.

[14] FAO. 1991. *Law of the sea concerning coastal state authority over driftnets on the high seas.* Legislative Study No. 47. Rome, FAO. (italics in original)

The other type of high sea fishing depends on the location of stocks aggregated in sufficiently dense schools to permit economically efficient harvesting. This approach is used for tuna fishing by pole-and-line and purse seine operations (although the former is decreasing in the South Pacific because of high labour costs). The major cost element in these types of fishing is the time required to search for the schools, but this has been improved greatly over the decade with the introduction of remote sensing and long-term forecasting.

In the eastern tropical Pacific, certain types of tuna (particularly large yellowfin, averaging 25 kg) are found in association with porpoises. It is economically efficient for purse seiners to set their nets around these schools but it does lead to some porpoise mortality, although techniques are available for reducing the rate of mortality. In the same area, schools are also associated with drifting logs but, here, the tuna tend to be smaller – less than 5 kg in size.

The by-catch of porpoises in tuna purse seine nets is not a recent development, having been a concern throughout the past two decades. Initially, the large number of porpoises taken in the eastern Pacific (700 000 to 850 000 individuals in 1961) raised the serious issue as to the ability of certain species to survive. Controls adopted by the United States led to a reduction in the number of porpoise kill to about 90 000 to 110 000 individuals in 1987 and an estimated 25 000 in 1990. Overall, the problem of porpoise kill has been significantly mitigated by implementing a combination of gear modifications and fishing manœuvres. Purse seines have been modified with the addition of Medina panels and Superaprons so that, in the final phase of pursing, the porpoises could be spilled out of the net in a "backdown manœuvre" which leaves the deeper-swimming tuna in the net.

Government-imposed reductions in the incidental catch of porpoises ensure that efforts continue to reduce the kill further by improving fishing methods and by sensitizing fishermen to environmental issues.

Attempts to achieve zero mortality, however, are likely to have negative effects in two regards. First, if the goal is achieved it is likely that the yield of yellowfin tuna in the eastern Pacific would be significantly reduced, since the fishery would have to restrict itself largely to the small yellowfin tuna in free schools or those associated with floating logs. It has been estimated that this would lead to a decline in

catches to one-third or one-half of present levels.[15] Second, controls established unilaterally by the United States may not be effective in preventing other countries from taking large numbers of porpoises. At present, some major United States tuna canners are refusing to buy tuna caught in association with schools of porpoises. This sanction may now be having an effect on production by other states.

In ocean regions other than the eastern tropical Pacific, the association of large tuna with porpoise schools is less strong and other means are used for locating the stocks. The development of remote sensing techniques is proceeding rapidly and may soon lead to the ability to predict precise locations of tuna schools. This technique could considerably reduce search time and costs. It could also, however, lead to the congestion of vessels on the schools and to overfishing. These various developments indicate a strong and urgent need for international arrangements concerning the management of tuna fisheries.

Extended continental shelves and straddling stocks

There is also an urgent need for international arrangements to deal with the management of the demersal stocks that straddle the boundaries between the high seas and national limits of jurisdiction. These areas occur where continental shelves and slopes extend beyond 200 nautical miles from shore: notably the "doughnut hole" in the Bering Sea between Russia and the United States; the Grand Banks in the northwest Atlantic and the Patagonian shelf off Argentina.

The "doughnut hole" is an area situated more than 200 miles from both the United States and the Russian Federation and in which sizeable stocks of Alaska pollack are found. These fish have attracted a considerable fishing effort by other states and led to an increase in catches of pollack to an estimated 1.3 million tonnes in 1987.[16] It is not entirely clear whether these stocks are completely independent of those found within the national zones (as claimed by the distant-water fishing states) or are stocks that straddle the national zones (as claimed by the coastal states). If the latter is the case, then fishing within the "doughnut hole" can affect the status of the stocks within national zones.

In the northwest Atlantic, there is also a growing conflict between Canada and the EEC with regard to the management of the cod stocks that are found on the outer edges of the Grand Banks. The conflict is being played out within the regional international management body, NAFO. It has also led to an evasion of management regimes, as some fishermen shifted their flags to states that are not members of NAFO. This means they can continue fishing in the area without having to comply with the regulations set by NAFO for its members beyond the EEZ. If, as is possible, fishing by these vessels in the high sea areas significantly affects the yields from the stocks as a whole, the benefits of the conservation measures will be dissipated and the viability of the arrangements threatened.

An additional problem facing NAFO, as well as other international management bodies, is that of new entrants. Under the NAFO arrangement, total allowable catches are set for individual stocks and these are then divided up into shares for the member states. According to the convention that established the organization, no state can be prohibited from joining NAFO.[17] When additional states exercise their right to join, the pie must be divided into smaller slices, thus decreasing the shares of the original members.

These problems question the desirability of the conventional approach, followed by most international management bodies, of determining total allowable catches and dividing them into individual national quotas.

In addition to the North Pacific and northwest Atlantic, similar conflicts are emerging between the coastal state and distant-water countries fishing on the Patagonian continental shelf and slope.

High sea areas beyond narrow limits of jurisdiction

There are still some areas into which jurisdiction has not been extended or where claims have not yet been put into effect. These areas include the Mediterranean Sea, the South China Sea

[15] *Summary Minutes of the 48th Meeting of the Inter-American Tropical Tuna Commission*, San José, Costa Rica, 17-20 September 1990.

[16] E.L. Miles and W.T. Burke. 1989. Pressures on the United Nations Convention on the Law of the Sea of 1982 arising from new fisheries conflicts: the problem of straddling stocks. *Ocean Dev. Int. Law*, 20(4): 343-357.

[17] Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries, 24 October 1978.

and the Antarctic Ocean. In the first area, fishery conflicts are largely, although not entirely, bilateral issues of concern to adjacent or opposing states. A regional body, the General Fisheries Council for the Mediterranean (GFCM), provides a forum for the exchange of information and adoption of recommendations on management measures. In the South China Sea, claims to extended jurisdiction involve significant disputes over the ownership of two sets of islands in the middle of the Sea: the Paracel Islands to the north and the Spratly Islands to the south. At present, fishing in the areas of dispute is not of major consequence. The main issue of contention is rather the presence of potential mineral resources.

In the Antarctic region, several international treaties relate to the use of fishery resources. These include the Antarctic Treaty (1959), the Convention for the Conservation of Antarctic Seals (1972) and the Convention for the Conservation of Antarctic Marine Living Resources (1980). Discussion on Antarctic issues now take place within UNGA. Since 1983, no change has been accepted.[18]

The international regime of the high seas

The issues raised by these developments on the high seas were not fully addressed by the 1982 UN Convention on the Law of the Sea. With regard to the high seas, the convention urges cooperation among the fishing states: "States shall co-operate with each other in the conservation and management of living resources in the areas of the high seas. States whose nationals exploit identical living resources, or different living resources in the same area, shall enter into negotiations with a view to taking the measures necessary for the conservation of the living resources concerned. They shall, as appropriate, co-operate to establish subregional or regional fisheries organizations to this end."[19]

For straddling and highly migratory stocks, the convention states that coastal and fishing states should seek to reach agreements on the management of stocks either directly or through subregional and regional organizations.

Although the convention is not yet in force, most of its provisions dealing with fisheries are widely considered as a codification of customary international law. Furthermore the 1958 Geneva Convention on the Law of the Sea, together with decisions of the International Court of Justice, UN resolutions and multilateral treaties, clearly support the obligation of states to take measures to manage the stocks beyond their respective limits of national jurisdiction and to seek cooperative arrangements for such management. For straddling stocks, there is also general agreement that coastal states have a special interest and right in the conservation of such stocks. However, there is a considerable lack of clarity on how these obligations and rights are to be met as well as on the scientific bases for management decisions, the kinds of institutions that might be used or created, the rights of third parties and even the goals of management.

In this situation, pressures are emerging to take steps based on immediate or special interests that may have significant long-term or broader consequences. The adoption of the "precautionary principle" is but one example. There are also pressures to extend unilaterally national authority beyond the limits of the EEZs. In the United States, west coast fishermen are pressing for the extension of national jurisdiction, either unilaterally or jointly with the Russian Federation, to cover the high sea enclave in the Bering Sea. Strong pressures are also emerging in eastern Canada to deal with the problems in NAFO.

Although a number of regional fishing bodies do not have a good record in resolving conflicts and achieving effective fisheries management, some cases indicate that improvements are possible. The first (and, in some regards, the most efficient) international fisheries agreement was created in 1911 by the Convention for the Preservation and Protection of Fur Seals. It was signed by Russia, Japan, the United States and the United Kingdom (acting on behalf of Canada). The stimulus for the agreement was the decline in the stocks of North Pacific fur seals due to overharvesting. The agreement stipulated that all harvesting of the fur seals at sea would be prohibited and that harvesting could only take place on the breeding islands. By doing so, the costs of harvests were diminished to a small proportion of the costs incurred when harvesting took place at sea, while the quality of the furs (and prices) increased. The parties to the agreement, who relinquished their right to high sea sealing, received a share of the skins by way of

[18] FAO. 1987. Le système des Nations Unies et le régime de l'Antarctique. *Le Droit et la Mer*, p. 233-266. Rome, FAO.

[19] *United Nations Convention on the Law of the Sea*, art. 118. UN Document No. A/CONF. 62/122.

compensation. When the agreement was renewed in the 1950s, Japan and Canada each received 15 percent of the skins harvested by the United States and the USSR on the islands under their jurisdiction.[20] With the extension of jurisdiction, the fur seal convention was terminated.

At present, the FFA, whose members include the small Pacific Islands, Australia and New Zealand, provides an example of an effective international fisheries body. By cooperating through the FFA, these states have been able to achieve greater benefits from access arrangements than they could have achieved through individual negotiation. They have also been able to reduce the costs of enforcement significantly through the creation of a regional register of foreign fishing vessels.

In a multilateral agreement with the United States, the Pacific Islands are to receive $60 million during a five-year period for fishing rights. The Pacific Islands have separately agreed among themselves to share the proceeds so that 85 percent of the revenues are allocated on the basis of the location of United States catches and 15 percent is to be distributed equally among all parties. This allows those states without significant tuna resources to receive some of the benefits for their participation in the agreement.

This compensatory mechanism helps to ensure stability in the regime. The success of the arrangement depends on the states being able to maintain a united front with regard to distant-water fishing vessels and, in order to achieve this unity, the states that have rich resources are willing to compensate the less well-endowed states with a share of the resource rents received.

Both the principles and the models of the North Pacific Fur Seal Commission and the FFA have much to be recommended for the achievement of effective management and the resolution of conflicts over high sea resources, even though the conditions that facilitated the success of these arrangements are not generally found in other ocean regions. The basic principle is the treatment of fishery resources as resources that have value *in situ*; a value definable in monetary terms. The model is that of an international regime that achieves stability by the sharing of the benefits deriving from use of the resources and providing compensation for those members who are less well endowed.

The management of straddling and high sea stocks is basically no different from the management of stocks lying fully within national zones, except for the kinds of participants and the distribution of benefits. A first step would be to move from management based on physical quantities to management based on economic values. This step would necessitate the adoption of measures designed to maximize the net economic revenues that can be produced by the resources. Such measures would be based on transferable use rights which might be vessel licences, individual shares of total allowable catch or total revenues, or individual shares of total allowable investment. The choice would depend upon the characteristics of the fisheries, including the costs of enforcement.

A second step would be to provide the means for extracting the economic rents. This could be done by the auction of use rights or the imposition of taxes or user fees. For the purpose of achieving stability in the regime, it would be essential that the maximum rents be extracted from the entire managed resources, whether they fall within or outside economic zones. When preferences are given to coastal states in the form of lower payments, the coastal states tend to attract excessive effort, leading to the dissipation of rents and a reduction in revenues available for other parties. The bona fide interests of the coastal states in the resources can be met through the distribution process.

The establishment of a system for distributing the benefits would constitute the third step. The benefits would be in the form of the economic rents, net of the costs of achieving them. The costs would be those of the management body for administration, research and enforcement. These costs are likely to be relatively small so there should be substantial surplus revenues available for distribution.

Distribution should be done in such a way that the stability of the regime is assured; that is, that all parties feel they have more to gain by maintaining the regime than by proceeding on their own. Achieving stability entails allowing

[20] The agreement initially collapsed in 1941 when the Japanese withdrew, alleging that "both direct and indirect damage had been inflicted on the Japanese fishing industry by the increase of fur seals" (M. Whiteman. 1965. *Digest of International Law*, p.1 042. Washington, D.C., United States Department of State). The number of fur seals reportedly increased from 125 000 in 1911 to approximately 2 300 000 in 1941. A new agreement was reached in 1957, with the provision that the determination of the total yield should take into account the effect of fur seal predation on the productivity of other living marine resources.

the most efficient producers to operate and compensating those who do not receive fishing privileges but who are in a position to affect the outcome of the regime. Herein lies the problem, as four different types of participants can be identified. At the most restricted level, the participants sharing the benefits would include only the coastal states. Where high sea catches are inconsequential, this may be effective in maintaining stability. But where high sea catches can affect total yields, this restricted approach would not succeed.

A second set would include the present distant-water fishing states and the coastal states. This approach, currently being followed in some regions, is only effective as long as there are no new entrants from non-contracting states. However, as demonstrated, the problem of new entrants is already emerging and it may therefore be necessary to broaden the membership to include all states with a potential as well as a current interest in fishing. This presents the problem of defining states with a potential interest.

The final set would be to include all countries of the world, land-locked as well as coastal. This approach does not mean that every country need receive a share of the rents directly but that the rents might be devoted to a purpose that is generally agreed to provide benefits for the world community. It is possible to identify uses that would leave all countries with the feeling that they are better off by complying with the regime than by breaking it.

In all cases, the amounts of shares would be subject to negotiation. Clearly, a significant proportion should be allocated to the coastal states but the amount might vary according to the degree in which the managed stocks are found within their zones. The distant-water states that are currently fishing in the zone might also be accorded a significant share as a means for buying out their "historical" right of free fishing.

During the past decade, the management of high sea fisheries has appeared as a significant international problem, not fully anticipated by the UN Convention on the Law of the Sea. The general response to the problem has been to modify and adjust the past forms of international arrangements. However, the treatment of fishery resources as physical quantities rather than economic resources has persisted. To continue along the same path will exacerbate waste and conflict. New and innovative approaches must therefore be adopted urgently.

ENVIRONMENT

The interrelationships between fish stocks and their environment have always been matters of considerable importance for fisheries. In the past decade, however, several developments have occurred that have significantly increased environmental concern. In addition to the overfishing of stocks, growing attention is being given to possible global climatic changes and the degradation of coastal zones.

One of the basic difficulties in examining the effects of environmental changes is that of distinguishing between natural and human causes. Global ocean currents move in complex ways which are not well understood at present and which bring with them changes in temperature, salinity and nutrient levels. Different species have different levels of tolerance to these elements, thriving or weakening according to the mix. The changes may produce either short- or long-term variations in population size.

It is well known that significant variations in stock size occurred prior to the advent of fishing operations. Cores taken from lower sediments show interrelationships among certain species, with some dominating a biological niche in certain periods and some in other periods. The influence of natural climatic change is particularly strong for shoaling pelagic species which are caught in extraordinarily large quantities; the Peruvian anchoveta and the Japanese, South American and South African pilchard, for example. In these situations, it is difficult to separate the effects of environmental degradation and intensive fishing from those of natural climatic fluctuations.

Thus, there are not only uncertainties with regard to the degree to which global warming may occur but also in terms of the effects it may have on fisheries. Certainly, if there is a large rise in sea level, the devastating effects on coastal cities and communities will make the effects on fisheries pale into insignificance. But a moderate rise in global temperatures still deserves attention. It is unlikely that total marine fish production will change very much, although changes in the composition of species that make up the catch can certainly be expected, as can changes in areas of high productivity. The highly fertile tropical upwelling zones may move closer to the poles. Changes in rainfall patterns could lead to increased erosion on formerly dry land areas, with associated increases in coastal siltation, and to decreased run-off from river

basins, with associated declines in nutrients. At present, aside from such generalized statements, little can be said other than that there is a need to increase research on global warming.

More immediately apparent are the several kinds of change taking place in coastal aquatic ecosystems. One is the increase in nutrient-rich wastes coming from municipalities and farms. In some cases, such nutrient discharges may enhance fishery production but, more generally, they may have damaging effects, such as oxygen depletion (resulting in fish larva kills) or blooms of phytoplankton species. The latter is often a cause of "red tides" and can produce paralytic shellfish poisoning (PSP).

The growing amounts of soil erosion and fresh water run-off resulting from deforestation and certain agricultural practices are leading to increased siltation and changes in water temperatures, salinity levels and transparency, with consequent damages to coral reefs and aquatic vegetation.

Chemical pollutants may enter the coastal zone: when discharged directly into water from industrial operations that are not governed by international conventions or in cases of accidents; as pesticide and herbicide run-off from farms; or as fallout from the atmosphere. Changes are also occurring through the extraction of sand and gravel and the mining of coral as well as through land reclamation activities, including the clearing of mangroves, often for the purpose of shrimp farming.

Pressures on the coastal zone ecosystem will increase in the future. It is estimated that, by the year 2000, 60 percent of the three billion people living in urban areas will be concentrated in settlements less than 50 miles from the sea, while many more will be in settlements along rivers sufficiently close to carry pollutants into the sea. Developing countries will be at a particular disadvantage in attempting to cope with the pressures because the immediate and manifest needs for food, living space and employment are likely to outweigh the less direct and visible need to avoid damage to the coastal zone. For example, dichlorodiphenyltrichloroethane (DDT) is commonly used and sometimes subsidized in developing countries even though the downstream damages are such that it has been banned in many developed countries.

It is estimated that 80 percent of marine pollution comes from land-based sources whereas the preponderance of the harm is felt by marine fisheries and aquaculture. There is therefore an asymmetry between those who cause environmental harm and those who bear the costs.

The tasks of dealing with the changes in the coastal zone are multidimensional and extremely difficult. Integrated coastal zone management involves the international, regional, national and local levels. It also involves a variety of government agencies and private enterprises. At the international level, there is considerable need for research on a range of problems. A major area for research is that of determining the nature and extent of the damages that may be occurring from changes in the coastal environment. This requires research on the effects of environmental change on stock productivity and composition; the development of models to understand coastal ecosystem dynamics; the causes of phytoplankton and algal blooms; and the development of models for the analysis of economic relationships between the multiple sources of environmental change and its effects.

In addition to research, there are international responsibilities for aiding developing coastal states in their attempts to deal with these problems. This assistance includes education and training, technical assistance and changes in development aid to ensure environmentally sound projects. In this last regard, it is essential that the preparation of projects takes into account the full value of the natural resources as well as the costs of their management. These tasks are equally critical for national governments.

One of the major reasons for the misuse of the coastal zone is the absence of a satisfactory pricing system and, as a result, the imperfect or zero valuation of the resources themselves. Access is free not only for fisheries but also for the consumption of water and the use of water as a carrier of waste. Other resources are underpriced, including forest land (priced at timber value), mangrove swamps (used for land development or aquaculture) and coral reefs (as a source of building materials). When natural resources are undervalued, there is inevitably a misallocation of the other factors of production (labour and capital) as well.

The provision of use rights and pricing systems can help to rationalize the allocation and use of the resources. Use rights and pricing systems can be achieved through a variety of means, such as access licences, pollution permits, quota shares, user fees, taxes and

incentive payments. Use rights can be provided to individuals, companies or communities. The charges for the use rights can be extracted by the government and used to protect societal interests that may not be covered by the system and to cover the costs of management. In Japan, where communities have exclusive use rights to fishing areas, those who wish to use the areas for other purposes (e.g. the construction of airports or disposal of wastes) must pay the communities for these uses.

SMALL-SCALE FISHERIES

Although the past decade did not bring any major new developments for small-scale fisheries, there was a general increase in the awareness that they had been badly neglected and that development projects had been insufficient to improve their welfare. In developing countries, interest has increased in community-based management of fisheries.

Small-scale fisheries are important sources of employment and food in many countries throughout the world, particularly in the developing countries of Africa and Asia, although there are no accurate estimates of the number of small-scale fishermen in developing countries. India, alone, is estimated to have one million active fishermen and there are well over one million in members of the ASEAN. Many more are engaged in part-time fishing and there are large numbers who are involved in marketing and other ancillary activities. Of equal importance is the fact that the sector produces a large amount of animal protein, particularly for low-income consumers.

Despite its importance, small-scale fisheries are generally characterized by low incomes and poor living conditions. Fisheries are often considered as the "employer of last resort" because of the open access property rights condition which prevails in most countries. Although social and cultural barriers to entry exist in some fishing communities, there are still many situations where fishing labour increases in spite of static or declining levels of catch. Often, the increase in fish prices makes up for the decrease in amount of catch per person and, as in other sectors, a large part of the increase in labour results from population growth within the fishing communities.

The growth in the labour force and the inability to expand the resource base have sometimes induced small-scale fishermen to engage in highly damaging fishing techniques, such as the use of dynamite and poisons for the harvest of the resources, thereby diminishing the resource base even more.

An additional cause for concern in small-scale fishing communities is the result of well-intentioned aid for improvement in vessels and gear. Fishermen, traditionally fishing from log rafts or small pirogues powered by hand or sail, sustain considerable physical hardship. Motorization reduces that hardship but it also tends to reduce employment. New forms of fishing gear can have similar effects. Since total

catches cannot be increased, there is a significant displacement of labour which presents severe problems in areas of high unemployment.

In many regions of the developing world, small-scale fishermen have experienced serious difficulties because of the intrusion of large-scale vessels into areas that they have traditionally worked. This situation has been particularly devastating in the case of shrimp trawlers, although it is also becoming important for other kinds of gear. Shrimp stocks are generally located close to shore where they can be readily taken by motorized vessels towing trawl nets over the bottom. There are several kinds of interference with the small-scale fishermen. In some cases, there is conflict over the resources, either in terms of competition for the shrimp or because of the effects of trawling on other species harvested by the small-scale fishermen. Spatial conflict occurs when the mobile trawlers move through and sometimes damage the stationary gear set by these fishermen. These conflicts have at times become sufficiently severe to result in killings and the burning and destruction of vessels.

Some countries are attempting to resolve such conflicts: in many, there are bans against trawling in inshore waters but a lack of enforcement capability generally renders these measures ineffective. In the case of Indonesia, the conflicts became so severe that *all* trawling has been banned from the western two-thirds of the country, thereby easing the task of enforcement.

More recent sources of distress for the small-scale fishermen are the damages to the environment of the coastal zone (see Box 15). Small-scale fishermen generally have limited mobility and cannot easily escape the damages to the stocks or impediments (e.g. siltation) in access to the sea.

The poverty of the small-scale fishermen, however, is only partially inherent to the sector. In many situations it may be more the consequence of a lack of satisfactory use rights than an indication of fundamental inefficiency in the enterprise. Small-scale fisheries in developing countries have certain economic and social advantages over large-scale operations: they make less use of capital, particularly imported elements; they use less fuel; they generally use more selective gear; they are based in rural areas; and they produce food for the domestic market rather than for export.

These advantages were largely neglected, if not harmed, by former development assistance programmes supporting the construction of large vessels which encroached on grounds fished by the small-scale sector. This is recognized in a number of evaluations undertaken by development agencies during the 1980s, which generally noted the high rate of failure of fishery development projects. The AsDB, the World Bank and the UNDP have all called for the redirection of support towards the small-scale sector based on an improved understanding of the social and economic characteristics of small-scale fishing communities.

A significant opportunity for improving the welfare of small-scale fishermen can be found in work of the past decade on community-based approaches to the management of common property resources. There are other natural resources besides fisheries for which exclusive use rights are imperfect, including grazing land, forest land and water supplies. There is a growing body of knowledge showing that many of these resources have been managed effectively by communities of users under traditional rules. Although many of these systems have broken down as a result of development activities and the advent of market forces, some still exist and some have been rehabilitated.

There are several advantages to these traditional systems. Local knowledge of the resources is generally superior to that of the central authorities. Local dependence on the resources is strong. The systems provide a sense of tenure security over the resources and an incentive to manage them so as to ensure the continued flow of benefits. The systems include techniques for controlling access and sharing benefits within the community — techniques that have generally been adopted as a means to preserve community stability.

These advantages have encouraged fishery administrators to explore the possibilities of supporting community approaches to management. In the Philippines, the government has transferred jurisdiction over coastal fisheries to the local municipal governments and initiated programmes to provide fishing communities with authority over adjacent resources (see Box 15). In Thailand, some communities are experimenting with artificial reefs which are intended not only as a means for aggregating fish but also to provide physical barriers to illegal trawling. In the

Solomon Islands, traditional territorial use rights systems are protected by legislation.

Territorial use rights in fisheries (TURFs) are not feasible in all situations and they face a number of difficulties in implementation. Nevertheless, together with other forms of exclusive fishing rights systems, TURFs appear to offer the greatest hope for the effective management of small-scale fisheries and improvement in the communities' welfare.

FISHERIES MANAGEMENT

It is abundantly clear that marine fishery resources offer an opportunity for making major contributions to the growth of national economies as well as to the world's food supply. It is also clear that these opportunities have not been realized during the past decade and that, although there are signs that the process is improving, the situation is generally worse than it was ten years ago. Economic waste has reached major proportions; there has been a general increase in resource depletion, as fishing efforts have moved down the food chain; the marine environment has become increasingly degraded; conflicts have become more

BOX 15

Combating resource depletion through community participation in the Philippines

Fisheries is one of the fastest-growing sectors in the Philippines. The value of fish production grew by more than 16 percent per year during the 1980s, making the Philippines the twelfth largest fish producer in the world and the fifth largest for aquaculture. With more than 7 000 islands, the country's marine area is approximately seven times larger than its land area. Marine waters cover 220 million ha, including its 200-mile EEZ and more than 18 million ha of continental shelf.

By 1990, the value of Philippine fisheries production was more than $2 billion, accounting for 5 percent of GNP, 5 percent of foreign exchange earnings and around 25 percent of total agricultural export value. Fish products provide half the annual animal protein available to Filipinos. Over one million people, 80 percent of whom live below the poverty line, are employed in the sector. In addition, nearly 100 000 Filipinos are employed in ship building and repairs, equipment manufacturing, net rope making, ice plants and cold storage, processing, sales and distribution.

Unfortunately, population pressure and the dramatic growth in fishing effort are depleting and damaging marine and coastal resources. Illegal fishing activities, including dynamiting, poisoning and fishing with fine-meshed nets, are destroying coral reefs and fish populations. Unsound agricultural practices, watershed mismanagement, illegal logging, mangrove destruction and domestic, industrial and solid waste pollutants are rapidly degrading inland and coastal fish habitats.

The Philippine Government reports that 70 percent of the 27 000 km^2 of coral reef resources have been subjected to major damage — coral reef fisheries account for 20 percent of capture fish production. Estimates suggest that there are less than 25 percent of the original mangrove forests remaining (mangroves are vital to marine ecosystems).

The case of Panguil Bay

In an attempt to combat problems resulting from environmental degradation, resource depletion, low productivity and poverty, the Philippine Government, supported by the AsDB and the Overseas Cooperation Fund of Japan, established the Fisheries Sector Programme (FSP) in October 1989. The FSP has identified 12 priority bays to improve coastal resource management (CRM) and address the

widespread; and the plight of the small-scale fishermen has intensified.

The effective management of fisheries is essential. It requires a fundamental institutional change, entailing the creation of forms of use rights to the resources: licensing programmes; systems that provide individual quotas of total allowable catch or total revenue; or territorial use rights. Exclusive use rights are a basic ingredient of effective management. Wherever the open access condition is maintained, the result will be economic waste, depletion and conflict.

Effective management also requires a shift in the treatment of fishery resources away from physical quantities considered as free goods towards economic resources with a specific value. This shift will occur when exclusive use rights are in place, so it is important to establish the concept of resource valuation as soon as possible. The absence of fishery resource valuations is a primary source of misallocation among different fisheries and different uses. Where the resources are valueless and there is conflict between different uses (for example, between those who fish the predator species and those who fish the prey), there is no market mechanism for determining the most appropriate mix of uses.

This is also true in situations where commercial and non-commercial uses are in conflict, such as those between tuna purse

social, economic and environmental problems facing the fisheries sector. Panguil Bay, in Mindanao in the southern Philippines, is one of the three pilot bays where work began in 1990.

The Panguil Bay area is approximately 18 500 ha, with a coastline spanning 116 km and a coastal population of 450 000 inhabitants. The bay is the source of some of the most valuable species of shrimp and crustaceans in the Philippines. About 47 rivers and tributaries flow into the bay. Mangrove destruction and overfishing have contributed heavily to the decline of this copious resource base during the past decade. Less than one-third of the mangrove forests remain and recent studies report that, while fishing boats in the bay doubled between 1985 and 1991, the total catch dropped by 75 percent. By 1991, the average catch had fallen to 1.8 kg per day per fisherman, or the equivalent of $2.50 per day.

Panguil Bay's CRM component is addressing these problems through site-specific planning and implementation with the combined participation of local governments, NGOs and fishing associations. Project officials maintain that success of the CRM depends on local community involvement. For example, the decentralization, training and involvement of local law enforcement is credited with an impressive record in 1990: local forces confiscated or destroyed about 1 600 filter nets, apprehended more than 60 violators, seized 30 scissor nets and uprooted more than 200 net posts in Panguil Bay.

In addition to communities enforcing regulations aimed at protecting their resources, local fishing associations are constructing, protecting and managing artificial reef sites in the mouth of the bay to replace coral reefs destroyed by dynamite fishing. Some municipalities and communities are developing territorial use rights in fisheries, delineating zones for specific fishing gears and establishing areas for seaweed, mussel and oyster cultivation.

Coastal inhabitants are reforesting 600 ha of open mud-flats through community-based contracts. Individual families are receiving certificates of stewardship to increase land tenure security and use rights to both these reforested mangrove forests and existing forests.

At the same time, mangrove zoning is resulting in commercial production zones, buffer zones, limited use zones and strict nature reserves to improve management of the mangrove resources.

seiners and people who wish to prevent porpoise mortality. A market for the resources would facilitate the resolution of conflicts on the basis of the amount the parties would be willing to pay to protect their interests. But in the absence of a market, decisions are made on an arbitrary basis, unrelated to the relative values of the different uses. There is no compensatory mechanism that would allow non-commercial users to reimburse the commercial users for relinquishing their rights to fish.

These steps constitute major changes which are difficult to make, largely because they initially involve decisions on the distribution of wealth. The creation of exclusive use rights, by definition, means that some acquire the rights while others are excluded. Where such exclusion affects employment and vested interests, political decisions become more difficult.

Nevertheless, the cost of maintaining the status quo is being increasingly understood. Increasing attention is being given to the malaise of fisheries and to the need for change. Several countries have already taken the necessary steps and implemented controls over access. Although these systems may contain imperfections, they nevertheless prove that it is possible to increase the contributions of fisheries to national economies and to reduce economic waste. As contained in the Declaration of Cancún: "[May] the next ten years be declared the decade of responsible fishing, so that by the turn of the century, the rich opportunities afforded by fishery resources will begin to be realized."[21]

It may be possible to expedite the rate of change. For the large-scale industrial fisheries where the proportion of global waste is so large (in both developed and developing countries), several policy changes may facilitate the process. The first is to remove the existing subsidies which exacerbate the waste and increase the impediments to change. The second parallel step would be to create use rights and allow the fishing effort to adapt to sustainable levels. The third step would be to allow the real prices of fish to increase, thereby improving the earnings of the fishermen so that they would have greater flexibility in adapting to the necessary management measures. Finally, national governments can begin to extract some of the rents and use them not only to help cover the costs of management but also to establish funds for the purpose of buying superfluous capital and labour and eventually achieving rationalized fisheries.

For countries with artisanal fisheries and where overfishing exists, the process may be more difficult because of the effects of the measures on employment. At the same time it would be facilitated because artisanal fishermen are generally less mobile. In these situations, the first step might be to transfer management authority to local levels and increase the participation of fishermen in management decisions. This approach might lead to the provision of territorial use rights to small-scale fishing communities, which would allow them to make their own decisions with regard to the protection of employment opportunities or the enhancement of economic rents. Another important step would be to remove the subsidies that currently support the industrial fleet and to eschew the adoption of new subsidies. Instead, such assistance should be devoted to creating alternative employment opportunities in the services sector of the fishing industry.

National governments are responsible for taking the necessary decisions. There is, however, a role for international agencies. One function would be to increase the analysis of different management systems throughout the world. The systems should be analysed with regard to the factors that facilitate, as well as those that impede, effective management. Conditions that allow management measures to be put into effect need to be identified and alternative approaches evaluated.

Developing countries face additional constraints because of shrinking national resources. Debt repayment problems, fiscal restraints, reduced development assistance and structural adjustment programmes are forcing governments to make difficult choices.

During the 1980s, many developing countries adopted structural adjustment programmes which resulted in significant shifts in economic policies and, consequently, in employment, consumption and production patterns. For fisheries, reduced public spending for production subsidies may improve resource efficiency over the long term, but spending on research administration and training has been reduced, resulting in government inability to address the sector's problems properly. In addition, governments must maintain a strong

[21] International Conference on Responsible Fishing, Cancún, Mexico, 6-8 May 1992.

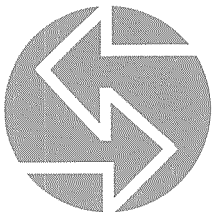
role in establishing policies to improve planning, management and development of the fisheries sector. As it stands now, with subsidies in the developed countries and SAPs limiting government spending in the developing countries, the competition is unequal.

Information on management measures needs to be widely distributed so that experiences can be shared and individual countries can determine what might work best for them.

Training and education programmes on fisheries management need to be established or strengthened, not only for fisheries administrators but also for fishermen's groups which may be expected to take on increasing management responsibilities.

There is also a strong need for improving economic and social information on fisheries. This need requires analyses of the costs and benefits of collecting the information and the identification and formulation of cost-effective approaches. Training and education on economic and social data collection are also necessary.

Such activities are not particularly costly but they do require a shift in priorities and emphasis away from the traditional ways of doing business — which simply encouraged fishing effort — towards new approaches designed to meet the pressing challenge for effective fisheries management.



MARINE FISHERIES AND THE LAW OF THE SEA: A DECADE OF CHANGE

IV. Appendix 1

FISHING COST METHODOLOGY

The basis for the cost estimates for the construction of larger fishing vessels (Table 24) can be considered fairly reliable, since information on new construction is available at shipyards. The prices refer to vessels of different length and it has been necessary to convert them to tonnage classes for the purpose of this exercise. Average unit values for the different tonnage classes have been derived from cost information on new construction, by size and type of vessel within each class. The resulting estimate of the replacement costs of the global fishing fleet are shown in Table 25. For the three million vessels included in the calculation, the estimated cost to replace these vessels at 1989 prices is approximately $320 billion.

In order to calculate operating costs for these vessels, the replacement value is considered to be the "best" measure. Without knowledge of the age structure of the fleet, the use of depreciation rate formulas may not be realistic and cannot be cross-referenced. The use of market value as the basis for the estimate would incur the same risk, while the insured value would cover only a percentage of the fleet. The following operating costs have therefore been derived on the basis of percentages of actual replacement values.

Tables 26 and 27 provide annual cost estimates for maintenance and repairs, insurance, supplies and gear and fuel. The preponderance of these costs are borne by vessels of more than 100 GRT, most of which are insured and subject to regular surveys, especially in class vessels.[22] The total annual costs for routine maintenance ($30 billion) may appear to be high, but these should be viewed against insurance costs whereby a good

[22] "In class" refers to vessels that are certified by an international classification society.

TABLE 24

Cost of representative fishing vessels

Vessel type	Length	Material	Cost in 1988
	(m)		*(...$'000...)*
Super trawler	100	Steel	80 000
Tuna seiner	65	Steel	15 000
Freezer trawler	50	Steel	11 000
Purse seiner	45	Steel	5 800
Stern trawler	35	Steel	4 200
Scottish seiner	25	Steel	2 250
Scottish seiner	23	Wood	1 900
Shrimp trawler	25	Steel	900
Shrimp trawler	23	FRP[1]	700
Gillnetter	15	FRP[1]	600
Trawler	13	Ferrocement	350
Fast potter	10	FRP[1]	120
Pirogue (inboard engine)	10	Wood	4

[1] Fibre-reinforced plastic.
Source: FAO. 1988. Fishing technology, fisheries resources and future demand. In *Report of the FAO World Symposium on Fishing Gear and Fishing Vessel Design*. Rome, FAO.

TABLE 25

Replacement costs of global marine fishing fleet

Vessel tonnage class	Number of vessels	Average replacement cost	Total replacement cost
		1989	
(.....GRT.....)		*($ '000)*	*($ million)*
>1 000	3 010	40 000	120 400
500-999.9	2 100	8 000	16 800
100-499.9	30 600	3 000	91 800
<100, decked	1 100 000	80	88 000
<100, undecked	2 100 000	1	2 100
TOTAL	3 235 710	51 081	319 100

Source: FAO.

TABLE 26a

Maintenance costs

Vessel tonnage class	Average replacement value in 1989	Annual maintenance and repair costs as % of replacement costs	Annual maintenance and repair costs
(.....GRT.....)	($ million)	(...%...)	($ million)
>1 000	120 400	7.5	9 030
500-999.9	16 800	4.0	1 512
100-499.9	91 800	10.5	9 639
<100, decked	88 000	11.25	9 900
<100, undecked	2 100	6.0	126
TOTAL	319 100		30 207

TABLE 26b

Insurance costs

Vessel tonnage class	Actual replacement value in 1989	Insurance as % of actual replacement value	Annual insurance costs
(.....GRT.....)	($ million)	(...%...)	($ million)
>1 000	120 400	1.625	1 956.5
500-999.9	16 800	2.275	382.2
100-499.9	91 800	2.275	2 088.5
<100, decked	88 000	3.0	2 640.0
<100, undecked	2 100	6.0	126.0
TOTAL	319 100		7 193.2

maintenance record is necessary to attract reasonable insurance premiums. The $7 billion estimate of insurance costs shown in Table 26 represents percentages of actual replacement value. Costs of supplies and gear are estimated to be $18.5 billion.

Fuel costs in Table 27 have been derived on the basis of estimated number of days at sea (column 2); the specific fuel consumption in grammes per b.h.p. per hour (column 3); and the estimated percentage of 24 hours during which the fuel power rating is applied (column 5) by vessel tonnage class. The estimated annual fuel consumption per vessel in each tonnage class is determined by multiplying columns 2, 3, 4 and 5 by 24 hours and dividing by 1 000 to convert to tonnes of fuel.

TABLE 26c

Supplies and gear costs

Vessel tonnage class	Actual replacement cost in 1989	Annual cost of supplies and gear as % of replacement costs	Annual cost of supplies and gear
(.....GRT.....)	($ million)	(...%...)	($ million)
>1 000	120 400	0.015	1 806
500-999.9	16 800	0.040	672
100-499.9	91 800	0.060	5 508
<100 decked	88 000	0.110	9 680
<100, undecked	2 100	0.400	840
TOTAL	319 100		18 506

Source: FAO.

TABLE 27

Fuel cost estimates

Vessel tonnage class	Days at sea	Specific fuel consumption[1]	Installed h.p.	Operational constant[2]	Number of vessels	Fuel consumption		Fuel costs		Actual replacent value
						Per vessel	Per tonnage class	Per tonne	Per year	
(.....GRT.....)						(.....Tonnes.....)		(...$...)	($ million...)	(...%...)
>1 000	250	0.16	3 000	0.60	3 010	1 728	5 201 280	300[3]	1 560	1.3
500-1 000	250	0.16	2 000	0.60	2 100	1 152	2 419 200	"	725.7	2.3
100-500	220	0.18	800	0.55	30 600	418	12 796 185	"	3 835.8	2.4
<100, decked	180	0.20	50	0.40	1 100 000	1 728	190 008 000	"	5 770.0	15.2
<100, undecked	180	0.20	20	0.20	2 100 000	3 455	7 257 600	" [4]	2 177.1	100
							46 687 265		14 068.6	

[1] Grammes per b.h.p. per hour.
[2] Estimated percentage of 24 hours during which the fuel power rating is applied.
[3] Large vessels using bunker oil would have a lower cost per tonne ($150 to $200).
[4] Small vessels usually pay higher costs (no duty free) for diesel ($350 to $400) and even higher costs for petrol.

TABLE 28a

Estimated labour costs based on earnings per employee per year

Vessel tonnage class	Number of vessels	Number of crew per vessel	Total number of crew	Estimated earnings per employee	Total labour costs
(.....GRT.....)				(.....$.....)	($ million)
>1 000	3 010	60	180 600	15 000	2 709
500-999.9	2 100	40	84 000	15 000	1 260
100-499.9	30 600	30	918 000	8 000	7 344
<100, decked	1 100 000	5	5 500 000	1 500	8 250
<100, undecked	2 100 000	3	6 300 000	500	3 150
TOTAL	3 235 710		12 982 600		22 713

Source: FAO.

TABLE 28b

Estimated labour costs as percentage of actual replacement value

Vessel tonnage class	Actual replacement value	Labour costs as % of actual replacement value	Total labour costs
(.....GRT.....)	($' 000)	(...%...)	($' 000)
>1 000	120 400	2.2	2 649
500-999.9	16 800	7.5	1 260
100-499.9	91 800	8.0	7 344
<100, decked	88 000	9.3	8 184
<100, undecked	2 100	150	3 150
TOTAL	319 100		22 587

Source: FAO.

TABLE 29

Fishing costs as percentage of total landed value of catch[1]

Cost	Estimated annual cost
	(Percentage share)
Maintenance and repairs	42
Supplies and gear	26
Insurance	10
Fuel	20
TOTAL (of above operating costs)	98
Capital	45
Labour	31

[1] $70 billion.
Source: FAO.

The total estimated fuel cost is $14 billion and is within the range estimated by an energy optimization working group. It should be noted that the number of days at sea (column 2) and the operational factor (column 5) are the key variables for this calculation.

The estimated annual total costs for maintenance and repairs, insurance, supplies and gear and fuel are $69.5 billion.

With the exception of the large corporate-owned vessels operating bonus schemes, the common practice in fishing is to use the gross revenue as the basis for determining the return to capital and labour. This is done on a share basis. Either the ratio of an equal split between capital and labour, whereby the capital share pays the operational costs; or on a ratio calculated by deducting the operational costs from the gross revenue and dividing the remainder on an agreed split between the boat share (capital) and the labour share.

From the following discussion, the gross revenue to the fleet in terms of estimated value of the global landed catch is shown to be approximately $70 billion. This, compared with the $69.5 billion in operating costs given above, leaves a margin of $500 million for capital and labour.

With such a small margin, the common practice of using the gross revenue minus operating costs as the basis for determining returns to capital and labour cannot be followed for estimating labour's share. The alternative is to calculate crew costs as a percentage of actual replacement value. This is shown in Table 28a and results in an estimated cost of $22.7 billion for the 13 million fishing crews. This estimate can be compared with the results given in Table

28b, where the total labour costs are derived on the basis of numbers of crew per vessel and likely earnings per caput for a total labour cost of about $23 billion.

The annual operating deficit for the world's fleet would now stand at about $22 billion. Although this figure may appear to be exceptionally large, a cross-reference of the costs shows that the estimates are conservative. The calculation of 13 million crew members is an underestimate of the actual number, given that a significant number are not recorded.

The cost of $7 billion for insurance is approximately 2 percent of the actual replacement value of the fleet.

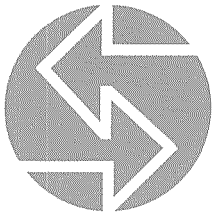
The fuel consumption for the fleet is estimated to be 46.7 million tonnes for a total marine catch of 85 million tonnes, which translates into a catch of 1.8 tonnes per tonne of fuel.

On the basis of the average price per tonne of fish ($600), the above ratio becomes $1 080 for every tonne of fuel (at $300 per tonne). The estimates from alternative approaches appear to confirm that the costs and revenues are on the conservative side.

A large cost in fishing is debt servicing, which has not been included. In many cases it is this item that places the fishing vessel in financial difficulties, yet estimates of the actual cost are not available. Some debt servicing costs can be at preferentially low rates, particularly those provided through international financial institutions and bilateral assistance whereas, in most cases, debt servicing charges are set no lower than commercial rates.

With a replacement value of $320 billion, the return to capital would at the least be equal to opportunity costs which, since there are limited opportunities for converting fishing vessels to other uses, may be lower than in other maritime practices. For this exercise, they have been set at 10 percent. The resulting costs for the fleet would increase by $32 billion for a deficit of about $54 billion. An allocation of 17 percent of revenues is normally required as a minimum to cover debt servicing, depreciation and profit margins.

The total annual operating costs (excluding labour) of the global fishing fleet, $69.5 billion, are estimated to almost equal the gross revenue, $70 billion. The opportunity costs of fisheries capital alone is in the order of 45 percent of the gross revenue (Table 29). Labour cost estimates are 31 percent of the gross revenue. The percentage of operating costs, by category, of the total gross revenue of $70 billion are also presented.



MARINE FISHERIES AND THE LAW OF THE SEA: A DECADE OF CHANGE

V. Appendix 2
FISHERIES STATISTICS

TABLE 30

Eastern central Atlantic catch by coastal distant-water states

Year	Coastal developing states	Former USSR	Spain	Other distant-water states	All countries
	(*Tonnes*)				
1970	814 181	612 729	224 545	791 056	2 442 511
1971	897 373	790 440	223 381	833 554	2 744 748
1972	985 287	849 405	243 748	857 061	2 935 501
1973	1 079 282	943 367	373 263	773 278	3 169 190
1974	1 023 266	1 145 974	413 605	730 668	3 313 513
1975	1 026 651	1 165 972	382 427	768 073	3 343 123
1976	1 042 433	1 315 543	408 112	623 862	3 389 950
1977	1 079 761	1 134 433	440 288	932 632	3 587 114
1978	1 144 232	769 500	485 414	635 556	3 034 702
1979	1 117 329	526 011	370 543	542 978	2 556 861
1980	1 142 958	942 334	448 841	839 681	3 373 814
1981	1 253 953	780 597	406 735	586 503	3 027 788
1982	1 242 635	955 801	415 314	438 208	3 051 958
1983	1 401 704	935 833	386 986	331 804	3 056 327
1984	1 404 434	662 736	372 035	249 097	2 688 302
1985	1 454 896	708 120	383 362	294 157	2 840 535
1986	1 621 130	854 177	268 776	278 803	3 022 886
1987	1 578 559	1 062 954	201 413	347 213	3 190 139
1988	1 616 997	1 395 028	192 707	329 080	3 533 812
1989	1 590 932	1 629 005	173 031	308 737	3 701 705

Note: FAO is credited as the source for all fishery statistics presented in this appendix.

TABLE 31

Southeast Atlantic catch by state

Year	Coastal states	Former USSR	Spain	Other distant-water states	Total
	(Tonnes)				
1970	1 664 701	422 200	246 000	186 073	2 518 974
1971	1 564 622	438 600	223 600	239 186	2 466 008
1972	1 833 210	719 800	201 500	266 094	3 020 604
1973	1 982 209	648 600	211 900	336 213	3 178 922
1974	1 922 236	447 480	157 987	309 226	2 836 929
1975	1 618 716	420 734	199 891	346 844	2 586 185
1976	1 334 897	841 250	202 964	393 616	2 772 727
1977	1 162 861	1 047 226	175 935	409 553	2 795 575
1978	1 165 964	1 496 362	161 265	474 029	3 297 620
1979	1 126 491	850 664	146 861	439 163	2 563 179
1980	957 954	825 208	128 132	283 222	2 194 516
1981	1 010 296	904 000	193 995	311 978	2 420 269
1982	947 934	887 840	188 623	360 602	2 384 999
1983	1 058 662	631 459	176 505	482 328	2 348 954
1984	833 862	702 998	163 094	466 503	2 166 457
1985	876 348	697 944	188 054	363 888	2 126 234
1986	904 860	679 222	199 451	363 767	2 147 300
1987	1 554 488	670 462	195 596	328 063	2 748 609
1988	1 444 633	634 559	192 559	249 475	2 521 226
1989	1 020 006	654 283	195 638	246 984	2 116 911

TABLE 32

Northeast Pacific catch by six major states

Year	United States	Japan	Former USSR	Canada	Korea, Rep.	Poland
	(Tonnes)					
1970	396 600	1 390 800	739 500	116 700	0	0
1971	350 900	1 188 000	656 000	112 800	0	0
1972	358 500	1 358 300	869 200	161 800	0	0
1973	366 900	964 100	379 800	183 200	0	2 400
1974	360 832	1 087 273	697 700	141 124	0	44 651
1975	352 613	1 113 803	572 597	132 965	3 267	58 738
1976	443 278	1 105 067	496 704	180 880	109 171	30 714
1977	481 875	808 695	185 120	204 317	64 143	24 509
1978	516 375	765 928	248 834	200 581	116 565	29 372
1979	593 507	846 221	210 259	159 803	119 713	63 972
1980	653 674	813 374	59 208	143 451	182 246	115 954
1981	806 594	936 527	2 589	183 127	265 870	159 942
1982	845 010	859 539	3 300	157 835	260 679	9 971
1983	1 017 703	801 630	2 400	191 540	362 757	13 805
1984	1 270 603	722 030	22 816	169 160	399 541	81 185
1985	1 614 024	551 548	10 971	214 732	399 147	91 675
1986	2 035 720	329 120	8 998	219 420	518 438	93 245
1987	2 571 670	218 331	11 202	247 228	320 129	58 842
1988	2 811 564	53 945	12 109	260 890	135 245	44 798
1989	2 786 566	46 578	12 869	265 431	140 143	19 284

TABLE 33

Squid: areas of increasing catch

Year	Southwest Atlantic	Southwest Pacific	Eastern central Pacific	Western Indian Ocean	Eastern Indian Ocean	Northeast Pacific	Total in selected areas
	(Tonnes)						
1970	1 300	0	11 300	6 600	700	0	19 900
1971	1 800	0	14 400	8 500	400	0	25 100
1972	1 800	100	9 300	11 100	300	200	22 800
1973	4 100	15 500	5 600	11 100	400	400	37 100
1974	5 000	24 626	13 203	13 089	1 010	251	57 179
1975	4 652	19 791	11 099	13 895	2 614	627	52 678
1976	8 266	19 692	10 126	16 658	2 076	453	57 271
1977	2 632	55 460	9 462	21 719	10 488	3 444	103 205
1978	72 469	36 786	18 600	18 586	10 536	3 356	160 333
1979	121 661	51 180	21 115	24 109	22 962	2 115	243 142
1980	29 787	114 330	30 532	19 040	16 588	2 310	212 587
1981	52 814	94 074	31 995	11 523	18 453	6 712	215 571
1982	207 194	110 978	19 432	12 336	18 692	23 171	391 803
1983	203 876	106 485	15 875	11 399	20 463	34 162	392 260
1984	249 976	149 711	17 518	20 129	27 726	31 531	496 591
1985	267 705	121 907	24 317	24 104	22 958	45 152	506 143
1986	348 931	99 932	34 872	24 839	28 216	41 445	578 235
1987	738 586	110 996	67 569	31 410	40 678	55 279	1 044 518
1988	678 885	101 275	75 673	40 880	47 716	47 848	992 277
1989	734 356	156 622	63 219	59 345	51 524	41 700	1 106 766

TABLE 34

Squid: eastern central Atlantic catch by state

Year	Japan	Korea, Rep.	Mauritania	Morocco	Spain	Former USSR	Total eastern central Atlantic
	(Tonnes)						
1970	5 000	0	400	1 700	7 400	1 400	15 900
1971	5 100	2 800	400	1 100	7 400	2 800	19 600
1972	4 300	2 000	100	1 100	12 900	5 100	25 500
1973	4 100	4 700	100	2 400	17 900	4 100	33 300
1974	5 965	20 468	100	3 864	26 581	7 100	64 078
1975	1 152	18 277	1 460	1 040	18 257	598	40 784
1976	389	19 707	1 865	1 076	8 615	525	32 177
1977	472	9 148	2 373	1 040	1 429	1 607	16 069
1978	343	7 388	2 430	909	14 830	736	26 636
1979	170	19 706	543	715	11 197	264	32 595
1980	6	13 919	500	2 101	7 606	611	24 743
1981	1 050	17 922	865	4 307	6 422	508	31 074
1982	0	2 919	417	2 369	6 950	2 578	15 233
1983	0	3 099	300	2 746	6 630	377	13 152
1984	0	1 213	184	3 316	732	608	6 053
1985	0	1 453	351	1 785	804	2 362	6 755
1986	0	1 457	499	2 139	439	5 889	10 423
1987	0	1 816	200	4 735	247	1 440	8 438
1988	0	3 139	98	5 092	233	3 266	11 828
1989	0	3 182	702	5 348	199	622	10 053
TOTAL	28 047	154 313	13 887	48 882	156 771	42 491	444 391

TABLE 35

Western Indian Ocean tuna catch by France and Spain

Year	France		Spain	
	Skipjack tuna	Yellowfin tuna	Skipjack tuna	Yellowfin tuna
	(Tonnes)			
1980	0	0	0	0
1981	210	260	179	363
1982	771	1 224	14	55
1983	10 075	10 773	0	0
1984	25 517	33 611	8 079	13 796
1985	33 084	32 231	22 854	15 411
1986	40 363	35 519	24 877	17 532
1987	48 765	37 118	35 399	20 361
1988	45 169	54 149	52 863	43 159
1989	43 082	38 411	77 632	33 852

TABLE 36

Southwest Atlantic catch by coastal distant-water states

Year	Brazil	Argentina	Uruguay	Poland	Japan	Former USSR	Taiwan, Province of China	Korea, Rep.	Spain
	(Tonnes)								
1970	480 140	208 600	13 200	0	13 800	9 700	9 743	0	0
1971	525 458	222 306	14 400	0	1 900	9 100	7 738	0	0
1972	542 518	231 100	20 600	0	4 800	2 100	7 192	0	0
1973	675 843	293 987	17 500	0	500	5 700	7 961	0	0
1974	546 908	285 784	15 700	0	87	8 400	11 071	0	0
1975	579 099	217 141	26 088	0	386	8 684	6 247	2 711	0
1976	515 446	272 347	33 625	579	1	9 710	6 118	2 689	0
1977	563 210	393 275	48 053	2 659	184	27 940	4 647	10 559	0
1978	583 763	527 194	73 827	21 035	20 773	0	6 949	6 827	0
1979	656 241	566 893	107 592	73 932	20 368	2 166	5 562	5 170	0
1980	618 562	391 604	120 087	93 186	12 481	27 710	6 719	1 877	0
1981	611 454	365 088	146 653	73 263	22 299	17 200	6 727	4 031	0
1982	619 463	472 720	118 805	247 601	40 340	19 040	6 398	1 968	0
1983	670 556	413 470	143 361	347 857	30 260	66 050	3 237	1 806	16 000
1984	742 828	313 006	132 549	218 710	69 680	58 033	3 163	4 728	13 000
1985	755 719	409 711	137 584	190 127	79 015	70 873	6 368	15 612	9 200
1986	717 289	417 658	139 993	167 688	130 032	77 121	51 826	58 144	58 518
1987	701 628	554 069	136 683	165 180	297 070	168 490	137 323	100 303	61 109
1988	624 313	484 973	107 145	130 883	288 654	259 773	149 267	104 325	84 460
1989	639 997	477 800	121 356	106 732	203 651	282 337	148 581	105 885	82 652

TABLE 37

Northwest Atlantic catch by coastal distant-water states

Year	Coastal states	Former USSR	Spain	Poland	Other distant-water states
	(Tonnes)				
1970	2 240 242	812 400	280 400	216 400	650 982
1971	2 127 382	1 021 600	270 600	269 400	671 480
1972	2 034 177	1 150 000	236 600	267 100	626 423
1973	2 015 218	1 357 300	180 700	255 100	659 993
1974	1 894 253	1 157 033	183 716	215 142	568 236
1975	1 831 986	1 166 927	121 751	187 647	497 921
1976	1 940 381	852 681	72 062	125 488	422 739
1977	2 155 429	432 744	49 518	49 520	325 554
1978	2 346 044	207 681	35 791	18 126	204 299
1979	2 532 199	125 193	40 792	20 621	253 105
1980	2 587 764	108 288	39 728	4 619	155 266
1981	2 566 402	113 951	49 445	9 575	118 851
1982	2 532 957	109 185	36 761	6 919	145 984
1983	2 484 147	85 101	31 825	13 627	119 572
1984	2 441 070	128 827	37 192	9 128	142 042
1985	2 528 904	133 378	66 199	7 892	160 216
1986	2 512 363	147 681	83 756	7 125	238 387
1987	2 660 704	152 324	83 194	7 623	220 355
1988	2 683 150	149 637	63 686	11 880	157 807
1989	2 713 613	155 429	63 538	9 329	182 229

TABLE 38

Southwest Atlantic catch of cephalopods and other fish by distant-water states

Year	Cephalopods	Other fish
	(Tonnes)	
1970	0	31 478
1971	0	17 904
1972	0	17 120
1973	0	13 348
1974	0	18 852
1975	0	17 240
1976	0	17 988
1977	102	40 935
1978	11 286	45 285
1979	30 124	79 073
1980	19 961	119 383
1981	39 107	82 850
1982	164 247	149 013
1983	171 580	292 894
1984	218 264	162 609
1985	245 831	159 956
1986	335 436	236 255
1987	686 140	275 531
1988	662 311	430 153
1989	706 379	288 690

TABLE 39

Change in total marine catch by 20 major states

Country	1970	1989
	(Tonnes)	
Canada	1 294 798	1 504 633
Chile	1 192 900	6 423 309
China	2 141 900	6 327 847
Denmark	1 215 100	1 900 502
Former USSR	6 364 429	10 279 024
Iceland	733 300	1 504 244
India	1 085 600	2 246 403
Indonesia	796 800	1 981 090
Japan	8 619 500	10 861 050
Korea, D.P. Rep.	447 000	1 600 000
Korea, Rep.	737 585	2 750 037
Mexico	337 085	1 236 225
Norway	2 906 270	1 899 465
Peru	12 481 200	6 815 290
Philippines	844 000	1 541 436
South Africa, Rep.	1 217 800	876 281
Spain	1 516 617	1 339 300
Taiwan, Province of China	586 400	1 215 849
Thailand	1 326 101	2 546 200
United States	2 728 300	5 447 920
TOTAL	48 572 685	70 296 105

TABLE 40

Catch by China, Peru and Chile

Year	China	Peru	Chile
	(Tonnes)		
1970	2 132 900	12 446 500	1 173 400
1971	2 394 100	10 478 900	1 454 300
1972	2 724 600	4 649 700	749 100
1973	2 715 000	2 238 200	633 100
1974	3 083 824	4 066 029	1 103 165
1975	3 165 200	3 366 731	871 701
1976	3 258 659	4 300 108	1 329 397
1977	3 375 532	2 447 403	1 278 823
1978	3 319 725	3 380 652	1 884 467
1979	2 910 734	3 554 001	2 591 949
1980	2 971 523	2 647 719	2 769 814
1981	2 971 831	2 645 851	3 401 909
1982	3 334 564	3 435 744	3 753 408
1983	3 322 945	1 485 847	4 063 597
1984	3 587 591	3 213 008	4 549 493
1985	3 798 126	3 993 512	4 846 888
1986	4 413 002	5 484 662	5 545 031
1987	5 116 529	4 473 917	4 771 970
1988	5 662 688	6 518 986	5 194 907
1989	6 185 891	6 727 957	6 449 032

TABLE 41

Republic of Korea: catch in distant waters

Year	Eastern central Atlantic	Western Indian Ocean	Southwest Pacific	Eastern central Pacific	Western central Pacific	Southwest Atlantic	Northeast Pacific
	(Tonnes)						
1970	23 050	0	0	0	0	0	0
1971	34 494	15 900	30 200	0	0	0	0
1972	36 445	20 500	40 400	0	0	0	0
1973	58 749	25 600	43 200	0	0	0	0
1974	67 706	37 486	43 986	0	0	0	0
1975	92 952	34 432	38 425	8 318	1 093	2 071	3 267
1976	102 252	29 612	24 889	28 807	15 561	2 305	109 047
1977	96 979	58 438	49 957	23 637	14 670	8 830	64 131
1978	93 004	60 096	43 124	12 150	15 454	6 165	116 279
1979	91 428	34 936	42 015	14 098	18 118	4 464	119 076
1980	78 179	31 979	27 515	11 055	15 120	1 801	180 920
1981	95 399	38 690	30 313	13 912	9 210	3 916	263 976
1982	84 444	48 120	33 785	18 542	14 142	1 721	259 259
1983	60 321	43 184	15 738	21 872	17 406	1 686	362 412
1984	44 282	30 884	17 435	21 636	16 411	3 339	394 449
1985	47 416	39 078	9 032	47 021	14 633	14 538	398 000
1986	43 702	50 476	8 557	55 433	29 719	53 646	517 880
1987	44 893	48 415	16 960	50 617	61 474	93 071	319 755
1988	29 031	50 224	19 592	45 196	82 291	100 035	133 562
1989	29 912	41 178	20 076	46 590	85 293	101 439	138 436

TABLE 42

Taiwan, Province of China: catch in distant waters

Year	Western central Pacific	Western Indian Ocean	Southeast Atlantic	Eastern Indian Ocean	Eastern central Pacific	Southwest Atlantic
	(Tonnes)					
1970	7 200	22 100	7 599	9 100	2 500	7 662
1971	6 031	9 106	14 616	2 531	2 100	6 425
1972	3 822	5 566	21 549	2 400	4 100	6 004
1973	3 222	3 564	17 815	2 065	6 300	6 327
1974	1 095	3 900	10 888	3 081	4 710	9 514
1975	825	1 865	13 042	1 575	8 374	5 100
1976	927	2 459	13 841	1 369	7 227	4 890
1977	6 510	10 968	15 697	7 002	11 762	3 958
1978	8 974	11 485	18 544	9 057	10 251	5 998
1979	7 748	15 468	19 475	8 341	9 817	3 541
1980	8 900	10 474	14 918	10 234	9 984	6 117
1981	5 150	18 492	12 804	9 513	7 796	5 875
1982	14 739	22 703	13 666	12 177	2 300	5 829
1983	19 823	20 493	6 812	17 403	3 831	2 837
1984	22 367	15 503	5 518	11 939	7 148	2 934
1985	32 735	13 790	12 982	11 648	8 957	5 992
1986	34 687	23 301	16 227	25 431	8 508	51 552
1987	43 977	25 733	9 228	17 936	9 660	136 523
1988	59 553	36 409	11 032	22 082	10 630	147 237
1989	69 565	31 266	9 074	22 213	12 500	146 357

TABLE 43

Japan: catch in distant waters

Year	Western central Pacific	Southwest Pacific	Eastern central Pacific	Southeast Atlantic	Southwest Atlantic	Eastern central Atlantic	Antarctic Atlantic	Northeast Pacific
	(Tonnes)							
1970	98 800	31 100	93 500	69 000	0	111 300	0	1 369 400
1971	122 200	48 100	75 500	103 000	0	89 700	0	1 178 900
1972	131 700	56 400	86 300	96 200	0	79 800	0	1 378 100
1973	159 500	59 700	83 700	114 500	0	86 200	59	941 400
1974	276 406	75 311	71 378	112 257	0	100 194	200	1 083 325
1975	198 338	66 696	66 759	116 812	218	66 020	0	1 110 216
1976	219 933	104 625	113 681	103 636	0	56 082	0	1 092 105
1977	238 203	161 451	120 140	91 142	155	57 266	0	801 431
1978	309 452	75 315	94 958	60 796	19 112	52 491	0	757 927
1979	231 831	74 661	114 133	57 808	19 587	38 014	0	835 409
1980	272 684	126 768	112 097	50 770	10 841	25 996	0	802 552
1981	248 880	128 195	123 021	51 902	20 037	36 840	3 751	924 469
1982	249 018	118 260	124 055	48 621	37 662	30 805	5 404	843 853
1983	289 478	121 258	112 623	40 402	28 342	14 561	5 498	790 530
1984	296 024	153 956	116 304	46 288	67 314	15 492	40 710	710 410
1985	171 021	141 683	217 482	38 283	69 205	15 879	31 304	541 270
1986	335 261	180 896	161 685	36 191	118 140	9 353	53 804	321 993
1987	310 911	231 707	179 951	33 068	271 784	11 275	74 309	214 366
1988	335 664	280 590	146 657	38 842	252 065	20 538	73 230	48 086
1989	308 433	272 351	141 984	31 234	184 733	18 999	79 024	41 700

TABLE 44

Japan: total marine catch and catch less pilchard

Year	Total marine catch	Catch less pilchard
	(Tonnes)	
1970	8 400 300	8 383 500
1971	8 966 300	8 908 900
1972	9 337 300	9 279 400
1973	9 683 659	9 386 759
1974	9 718 276	9 366 592
1975	9 522 682	8 996 635
1976	9 610 585	8 544 893
1977	9 692 435	8 271 923
1978	9 773 766	8 136 386
1979	9 582 422	7 842 256
1980	10 085 726	7 887 982
1981	10 331 268	7 241 957
1982	10 428 691	7 138 737
1983	10 846 336	7 101 188
1984	11 612 098	7 432 672
1985	10 970 576	7 103 648
1986	11 532 605	7 323 092
1987	11 362 470	7 000 445
1988	11 541 468	7 053 057
1989	10 045 000	6 367 000

TABLE 45

Former USSR: marine catch in nine major areas

Year	Northwest Pacific	Northeast Atlantic	Eastern central Atlantic	Southeast Atlantic	Northwest Atlantic	Southeast Pacific	Mediterranean and Black Sea	Northeast Pacific	Antarctic Atlantic
	(Tonnes)								
1970	1 393 000	1 566 300	609 500	419 100	807 000	0	297 900	727 200	410 900
1971	1 509 300	1 380 100	782 602	436 500	991 200	0	241 200	643 800	17 100
1972	1 397 200	1 267 700	839 107	718 300	1 128 900	33 600	258 600	862 100	2 500
1973	2 202 000	1 608 000	931 467	647 000	1 327 900	39 200	265 300	379 800	400
1974	2 316 300	1 985 125	1 130 553	445 851	1 138 111	0	348 800	697 600	26 200
1975	2 681 489	2 409 315	1 152 802	419 257	1 134 506	0	323 337	572 407	45 405
1976	2 732 886	2 545 847	1 302 115	840 418	819 955	0	343 413	496 618	29 341
1977	2 914 575	2 000 895	1 123 516	1 045 879	403 139	0	231 852	185 120	183 410
1978	3 011 839	1 735 138	747 766	1 484 548	197 939	54 019	360 430	247 456	205 846
1979	3 244 919	1 945 034	515 769	832 244	115 409	541 483	402 103	209 856	342 819
1980	3 177 328	2 008 438	935 176	816 550	100 962	551 495	473 073	59 181	424 049
1981	3 541 749	1 826 228	774 372	896 696	108 411	603 506	411 074	1 472	361 227
1982	3 965 730	1 448 496	947 187	874 914	109 012	606 747	503 358	3 300	452 214
1983	4 187 453	1 547 056	920 486	623 111	84 935	614 372	433 476	2 350	296 026
1984	5 419 426	1 386 018	656 312	691 982	128 375	604 642	467 873	22 811	172 640
1985	5 411 990	1 258 436	696 644	688 096	133 091	624 397	410 514	10 971	187 749
1986	5 777 985	1 019 254	840 856	669 636	147 617	710 891	480 640	8 998	396 826
1987	5 450 856	962 062	1 049 914	648 860	149 962	844 936	332 580	11 202	347 654
1988	5 301 018	801 928	1 379 070	622 570	149 217	944 690	434 873	12 109	353 583
1989	4 914 971	660 875	1 621 042	647 684	153 893	1 202 244	285 178	12 541	369 251

TABLE 46

Former USSR: Alaska pollack catch and other marine catch

Year	Alaska pollack	Other marine catch
	(Tonnes)	
1970	697 000	5 577 600
1971	861 900	5 405 102
1972	1 029 400	5 735 507
1973	1 339 200	6 303 767
1974	1 754 200	6 590 840
1975	1 958 116	6 996 526
1976	2 090 869	7 159 108
1977	1 975 140	6 288 429
1978	2 011 918	6 292 536
1979	2 048 833	6 197 314
1980	2 111 669	6 638 624
1981	2 137 875	6 630 032
1982	2 497 907	6 638 588
1983	2 747 044	6 184 037
1984	3 449 559	6 243 402
1985	3 343 034	6 216 497
1986	3 584 140	6 727 498
1987	3 421 719	6 723 312
1988	3 369 858	6 960 112
1989	3 133 152	7 039 120

TABLE 47

Norway: total marine catch by selected species groups

Year	Total cod and haddock	Atlantic mackerel	Total herring	Sand eel (sandlance)	Atlantic salmon	Other	Capelin
	(Tonnes)						
1970	825 000	278 800	368 100	600	1 000	107 307	1 301 000
1971	881 900	202 600	315 000	2 100	1 300	212 285	1 371 200
1972	922 600	159 800	309 900	18 800	1 800	145 736	1 556 400
1973	821 600	337 600	216 100	17 200	1 900	171 099	1 332 100
1974	906 803	287 806	117 037	77 968	2 001	145 764	1 030 158
1975	904 959	243 440	206 682	54 139	2 142	79 915	980 202
1976	898 633	212 119	150 587	44 408	2 530	73 161	1 972 289
1977	873 198	181 742	54 635	78 761	3 321	65 041	2 137 200
1978	911 581	92 897	122 252	93 971	4 357	73 451	1 280 630
1979	998 815	125 497	99 479	102 433	5 917	78 558	1 232 177
1980	862 994	76 920	94 675	148 444	5 875	88 471	1 118 069
1981	942 396	62 099	32 108	54 319	9 797	90 904	1 347 258
1982	1 023 693	74 069	71 434	47 738	11 782	107 680	1 152 945
1983	983 824	79 970	91 444	12 442	18 572	144 115	1 492 672
1984	998 571	142 538	173 456	30 291	23 236	140 210	945 567
1985	891 484	115 358	256 598	15 653	30 796	157 043	640 810
1986	870 810	156 749	335 297	87 675	46 160	130 758	272 632
1987	863 973	157 174	356 521	198 869	48 466	162 193	142 414
1988	783 618	162 139	350 722	191 653	81 380	180 081	72 671
1989	818 853	143 415	274 004	194 425	116 164	228 351	108 270

TABLE 48

United States: northeast Pacific whitefish catch[1]

Year	Pacific cod	North Pacific hake	Sablefish	Flatfish[2]	Pacific halibut	Yellowfin sole	Other
	(Tonnes)						
1970	1 300	4 100	1 600	15 100	15 600	0	17 500
1971	2 800	4 800	1 200	13 900	12 800	0	14 500
1972	4 800	1 900	4 200	19 700	11 600	0	17 200
1973	3 800	1 200	4 500	20 700	10 400	0	19 400
1974	4 542	2 382	4 125	21 210	8 407	0	15 906
1975	5 551	1 524	5 080	21 114	9 626	0	14 962
1976	5 870	1 911	4 302	22 860	8 231	0	19 483
1977	4 966	1 616	5 995	22 855	7 967	0	24 166
1978	4 952	3 138	7 754	19 999	7 926	0	22 507
1979	6 323	13 925	14 706	24 096	9 573	0	32 112
1980	8 923	5 438	7 609	20 422	8 603	0	43 826
1981	29 063	48 649	8 796	26 277	12 111	15 975	56 528
1982	45 938	74 589	16 888	35 358	14 296	17 414	62 337
1983	66 186	79 969	14 850	37 964	19 935	22 529	54 825
1984	90 950	85 582	21 247	42 659	21 652	33 025	73 262
1985	90 929	38 910	25 345	63 747	27 594	134 518	74 984
1986	113 390	93 253	35 789	81 695	35 195	152 312	78 779
1987	136 900	229 576	43 753	75 170	34 464	181 403	98 421
1988	232 729	142 907	46 369	148 181	36 939	218 793	80 178
1989	213 224	211 082	41 923	52 451	34 076	152 777	130 080

[1] Excluding Alaska pollack.
[2] Not elsewhere included.

TABLE 49

United States: total catch by group[1]

Year	Total Fish-meal fish	Total tuna	Total salmon	Total shrimp	Other	East coast whitefish	West coast whitefish	Alaska pollack (walleye pollack)
	(Tonnes)							
1970	993 900	214 000	186 000	163 900	198 800	260 300	55 200	200
1971	1 109 900	213 800	150 900	176 100	212 500	240 500	50 000	100
1972	1 034 400	241 300	105 200	174 500	229 900	228 400	59 400	100
1973	1 053 300	236 100	100 600	169 600	209 700	255 000	60 000	0
1974	1 074 370	252 591	91 388	165 277	232 356	248 788	56 572	57
1975	1 054 465	259 153	91 627	152 454	228 337	249 586	57 857	21
1976	1 140 975	301 039	140 649	183 304	245 794	254 201	62 657	229
1977	1 008 427	212 010	152 247	211 628	310 065	266 979	67 565	323
1978	1 283 794	251 428	183 475	186 842	330 377	291 175	66 276	1 765
1979	1 345 540	218 273	243 180	148 430	345 501	305 567	100 735	3 132
1980	1 337 029	225 886	278 422	157 651	382 182	321 513	94 821	1 409
1981	1 145 160	221 105	294 129	156 129	354 026	286 121	197 399	60 691
1982	1 411 553	198 193	275 522	132 191	333 175	268 636	266 820	130 365
1983	1 447 093	264 446	289 980	117 305	299 766	276 501	296 258	284 486
1984	1 416 299	264 165	313 622	133 065	302 943	261 572	368 377	455 149
1985	1 356 857	233 775	329 722	148 577	321 973	208 122	456 027	656 446
1986	1 199 949	251 126	298 696	175 889	350 058	201 906	590 413	963 271
1987	1 346 653	282 521	255 031	159 106	382 036	195 638	799 687	1 307 722
1988	1 123 811	272 843	256 443	146 103	414 020	186 214	906 096	1 396 849
1989	1 072 819	242 169	352 806	156 918	418 643	160 360	835 613	1 359 146

[1] Excluding clams.

TABLE 50

Eastern Europe: catch of nine major species

Year	Atlantic herring	Cape horse mackerel	Atlantic cod	Atlantic mackerel	Jack and horse mackerel[1]	Alaska pollack (walleye pollack)	European sprat	Southern blue whiting	European pilchard
	(Tonnes)								
1970	208 400	2 300	173 300	86 100	24 400	0	30 900	0	2 100
1971	205 600	6 200	123 800	225 700	28 500	0	51 700	0	4 800
1972	211 500	3 000	144 900	263 200	34 500	0	58 200	0	4 100
1973	245 000	10 500	124 700	249 000	46 300	0	68 400	0	19 900
1974	223 177	12 619	136 839	227 327	46 450	0	81 940	0	52 712
1975	225 243	48 748	144 481	198 191	51 716	631	94 956	0	137 386
1976	154 974	59 593	130 765	176 681	34 524	21	86 375	0	147 363
1977	122 791	100 118	77 194	32 366	75 991	1 376	79 366	2 057	206 345
1978	110 111	175 626	83 940	285	78 269	1 229	54 370	11 717	35 519
1979	129 409	167 442	105 135	180	103 152	40 356	33 697	35 870	3 387
1980	127 802	119 928	133 118	31	186 098	60 974	33 741	54 218	39 772
1981	120 648	196 369	135 656	4 480	154 070	92 889	32 446	48 419	10 000
1982	127 197	217 822	104 703	4 956	136 047	443	34 802	130 173	0
1983	134 319	275 719	88 523	5 603	108 145	0	26 613	233 029	5 518
1984	128 398	234 413	104 214	10 937	86 077	53 706	32 092	102 732	2 071
1985	137 480	148 394	70 961	18 783	71 620	146 670	46 865	76 685	8 399
1986	130 170	160 625	47 979	25 847	104 926	170 124	50 150	98 681	13 309
1987	110 682	145 402	38 812	24 953	111 900	230 340	56 647	48 976	24 581
1988	114 264	90 534	38 644	31 666	66 214	298 715	39 246	48 535	32 587
1989	113 450	94 449	34 386	28 725	47 735	268 565	38 077	42 186	31 954

[1] Not elsewhere included.

TABLE 51

Eastern Europe: catch in areas excluding North America

Year	Northeast Atlantic	Eastern central Atlantic	Southwest Atlantic	Southeast Atlantic	Northwest Pacific	Southeast Pacific
	(Tonnes)					
1970	383 200	90 600	0	40 100	0	0
1971	321 100	87 700	0	32 000	0	0
1972	342 400	82 300	0	33 300	0	0
1973	361 300	86 300	0	68 400	0	0
1974	489 871	125 347	0	75 113	0	0
1975	546 432	213 310	0	106 829	0	0
1976	476 372	194 384	0	166 501	0	0
1977	319 071	342 688	2 060	187 293	0	0
1978	312 440	136 182	16 642	257 571	0	0
1979	316 487	150 918	64 758	239 881	0	5 906
1980	330 388	284 120	81 410	143 635	0	15 593
1981	313 849	191 247	70 672	210 280	0	12 629
1982	283 139	162 071	245 508	257 173	0	20 697
1983	254 679	90 334	347 915	361 826	0	64 267
1984	270 572	61 509	234 922	326 671	0	94 823
1985	262 730	97 817	214 975	218 464	115 874	2 290
1986	247 342	93 207	189 989	228 523	163 249	0
1987	220 397	143 746	189 125	180 836	230 318	0
1988	220 469	125 180	171 173	117 309	298 714	0
1989	198 607	86 038	146 609	124 319	268 560	0

TABLE 52

Eastern Europe: catch off North America

Year	Northeast Pacific	Northwest Atlantic
	(.....Tonnes.....)	
1970	0	313 100
1971	0	448 600
1972	0	467 300
1973	6 700	464 100
1974	45 600	367 614
1975	45 660	314 559
1976	75 278	210 323
1977	23 562	72 021
1978	28 900	25 195
1979	63 322	36 536
1980	111 790	9 985
1981	163 824	13 992
1982	17 196	11 596
1983	13 346	20 698
1984	80 514	21 655
1985	91 180	25 169
1986	92 520	33 071
1987	58 011	34 884
1988	44 192	39 024
1989	18 220	31 902

TABLE 53

Spain: marine catch by area

Year	Northeast Atlantic	Mediterranean and Black Sea	Eastern central Atlantic	Southeast Atlantic	Northwest Atlantic	Western Indian Ocean	Southwest Atlantic	Western central Atlantic
	(.....Tonnes.....)							
1970	634 355	118 169	219 245	246 000	280 400	0	0	0
1971	622 137	118 316	218 381	223 600	270 600	0	0	0
1972	714 137	90 388	239 780	201 500	236 600	4 100	0	489
1973	652 189	120 927	370 240	211 900	180 700	5 100	0	0
1974	600 920	117 387	410 393	157 046	179 528	2 710	0	0
1975	634 366	138 352	377 243	199 458	117 385	2 878	0	762
1976	658 430	147 061	405 582	202 251	71 899	1 320	0	0
1977	598 199	139 724	432 199	172 442	49 232	1 466	0	266
1978	558 504	143 463	478 454	158 482	35 100	1 466	0	2 029
1979	539 477	148 393	363 071	145 250	39 354	0	0	1 052
1980	511 644	146 338	441 416	126 981	38 825	0	0	0
1981	517 295	149 910	399 736	188 985	47 874	542	0	0
1982	632 164	159 794	407 709	187 125	35 103	69	0	0
1983	605 366	159 185	379 326	173 707	30 841	0	16 000	1 957
1984	638 461	150 835	366 293	159 198	35 981	22 684	13 000	3 976
1985	623 199	136 592	377 770	186 903	60 815	38 426	9 200	1 000
1986	603 659	140 600	265 721	198 069	82 083	42 959	58 518	0
1987	622 958	128 278	199 688	194 013	78 764	57 685	56 075	0
1988	620 600	132 085	191 048	191 236	59 843	98 868	76 097	0
1989	561 842	131 083	171 529	192 700	61 857	115 021	77 193	0

TABLE 54

Spain: catch of major tuna by area

Year	Northeast and western central Atlantic	Eastern central Atlantic	Western Indian Ocean
	(.....Tonnes.....)		
1970	26 616	20 045	0
1971	31 971	31 016	0
1972	26 497	38 580	0
1973	21 999	42 340	0
1974	26 392	59 771	0
1975	23 010	52 027	0
1976	27 249	57 172	0
1977	26 110	68 387	0
1978	28 750	68 259	0
1979	32 861	65 612	0
1980	26 622	74 488	0
1981	21 533	98 055	542
1982	27 740	101 687	69
1983	34 886	90 330	0
1984	23 486	101 153	22 684
1985	23 699	113 799	38 426
1986	26 742	117 285	42 959
1987	30 476	113 417	57 685
1988	31 742	110 144	98 868
1989	28 583	105 006	115 021

TABLE 55

Total catch by states in non-local areas

Year	Total catch (all states)
	(.....Tonnes.....)
1970	7 544 137
1971	7 478 677
1972	8 549 749
1973	8 144 732
1974	8 360 756
1975	8 080 103
1976	8 268 868
1977	7 945 652
1978	7 333 889
1979	6 662 499
1980	7 392 884
1981	7 215 932
1982	7 375 155
1983	7 276 798
1984	6 989 962
1985	6 959 703
1986	8 004 878
1987	8 525 497
1988	8 701 362
1989	8 958 413

TABLE 56

Catch by major distant-water states in non-local areas, 1970

Country	Catch
	(.....Tonnes.....)
Former USSR	3 053 029
Japan	2 049 300
Spain	750 945
Poland	247 600
Portugal	214 702
Germany, Fed. Rep.	206 300
Others	1 022 261
TOTAL	7 544 137

TABLE 57

Catch by major distant-water states in non-local areas, 1989

Country	Catch
	(.....Tonnes.....)
Former USSR	4 547 530
Japan	1 492 727
Spain	634 722
Korea, Rep.	580 234
Poland	410 991
Taiwan, Province of China	327 719
Others	964 490
TOTAL	8 958 413

ANNEX TABLES

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
						'000 TONNES						PERCENT
WORLD												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	1646468	1708634	1640483	1800880	1839782	1854678	1788484	1749987	1885203	1971807	1887941	1.45
WHEAT	454113	481475	493064	516027	504664	535003	510896	507730	543206	601314	553123	1.97
RICE,PADDY	412108	425165	451063	468193	471308	471653	464367	491026	516888	522210	518470	2.26
BARLEY	152274	164244	161964	172413	176176	182033	180549	171281	168791	182357	166332	.91
MAIZE	448941	450318	348374	451900	486967	478109	450918	400791	473842	479472	490244	1.19
MILLET AND SORGHUM	100542	95177	92885	97352	105744	96966	90691	95417	89652	86806	82628	-1.49
ROOT CROPS	543597	547031	552056	579379	565289	567207	574915	562935	579238	573459	574224	.52
POTATOES	268700	266143	265389	291885	282603	287053	279398	269363	276489	268705	262747	-.11
CASSAVA	128165	130003	127651	132116	137280	135960	139639	145137	151736	149610	152263	1.97
TOTAL PULSES	41503	45913	47603	49722	50720	52899	54887	55788	55407	58870	60100	3.34
CITRUS FRUIT	59652	58791	62783	58404	61865	64549	67990	69451	75439	72957	76796	2.88
BANANAS	38185	38436	37343	39744	40544	42968	44816	45090	45387	47063	47853	2.65
APPLES	32885	41634	39551	39867	38910	41875	38344	42059	41985	40525	38640	.89
VEGETABLE OILS,OIL EQUIV.	53951	57345	53508	59633	64695	64832	67649	68613	72302	75252	76964	3.79
SOYBEANS	88504	92116	79460	90755	101147	94447	100034	93498	107167	108194	103804	2.19
GROUNDNUTS,IN SHELL	20496	17995	18973	19870	20755	21374	21642	25384	23068	23146	23866	2.66
SUNFLOWER SEED	14372	16442	15711	16627	18863	20793	20648	20616	21412	22759	22524	4.65
RAPESEED	12486	15212	14147	16711	19244	19749	22533	21882	22671	24400	27964	7.58
COTTONSEED	28657	28045	27421	34932	32157	28241	30929	33920	31774	33987	38401	2.37
COPRA	4576	4662	4569	3854	4420	5568	4986	4536	4409	5405	4957	1.22
PALM KERNELS	1809	2165	2010	2391	2608	2756	2736	3073	3434	3547	3578	7.10
SUGAR (CENTRIFUGAL,RAW)	93348	102757	97492	99653	98515	100830	101895	103736	105414	110542	113351	1.48
COFFEE,GREEN	6079	5018	5618	5226	5850	5299	6470	5789	6112	6349	6264	1.51
COCOA BEANS	1740	1612	1598	1771	1978	2069	2063	2516	2459	2576	2384	5.11
TEA	1874	1949	2047	2187	2291	2287	2391	2462	2440	2532	2596	3.22
COTTON LINT	15255	14888	14264	18230	17364	15239	16595	18329	17067	18700	20906	2.76
JUTE AND SIMILAR FIBRES	3608	3217	3437	3562	6297	4433	3515	3281	3407	3665	3517	-.34
SISAL	509	521	423	446	493	459	364	373	422	377	455	-2.28
TOBACCO	6003	6934	5980	6518	7047	6073	6176	6852	7061	7124	7574	1.59
NATURAL RUBBER	3785	3807	4110	4179	4330	4556	4732	4899	5060	5070	5199	3.48
TOTAL MEAT	138278	139389	143935	147673	152808	157408	162365	169000	171874	176665	179305	2.87
TOTAL MILK	465338	475900	494484	497931	507845	516887	516044	524026	530556	539122	526976	1.33
TOTAL EGGS	27904	28759	29249	30702	32343	33417	34318	35954	35921	36972	37660	3.23
WOOL,GREASY	2842	2870	2892	2879	2954	2999	3077	3137	3222	3062	3024	1.01
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	8562	8899	9727	10436	11342	12255	13111	13756	14435	14880		
MARINE FISH	57039	58387	58106	63428	64474	69379	68605	72121	72265	67800		
CRUST.+ MOLLU.+ CEPHAL.	8689	9203	9233	9777	10188	10705	12036	12284	12670	12468		
AQUATIC MAMMALS	1	1	2	2	2	2	3	4				
AQUATIC ANIMALS	197	264	402	249	299	350	366	303	317	319		
AQUATIC PLANTS	3269	3283	3447	3775	3877	3856	3547	4140	4340	4400		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	581104	561200	623627	661279	667938	698939	717009	721625	706107	707316	655634	1.97
SAWLOGS,NON-CONIFEROUS	255203	243364	253022	261319	253936	267754	273941	280063	283435	272740	264478	1.09
PULPWOOD+PARTICLE	372394	361866	369574	382496	378305	399737	411900	422221	434106	439660	421968	1.99
FUELWOOD	1514346	1553626	1581701	1629268	1658001	1682598	1711116	1748412	1779222	1797035	1793192	1.79
SAWNWOOD,CONIFEROUS	317161	313008	328715	344662	350421	362380	378530	379436	375035	362331	348771	1.58
SAWNWOOD,NON-CONIFEROUS	112997	109872	112889	116307	117407	121042	126521	127054	127308	123356	119211	1.23
WOOD-BASED PANELS	100363	95342	105066	107979	110931	116055	122073	127599	129438	124431	114697	2.57
PULP FOR PAPER	128808	123474	132359	140224	141282	146689	152672	158965	159876	158328	156921	2.65
PAPER AND PAPERBOARD	170985	167264	177318	189998	192914	202191	212922	225788	231895	238442	227308	3.79

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... '000 TONNES											PERCENT
WESTERN EUROPE												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	176088	191329	183659	222963	207357	202815	197785	206470	209019	204810	218347	1.41
WHEAT	69213	76429	77270	96598	84114	85343	85165	88615	92770	95861	100916	2.93
RICE,PADDY	1597	1705	1519	1750	1933	2012	1932	1982	1974	2266	2211	3.51
BARLEY	54112	57768	53630	66994	63200	57992	57069	60708	57893	57633	58332	.27
MAIZE	32625	35506	34533	36438	37682	39893	36556	38743	38664	30848	40520	.87
MILLET AND SORGHUM	592	498	454	485	386	377	384	452	573	512	645	1.00
ROOT CROPS	58970	57243	49577	62417	63891	58685	60613	59010	55955	53587	49802	-.82
POTATOES	58832	57112	49455	62309	63776	58582	60516	58923	55876	53507	49704	-.82
TOTAL PULSES	1745	2078	2265	2889	3492	4102	5001	5995	5657	6359	5702	14.57
CITRUS FRUIT	6777	6740	8650	6413	8036	8737	7674	8814	9512	8991	9000	3.18
BANANAS	522	492	500	489	454	527	509	457	462	482	476	-.74
APPLES	8159	13478	9873	11473	10002	11432	9586	11866	10672	10233	7235	-1.30
VEGETABLE OILS,OIL EQUIV.	3032	3874	3736	4363	4814	4911	6833	5930	6157	6383	7020	8.19
SOYBEANS	118	233	300	389	523	1130	2044	1869	2206	2240	1715	34.88
GROUNDNUTS,IN SHELL	15	14	17	16	18	19	16	15	12	13	14	-1.61
SUNFLOWER SEED	1219	1736	1895	2484	3008	3769	4753	4495	4024	4792	4619	14.22
RAPESEED	2807	3603	3401	4465	4768	4817	6882	6271	6241	6983	7962	10.24
COTTONSEED	366	285	329	363	419	527	516	644	589	551	499	6.84
COPRA								1	1	1	1	12.74
SUGAR (CENTRIFUGAL,RAW)	19825	18812	15636	17328	17334	17592	16621	16987	17969	19105	17446	-.22
COTTON LINT	196	156	176	196	238	291	274	354	316	290	273	6.77
TOBACCO	439	463	436	482	499	500	481	472	492	459	501	.82
TOTAL MEAT	31710	31594	32082	33026	33237	33534	34339	34567	34199	35078	35171	1.14
TOTAL MILK	143381	146576	151314	150047	149050	150316	145034	142037	141889	141503	137205	-.63
TOTAL EGGS	5870	6027	5907	5821	5894	5834	5780	5793	5634	5634	5658	-.57
WOOL,GREASY	173	173	176	183	189	194	199	209	222	220	217	2.87
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	268	288	299	316	348	389	383	441	475	480		
MARINE FISH	10241	9760	9959	10387	10082	9797	9653	9919	9226	9213		
CRUST.+ MOLLU.+ CEPHAL.	1197	1265	1372	1290	1424	1444	1485	1401	1403	1390		
AQUATIC ANIMALS	1	1			1			1				
AQUATIC PLANTS	208	226	222	242	249	264	272	319	326	330		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	94280	92994	98004	99680	98366	98655	97573	102502	109677	144459	92569	1.89
SAWLOGS,NON-CONIFEROUS	24772	23292	22563	23740	23666	24204	24073	25365	26165	25403	19731	-.18
PULPWOOD+PARTICLE	89054	86585	84960	88883	89128	92739	98659	102492	109075	109288	91509	2.02
FUELWOOD	39009	39653	40189	40577	41920	42310	41112	41142	41199	40519	36153	-.19
SAWNWOOD,CONIFEROUS	52865	52466	54610	55738	53830	53947	54669	55729	58572	59708	47072	.15
SAWNWOOD,NON-CONIFEROUS	12391	12110	11495	12146	12087	12185	12173	12544	12681	12043	9449	-.92
WOOD-BASED PANELS	26056	24775	25164	25507	25764	26550	27646	30786	32541	32450	22815	1.50
PULP FOR PAPER	27102	25663	27507	29853	29909	30591	31973	33534	34223	32790	29697	2.20
PAPER AND PAPERBOARD	45965	44999	46815	51264	51403	53187	55951	60128	62059	63847	51281	2.95

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
						`000 TONNES						PERCENT
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	230311	267162	266677	256943	270073	293238	289904	279529	296608	318287	244401	1.42
WHEAT	107396	113442	107166	104912	110278	126281	118569	123207	131019	148915	110416	2.04
RICE,PADDY	2664	2651	2817	2932	2814	2905	2902	3099	2710	2611	2292	-.71
BARLEY	51413	59740	64483	58199	62174	70382	74818	65261	68198	75157	52470	1.47
MAIZE	28205	37978	34281	34461	35934	34943	33042	32464	32879	23423	31076	-1.60
MILLET AND SORGHUM	2034	2717	2709	2150	3153	2570	4259	3417	4394	3882	3847	6.85
ROOT CROPS	135403	129664	135629	147289	133892	146788	133087	118064	125333	114279	99947	-2.43
POTATOES	135399	129661	135627	147287	133889	146785	133083	118062	125332	114277	99944	-2.43
TOTAL PULSES	5290	7800	9865	10213	10786	9318	11412	10513	11186	11297	9860	4.73
CITRUS FRUIT	313	286	415	367	157	336	194	462	121	260	385	-2.13
APPLES	10000	13282	13125	11934	11666	13615	8838	10247	10953	9436	9245	-2.59
VEGETABLE OILS,OIL EQUIV.	4365	4677	4557	4480	4756	5080	5297	5420	5983	5488	4971	2.39
SOYBEANS	914	1014	960	1008	863	1198	1181	1312	1412	1101	1111	3.05
GROUNDNUTS,IN SHELL	9	9	8	8	6	9	10	11	12	15	21	8.03
SUNFLOWER SEED	6636	7350	6904	6528	7074	7568	8121	8039	8978	8271	7578	2.28
RAPESEED	1097	1064	1312	1718	1932	2295	2301	2518	2932	2577	2151	9.77
COTTONSEED	5901	5691	5648	5281	5368	5051	4979	5319	5246	5079	4760	-1.63
SUGAR (CENTRIFUGAL,RAW)	10943	12450	13563	13705	12955	13355	14335	13233	14116	13937	10590	.40
TEA	137	140	146	151	152	146	156	123	131	136	118	-1.42
COTTON LINT	2905	2800	2597	2355	2796	2662	2475	2772	2697	2641	2429	-.74
JUTE AND SIMILAR FIBRES	45	45	45	45	45	45	45	47	47	49	52	1.17
TOBACCO	574	637	670	704	697	714	639	529	442	464	421	-4.20
TOTAL MEAT	24857	24735	26054	26916	27221	28578	29528	30298	30342	30213	26912	1.81
TOTAL MILK	126649	128291	136217	139380	139868	143162	144440	147738	150030	149084	129911	1.07
TOTAL EGGS	5834	5861	6061	6176	6249	6473	6554	6725	6656	6498	5866	.86
WOOL,GREASY	574	571	584	594	572	593	577	597	588	582	530	-.25
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	1146	1216	1276	1215	1325	1275	1383	1284	1423	1408		
MARINE FISH	9119	9308	9520	10365	10007	10660	10504	10766	10353	9144		
CRUST.+ MOLLU.+ CEPHAL.	540	732	428	369	481	625	581	570	667	570		
AQUATIC ANIMALS			1		1	6	6	5	5	5		
AQUATIC PLANTS	134	109	93	109	122	155	150	178	140	150		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	155698	153520	156432	158709	157347	165092	168755	168827	163980	146614	143596	-.23
SAWLOGS,NON-CONIFEROUS	33619	33109	33368	34357	33003	32610	33298	33501	32178	29425	28761	-1.27
PULPWOOD+PARTICLE	55666	56524	57323	58951	58714	61664	62292	65326	61661	62187	59408	1.09
FUELWOOD	96413	99038	95838	100756	103259	104366	103149	99188	95153	95830	95120	-.23
SAWNWOOD,CONIFEROUS	101120	100441	100568	100928	101482	103510	104165	104107	101073	93435	91309	-.63
SAWNWOOD,NON-CONIFEROUS	18580	18348	18572	18728	18490	18169	17700	17740	16920	15892	15202	-1.81
WOOD-BASED PANELS	17598	17988	18563	19480	19682	20662	20801	21413	21578	18584	17403	.70
PULP FOR PAPER	11774	12052	12869	13261	13432	13342	13339	14922	14460	13129	10995	.53
PAPER AND PAPERBOARD	14264	14356	14993	15387	15636	15783	15961	16750	16386	15731	13070	.35

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... '000 TONNES											PERCENT
NORTH AMERICA, DEVELOPED												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	382085	386769	255460	357905	395709	372730	332478	242608	332574	371140	335552	-.88
WHEAT	100608	101966	92323	91806	90227	88275	83353	65316	80006	107184	86737	-1.56
RICE, PADDY	8289	6969	4523	6296	6122	6049	5879	7253	7007	7080	7006	.71
BARLEY	24033	25198	21289	23324	25263	27926	25311	16530	20473	23117	22576	-1.32
MAIZE	212895	215702	111972	201705	232415	214854	188157	130563	197535	208665	197166	.10
MILLET AND SORGHUM	22357	21322	12514	22164	28596	24009	18743	14808	15832	14742	14900	-3.60
ROOT CROPS	18680	19565	18245	19804	22102	19734	21222	19390	20133	21773	22277	1.39
POTATOES	18097	18889	17694	19215	21437	19169	20692	18889	19614	21198	21752	1.48
TOTAL PULSES	1938	1714	1175	1373	1494	1809	2374	1578	1826	2276	2679	4.47
CITRUS FRUIT	13703	10938	12411	9836	9548	10042	10881	11577	11962	9855	10235	-1.38
BANANAS	3	3	2	4	4	4	5	6	5	5	5	9.23
APPLES	3933	4162	4283	4213	4073	3953	5378	4619	5035	4921	4985	2.58
VEGETABLE OILS, OIL EQUIV.	13308	14342	10895	13029	14190	13191	13358	11372	12750	13211	14357	.17
SOYBEANS	55043	60459	45253	51565	58140	53828	54007	43306	53659	53678	55499	-.31
GROUNDNUTS, IN SHELL	1806	1560	1495	1998	1870	1677	1640	1806	1810	1634	2235	1.36
SUNFLOWER SEED	2201	2514	1497	1783	1492	1250	1235	861	867	1142	1770	-6.62
RAPESEED	1849	2218	2593	3412	3498	3714	3741	4236	3252	3310	4299	6.57
COTTONSEED	5803	4304	2791	4671	4789	3448	5234	5499	4243	5415	6254	2.73
SUGAR (CENTRIFUGAL, RAW)	5784	5384	5239	5476	5528	6197	6799	6377	6121	6492	6670	2.24
COFFEE, GREEN	1		1	1	1	1	1	1	1	1	1	5.26
COTTON LINT	3406	2605	1692	2827	2924	2119	3214	3355	2655	3375	3834	3.15
TOBACCO	1048	975	760	873	782	596	601	680	696	801	824	-2.71
TOTAL MEAT	27436	26774	27745	28008	28560	29278	29618	30647	31130	31380	32264	1.84
TOTAL MILK	67768	69279	70733	69036	72348	72442	72315	73667	72985	74811	74820	.94
TOTAL EGGS	4477	4456	4359	4382	4379	4419	4494	4434	4302	4347	4411	-.15
WOOL, GREASY	51	50	48	45	41	40	40	42	42	41	41	-2.20
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	530	530	563	644	731	706	662	650	757	723		
MARINE FISH	3122	3519	3774	3949	4181	4532	5347	5311	5010	5202		
CRUST.+ MOLLU.+ CEPHAL.	1558	1378	1324	1674	1481	1423	1515	1541	1521	1464		
AQUATIC ANIMALS	1	9	8	8	10	15	24	31	30	30		
AQUATIC PLANTS	78	103	29	63	109	82	126	113	125	130		
FOREST PRODUCTS 2/												
SAWLOGS, CONIFEROUS	238884	220996	276510	304302	310133	333140	348289	348493	332012	315600	315600	3.47
SAWLOGS, NON-CONIFEROUS	39834	29093	36240	37061	35511	42142	43671	44601	44497	40626	40626	2.42
PULPWOOD+PARTICLE	164429	156026	161024	165399	158513	171356	175472	176865	185815	191015	191015	2.04
FUELWOOD	98488	103673	100797	112135	107369	98034	95634	103234	105934	92734	92734	-.80
SAWNWOOD, CONIFEROUS	98793	95013	109470	122258	127466	135456	148657	147479	143135	137886	137781	4.16
SAWNWOOD, NON-CONIFEROUS	17192	12462	14520	16062	15481	19029	20809	20785	19130	18627	18522	3.34
WOOD-BASED PANELS	32036	27397	34290	35470	36933	39073	40800	40476	40149	38352	38255	2.83
PULP FOR PAPER	65672	61122	65863	69877	68336	72386	75780	77662	78645	79051	81022	2.70
PAPER AND PAPERBOARD	71502	67307	72157	76588	75407	79703	83576	86226	86069	88431	89283	2.83

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	'000 TONNES											PERCENT
OCEANIA, DEVELOPED												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	24503	15069	31940	29719	26296	25878	20960	22641	22991	23837	19439	-.98
WHEAT	16686	9168	22317	18981	16477	17158	12624	14141	14349	15254	10783	-2.09
RICE, PADDY	759	857	519	632	866	716	608	740	748	846	740	.80
BARLEY	3721	2295	5236	6125	5445	4104	3818	3598	4371	4543	5039	2.10
MAIZE	325	382	282	392	466	465	383	345	355	380	377	.88
MILLET AND SORGHUM	1231	1355	987	1929	1395	1448	1458	1683	1264	985	772	-2.78
ROOT CROPS	1089	1168	1127	1327	1277	1250	1311	1366	1337	1497	1453	2.80
POTATOES	1075	1157	1117	1314	1264	1239	1297	1352	1321	1481	1436	2.79
TOTAL PULSES	229	315	332	618	862	922	1602	1568	1676	1425	1422	22.70
CITRUS FRUIT	509	534	525	587	647	644	615	524	628	578	608	1.35
BANANAS	130	140	146	145	134	158	160	196	180	165	210	4.14
APPLES	549	520	534	513	629	636	663	630	635	680	669	2.80
VEGETABLE OILS, OIL EQUIV.	126	123	106	164	266	221	180	220	211	187	284	7.59
SOYBEANS	73	77	53	89	110	105	90	69	130	77	70	1.59
GROUNDNUTS, IN SHELL	43	58	23	47	42	43	48	39	33	25	36	-3.11
SUNFLOWER SEED	139	115	104	170	293	215	137	216	172	92	186	1.63
RAPESEED	15	7	18	33	88	84	74	65	80	115	170	30.00
COTTONSEED	161	219	164	230	410	366	330	435	419	493	689	13.96
SUGAR (CENTRIFUGAL, RAW)	3435	3500	3171	3548	3379	3371	3439	3679	3797	3515	3535	.72
COTTON LINT	99	134	101	141	249	267	222	284	286	305	410	14.41
TOBACCO	17	15	15	16	14	12	14	14	12	13	13	-2.25
TOTAL MEAT	3814	3857	3924	3586	3781	3823	4070	4187	4060	4195	4413	1.42
TOTAL MILK	12079	12203	12593	13711	14089	14440	13625	14049	13843	13955	14271	1.53
TOTAL EGGS	278	274	275	264	250	249	247	244	251	251	250	-1.20
WOOL, GREASY	1082	1080	1073	1091	1188	1188	1240	1262	1300	1151	1148	1.34
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	4	4	4	6	6	5	5	7	8	8		
MARINE FISH	257	261	289	308	308	382	477	563	525	598		
CRUST.+ MOLLU.+ CEPHAL.	121	152	158	178	152	140	149	141	207	135		
AQUATIC PLANTS	16	11	11	18	14	13	16	18	25	30		
FOREST PRODUCTS 2/												
SAWLOGS, CONIFEROUS	8607	8357	7703	7308	8826	9235	8540	8403	9259	10469	10469	2.47
SAWLOGS, NON-CONIFEROUS	6077	5725	4569	4556	4911	4784	4795	4748	4660	5137	5137	-1.05
PULPWOOD+PARTICLE	10177	9513	9865	10455	11073	11720	11862	12436	12263	12102	12102	2.67
FUELWOOD	1818	2118	2524	2924	2924	2930	2930	2936	2936	2942	2942	3.88
SAWNWOOD, CONIFEROUS	3491	3527	3246	3268	3601	3713	3083	3359	3830	3771	3690	.86
SAWNWOOD, NON-CONIFEROUS	2266	2126	1895	1844	1935	1919	1925	1948	1795	1740	1659	-2.17
WOOD-BASED PANELS	1215	1228	1053	1210	1292	1330	1498	1620	1739	1710	1710	4.91
PULP FOR PAPER	1913	1896	1794	1917	2065	2032	2039	2217	2307	2273	2399	2.66
PAPER AND PAPERBOARD	2151	2188	2101	2214	2316	2267	2170	2492	2605	2826	2790	2.90

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... '000 TONNES											PERCENT
AFRICA,DEVELOPING												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	46756	50125	46034	46530	59834	63706	57341	66275	68116	62426	68580	4.30
WHEAT	4388	5600	4584	4699	6611	7060	6408	6445	7277	7239	9861	6.63
RICE,PADDY	6319	6482	6512	6712	7100	7565	7965	8413	10135	9297	9901	5.21
BARLEY	2866	4435	2882	3113	5522	6115	4067	5006	5011	4371	6338	5.81
MAIZE	15190	15205	14485	14621	18576	19790	17097	21291	22068	19523	19564	3.89
MILLET AND SORGHUM	16573	16692	16224	16250	20711	21756	20514	23604	22207	19798	20636	3.19
ROOT CROPS	74375	78489	77734	80360	85432	88095	87378	94314	96393	103689	107596	3.65
POTATOES	3177	3423	3610	3313	4268	4110	4038	4131	4364	4236	4626	3.41
CASSAVA	50465	53829	53257	55740	59114	60922	61293	63433	64998	67624	68876	3.10
TOTAL PULSES	4620	5256	5017	4400	4866	5938	5236	5817	5928	6031	6406	3.06
CITRUS FRUIT	2663	2585	2482	2621	2475	2792	2624	2886	3154	2759	3002	1.68
BANANAS	4915	5005	5015	5025	5342	5413	5435	5602	5502	5641	5624	1.52
APPLES	134	154	195	233	261	288	329	378	324	351	357	10.44
VEGETABLE OILS,OIL EQUIV.	3835	3925	3838	3832	4095	4549	4567	4642	4897	4862	4941	3.09
SOYBEANS	181	197	158	170	193	200	227	294	334	367	395	9.41
GROUNDNUTS,IN SHELL	3663	3704	3170	3116	3295	4197	4110	4200	4436	4257	4183	2.81
SUNFLOWER SEED	134	136	139	156	170	184	251	313	238	340	264	9.93
RAPESEED	64	60	74	73	83	93	128	141	162	166	174	12.72
COTTONSEED	844	854	937	1046	1151	1364	1347	1519	1549	1398	1590	7.10
COPRA	177	192	206	204	216	223	216	213	214	249	258	2.89
PALM KERNELS	691	691	611	685	696	684	659	706	703	698	724	.63
SUGAR (CENTRIFUGAL,RAW)	3772	3903	3986	3982	3982	4215	4249	4355	4274	4339	4213	1.31
COFFEE,GREEN	1290	1203	1122	1025	1183	1257	1244	1210	1268	1264	1188	.49
COCOA BEANS	1072	887	890	1073	1054	1125	1219	1472	1377	1440	1280	4.57
TEA	195	208	219	225	259	251	257	272	291	311	321	4.98
COTTON LINT	470	490	550	595	656	763	770	896	859	829	963	7.56
JUTE AND SIMILAR FIBRES	9	9	9	9	10	10	10	10	10	11	11	1.79
SISAL	146	142	124	115	103	96	95	94	95	103	105	-3.75
TOBACCO	215	235	253	296	276	271	292	292	322	343	407	5.10
NATURAL RUBBER	206	202	207	223	235	248	260	292	319	256	278	4.06
TOTAL MEAT	4583	4738	4833	4910	5097	5118	5270	5363	5558	5830	5937	2.53
TOTAL MILK	9898	10373	10523	10421	10722	11524	12000	12333	12678	12873	12751	2.89
TOTAL EGGS	671	734	775	778	816	826	859	882	897	946	960	3.27
WOOL,GREASY	72	78	91	100	105	109	112	114	117	118	121	4.94
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	1201	1263	1287	1372	1349	1473	1525	1623	1612	1647		
MARINE FISH	1546	1502	1633	1642	1693	1842	1827	1930	1959	1987		
CRUST.+ MOLLU.+ CEPHAL.	115	133	174	185	187	201	255	217	227	241		
AQUATIC ANIMALS						1		1	1	1		
AQUATIC PLANTS	5	6	5	5	5	5	5	6	6	6		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	1266	1305	1129	1232	1233	1315	1452	1471	1530	1562	1562	2.95
SAWLOGS,NON-CONIFEROUS	17208	16054	15921	16513	16584	16327	15990	15667	15954	16406	16409	-.26
PULPWOOD+PARTICLE	2008	1913	1985	2157	2240	2031	2450	2535	2717	2577	2577	3.51
FUELWOOD	320516	331433	342851	353469	366665	378205	389676	401490	412666	424641	425126	3.02
SAWNWOOD,CONIFEROUS	620	629	559	626	603	622	699	703	716	727	714	2.21
SAWNWOOD,NON-CONIFEROUS	5561	5311	5094	5187	5657	5773	6007	6017	6121	6095	5800	1.53
WOOD-BASED PANELS	1110	1183	1241	1245	1390	1391	1379	1405	1426	1451	1450	2.58
PULP FOR PAPER	471	359	381	387	415	424	465	502	488	465	465	2.15
PAPER AND PAPERBOARD	399	387	418	449	490	560	597	627	625	622	622	5.80

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... '000 TONNES											PERCENT
LATIN AMERICA												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	104531	105327	99818	106837	110542	106685	111889	110546	105637	99804	102083	-.08
WHEAT	15187	22723	20131	21914	20216	21673	22319	22431	23326	20930	18590	1.16
RICE,PADDY	15745	17549	14774	16945	17029	17569	18192	19955	19680	15622	17437	1.19
BARLEY	1232	1132	1177	1325	1262	1276	1596	1431	1658	1472	1820	4.10
MAIZE	55315	47922	47202	50878	55686	52374	56391	53519	50760	50374	54007	.38
MILLET AND SORGHUM	16063	14791	15072	14245	15187	12692	11975	11921	8739	10159	9030	-5.83
ROOT CROPS	46420	45762	42008	44079	45045	47017	46049	46487	47645	48000	49331	.91
POTATOES	11990	11836	10217	12209	11602	11213	11542	13660	12368	12162	12587	1.05
CASSAVA	30955	30454	28280	28037	29625	32058	30586	29224	31591	32219	33068	.92
TOTAL PULSES	5343	5586	4328	5107	5044	4862	4542	5240	4413	5148	5896	.16
CITRUS FRUIT	20249	20879	20831	21739	23284	22563	24558	25230	26902	26657	29340	3.66
BANANAS	16340	16636	15843	16995	17045	17445	18466	18515	18915	20142	20936	2.57
APPLES	1769	1816	1801	2177	2268	2064	2645	2691	2651	2765	3000	5.66
VEGETABLE OILS,OIL EQUIV.	6364	6248	6649	7460	8660	8050	7903	9179	9841	10157	9520	5.09
SOYBEANS	20499	18680	20331	24445	27169	22399	26313	30089	33876	33737	29495	5.70
GROUNDNUTS,IN SHELL	1005	895	793	887	992	875	997	877	737	779	989	-.79
SUNFLOWER SEED	1353	2068	2463	2268	3521	4280	2382	3152	3462	4123	4245	9.28
RAPESEED	64	32	17	17	46	111	112	139	142	74	157	19.15
COTTONSEED	2755	2544	2293	3056	3423	2761	2337	3441	2643	2769	2937	.86
COPRA	218	277	276	232	237	259	257	289	284	285	263	1.52
PALM KERNELS	314	312	295	312	327	316	323	365	339	368	373	2.05
SUGAR (CENTRIFUGAL,RAW)	27176	28889	28514	28848	27968	28190	27652	28313	26798	27869	29803	.08
COFFEE,GREEN	4075	3075	3757	3527	3855	3193	4255	3603	3664	3911	3830	.65
COCOA BEANS	562	607	571	534	738	729	572	679	674	668	623	1.49
TEA	38	49	54	56	63	59	64	50	63	60	67	3.50
COTTON LINT	1533	1385	1270	1692	1925	1519	1321	1945	1537	1662	1783	1.79
JUTE AND SIMILAR FIBRES	126	88	95	105	95	90	92	87	70	46	39	-8.49
SISAL	339	357	276	307	365	336	244	254	299	250	324	-1.97
TOBACCO	689	761	707	722	703	691	691	742	740	739	711	.19
NATURAL RUBBER	51	54	57	58	61	59	48	56	55	51	52	-.47
TOTAL MEAT	15784	15805	15866	15406	16011	16122	16795	18062	18702	19132	19643	2.50
TOTAL MILK	35824	36526	36393	36705	38103	38400	39233	40304	40918	42108	43215	1.90
TOTAL EGGS	2622	2752	2715	2920	3135	3464	3585	3698	3633	3661	4007	4.40
WOOL,GREASY	310	312	312	293	291	309	314	305	325	320	309	.34
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	323	338	444	470	463	497	582	554	523	546		
MARINE FISH	9384	10367	8174	10911	12630	14761	12782	15023	16618	16587		
CRUST.+ MOLLU.+ CEPHAL.	530	568	599	653	668	665	741	727	776	763		
AQUATIC ANIMALS	25	20	20	24	41	35	33	31	32	32		
AQUATIC PLANTS	152	222	213	213	235	179	167	199	229	254		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	28493	29038	30038	31453	32405	31611	31947	31902	32082	32600	32534	1.22
SAWLOGS,NON-CONIFEROUS	29649	29484	29972	30971	31388	33710	34496	34701	34707	35549	32958	1.87
PULPWOOD+PARTICLE	29132	29006	30745	32431	33812	35308	36897	38194	38200	38285	38372	3.28
FUELWOOD	240373	245168	251392	257417	262494	267392	273055	278608	283650	288498	288535	1.95
SAWNWOOD,CONIFEROUS	11789	11413	12256	12782	13177	12900	13769	13915	13818	14244	13941	2.11
SAWNWOOD,NON-CONIFEROUS	14780	14254	14557	15292	15396	16208	16565	16708	17120	17459	17171	2.11
WOOD-BASED PANELS	4421	4322	4400	4518	4456	4623	4937	5051	5056	5034	5032	1.83
PULP FOR PAPER	5261	5566	6106	6192	6591	6901	6920	7254	7563	7283	7968	3.85
PAPER AND PAPERBOARD	7451	7723	7970	8770	9098	9946	10442	11280	11231	10798	10701	4.48

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... '000 TONNES											PERCENT
NEAR EAST, DEVELOPING												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	58346	57556	55002	54664	61798	65975	64139	73657	58228	74150	77739	3.00
WHEAT	30836	32072	30610	30892	33296	36313	37202	39391	32660	42216	44190	3.41
RICE, PADDY	4777	4927	4436	4445	4825	4983	4878	4298	5415	6233	6473	2.77
BARLEY	10920	10552	10104	10218	11531	12396	11800	16252	9378	14818	13786	3.00
MAIZE	5439	5584	5845	6027	6385	6735	6780	6859	7321	7790	8402	4.18
MILLET AND SORGHUM	5339	3526	3182	2293	4981	4808	2712	6254	3007	2547	4340	-1.00
ROOT CROPS	7485	7750	7713	8002	9206	9825	10278	9527	9686	10690	10692	3.90
POTATOES	7022	7256	7247	7563	8750	9399	9905	9120	9374	10378	10370	4.32
CASSAVA	125	125	125	100	90	80	80	65	15	6	8	-26.07
TOTAL PULSES	1936	2294	2480	2375	2633	3271	3527	3618	2858	3509	3113	5.26
CITRUS FRUIT	4170	4802	4927	4997	5047	6004	6440	6701	7290	7692	7778	6.58
BANANAS	305	351	356	387	424	461	518	618	622	656	380	6.01
APPLES	2519	2971	3217	3283	3477	3446	3376	3858	3646	3925	4091	3.90
VEGETABLE OILS, OIL EQUIV.	1344	1577	1329	1434	1348	1646	1565	1871	1459	1548	1279	.58
SOYBEANS	209	319	340	315	372	430	443	376	344	359	374	3.66
GROUNDNUTS, IN SHELL	841	610	524	496	400	479	584	728	350	272	340	-6.86
SUNFLOWER SEED	643	665	776	775	880	1043	1213	1290	1359	1085	771	5.49
RAPESEED	6	2						1	3	2	1	-.46
COTTONSEED	2192	2317	2417	2486	2439	2292	2223	2486	2308	2288	2188	-.26
SUGAR (CENTRIFUGAL, RAW)	3106	3749	3802	3708	3683	3763	4067	3561	3381	4039	4295	1.45
COFFEE, GREEN	5	4	4	5	5	5	5	7	7	8	8	6.55
TEA	76	103	137	157	170	189	184	196	164	167	181	6.90
COTTON LINT	1324	1382	1436	1501	1472	1383	1319	1431	1347	1297	1285	-.72
JUTE AND SIMILAR FIBRES	11	8	8	8	8	8	8	8	8	8	8	-1.42
TOBACCO	238	278	305	242	245	230	252	274	314	346	306	2.28
TOTAL MEAT	3628	3748	4009	4294	4484	4442	4572	4698	4777	4859	4873	2.99
TOTAL MILK	16355	16282	16510	14767	15938	16069	16035	16450	16990	17232	17309	.75
TOTAL EGGS	839	907	967	1024	1092	1165	1167	1276	1290	1316	1275	4.60
WOOL, GREASY	189	194	195	176	177	177	179	185	184	184	191	-.21
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	176	204	215	232	261	282	294	297	316	335		
MARINE FISH	722	800	880	882	916	943	1035	1117	1057	1062		
CRUST.+ MOLLU.+ CEPHAL.	29	32	35	39	41	43	50	54	56	55		
FOREST PRODUCTS 2/												
SAWLOGS, CONIFEROUS	5218	5214	4190	4152	4061	4397	4058	3777	3733	3729	3732	-3.18
SAWLOGS, NON-CONIFEROUS	1354	1282	1284	1261	1245	1044	1236	1075	946	802	802	-5.08
PULPWOOD+PARTICLE	714	712	765	513	380	740	726	717	719	717	717	1.08
FUELWOOD	40936	41396	41803	40933	38268	39042	39725	40451	40592	41456	41456	
SAWNWOOD, CONIFEROUS	4133	4127	3813	3820	3818	3817	3812	3812	3815	3776	3756	-.76
SAWNWOOD, NON-CONIFEROUS	1220	1016	1230	1816	1836	1849	1866	1882	1904	1898	1779	5.40
WOOD-BASED PANELS	629	658	719	969	1090	1159	1159	1139	1194	1230	1230	7.32
PULP FOR PAPER	487	487	517	588	584	615	600	502	556	575	542	1.04
PAPER AND PAPERBOARD	832	821	674	808	973	1039	1171	1085	1288	1466	1447	7.35

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
						'000 TONNES						PERCENT
FAR EAST, DEVELOPING												
AGRICULTURAL PRODUCTS												
TOTAL CEREALS	600804	619641	690890	712647	692883	707923	698934	732489	773323	803053	797416	2.63
WHEAT	109598	119491	139408	146923	144693	153728	144988	147111	162063	164959	168466	3.61
RICE, PADDY	359099	371152	402977	413599	416003	415265	408700	432830	456248	465095	460369	2.38
BARLEY	6943	6665	6473	6674	5506	5581	5616	5758	5830	5429	5502	-2.31
MAIZE	84246	83508	95420	102633	91503	100712	105129	109748	112192	129568	130782	4.38
MILLET AND SORGHUM	35780	33968	41508	37339	30707	28842	30123	32778	33151	33889	28179	-1.94
ROOT CROPS	203753	207715	218864	219462	207976	196698	218259	217614	223114	217992	224352	.70
POTATOES	39305	40710	42860	45685	44976	41239	45350	51719	52339	53251	57146	3.52
CASSAVA	46467	45433	45821	48041	48251	42712	47503	52243	54963	49570	50121	1.30
TOTAL PULSES	20253	20696	22053	22577	21383	22516	21037	21276	21672	22627	24752	1.07
CITRUS FRUIT	5654	5950	6728	6968	7411	8546	9592	8834	11364	11601	12368	8.42
BANANAS	14803	14620	14326	15540	15912	17743	18384	18275	18231	18473	18722	3.05
APPLES	4963	4527	5767	5175	5916	5620	6540	6842	7152	6947	7358	4.64
VEGETABLE OILS, OIL EQUIV.	20840	22024	21846	24286	25908	26570	27316	29314	30339	32715	33775	5.04
SOYBEANS	11227	10888	11819	12498	13510	14873	15408	15832	14851	16293	14823	3.98
GROUNDNUTS, IN SHELL	12708	10949	12776	13151	13847	13881	14039	17406	15445	15975	15882	3.49
SUNFLOWER SEED	1516	1592	1718	2273	2173	2198	2165	1813	1859	2342	2473	3.49
RAPESEED	6863	8529	6987	7293	9207	9079	9660	8933	10276	11541	13049	5.64
COTTONSEED	10383	11631	12647	17611	13925	12245	13768	14355	14589	15820	19394	4.05
COPRA	3853	3871	3787	3078	3608	4748	4214	3759	3640	4598	4190	1.41
PALM KERNELS	779	1131	1068	1347	1531	1703	1713	1959	2336	2431	2431	11.48
SUGAR (CENTRIFUGAL, RAW)	16565	23120	21651	19820	20919	21210	21889	24106	25835	28674	33419	4.97
COFFEE, GREEN	658	693	678	624	748	798	902	907	1101	1098	1174	6.69
COCOA BEANS	71	90	105	127	147	179	236	325	355	421	440	21.34
TEA	1313	1334	1371	1487	1533	1530	1616	1714	1679	1748	1800	3.33
COTTON LINT	5175	5816	6325	8807	6965	6125	6885	7161	7270	8197	9847	4.25
JUTE AND SIMILAR FIBRES	3415	3065	3278	3393	6138	4279	3358	3127	3270	3550	3406	-.18
SISAL	17	17	18	20	18	19	18	17	21	17	18	.03
TOBACCO	2619	3401	2662	3014	3681	2916	3079	3739	3939	3848	4285	4.07
NATURAL RUBBER	3524	3547	3842	3893	4028	4242	4419	4547	4682	4758	4863	3.50
TOTAL MEAT	23998	25325	26508	28562	31345	33462	35007	37850	39778	42422	44946	6.66
TOTAL MILK	50579	52917	56879	60878	64778	67711	70515	74291	77953	83460	85646	5.50
TOTAL EGGS	5383	5743	6166	7245	8401	8794	9296	10532	10868	11926	12420	9.17
WOOL, GREASY	299	315	311	302	301	309	342	348	367	360	361	2.21
FISHERY PRODUCTS 1/												
FRESHWATER + DIADROMOUS	4588	4743	5311	5860	6486	7293	7925	8552	8910	9312		
MARINE FISH	12893	13149	13693	14194	14445	15595	15959	16348	17529	18064		
CRUST.+ MOLLU.+ CEPHAL.	3121	3383	3538	382	4175	4595	5370	5789	5890	5867		
AQUATIC ANIMALS	80	154	262	100	152	166	163	139	130	133		
AQUATIC PLANTS	2012	1960	2148	2339	2414	2353	2126	2485	2684	2750		
FOREST PRODUCTS 2/												
SAWLOGS, CONIFEROUS	31386	32019	33269	37876	38671	39143	39276	38737	36340	35113	35113	1.15
SAWLOGS, NON-CONIFEROUS	97975	99776	103975	107664	102547	107954	111514	115614	119387	114673	114463	1.81
PULPWOOD+PARTICLE	7820	7909	8411	9123	9399	9690	10025	10267	10442	10907	10907	3.61
FUELWOOD	664087	678447	693556	708294	722244	737564	753026	768531	784393	797727	797727	1.96
SAWNWOOD, CONIFEROUS	18628	19454	20558	21937	23146	23460	23846	24029	23251	22579	22364	1.92
SAWNWOOD, NON-CONIFEROUS	34561	38262	40070	40477	42076	42214	45626	45945	48309	46350	45874	2.84
WOOD-BASED PANELS	8761	9771	11118	11355	12006	13263	14941	16775	17371	17548	17548	7.69
PULP FOR PAPER	7619	7730	8528	9274	10732	11067	11744	11885	10382	10582	10713	3.83
PAPER AND PAPERBOARD	11302	11835	13314	14896	16800	18202	20097	21968	24095	25885	26957	9.73

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

2. INDEXES OF FOOD PRODUCTION

	TOTAL						PER CAPUT					
	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991
	1979-81=100					PERCENT	1979-81=100					PERCENT
WORLD	117	119	123	126	125	-.62	103	103	105	106	103	-2.34
DEVELOPED COUNTRIES	108	105	110	111	106	-3.90	103	100	103	104	99	-4.44
WESTERN EUROPE	109	108	110	109	109	.24	107	105	107	106	106	-.03
EEC	110	108	110	110	110	.79	108	106	107	107	107	.53
BELGIUM-LUXEMBOURG	109	112	112	113	118	4.05	108	112	112	113	117	4.06
DENMARK	114	122	127	135	134	-1.36	114	122	127	135	133	-1.44
FRANCE	110	106	103	106	107	.67	106	103	99	101	102	.32
GERMANY, NEW LANDER	117	113	114	107	78	-27.58	118	113	115	111	80	-27.31
GERMANY, FEDERAL REP.	111	117	116	119	123	3.23	112	117	115	117	120	2.62
GREECE	101	107	111	94	107	14.16	98	103	107	90	103	14.11
IRELAND	117	114	110	120	122	1.55	112	109	106	117	119	1.96
ITALY	104	100	104	95	104	9.60	102	98	102	93	102	9.54
NETHERLANDS	114	111	120	114	113	-1.04	110	106	114	108	106	-1.67
PORTUGAL	115	94	124	129	123	-4.69	110	89	117	123	117	-4.60
SPAIN	123	119	119	123	118	-4.33	119	114	114	118	113	-4.57
UNITED KINGDOM	109	106	110	109	112	2.03	108	104	108	108	109	1.78
AUSTRIA	109	115	111	108	105	-2.68	109	115	110	108	105	-2.78
FINLAND	99	103	114	120	105	-12.71	96	100	110	116	101	-12.93
ICELAND	100	89	87	88	89	.61	93	81	79	80	79	-.32
MALTA	113	105	116	117	117	-.10	118	109	120	121	120	-.44
NORWAY	107	107	107	120	116	-2.64	104	104	104	115	112	-2.94
SWEDEN	93	92	99	107	99	-7.80	92	90	97	104	96	-7.98
SWITZERLAND	106	106	115	110	113	2.30	102	102	109	105	107	1.88
YUGOSLAVIA	105	100	104	95	92	-2.33	100	94	98	89	86	-2.83
USSR AND EASTERN EUROPE	115	115	118	117	102	-12.41	109	108	110	109	95	-12.91
EASTERN EUROPE	106	110	110	107	101	-5.47	102	106	106	102	97	-5.71
ALBANIA	112	107	114	92	76	-16.76	97	91	95	76	62	-18.20
BULGARIA	100	100	106	101	94	-7.18	99	99	104	99	92	-7.25
CZECH SLOVAK FED.REP.	121	125	129	126	126	-.10	119	123	126	123	122	-.29
HUNGARY	109	116	113	106	113	6.91	110	117	114	107	115	7.11
POLAND	111	114	118	121	110	-8.81	105	107	111	114	104	-8.99
ROMANIA	97	104	96	82	77	-5.91	93	100	92	78	73	-6.32
USSR	119	119	122	121	107	-11.82	112	110	112	111	97	-12.47
NORTH AMERICA,DEVELOPED	101	94	104	108	106	-2.18	95	87	96	99	96	-2.90
CANADA	117	104	115	126	126	-.25	109	97	105	115	114	-1.05
UNITED STATES	100	94	103	106	103	-2.51	94	87	94	96	93	-3.23
OCEANIA,DEVELOPED	106	111	109	111	109	-1.57	97	100	96	96	94	-2.77
AUSTRALIA	104	110	109	114	106	-6.74	94	98	95	98	90	-7.93
NEW ZEALAND	111	114	112	106	112	6.34	106	108	104	97	102	5.30
OTHER DEV.CO COUNTRIES	107	105	109	107	105	-1.31	100	98	100	97	95	-2.07
ISRAEL	129	123	125	144	126	-12.56	114	107	107	121	104	-13.92
JAPAN	104	100	102	103	99	-3.19	99	95	97	97	94	-3.51
SOUTH AFRICA	102	106	112	104	104	.35	88	89	92	83	82	-1.84

2. INDEXES OF FOOD PRODUCTION

	TOTAL						PER CAPUT					
	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991
	1979-81=100					PERCENT	1979-81=100					PERCENT
DEVELOPING COUNTRIES	125	132	135	140	142	1.89	108	111	112	113	113	-.24
AFRICA,DEVELOPING	118	127	130	132	138	4.05	95	99	99	97	98	.83
NORTH WESTERN AFRICA	132	133	140	141	157	11.25	109	107	110	108	117	8.43
ALGERIA	136	132	126	125	147	17.38	111	105	97	94	107	14.25
MOROCCO	135	167	169	160	186	16.42	112	136	134	124	140	13.49
TUNISIA	142	105	121	142	148	4.57	119	86	96	111	113	2.30
WESTERN AFRICA	122	137	141	144	154	6.99	98	107	106	105	109	3.60
BENIN	128	150	158	158	164	4.06	105	119	122	118	119	.89
BURKINA FASO	132	148	146	134	158	18.29	111	121	116	103	119	15.03
COTE D`IVOIRE	129	143	139	141	141	.52	99	105	99	96	93	-3
GAMBIA	125	125	134	112	124	10.91	102	99	103	83	90	7.87
GHANA	139	151	151	133	168	26.19	109	115	112	95	116	22.16
GUINEA	110	111	107	114	120	5.03	94	91	86	88	90	1.86
LIBERIA	121	124	120	94	94	-.40	97	96	90	69	66	-3.54
MALI	113	126	126	125	133	6.64	92	100	97	93	96	3.30
MAURITANIA	105	110	114	108	107	-1.08	87	89	90	83	80	-3.82
NIGER	81	107	96	90	111	22.58	64	82	72	65	78	18.75
NIGERIA	122	143	148	165	176	6.56	97	110	110	119	123	3.13
SENEGAL	143	125	143	134	133	-.48	118	100	111	102	98	-3.21
SIERRA LEONE	116	118	122	123	110	-10.44	98	98	99	96	84	-12.73
TOGO	111	120	132	134	133	-.52	90	95	101	99	95	-3.60
CENTRAL AFRICA	115	119	120	121	124	2.33	94	94	92	90	89	-.81
ANGOLA	103	103	102	104	106	2.30	86	84	81	80	79	-.43
CAMEROON	112	111	110	112	110	-1.11	90	87	83	82	78	-4.39
CENTRAL AFRICAN REP.	111	117	119	124	127	2.27	92	95	93	95	94	-.60
CHAD	113	130	124	121	133	9.54	96	108	100	96	102	6.80
CONGO	119	122	118	126	129	1.92	96	96	90	93	92	-1.33
GABON	108	112	114	122	123	1.27	82	82	81	84	82	-2.02
ZAIRE	121	125	127	129	132	2.83	99	98	97	95	94	-.42
EASTERN AFRICA	112	118	122	124	123	-.87	91	92	92	91	87	-4.04
BURUNDI	127	128	122	121	125	3.26	105	103	95	91	91	.25
ETHIOPIA	103	106	109	113	113	.17	88	88	88	89	86	-2.65
KENYA	134	146	150	157	154	-2.25	103	108	108	109	103	-5.73
MADAGASCAR	115	117	121	124	121	-1.91	93	92	91	90	86	-5.02
MALAWI	105	109	104	101	110	9.76	83	82	76	71	75	5.90
MAURITIUS	120	112	113	118	118	.20	111	102	102	105	104	-.90
MOZAMBIQUE	103	106	107	110	102	-7.39	86	86	85	85	77	-9.82
RWANDA	107	108	116	118	121	3.12	84	82	85	84	84	-.37
SOMALIA	119	124	127	124	113	-9.18	93	94	93	88	78	-11.58
TANZANIA	115	115	126	124	117	-5.45	89	86	90	85	78	-8.90
UGANDA	120	127	136	143	146	2.13	94	95	99	100	98	-1.60
ZAMBIA	118	145	145	127	146	15.47	90	106	102	86	96	11.19
ZIMBABWE	92	130	121	125	109	-12.84	75	102	92	92	78	-15.54
SOUTHERN AFRICA	103	110	111	109	120	10.31	83	85	83	79	85	6.80
BOTSWANA	87	114	118	109	102	-6.59	67	85	85	76	68	-9.89
LESOTHO	96	115	98	102	95	-7.10	79	92	76	77	70	-9.76
SWAZILAND	123	126	121	120	124	2.80	97	97	90	86	85	-.75
LATIN AMERICA	119	124	127	128	129	.81	103	105	105	103	102	-1.16
CENTRAL AMERICA	113	118	119	122	123	1.15	96	97	96	96	95	-1.10
COSTA RICA	110	112	120	130	124	-4.22	90	89	93	98	92	-6.48
EL SALVADOR	101	114	111	116	119	2.57	93	102	97	100	100	.21
GUATEMALA	118	120	116	124	121	-2.00	97	96	90	93	88	-4.80
HONDURAS	114	120	124	126	132	5.45	90	91	91	90	92	2.25
MEXICO	113	116	118	123	124	.73	96	97	96	98	96	-1.35
NICARAGUA	78	77	83	85	88	3.62	61	59	61	61	61	.29
PANAMA	111	101	108	110	110	-.08	96	85	89	89	88	-2.04
CARIBBEAN	103	105	107	108	105	-2.86	93	93	94	93	89	-4.30
BARBADOS	76	77	80	79	83	5.22	75	76	78	77	80	4.99
CUBA	106	110	110	110	107	-3.39	100	103	102	101	96	-4.39
DOMINICAN REP.	112	115	123	125	122	-2.36	95	96	100	100	95	-4.37
HAITI	115	112	115	110	105	-4.58	101	97	97	90	84	-6.53
JAMAICA	110	103	105	115	112	-2.01	99	92	92	100	96	-3.16

2. INDEXES OF FOOD PRODUCTION

	TOTAL						PER CAPUT					
	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991
	1979-81=100					PERCENT	1979-81=100					PERCENT
SOUTH AMERICA	123	128	131	131	133	1.09	106	108	108	107	106	-.82
ARGENTINA	107	111	103	111	110	-.53	97	100	91	97	95	-1.71
BOLIVIA	126	131	133	144	167	16.00	105	105	104	110	124	12.79
BRAZIL	167	165	165	166	167	.20	144	139	136	134	132	-1.73
CHILE	115	123	132	136	141	3.42	103	108	113	115	117	1.78
COLOMBIA	115	123	133	137	139	1.10	100	105	111	112	111	-.80
ECUADOR	120	130	137	147	154	4.61	99	105	108	113	115	2.07
GUYANA	80	73	66	62	68	10.17	76	70	63	59	65	9.81
PARAGUAY	140	152	159	163	159	-2.15	112	119	121	120	114	-4.84
PERU	116	126	123	113	117	4.35	99	105	101	90	92	2.26
URUGUAY	104	116	128	127	116	-8.95	99	110	121	120	109	-9.45
VENEZUELA	118	121	129	134	137	2.03	97	97	101	102	102	-.45
NEAR EAST,DEVELOPING	122	128	120	130	130	-.10	100	102	94	99	96	-2.82
NEAR EAST IN AFRICA	121	126	121	124	125	.92	99	101	95	95	93	-1.58
EGYPT	147	148	151	155	149	-3.82	123	121	120	121	114	-5.97
LIBYAN ARAB JAM.	109	114	122	117	124	5.28	82	82	85	79	80	1.59
SUDAN	91	117	92	85	111	30.81	73	92	70	63	80	27.12
NEAR EAST IN ASIA	122	128	119	132	131	-.44	101	103	93	100	97	-3.25
AFGHANISTAN	81	78	76	77	78	1.01	87	82	77	74	71	-4.04
CYPRUS	92	109	109	102	113	10.79	85	100	99	91	100	9.72
IRAN, ISLAMIC REP.	148	142	145	160	166	3.82	114	107	106	114	116	1.43
IRAQ	125	123	132	146	100	-31.76	98	92	96	103	68	-34.05
JORDAN	157	168	123	155	134	-13.21	121	124	88	106	89	-16.32
LEBANON	140	131	144	136	140	2.69	141	131	143	135	136	1.30
SAUDI ARABIA, KINGDOM	308	428	474	515	540	5.05	226	303	322	336	340	1.12
SYRIAN ARAB REP.	105	137	91	116	113	-1.87	82	104	67	81	77	-5.37
TURKEY	115	123	116	125	127	1.58	97	102	94	99	99	-.44
YEMEN	99	112	111	106	98	-7.46	77	84	81	75	67	-10.73
FAR EAST,DEVELOPING	129	136	142	147	150	2.16	113	117	120	122	123	.27
CHINA	138	141	145	157	160	2.40	126	127	129	137	138	.89
SOUTH ASIA	122	134	141	143	146	1.69	103	111	115	113	113	-.58
BANGLADESH	112	114	126	125	129	2.93	93	91	99	95	96	.22
INDIA	123	139	147	149	151	1.12	106	117	121	120	119	-.96
NEPAL	128	150	154	157	167	6.48	107	123	123	122	127	3.97
PAKISTAN	130	136	146	150	157	4.55	100	101	105	105	106	1.25
SRI LANKA	97	102	100	109	106	-2.18	87	90	87	94	90	-3.40
EAST,SOUTHEAST ASIA	122	129	135	135	138	2.45	106	109	112	111	111	.53
CAMBODIA	152	177	185	186	185	-.57	128	145	148	145	141	-3.28
INDONESIA	139	148	155	162	167	3.68	121	126	129	132	135	1.76
KOREA,DEM. PEOPLE`S REP.	122	127	124	126	126	-.01	108	110	106	106	104	-1
KOREA,REP.	107	112	111	108	108	.02	98	102	99	96	95	-.83
LAOS	127	119	140	149	147	-1.32	108	98	112	116	111	-4.27
MALAYSIA	172	186	204	210	211	.43	143	151	161	162	159	-2.05
MYANMAR	142	132	119	121	126	4.35	123	112	99	98	100	2.18
MONGOLIA	111	109	113	116	105	-8.82	92	87	88	88	78	-11.26
PHILIPPINES	105	108	114	117	117	.18	88	88	90	90	88	-2.17
THAILAND	113	124	127	118	128	8.49	99	107	108	99	106	7.01
VIET NAM	135	139	147	153	157	2.77	116	117	121	123	124	.57
OTHER DEV.ING COUNTRIES	106	109	115	116	113	-2.61	91	91	94	93	88	-4.70

3. INDEXES OF AGRICULTURAL PRODUCTION

	TOTAL						PER CAPUT					
	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991
	1979-81=100					PERCENT	1979-81=100					PERCENT
WORLD	117	119	123	125	125	-.21	103	103	105	105	103	-1.94
DEVELOPED COUNTRIES	108	105	110	111	107	-3.65	103	100	103	103	99	-4.19
WESTERN EUROPE	109	108	110	109	109	.32	107	106	107	106	106	.05
EEC	110	109	110	110	111	.87	109	107	108	107	108	.62
BELGIUM-LUXEMBOURG	109	112	112	113	118	4.05	108	112	112	113	117	4.06
DENMARK	114	122	127	135	134	-1.36	114	122	127	135	133	-1.44
FRANCE	109	106	103	106	107	.67	106	102	99	101	102	.32
GERMANY, NEW LANDER	118	113	115	108	79	-26.76	118	114	116	111	81	-26.49
GERMANY, FEDERAL REP.	111	117	116	119	123	3.22	112	117	115	116	120	2.61
GREECE	105	111	115	97	111	13.63	101	107	110	94	106	13.58
IRELAND	117	114	110	121	123	1.59	112	109	106	117	120	2.00
ITALY	104	100	104	96	105	9.37	102	99	102	94	103	9.32
NETHERLANDS	114	111	120	114	113	-1.08	110	106	115	108	106	-1.71
PORTUGAL	115	94	123	129	123	-4.63	109	89	117	122	117	-4.54
SPAIN	123	119	119	123	118	-4.08	119	115	114	118	113	-4.32
UNITED KINGDOM	110	106	110	110	112	2.02	108	104	108	108	110	1.76
AUSTRIA	109	115	111	108	105	-2.69	109	115	110	108	105	-2.78
FINLAND	99	103	114	120	105	-12.70	96	100	110	116	101	-12.93
ICELAND	100	89	88	88	89	.59	93	81	79	80	79	-.34
MALTA	113	105	116	117	117	-.10	118	109	120	121	120	-.44
NORWAY	107	107	107	119	116	-2.61	104	104	104	115	112	-2.92
SWEDEN	93	92	99	107	99	-7.80	92	90	97	104	96	-7.98
SWITZERLAND	106	106	115	110	113	2.33	102	102	109	105	107	1.91
YUGOSLAVIA	105	99	104	94	92	-2.30	100	94	98	88	86	-2.80
USSR AND EASTERN EUROPE	114	114	117	115	102	-12.08	108	107	109	108	94	-12.58
EASTERN EUROPE	106	110	110	106	100	-5.53	102	105	105	102	96	-5.76
ALBANIA	112	109	114	91	76	-17.12	97	92	95	75	61	-18.55
BULGARIA	99	98	99	94	88	-6.88	98	96	98	93	86	-6.95
CZECH SLOVAK FED.REP.	121	125	129	126	124	-1.05	119	122	126	123	121	-1.24
HUNGARY	109	115	112	105	112	7.04	110	116	114	107	114	7.24
POLAND	111	114	116	119	108	-9.14	105	107	109	112	102	-9.32
ROMANIA	97	104	97	82	78	-5.55	94	100	93	79	74	-5.97
USSR	117	117	119	119	105	-11.37	110	109	110	109	96	-12.01
NORTH AMERICA,DEVELOPED	101	94	103	108	106	-1.64	94	87	95	99	96	-2.37
CANADA	116	103	114	126	125	-.59	109	96	104	114	112	-1.39
UNITED STATES	100	94	102	105	104	-1.78	93	87	93	96	94	-2.50
OCEANIA,DEVELOPED	109	114	113	116	115	-.94	99	102	99	101	99	-2.15
AUSTRALIA	109	116	116	124	119	-4.07	99	103	101	107	101	-5.29
NEW ZEALAND	108	110	108	101	106	4.66	103	104	101	93	96	3.64
OTHER DEV.ED COUNTRIES	105	104	107	105	103	-1.36	98	96	98	95	93	-2.12
ISRAEL	119	115	113	130	109	-16.18	106	100	97	109	90	-17.48
JAPAN	101	97	99	100	96	-3.20	97	93	94	94	91	-3.52
SOUTH AFRICA	101	105	111	104	105	.76	87	88	91	83	82	-1.44

3. INDEXES OF AGRICULTURAL PRODUCTION

	TOTAL						PER CAPUT					
	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991
	1979-81=100					PERCENT	1979-81=100					PERCENT
DEVELOPING COUNTRIES	125	131	135	139	143	2.33	108	111	112	113	113	.20
AFRICA,DEVELOPING	118	127	130	132	137	4.00	96	99	99	97	98	.79
NORTH WESTERN AFRICA	135	135	142	144	159	10.76	111	109	111	110	119	7.96
ALGERIA	137	133	127	126	148	17.16	112	105	98	95	108	14.03
MOROCCO	136	168	170	161	187	16.10	113	136	135	124	141	13.19
TUNISIA	142	106	121	142	148	4.47	119	86	96	111	113	2.19
WESTERN AFRICA	122	137	141	144	154	6.78	98	106	106	105	109	3.40
BENIN	131	156	163	165	173	4.60	107	124	125	123	125	1.41
BURKINA FASO	134	150	148	138	162	17.26	113	123	117	107	122	14.03
COTE D`IVOIRE	125	134	134	137	137	-.57	96	99	95	94	90	-4.28
GAMBIA	124	127	135	113	125	10.61	101	100	104	85	91	7.59
GHANA	136	149	149	132	166	26.14	107	113	110	94	115	22.10
GUINEA	108	109	109	112	117	4.91	92	90	87	87	88	1.75
LIBERIA	118	121	117	80	72	-10.31	94	94	88	58	50	-13.14
MALI	115	127	129	128	138	7.33	94	101	99	96	99	3.98
MAURITANIA	105	110	114	108	107	-1.08	87	89	90	83	80	-3.82
NIGER	81	107	96	91	111	22.63	64	83	72	65	78	18.80
NIGERIA	122	142	148	165	176	6.75	97	110	110	119	123	3.31
SENEGAL	143	126	142	135	134	-.49	118	101	111	102	99	-3.22
SIERRA LEONE	120	123	127	127	115	-9.46	102	102	102	100	88	-11.78
TOGO	115	125	136	137	138	.79	94	98	104	101	99	-2.33
CENTRAL AFRICA	115	120	119	121	122	1.00	94	95	92	90	88	-2.09
ANGOLA	100	100	99	100	102	2.29	84	81	78	77	77	-.44
CAMEROON	110	115	108	111	106	-4.62	89	90	82	82	75	-7.78
CENTRAL AFRICAN REP.	111	118	119	124	126	2.00	92	95	93	94	94	-.86
CHAD	116	132	127	125	136	8.81	98	109	103	99	105	6.09
CONGO	119	122	118	126	128	1.90	96	96	89	93	91	-1.35
GABON	108	112	115	122	124	1.26	82	83	81	84	82	-2.02
ZAIRE	122	125	128	129	132	2.61	99	98	97	95	94	-.63
EASTERN AFRICA	113	119	123	124	124	.16	91	93	93	91	88	-3.04
BURUNDI	127	127	121	120	125	4.16	105	102	94	91	92	1.12
ETHIOPIA	103	105	108	112	110	-1.25	88	88	88	88	84	-4.03
KENYA	132	146	149	154	150	-2.51	102	109	107	106	100	-5.99
MADAGASCAR	114	117	120	122	120	-1.80	92	91	91	90	85	-4.91
MALAWI	107	113	111	110	122	10.91	84	86	81	77	83	7.01
MAURITIUS	120	112	112	117	117	.31	111	103	101	104	103	-.79
MOZAMBIQUE	103	105	106	109	101	-7.43	86	85	84	84	76	-9.85
RWANDA	111	113	119	123	126	2.37	88	86	88	88	87	-1.10
SOMALIA	119	124	127	124	113	-9.18	93	94	93	88	78	-11.57
TANZANIA	114	115	125	121	116	-4.33	88	85	89	84	77	-7.82
UGANDA	120	127	136	143	147	2.73	94	95	99	100	99	-1.02
ZAMBIA	118	147	147	128	151	17.88	90	108	104	87	98	13.51
ZIMBABWE	109	139	131	129	125	-3.43	88	109	99	95	89	-6.43
SOUTHERN AFRICA	103	109	109	108	119	9.74	83	85	82	79	84	6.24
BOTSWANA	87	113	118	109	102	-6.54	67	84	85	76	68	-9.85
LESOTHO	100	116	99	103	97	-6.47	82	93	77	78	71	-9.14
SWAZILAND	122	125	120	120	122	2.28	97	96	89	86	84	-1.26
LATIN AMERICA	118	122	124	125	126	.62	102	103	103	102	100	-1.34
CENTRAL AMERICA	110	115	115	118	118	-.22	93	95	92	93	91	-2.44
COSTA RICA	114	117	126	132	129	-1.93	93	93	98	100	95	-4.25
EL SALVADOR	85	82	81	93	92	-1.00	78	74	71	80	77	-3.27
GUATEMALA	104	107	107	112	110	-2.48	85	85	83	85	80	-5.26
HONDURAS	111	120	125	133	139	4.81	87	91	92	95	96	1.63
MEXICO	112	117	116	123	121	-1.01	95	97	94	98	95	-3.06
NICARAGUA	74	73	74	75	71	-4.29	58	55	55	53	49	-7.37
PANAMA	112	102	109	112	112	.23	97	86	90	91	89	-1.73
CARIBBEAN	102	105	107	107	104	-2.87	93	93	94	93	89	-4.31
BARBADOS	76	77	80	79	83	5.22	75	76	78	77	80	4.99
CUBA	106	110	111	111	107	-3.28	100	103	102	101	97	-4.29
DOMINICAN REP.	111	114	120	120	115	-4.31	94	95	98	95	89	-6.28
HAITI	111	111	113	107	103	-4.26	97	95	95	89	83	-6.21
JAMAICA	110	104	105	115	113	-1.77	99	92	92	100	97	-2.93

3. INDEXES OF AGRICULTURAL PRODUCTION

	TOTAL						PER CAPUT					
	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991	1987	1988	1989	1990	1991	CHANGE 1990 TO 1991
	1979-81=100					PERCENT	1979-81=100					PERCENT
SOUTH AMERICA	122	126	129	129	131	1.16	105	107	107	105	104	-.76
ARGENTINA	106	112	103	111	111	-.27	96	100	91	97	96	-1.46
BOLIVIA	124	129	131	142	165	16.10	103	104	102	108	122	12.89
BRAZIL	166	162	162	163	164	.23	142	136	134	132	130	-1.70
CHILE	115	123	131	136	140	3.27	103	108	113	115	117	1.63
COLOMBIA	111	118	125	133	135	1.43	96	100	104	108	108	-.47
ECUADOR	120	132	137	147	152	3.36	99	107	108	113	114	.85
GUYANA	80	73	66	62	68	10.16	76	70	63	59	65	9.79
PARAGUAY	135	158	167	171	174	1.79	108	123	127	126	125	-1.00
PERU	114	124	122	110	114	3.65	97	104	100	88	89	1.58
URUGUAY	107	116	129	128	120	-6.66	103	110	122	121	112	-7.16
VENEZUELA	118	121	129	134	135	.83	97	97	101	102	100	-1.62
NEAR EAST,DEVELOPING	120	126	118	127	127	-.17	99	101	92	97	94	-2.89
NEAR EAST IN AFRICA	117	121	116	118	119	.92	96	97	91	90	88	-1.59
EGYPT	137	137	139	143	138	-3.75	115	112	111	111	105	-5.90
LIBYAN ARAB JAM.	109	114	122	117	124	5.28	81	82	85	79	80	1.59
SUDAN	93	117	93	85	110	29.33	76	92	71	63	79	25.68
NEAR EAST IN ASIA	121	128	119	131	130	-.53	99	102	93	99	96	-3.34
AFGHANISTAN	80	77	76	76	77	1.28	86	81	76	73	71	-3.77
CYPRUS	92	109	109	102	113	10.74	85	99	99	92	100	9.67
IRAN, ISLAMIC REP.	147	142	144	159	165	3.80	113	106	105	114	115	1.41
IRAQ	125	122	131	145	99	-31.89	98	91	95	102	67	-34.17
JORDAN	155	166	123	153	134	-12.83	120	123	88	105	88	-15.95
LEBANON	137	128	140	132	136	2.70	138	129	140	131	133	1.31
SAUDI ARABIA, KINGDOM	304	423	468	507	532	5.03	224	299	318	331	335	1.10
SYRIAN ARAB REP.	105	137	94	117	118	.59	83	104	69	82	80	-3.00
TURKEY	114	123	116	124	126	1.10	97	102	94	99	98	-.91
YEMEN	99	112	111	107	100	-6.95	78	84	81	75	68	-10.24
FAR EAST,DEVELOPING	129	136	142	148	152	2.95	114	118	120	123	124	1.04
CHINA	140	144	147	159	164	3.69	128	129	131	139	142	2.16
SOUTH ASIA	122	133	141	143	146	2.27	103	110	114	113	113	-.01
BANGLADESH	113	113	124	123	127	3.08	93	91	97	94	95	.37
INDIA	122	137	146	147	149	1.21	105	116	120	119	118	-.86
NEPAL	126	148	151	154	164	6.46	105	120	121	120	125	3.95
PAKISTAN	136	141	150	155	167	7.41	104	105	108	108	113	4.02
SRI LANKA	97	100	97	106	104	-2.08	87	89	85	91	88	-3.30
EAST,SOUTHEAST ASIA	122	128	134	134	138	2.44	105	109	112	110	111	.52
CAMBODIA	157	182	189	194	191	-1.24	131	149	152	151	145	-3.93
INDONESIA	137	146	151	159	165	3.56	119	124	126	130	132	1.65
KOREA,DEM. PEOPLE`S REP.	123	127	125	127	127	.10	109	111	107	107	105	-1.76
KOREA,REP.	106	111	109	106	107	.15	97	100	98	95	94	-.70
LAOS	127	119	140	148	147	-1.20	107	98	112	115	110	-4.16
MALAYSIA	152	163	172	174	174	-.06	127	132	135	134	130	-2.52
MONGOLIA	109	107	111	113	105	-7.38	89	86	86	86	78	-9.85
MYANMAR	140	130	117	119	124	4.21	121	110	97	96	98	2.04
PHILIPPINES	106	108	114	117	116	-.27	88	88	91	90	88	-2.62
THAILAND	115	125	129	123	133	8.15	101	108	110	103	110	6.67
VIET NAM	137	141	149	156	161	3.10	117	119	123	126	127	.88
OTHER DEV.ING COUNTRIES	107	109	116	117	113	-2.77	91	91	95	93	89	-4.86

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
						'000 TONNES						PERCENT
WORLD												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	105854	104809	111807	116435	105081	96299	110556	119101	107327	108237	120975	.70
RICE,MILLED	13075	12059	11499	12769	11536	13010	12810	12178	15307	12222	12817	.75
BARLEY	20278	18346	17755	23006	21918	26247	22295	21076	21661	21092	22991	1.49
MAIZE	78735	69630	69121	68679	69915	57661	64819	66657	77554	72210	66602	-.44
MILLET	242	196	191	168	210	180	198	224	210	204	213	.29
SORGHUM	14466	13725	11732	12438	13344	8563	7948	9285	10630	8862	8128	-5.34
POTATOES	4948	5182	4783	4788	5014	5482	6259	6507	6769	7009	8014	5.12
SUGAR,TOTAL (RAW EQUIV.)	29347	30760	29498	28575	28387	27740	28755	29206	30044	29916	29677	.05
PULSES	3148	2963	3183	3381	3704	4834	5373	6114	5447	6553	6363	9.38
SOYBEANS	26219	28928	26592	25790	26152	27653	29187	26059	24056	26089	27640	-.29
SOYBEAN OIL	3489	3406	3653	4041	3503	2994	4015	3917	3771	3742	3602	.64
GROUNDNUTS SHELLED BASIS	831	739	782	740	866	971	904	984	910	1111	1075	3.69
GROUNDNUT OIL	322	450	529	302	326	370	380	329	357	348	306	-1.93
COPRA	415	431	252	287	388	404	336	295	287	319	275	-2.66
COCONUT OIL	1357	1270	1325	985	1234	1649	1481	1333	1310	1669	1337	1.62
PALM NUTS,KERNELS	138	136	120	131	98	111	122	133	97	87	72	-4.81
PALM OIL	3228	3776	4017	4318	5221	6242	5795	5925	7057	8083	8227	9.67
OILSEED CAKE AND MEAL	27799	27689	31980	28543	30516	33872	36505	39304	39010	38492	39678	4.19
BANANAS	6996	7211	6335	6937	6807	7386	7633	7762	8348	9453	10334	3.89
ORANGES+TANGER.+CLEMEN.	4941	4955	4807	5269	4960	6032	5445	5271	5313	5757	5480	1.38
LEMONS AND LIMES	923	1000	935	996	1041	1072	1063	1029	1017	1026	1034	.92
COFFEE,GREEN+ROASTED	3732	3959	4031	4229	4426	4099	4471	4209	4786	5055	4985	2.71
COCOA BEANS	1336	1252	1207	1354	1386	1553	1611	1647	1863	1867	1872	4.77
TEA	951	927	975	1080	1083	1096	1103	1140	1206	1231	1180	2.74
COTTON LINT	4263	4430	4272	4235	4134	4697	5411	4787	5910	5148	4948	2.61
JUTE AND SIMILAR FIBRES	573	512	508	495	384	526	515	352	400	439	352	-3.71
TOBACCO,UNMANUFACTURED	1491	1429	1338	1390	1388	1334	1362	1356	1431	1517	1657	.82
NATURAL RUBBER	3148	3113	3449	3641	3646	3718	4071	4229	4371	5262	4144	4.26
WOOL,GREASY	952	874	893	882	910	947	1013	998	940	836	727	-.93
BOVINE CATTLE 1/	7187	7687	7108	6716	6456	7137	7378	7360	7304	8012	8703	1.39
SHEEP AND GOATS 1/	17608	18437	20576	19631	18695	19109	21819	22051	22669	21120	22212	2.19
PIGS 1/	9846	9357	9583	10119	10277	11862	12241	12678	13527	12913	13792	4.30
TOTAL MEAT	8853	8576	8929	8777	9060	9896	10153	10735	11308	11570	12674	3.91
MILK,DRY	868	816	743	822	839	872	1045	1119	1169	973	1206	4.22
TOTAL EGGS,IN SHELL	806	824	792	837	759	749	795	774	803	833	801	-.05
FISHERY PRODUCTS												
FISH,FRESH FROZEN	4639	4765	5210	5407	6197	7266	7588	8363	7871	7848		
FISH,CURED	470	436	415	408	428	448	453	451	493	489		
SHELLFISH	1146	1249	1440	1601	1654	1781	2035	2145	2309	2308		
FISH,CANNED AND PREPARED	1063	937	904	987	1029	1115	1132	1221	1310	1312		
SHELLFISH,CANNED+PREPARED	150	162	184	197	209	227	240	269	292	292		
FISH,BODY AND LIVER OIL	727	686	728	945	991	807	722	837	932	932		
FISH-MEAL	2164	2656	2321	2654	3170	3264	3278	3299	3760	3753		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	22480	26310	29382	30884	32586	32615	35682	38584	36586	34754	32791	3.89
SAWLOGS,NON-CONIFEROUS	33131	33373	32375	29713	30013	28829	33021	32177	33242	32309	31136	-.10
PULPWOOD+PARTICLE	38834	33668	34187	38130	39729	42097	46581	51015	54309	49901	45400	4.16
FUELWOOD	2248	2392	2784	2653	2097	2068	2196	2265	2823	2385	2337	-.04
SAWNWOOD,CONIFEROUS	61106	61788	70915	73140	73781	73940	79105	81933	81197	74178	71366	2.03
SAWNWOOD,NON-CONIFEROUS	11455	11353	12856	13012	12222	13114	15232	17583	17241	15026	16262	4.25
WOOD-BASED PANELS	16758	15444	17371	18410	19346	20955	23857	26474	28897	31275	30125	7.76
PULP FOR PAPER	18755	17314	19810	20334	20599	22090	23399	24532	24799	23734	23738	3.34
PAPER AND PAPERBOARD	35370	33688	36744	39803	40972	43451	46811	50749	52368	55333	51647	5.18

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	'000 TONNES											PERCENT
WESTERN EUROPE												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	23765	22482	23906	27520	29757	27861	29738	30617	33755	37392	37455	5.18
RICE,MILLED	999	933	941	984	1198	1190	1156	945	1066	1087	1253	1.84
BARLEY	10949	7554	8550	11651	12919	13926	11235	13425	13683	12278	13741	4.30
MAIZE	4808	5743	7705	7809	7025	9310	9529	8248	9817	8186	6109	3.47
MILLET	20	20	26	21	24	18	15	23	26	23	25	1.17
SORGHUM	240	269	159	165	190	124	191	134	208	234	248	.03
POTATOES	3543	3666	3517	3526	3778	4176	4779	4544	4354	4637	5572	4.26
SUGAR,TOTAL (RAW EQUIV.)	6255	6560	6198	5742	5482	5906	6813	7387	7797	7290	7069	2.25
PULSES	457	426	614	825	1244	1215	1437	1479	1724	2030	2023	17.88
SOYBEANS	160	207	127	88	95	153	287	304	245	390	464	12.98
SOYBEAN OIL	1286	1398	1400	1441	1344	1281	1452	1148	1163	1209	1209	-1.64
GROUNDNUTS SHELLED BASIS	24	25	17	24	24	33	41	57	53	48	87	14.35
GROUNDNUT OIL	68	74	99	62	61	56	51	63	71	40	38	-5.72
COPRA		1							3			7.70
COCONUT OIL	58	87	60	57	51	54	67	64	77	65	65	.61
PALM NUTS,KERNELS	1	2					1	1		1	1	6.70
PALM OIL	114	94	123	131	141	171	156	149	172	197	221	7.20
OILSEED CAKE AND MEAL	4922	5335	6434	6119	6364	5589	6824	5748	5991	6332	6038	1.32
BANANAS	48	46	35	47	35	81	113	49	70	148	176	14.04
ORANGES+TANGER.+CLEMEN.	1659	1880	1702	2439	1957	3024	2512	2385	2441	2662	2743	4.83
LEMONS AND LIMES	433	574	449	532	542	597	566	518	540	509	494	.65
COFFEE,GREEN+ROASTED	122	126	142	165	202	209	232	265	300	315	338	11.63
COCOA BEANS	48	52	52	66	76	78	74	43	71	28	21	-5.79
TEA	44	43	51	56	56	52	55	52	51	66	61	2.92
COTTON LINT	62	82	99	102	120	98	166	123	231	150	165	10.07
JUTE AND SIMILAR FIBRES	17	15	16	14	14	13	11	12	12	11	11	-4.54
TOBACCO,UNMANUFACTURED	213	248	249	265	244	255	310	281	331	364	388	5.37
NATURAL RUBBER	14	15	16	23	23	22	28	42	37	39	43	12.65
WOOL,GREASY	61	57	69	65	62	64	80	82	73	59	65	1.18
BOVINE CATTLE 1/	3707	3640	3598	3632	3512	3874	3853	3486	3367	3134	3673	-.75
SHEEP AND GOATS 1/	1327	1029	1431	1372	1670	1813	2206	2213	2732	3998	4689	14.52
PIGS 1/	5767	5037	5087	5031	5301	7510	7862	7570	7642	7512	7616	5.05
TOTAL MEAT	3958	3833	4108	4352	4611	5154	5095	5307	5740	5734	6573	5.27
MILK,DRY	673	599	531	641	624	616	773	832	817	703	817	3.36
TOTAL EGGS,IN SHELL	554	616	612	602	555	559	572	574	630	650	602	.59
FISHERY PRODUCTS												
FISH,FRESH FROZEN	1797	1928	2018	1991	2181	2342	2410	2541	2724	2708		
FISH,CURED	309	274	271	270	281	291	291	284	295	291		
SHELLFISH	330	317	352	412	415	385	379	395	425	424		
FISH,CANNED AND PREPARED	266	260	260	270	283	279	278	277	302	305		
SHELLFISH,CANNED+PREPARED	47	57	72	75	86	82	81	85	103	102		
FISH,BODY AND LIVER OIL	335	270	265	270	392	274	265	278	208	208		
FISH-MEAL	843	822	930	1003	927	854	767	823	831	824		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	2775	2469	2534	2826	3306	2929	3446	3690	4131	5361	3398	5.75
SAWLOGS,NON-CONIFEROUS	2128	1928	2011	2335	2458	2639	2873	3833	5002	3968	3755	9.13
PULPWOOD+PARTICLE	11307	10037	9170	11794	13395	14875	14768	13526	14737	13651	9126	1.79
FUELWOOD	745	1010	1241	1172	940	910	1004	1082	1107	985	962	.67
SAWNWOOD,CONIFEROUS	17312	18512	20762	20528	19791	19339	19602	20262	20605	19363	18340	.37
SAWNWOOD,NON-CONIFEROUS	2190	2055	2149	2569	2393	2379	2666	2734	2657	2611	2147	1.58
WOOD-BASED PANELS	6696	6312	6459	6894	7192	7478	7828	8765	9334	9631	8262	4.09
PULP FOR PAPER	6219	5616	6749	7086	7197	7298	7775	7975	7769	7442	7412	2.52
PAPER AND PAPERBOARD	18260	17967	19858	22180	22972	23709	26164	28995	29941	31021	26854	5.62

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	'000 TONNES											PERCENT
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	5024	4909	3998	3680	4671	3771	3537	3948	3626	2856	2348	-5.65
RICE,MILLED	20	24	35	60	38	86	75	25	65	35	30	3.97
BARLEY	247	276	276	277	276	226	314	289	342	364	384	3.87
MAIZE	1063	905	894	694	1189	987	903	751	504	478	759	-5.37
MILLET	3	5	4	3	2	4	5	12	9	22	27	22.32
SORGHUM	9	6	4	4	6	9	23	25	15	11	10	10.90
POTATOES	323	299	185	141	272	306	506	748	960	998	408	14.48
SUGAR,TOTAL (RAW EQUIV.)	631	807	762	871	1024	1240	1083	956	940	645	495	-1.12
PULSES	122	112	118	193	231	274	361	399	551	564	580	20.80
SOYBEANS	4	5	5	11	6	5	33	15	13	24	25	20.42
SOYBEAN OIL	14	20	15	35	25	12	7	2	24	3	1	-21.39
GROUNDNUTS SHELLED BASIS				2								
GROUNDNUT OIL									1			
PALM OIL										6	58	
OILSEED CAKE AND MEAL	91	115	120	64	205	174	323	236	234	252	317	14.05
ORANGES+TANGER.+CLEMEN.	2	2	1	1	2	2	1					
COFFEE,GREEN+ROASTED									3	3	3	
COCOA BEANS			5	12								
TEA	18	17	26	30	19	6	5	7	5	7	7	-14.33
COTTON LINT	928	970	847	695	720	769	813	781	835	556	512	-4.34
JUTE AND SIMILAR FIBRES							1	5	21	3	1	
TOBACCO,UNMANUFACTURED	90	88	85	81	84	95	93	90	98	64	43	-3.75
NATURAL RUBBER								1	7	6	6	
WOOL,GREASY	1		1	1	1	1	2	2	3	2	3	19.11
BOVINE CATTLE 1/	460	607	705	707	642	677	884	995	1056	1160	1026	8.34
SHEEP AND GOATS 1/	3720	3654	4179	4232	3166	2768	3644	3958	3374	3120	2967	-2.16
PIGS 1/	1713	1091	973	857	1120	1151	1177	1218	1316	995	678	-3.00
TOTAL MEAT	779	715	758	832	923	953	932	927	786	731	515	-1.48
MILK,DRY								1	6	6	25	
TOTAL EGGS,IN SHELL	78	59	55	65	42	38	44	42	52	74	31	-4.15
FISHERY PRODUCTS												
FISH,FRESH FROZEN	493	418	543	540	607	823	774	1006	839	839		
FISH,CURED	11	6	18	6				1	2	2		
SHELLFISH	24	51	114	135	113	78	98	90	111	111		
FISH,CANNED AND PREPARED	36	30	38	39	66	68	81	86	66	66		
SHELLFISH,CANNED+PREPARED	1	2	2	1	1	2	2	2	2	2		
FISH,BODY AND LIVER OIL								31	37	37		
FISH-MEAL	12	9	12	8	11	12	12	14	20	20		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	6783	7025	7762	8085	8271	9662	9311	9033	7454	6252	6237	-.60
SAWLOGS,NON-CONIFEROUS	285	289	315	232	165	152	173	121	110	141	141	-9.36
PULPWOOD+PARTICLE	11529	9631	10909	12616	12617	12948	13752	14968	14296	11761	10986	1.65
FUELWOOD	94	70	92	121	132	149	171	201	202	206	206	11.43
SAWNWOOD,CONIFEROUS	9426	9700	9768	9548	9758	10323	10061	10813	9801	8053	6371	-2.17
SAWNWOOD,NON-CONIFEROUS	602	556	607	636	445	422	571	534	525	506	486	-1.78
WOOD-BASED PANELS	1683	1548	1598	1437	1488	1623	1818	1718	1724	1839	1839	1.76
PULP FOR PAPER	896	982	1162	1217	1227	1366	1326	1259	1171	842	842	-.68
PAPER AND PAPERBOARD	1697	1745	1775	1806	1795	1881	1904	1756	1719	1696	1580	-.51

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	'000 TONNES											PERCENT
NORTH AMERICA, DEVELOPED												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR, WHEAT EQUIV.	61342	61264	63319	65263	43528	42833	55214	62600	49757	46915	55992	-1.88
RICE, MILLED	3133	2540	2385	2141	1940	2392	2472	2260	3061	2474	2243	-.61
BARLEY	6853	7097	7258	5876	2938	7586	8468	4873	5627	6008	5483	-1.68
MAIZE	56067	49658	48083	49584	44345	27473	41097	46815	56544	52294	45293	-.51
MILLET	24	28	41	55	39	74	58	47	113	63	59	10.40
SORGHUM	8032	6051	5325	6828	7239	4149	5009	6532	8413	6804	5965	-.09
POTATOES	395	461	363	296	321	319	353	442	510	625	559	4.54
SUGAR, TOTAL (RAW EQUIV.)	1187	154	323	397	436	544	673	358	486	535	629	2.99
PULSES	1141	854	679	635	646	851	930	1030	947	1100	1048	2.69
SOYBEANS	21980	25652	22791	19641	17671	21576	21513	18124	15415	15633	17844	-3.71
SOYBEAN OIL	809	911	786	1043	588	540	624	892	712	536	457	-4.90
GROUNDNUTS SHELLED BASIS	146	201	224	266	311	276	221	159	246	278	222	2.12
GROUNDNUT OIL	20	10	2	7	17	35	3	3	7	7	23	.09
COCONUT OIL	14	13	11	21	19	18	39	40	33	23	26	10.42
PALM NUTS, KERNELS										1	1	
PALM OIL									3	3	4	
OILSEED CAKE AND MEAL	7471	6917	7517	5551	5599	7379	8258	8652	6343	6099	6921	-.11
BANANAS	217	210	188	202	197	163	188	180	154	337	356	3.25
ORANGES+TANGER.+CLEMEN.	443	353	497	374	412	417	403	357	393	541	252	-1.74
LEMONS AND LIMES	176	135	163	148	144	148	152	146	137	144	124	-1.79
COFFEE, GREEN+ROASTED	70	60	46	63	52	77	60	76	52	43	51	-1.87
COCOA BEANS	14	14	16	12	11	14	17	14	16	11	14	
TEA	4	4	5	5	13	22	15	3	4	3	3	-4.21
COTTON LINT	1269	1392	1126	1367	1001	662	1195	1173	1533	1697	1532	2.33
JUTE AND SIMILAR FIBRES								1	6	4	4	52.53
TOBACCO, UNMANUFACTURED	300	290	264	275	274	247	226	240	247	248	252	-1.94
NATURAL RUBBER	18	16	20	35	41	37	37	56	63	31	37	9.97
WOOL, GREASY	1	1	1	1	1	1	1	1	2	2	2	10.30
BOVINE CATTLE 1/	441	563	440	479	506	355	399	868	605	1004	1227	8.86
SHEEP AND GOATS 1/	225	287	226	332	382	145	67	204	458	591	895	8.70
PIGS 1/	171	342	483	1362	1171	515	435	960	1300	948	1323	15.21
TOTAL MEAT	1073	987	926	956	1013	1150	1285	1443	1676	1654	1808	7.07
MILK, DRY	37	29	37	19	49	30	12	21	51	13	13	-7.47
TOTAL EGGS, IN SHELL	87	64	31	25	22	19	35	49	38	38	59	-1.44
FISHERY PRODUCTS												
FISH, FRESH FROZEN	638	801	918	1167	1465	1913	2094	2163	1542	1533		
FISH, CURED	87	89	70	65	70	79	70	71	98	98		
SHELLFISH	88	80	80	71	83	95	115	144	158	158		
FISH, CANNED AND PREPARED	92	68	82	96	85	100	95	111	129	129		
SHELLFISH, CANNED+PREPARED	12	11	4	3	3	6	5	16	24	24		
FISH, BODY AND LIVER OIL	117	98	191	188	133	92	120	76	98	98		
FISH-MEAL	75	42	95	41	58	55	87	131	63	63		
FOREST PRODUCTS 2/												
SAWLOGS, CONIFEROUS	11676	15269	17395	18441	19320	18316	21212	23617	22299	19111	19111	4.36
SAWLOGS, NON-CONIFEROUS	751	506	755	761	602	779	879	1163	1114	1056	1056	6.61
PULPWOOD+PARTICLE	8382	6605	6716	6102	6076	6615	6961	8949	11310	11314	11314	5.72
FUELWOOD	108	85	85	90	89	82	76	104	125	113	113	2.46
SAWNWOOD, CONIFEROUS	31905	31469	38363	41003	42292	42286	47210	48778	48578	44528	44435	3.90
SAWNWOOD, NON-CONIFEROUS	1344	1129	1408	1497	1246	1567	2223	3490	2495	2463	2371	9.47
WOOD-BASED PANELS	2533	2088	2401	2668	2754	3159	3547	4697	4818	5791	5791	11.21
PULP FOR PAPER	9261	8531	9428	9611	9791	10917	11909	12614	13045	12436	12436	4.36
PAPER AND PAPERBOARD	13149	11941	12846	13288	13378	14558	15455	16105	16330	17263	17263	3.78

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... '000 TONNES											PERCENT
OCEANIA,DEVELOPED												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	10677	10998	8312	10647	15782	16171	14898	12285	10589	11630	12021	1.62
RICE,MILLED	281	596	405	246	341	178	186	298	339	178	219	-6.03
BARLEY	1650	1599	852	3231	5482	4399	2345	1530	1617	2411	2448	2.95
MAIZE	52	24	73	30	164	117	103	29	10	26	15	-10.53
MILLET	11	25	19	18	16	16	24	46	16	12	13	-.38
SORGHUM	463	1271	445	772	1594	1234	818	415	313	303	168	-11.76
POTATOES	21	23	26	21	24	19	19	20	15	22	33	-.09
SUGAR,TOTAL (RAW EQUIV.)	2563	2502	2551	2361	2529	2760	2481	2786	2809	2860	2621	1.14
PULSES	64	71	106	78	100	219	480	441	431	430	443	26.82
SOYBEANS										1		37.74
SOYBEAN OIL			1								3	10.47
GROUNDNUTS SHELLED BASIS	4	4	8		5	3	3	3	2	1		-14.67
GROUNDNUT OIL		1				1					1	-6.46
PALM OIL						2						
OILSEED CAKE AND MEAL		1	1	2	1	13	16	1	2	6	1	27.18
ORANGES+TANGER.+CLEMEN.	32	28	32	25	30	36	48	51	29	38	52	4.76
LEMONS AND LIMES	1	2	1	1	1	5	4	2	1	1	2	1.12
COCOA BEANS			1	1	1			1				
COTTON LINT	59	79	129	81	140	241	251	176	287	301	319	18.15
TOBACCO,UNMANUFACTURED	1		1									-11.36
NATURAL RUBBER					1	2	3	1	2	2	3	62.99
WOOL,GREASY	680	642	660	659	709	733	799	784	748	617	521	-.58
BOVINE CATTLE 1/	109	121	120	96	67	181	125	153	189	116	121	3.01
SHEEP AND GOATS 1/	5763	6097	7035	6350	6262	6554	8416	7748	7467	5289	5079	-.30
PIGS 1/	1		1	3				2	1	6		10.64
TOTAL MEAT	1602	1493	1666	1351	1323	1361	1642	1639	1537	1557	1750	.89
MILK,DRY	137	157	146	148	152	202	227	214	234	195	289	6.74
TOTAL EGGS,IN SHELL	1	1	3	6	2	2	1	1				-20.62
FISHERY PRODUCTS												
FISH,FRESH FROZEN	95	88	98	94	97	119	114	162	151	150		
FISH,CURED	1	2	1		1	3	2	6	10	10		
SHELLFISH	57	70	68	78	70	61	70	73	114	113		
FISH,CANNED AND PREPARED	2	4	5	4	4	4	4	5	6	6		
SHELLFISH,CANNED+PREPARED	2	2	3	3	3	3	3	3	3	3		
FISH,BODY AND LIVER OIL				2	2	1	1	1	2	2		
FISH-MEAL	1		3	4	1	2	1	2	2	2		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	529	479	508	452	361	389	429	820	1701	2860	2860	20.57
SAWLOGS,NON-CONIFEROUS	4				1	1	22	22	30	36	36	78.91
PULPWOOD+PARTICLE	6647	6240	6105	7345	7376	7188	8069	8471	8213	7605	7605	2.51
SAWNWOOD,CONIFEROUS	559	524	406	381	489	401	348	409	481	582	582	.85
SAWNWOOD,NON-CONIFEROUS	48	43	40	41	36	34	16	24	51	51	51	-.16
WOOD-BASED PANELS	138	99	113	93	79	98	167	259	279	379	379	15.56
PULP FOR PAPER	518	421	471	459	428	504	483	483	630	652	652	3.70
PAPER AND PAPERBOARD	447	340	361	342	353	336	330	263	404	499	499	1.68

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	'000 TONNES											PERCENT
AFRICA, DEVELOPING												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR, WHEAT EQUIV.	19	27	14	13	7	10	28	51	43	314	352	33.65
RICE, MILLED	18	14	8	20	13	12	5	15	107	49	122	20.88
BARLEY								263		2		
MAIZE	245	383	782	262	352	817	819	637	392	983	841	10.00
MILLET	41	6	1	5	19	22	23	19	5	25	41	12.75
SORGHUM	3	15	25	30	11	5	36	23	25	8	39	10.00
POTATOES	36	30	49	63	61	84	73	53	106	79	133	12.07
SUGAR, TOTAL (RAW EQUIV.)	1491	1699	1701	1595	1658	1844	1842	1639	1651	1664	1714	.63
PULSES	127	166	191	128	71	133	164	163	109	199	120	.08
SOYBEANS	1		1		3	1	1	10	5	1	2	51.36
SOYBEAN OIL							1			2	1	41.44
GROUNDNUTS SHELLED BASIS	36	56	96	56	45	55	70	78	37	62	37	-1.19
GROUNDNUT OIL	38	162	210	109	56	95	135	138	166	141	98	4.51
COPRA	22	20	14	11	18	18	20	18	9	16	26	-.27
COCONUT OIL	18	21	21	23	32	34	29	22	26	35	40	6.16
PALM NUTS, KERNELS	107	97	87	98	50	87	109	116	82	56	37	-5.80
PALM OIL	85	84	70	75	92	135	174	98	137	207	181	10.05
OILSEED CAKE AND MEAL	362	492	490	336	409	454	503	512	608	555	536	3.83
BANANAS	205	187	193	193	208	189	183	192	249	245	253	2.57
ORANGES+TANGER.+CLEMEN.	715	662	594	582	636	644	586	661	637	533	741	-.27
LEMONS AND LIMES	1	2	7	6	7	3	3	2	3	1	2	-5.48
COFFEE, GREEN+ROASTED	965	1053	939	914	972	1077	911	904	1010	1104	943	.19
COCOA BEANS	976	826	783	894	831	1008	977	955	1193	1188	1199	3.73
TEA	168	190	200	195	226	224	231	243	257	271	277	4.79
COTTON LINT	340	316	349	372	380	478	489	498	635	589	635	7.78
JUTE AND SIMILAR FIBRES								1	1			
TOBACCO, UNMANUFACTURED	189	147	144	173	175	172	173	175	173	220	252	3.33
NATURAL RUBBER	146	151	156	186	185	204	215	264	302	269	215	6.65
WOOL, GREASY	4	4	4	5	4	5	6	4	4	3	3	-2.25
BOVINE CATTLE 1/	1461	1461	1206	1125	961	824	868	786	838	871	875	-5.78
SHEEP AND GOATS 1/	3412	3574	3001	2488	3367	3096	3103	2752	2912	2821	2752	-1.79
PIGS 1/			1			3	3	1				
TOTAL MEAT	44	44	48	52	45	37	54	51	58	48	64	2.78
MILK, DRY										3	3	23.13
TOTAL EGGS, IN SHELL				2	1							
FISHERY PRODUCTS												
FISH, FRESH FROZEN	144	156	146	164	192	168	218	223	215	215		
FISH, CURED	11	12	9	13	17	14	18	12	9	9		
SHELLFISH	74	78	130	135	142	154	169	165	174	174		
FISH, CANNED AND PREPARED	94	82	101	100	105	105	108	120	129	128		
FISH, BODY AND LIVER OIL	10	1	8	5		4	3	1	1	1		
FISH-MEAL	20	3	12	7	6	1	7	12	11	11		
FOREST PRODUCTS 2/												
SAWLOGS, NON-CONIFEROUS	4599	4728	4531	5072	4247	3658	3553	3724	3456	3677	3612	-3.41
PULPWOOD+PARTICLE	173	173	173	173	173	173	412	673	639	551	551	17.68
FUELWOOD				28								
SAWNWOOD, CONIFEROUS	116	88	83	82	77	79	89	64	84	103	103	-.21
SAWNWOOD, NON-CONIFEROUS	568	591	615	683	783	777	818	832	823	1130	1152	6.99
WOOD-BASED PANELS	283	266	288	300	307	286	283	264	251	263	288	-.63
PULP FOR PAPER	229	192	202	252	244	244	264	282	249	246	246	2.12
PAPER AND PAPERBOARD	11	19	12	14	13	7	14	7	7	7	7	-8.21

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	'000 TONNES											PERCENT
LATIN AMERICA												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	3964	4042	10425	7496	9802	4165	4366	3954	5005	6513	5943	-.32
RICE,MILLED	625	526	512	530	561	569	479	484	601	583	584	.19
BARLEY	32	24	59	95	86	51	36	150	181	104	145	16.43
MAIZE	9198	5837	7321	5733	7129	7422	4150	4386	2087	3292	3982	-9.78
MILLET	136	101	96	58	93	32	60	67	27	46	42	-11.12
SORGHUM	5075	5369	5332	4278	3332	1960	1006	1512	388	1082	1288	-19.90
POTATOES	45	44	32	50	55	66	39	33	34	34	57	-.71
SUGAR,TOTAL (RAW EQUIV.)	12702	13052	12953	12842	12298	11366	10946	12033	10517	11541	10902	-1.92
PULSES	286	281	358	412	349	392	307	325	256	329	310	-.51
SOYBEANS	3909	2877	3270	5170	7171	4469	5577	5999	7042	9026	7749	9.86
SOYBEAN OIL	1355	1025	1369	1423	1511	1103	1734	1705	1719	1820	1785	4.52
GROUNDNUTS SHELLED BASIS	86	61	101	104	138	138	131	146	103	105	89	2.73
GROUNDNUT OIL	80	113	104	57	109	50	105	75	40	49	66	-5.87
COPRA		5			1							
COCONUT OIL	5	6	6	17	4	5	6	9	10	7	5	1.46
PALM NUTS,KERNELS	1	4	4	3	2	1	1	1				-23.55
PALM OIL	6	15	17	27	35	31	33	34	26	43	44	15.99
OILSEED CAKE AND MEAL	10912	10498	12344	12163	13506	12751	13491	15572	17212	16790	16212	4.98
BANANAS	5471	5652	5082	5492	5370	5932	6170	6297	6878	7761	8459	4.43
ORANGES+TANGER.+CLEMEN.	316	383	418	409	479	536	532	520	498	551	590	5.30
LEMONS AND LIMES	51	34	56	65	154	113	130	141	140	150	191	16.40
COFFEE,GREEN+ROASTED	2148	2259	2426	2533	2623	2107	2691	2343	2667	2773	2893	2.27
COCOA BEANS	201	241	229	211	289	238	254	260	218	263	215	.73
TEA	35	43	54	54	53	49	48	46	54	55	44	1.57
COTTON LINT	600	599	509	481	637	372	436	552	698	645	689	1.68
JUTE AND SIMILAR FIBRES		1		1	2							
TOBACCO,UNMANUFACTURED	271	273	274	290	305	267	260	299	284	315	313	1.19
NATURAL RUBBER	2	3	3	2	2	13	7	15	14	17	19	27.25
WOOL,GREASY	125	108	88	79	67	78	75	67	49	68	52	-7.17
BOVINE CATTLE 1/	716	962	717	451	556	1022	1053	837	1003	1517	1505	7.95
SHEEP AND GOATS 1/	312	195	634	462	14	89	20	300	75	269	453	-3.39
PIGS 1/			10	4	6	55	18	13	168	14	1	45.01
TOTAL MEAT	992	1027	983	778	806	805	625	816	894	1042	909	-.75
MILK,DRY	11	19	17	2	1	2	3	13	28	19	21	9.00
TOTAL EGGS,IN SHELL	14	6	3	4	6	11	6	3	6	7	6	-1.96
FISHERY PRODUCTS												
FISH,FRESH FROZEN	375	411	376	368	513	496	502	523	584	584		
FISH,CURED	5	5	5	5	5	7	9	11	11	11		
SHELLFISH	121	162	172	174	161	173	204	191	202	202		
FISH,CANNED AND PREPARED	170	98	54	65	50	76	87	86	108	108		
SHELLFISH,CANNED+PREPARED	6	4	6	7	6	7	9	12	13	13		
FISH,BODY AND LIVER OIL	77	137	23	139	204	190	138	81	388	388		
FISH-MEAL	962	1495	1022	1294	1844	1977	1926	1957	2516	2516		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	377	906	1024	902	1271	1162	1271	1403	872	1042	1042	5.66
SAWLOGS,NON-CONIFEROUS	65	54	55	68	47	37	43	97	112	113	115	8.11
PULPWOOD+PARTICLE						323	1347	2737	3817	3878	3878	
FUELWOOD	71	23	57	10	7	6	60	6	6	6	6	-18.30
SAWNWOOD,CONIFEROUS	1330	1105	1176	1217	1004	1153	1342	1383	1140	1205	1187	.21
SAWNWOOD,NON-CONIFEROUS	1011	899	859	915	899	774	859	781	833	841	848	-1.44
WOOD-BASED PANELS	606	608	584	660	660	678	732	886	1026	1073	1072	7.06
PULP FOR PAPER	1374	1302	1566	1532	1515	1511	1407	1614	1521	1678	1678	1.79
PAPER AND PAPERBOARD	497	404	651	939	778	925	829	1371	1382	1417	1398	12.82

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... '000 TONNES											PERCENT
NEAR EAST, DEVELOPING												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR, WHEAT EQUIV.	652	717	1145	1046	804	873	2025	4623	2481	1513	5271	19.56
RICE, MILLED	159	59	78	158	121	226	255	159	251	231	296	12.42
BARLEY	424	1026	662	321	100	171	48	678	338	37	789	-9.92
MAIZE	40	53	10	6	12	7	13	21	26	22	16	-2.46
MILLET	3	8	2	4		2	5	2	5	1	1	-11.52
SORGHUM	256	423	186	25		30	534	237	308	100		
POTATOES	393	463	456	511	354	369	354	493	552	557	989	5.46
SUGAR, TOTAL (RAW EQUIV.)	71	224	341	629	369	78	316	95	130	158	224	-2.25
PULSES	500	573	658	609	386	560	800	1269	596	623	606	2.95
SOYBEAN OIL	5	16	11	11	5	1		1	6	8	16	-5.44
GROUNDNUTS SHELLED BASIS	108	101	24	31	19	6	10	77	32	15	15	-13.24
GROUNDNUT OIL	16	18	2	12	3	2	22	9	15	22	10	5.37
COCONUT OIL	1											-11.45
PALM OIL		1				5	17	13	10	4	17	
OILSEED CAKE AND MEAL	145	105	104	133	29	73	111	192	107	120	42	-3.17
BANANAS	20	11	10	12	12	13	20	20	20	24	19	5.81
ORANGES+TANGER.+CLEMEN.	698	637	617	611	590	434	511	440	559	574	417	-3.65
LEMONS AND LIMES	190	191	202	199	137	152	160	176	155	183	183	-1.12
COFFEE, GREEN+ROASTED	6	5	5	8	4	5	2	5	8	6	7	.70
TEA	17	5	7	5	6	8	2	5	33	35	11	8.98
COTTON LINT	532	584	623	648	488	611	425	414	400	337	315	-6.31
TOBACCO, UNMANUFACTURED	138	110	75	72	105	86	115	81	120	102	145	1.56
NATURAL RUBBER						1						-24.82
WOOL, GREASY	3	6	6	5	5	8	11	14	15	20	12	17.63
BOVINE CATTLE 1/	60	112	77	51	18	13	1	12	7	14	15	-22.55
SHEEP AND GOATS 1/	2858	3505	3710	3866	3353	4098	3782	4408	5204	4709	4654	4.67
TOTAL MEAT	74	96	78	97	60	58	47	52	43	34	42	-9.01
MILK, DRY		1	1				1	3	2	1	1	23.99
TOTAL EGGS, IN SHELL	17	27	42	70	68	51	51	30	23	24	25	-2.17
FISHERY PRODUCTS												
FISH, FRESH FROZEN	28	26	29	30	29	28	31	46	47	47		
FISH, CURED	1	3	1	1	1	1	2	3	3	3		
SHELLFISH	4	5	7	5	5	4	14	15	16	16		
FISH, CANNED AND PREPARED	3	2	1	1	2	2	3	2	2	2		
SHELLFISH, CANNED+PREPARED	4	5	7	8	5	6	3	2	2	2		
FISH, BODY AND LIVER OIL		1	2	5	7	5	9	13	4	4		
FISH-MEAL				1								
FOREST PRODUCTS 2/												
SAWLOGS, CONIFEROUS	2	7	11	20	15	24	1	13	115	115	115	37.70
SAWLOGS, NON-CONIFEROUS	36	36	35	100	76	24	23	22	16	2	2	-25.34
FUELWOOD	24	16	24	11	11	11	11	11	11	11	11	-6.75
SAWNWOOD, CONIFEROUS	96	94	126	107	82	48	50	82	82	82	82	-3.24
SAWNWOOD, NON-CONIFEROUS	6	12	7	8	5	8	57	26	24	24	24	17.84
WOOD-BASED PANELS	19	24	27	19	19	19	18	25	23	23	23	.61
PAPER AND PAPERBOARD	35	35	41	71	56	65	65	65	65	49	49	4.16

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

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	'000 TONNES											PERCENT
FAR EAST,DEVELOPING												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	304	163	317	434	465	365	468	333	388	462	1078	10.07
RICE,MILLED	6982	7044	6803	8522	7322	8355	8180	7989	9813	7581	8055	1.92
BARLEY	276	907	257	1655	188	36	35	20	7	1	1	-51.88
MAIZE	2862	3126	2952	4520	9321	9757	5723	5433	5240	4928	9213	8.79
MILLET	3	3	2	4	16	12	8	8	9	13	5	13.79
SORGHUM	288	320	252	331	903	1022	332	407	937	309	409	4.62
POTATOES	152	158	139	132	116	117	109	161	189	205	218	3.77
SUGAR,TOTAL (RAW EQUIV.)	3370	4556	3837	3159	3373	3132	3297	2858	4514	3981	4769	1.34
PULSES	449	482	468	509	676	1177	889	1002	817	1246	1217	11.61
SOYBEANS	166	186	400	880	1205	1449	1776	1607	1335	1014	1556	23.47
SOYBEAN OIL	32	50	79	97	48	63	200	160	146	161	128	15.49
GROUNDNUTS SHELLED BASIS	363	242	290	246	297	428	413	441	389	571	599	7.85
GROUNDNUT OIL	62	61	100	47	66	118	52	30	25	75	59	-4.13
COPRA	172	233	77	74	164	202	157	119	138	159	137	-.04
COCONUT OIL	1192	1064	1148	782	1050	1451	1267	1135	1102	1467	1139	1.71
PALM NUTS,KERNELS	24	16	15	13	26	7	3	1	3	14	12	-13.91
PALM OIL	2963	3487	3709	3951	4811	5755	5307	5514	6563	7483	7541	9.72
OILSEED CAKE AND MEAL	3306	3622	4542	3883	4178	7107	6648	8183	8256	8126	9389	11.73
BANANAS	1026	1094	817	976	973	996	953	1014	974	936	1070	.16
ORANGES+TANGER.+CLEMEN.	104	119	137	126	132	143	158	158	165	149	145	3.48
LEMONS AND LIMES	7	2	2	2	3	3	3	3	3	2	3	-2.54
COFFEE,GREEN+ROASTED	373	413	420	495	530	570	509	569	661	746	696	6.65
COCOA BEANS	65	88	91	121	143	180	249	333	313	336	379	20.44
TEA	653	614	623	723	701	726	738	776	795	786	770	2.52
COTTON LINT	416	343	541	422	612	1399	1587	1034	1246	839	741	11.24
JUTE AND SIMILAR FIBRES	556	495	493	479	367	513	503	334	361	422	336	-4.00
TOBACCO,UNMANUFACTURED	287	268	236	225	192	195	159	176	167	197	253	-3.21
NATURAL RUBBER	2962	2925	3250	3390	3388	3433	3777	3845	3943	4894	3819	3.96
WOOL,GREASY	22	17	16	14	15	24	11	10	9	14	14	-5.15
BOVINE CATTLE 1/	299	296	328	255	279	280	316	335	352	331	260	.57
SHEEP AND GOATS 1/	390	338	592	756	734	805	861	649	621	603	723	5.02
PIGS 1/	3213	3386	3377	3205	3229	3451	3498	3647	3737	4070	4174	2.47
TOTAL MEAT	353	401	368	390	424	490	586	590	675	850	997	10.68
MILK,DRY	10	10	10	10	13	21	28	35	31	32	36	17.30
TOTAL EGGS,IN SHELL	68	64	60	74	71	76	96	86	68	81	73	2.14
FISHERY PRODUCTS												
FISH,FRESH FROZEN	820	745	855	788	887	1114	1156	1280	1345	1345		
FISH,CURED	33	36	33	43	44	45	51	53	55	55		
SHELLFISH	405	454	476	552	620	777	931	1026	1055	1055		
FISH,CANNED AND PREPARED	114	138	155	182	218	307	346	436	474	474		
SHELLFISH,CANNED+PREPARED	66	71	79	86	90	107	124	132	129	129		
FISH,BODY AND LIVER OIL	1	1	1	2	2	2	3	3	3	3		
FISH-MEAL	151	142	154	157	161	194	197	128	93	93		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	324	157	146	141	43	130	8	6	5	5	5	-37.92
SAWLOGS,NON-CONIFEROUS	24192	24424	23304	19551	20860	19863	23708	21519	22210	21680	20783	-.96
PULPWOOD+PARTICLE	1033	963	1122	793	927	796	1111	1210	1013	935	959	.20
FUELWOOD	1164	1086	1229	1146	842	832	798	784	1295	987	961	-1.80
SAWNWOOD,CONIFEROUS	329	265	205	246	272	291	430	390	431	262	202	1.02
SAWNWOOD,NON-CONIFEROUS	5613	5995	7106	6610	6374	7121	7996	9148	9805	7364	9147	4.75
WOOD-BASED PANELS	4548	4262	5640	6071	6605	7363	9257	9673	11238	12070	12264	12.00
PULP FOR PAPER	97	89	73	46	84	105	101	173	240	262	296	16.00
PAPER AND PAPERBOARD	483	393	362	466	630	916	1304	1537	1662	2162	2661	23.30

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

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	US$/TONNE											PERCENT
AGRICULTURAL PRODUCTS												
WHEAT	188	173	162	157	144	135	114	140	170	162	131	-1.58
WHEAT FLOUR	294	245	197	215	208	195	179	198	246	253	215	-1.34
RICE, MILLED	443	343	307	296	279	246	250	318	315	315	325	-1.83
BARLEY	175	161	144	147	121	107	103	130	146	153	131	-1.55
MAIZE	153	128	142	149	126	117	104	128	132	136	134	-.94
POTATOES	178	186	168	209	124	151	170	159	190	228	231	.83
SUGAR, CENTRIFUGAL RAW	505	403	422	415	390	420	382	384	405	485	354	-1.14
SOYBEANS	282	243	256	278	218	200	199	263	259	226	219	-1.17
SOYBEAN OIL	542	483	498	715	644	412	356	466	457	477	498	-1.08
GROUNDNUTS, SHELLED	964	697	655	733	587	589	589	576	616	662	773	-1.91
GROUNDNUT OIL	998	647	568	986	930	659	566	620	773	961	946	-.56
COPRA	312	262	354	583	332	139	222	318	296	194	231	-2.14
COCONUT OIL	536	461	556	1029	589	291	399	541	518	347	382	-2.03
PALM NUTS, KERNELS	235	222	263	331	232	111	100	151	157	163	171	-3.24
PALM OIL	529	441	442	660	505	290	328	425	364	304	339	-2.85
PALM KERNEL OIL	540	450	574	908	535	261	392	501	443	319	331	-2.78
OLIVE OIL	1808	1782	1504	1362	1174	1631	1950	1937	2288	2728	2608	2.26
CASTOR BEANS	324	284	291	376	275	192	202	299	376	359	273	-.35
CASTOR BEAN OIL	856	825	908	1119	709	586	710	910	917	917	835	-.12
COTTONSEED	199	136	130	175	141	105	115	154	159	175	178	-.73
COTTONSEED OIL	627	529	526	751	639	446	429	496	476	476	501	-1.67
LINSEED	326	285	275	287	267	207	174	276	342	313	223	-1.17
LINSEED OIL	662	533	417	527	625	477	305	395	665	687	607	-.53
BANANAS	199	204	214	213	221	241	254	265	266	279	302	2.29
ORANGES	348	332	327	300	338	339	384	399	382	410	434	1.27
APPLES	409	432	336	329	323	388	412	440	423	547	627	1.75
RAISINS	1477	1212	1079	941	923	1064	1176	1236	1231	1326	1300	-.44
DATES	588	654	712	881	809	757	624	630	529	758	1027	1.21
COFFEE, GREEN	2238	2309	2287	2547	2518	3669	2249	2427	1945	1457	1436	-1.76
COCOA BEANS	1771	1590	1636	2099	2076	2113	1984	1688	1388	1192	1121	-1.81
TEA	1906	1772	1993	2648	2185	1870	1898	1898	2031	2253	2104	.48
COTTON LINT	1719	1443	1521	1693	1457	1134	1236	1571	1456	1639	1642	-.53
JUTE	313	284	263	333	503	282	233	319	324	338	371	.52
JUTE-LIKE FIBRES	190	235	310	304	259	219	142	165	4068	1015	1360	10.81
SISAL	558	516	433	418	405	425	409	419	426	482	442	-1.26

5. WORLD AVERAGE EXPORT UNIT VALUES OF SELECTED AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	US$/TONNE											PERCENT
TOBACCO,UNMANUFACTURED	2949	3234	3125	2970	2913	2913	2897	3009	3073	3236	3464	.41
NATURAL RUBBER	1162	875	1018	1054	836	904	1148	1730	1371	848	1162	.50
RUBBER NATURAL DRY	1066	797	963	965	755	788	903	1102	912	819	798	-.97
WOOL,GREASY	2956	2917	2517	2626	2500	2442	2680	4279	5137	4138	3124	1.96
CATTLE 1/	423	400	379	367	376	428	459	532	530	537	510	1.66
BEEF AND VEAL	2381	2450	2221	1960	1871	2032	2692	2963	2802	3184	2843	1.51
MUTTON AND LAMB	1863	1809	1597	1515	1422	1467	1570	1808	1921	2102	2079	.54
PIGS 1/	108	113	99	94	88	93	96	96	103	112	110	-.11
BACON HAM OF SWINE	2744	2640	2345	2226	2236	2741	3057	3256	3427	3993	3914	2.27
MEAT CHIKENS	1338	1162	1031	1072	1030	1205	1259	1261	1311	1450	1501	.71
MEAT PREPARATIONS	2414	2150	2106	1982	1842	2002	2343	2143	2165	2369	2650	.16
COW MILK WHOLE, EVAP.COND.	926	939	898	785	775	969	1068	1043	1077	1230	1142	1.49
COW MILK, SKIMMED DRY	1106	1055	864	786	781	1016	1175	1603	1854	1878	1697	3.44
BUTTER OF COW MILK	2631	2704	2395	2006	1683	1845	1748	1980	2649	2574	2504	-.61
CHEESE OF WHOLE COW MILK	2663	2568	2429	2188	2237	2805	3258	3449	3440	3952	3820	2.48
FISHERY PRODUCTS												
FISH,FRESH FROZEN	1299	1207	1091	1066	1049	1202	1424	1487	1589	1586		
FISH,CURED	2570	2246	2012	1806	1861	2471	3159	3217	2905	2931		
SHELLFISH	3809	3820	3562	3307	3389	4328	4745	4985	4763	4765		
FISH,CANNED AND PREPARED	2358	2319	2427	2274	2334	2709	3062	3414	3293	3297		
SHELLFISH,CANNED+PREPAR	4356	4199	4351	4067	3972	5120	5973	6412	6217	6246		
FISH,BODY AND LIVER OIL	399	343	345	348	301	255	264	352	226	226		
FISH-MEAL	472	370	428	390	294	340	381	496	438	438		
FOREST PRODUCTS												
SAWLOGS,CONIFEROUS 2/	81	73	63	63	61	65	74	88	92	100	100	1.42
SAWLOGS,NONCONIFEROUS 2/	89	87	85	72	70	74	87	92	95	99	102	.75
PULPWOOD+PARTICLE 2/	40	35	30	30	29	32	36	40	41	43	44	.76
FUELWOOD 2/	34	29	25	26	26	29	33	33	30	43	42	1.23
SAWNWOOD,CONIFEROUS 2/	127	114	114	110	105	117	128	140	152	170	170	1.77
SAWNWOOD,NONCONIF. 2/	217	207	211	198	193	223	233	238	279	300	261	1.59
WOOD-BASED PANELS 2/	294	280	268	245	250	260	305	318	326	326	315	.77
PULP FOR PAPER	451	411	356	416	353	386	503	591	658	628	627	2.49
PAPER AND PAPERBOARD	567	556	504	521	528	595	688	764	785	819	794	2.46

1/ U.S. DOLLARS PER HEAD
2/ U.S. DOLLARS PER CUBIC METRE

6. VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
						`000 TONNES						PERCENT
WORLD												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	102677	107860	105681	114806	104486	96500	108304	116858	109664	105978	116726	.69
RICE,MILLED	13838	11489	11902	11455	12496	12667	12343	11564	14295	12209	12592	.30
BARLEY	18682	18655	17746	23004	21688	23564	21524	19741	21294	19862	21937	1.18
MAIZE	80821	69806	69490	67784	70769	58749	64515	66536	76787	73627	65996	-.57
MILLET	223	283	257	227	246	199	194	228	232	198	235	-1.54
SORGHUM	13691	13551	11022	13162	12276	8450	7770	8841	11596	8573	8110	-4.92
POTATOES	4701	5137	4851	4821	5300	5588	6240	6521	6725	7066	7657	5.09
SUGAR,TOTAL (RAW EQUIV.)	28326	29576	27909	28234	27156	26646	28057	28280	29380	29071	28329	.11
PULSES	3210	3169	3269	3536	3910	4842	5453	5974	5430	6661	6214	8.70
SOYBEANS	26276	28676	26846	25646	25835	27067	29392	26554	23721	26311	26850	-.37
SOYBEAN OIL	3255	3792	3675	4028	3449	3007	3969	3820	4076	3680	3549	.60
GROUNDNUTS,SHELLED BASIS	727	814	766	755	814	909	928	966	905	1042	1160	4.13
GROUNDNUT OIL	359	416	516	323	333	358	371	383	371	330	306	-2.05
COPRA	393	477	251	306	368	407	339	283	285	310	249	-3.46
COCONUT OIL	1400	1291	1294	1052	1135	1486	1428	1365	1256	1532	1379	1.16
PALM NUTS,KERNELS	161	123	127	125	99	106	135	93	103	73	68	-6.42
PALM OIL	3224	3688	3919	3902	4875	6005	5766	5683	6763	7673	7991	9.54
OILSEED CAKE AND MEAL	27042	28452	33049	29216	31833	34063	37604	39247	38727	38997	39063	4.02
BANANAS	6786	6796	6190	6643	7145	7301	7571	7844	8278	9035	9927	3.99
ORANGES+TANGER.+CLEMEN.	5020	5160	5109	5261	4952	5300	5465	5604	5498	5852	5331	1.14
LEMONS AND LIMES	970	1049	1003	997	1009	1017	998	1055	1036	1035	1012	.32
COFFEE,GREEN+ROASTED	3815	3886	3988	4048	4210	4233	4548	4256	4689	4885	4782	2.49
COCOA BEANS	1242	1271	1262	1335	1481	1413	1477	1546	1660	1765	1876	4.17
TEA	883	888	915	1050	1010	1065	1034	1175	1124	1244	1142	3.23
COTTON LINT	4421	4503	4358	4498	4597	4833	5602	5025	5837	5175	4879	2.16
JUTE AND SIMILAR FIBRES	531	572	518	461	380	523	529	364	391	420	342	-3.93
TOBACCO,UNMANUFACTURED	1443	1410	1369	1434	1382	1367	1411	1338	1420	1468	1616	.66
NATURAL RUBBER	3281	3132	3428	3696	3660	3701	4061	4328	4412	4271	3998	3.14
WOOL,GREASY	857	818	823	820	909	922	990	915	878	672	859	-.25
BOVINE CATTLE 1/	6919	7288	6786	6658	6629	7044	7003	6813	7040	8178	8229	1.41
SHEEP AND GOATS 1/	17927	18750	20496	20392	19264	19326	20822	21432	21314	20764	22040	1.59
PIGS 1/	9715	9020	9357	9987	10218	11821	12270	12655	13279	13043	13411	4.45
TOTAL MEAT	8425	8700	8673	8545	9026	9902	9950	10313	10861	11624	12439	3.94
MILK,DRY	696	679	645	723	713	829	939	1095	1076	971	1060	5.78
TOTAL EGGS,IN SHELL	780	825	820	847	785	745	784	768	797	808	800	-.22
FISHERY PRODUCTS												
FISH,FRESH FROZEN	4311	4693	4697	4947	5367	6029	6986	7618	7754	7778		
FISH,CURED	424	363	434	424	466	432	464	471	451	452		
SHELLFISH	1140	1238	1348	1486	1598	1756	1930	2114	2274	2275		
FISH,CANNED AND PREPARED	1081	977	925	944	1031	1102	1151	1172	1272	1281		
SHELLFISH,CANNED+PREPARED	181	199	220	236	254	271	307	330	304	304		
FISH,BODY AND LIVER OIL	732	796	731	951	1099	820	837	821	904	892		
FISH-MEAL	2052	2599	2336	2531	3126	3238	3213	3343	3640	3624		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	23842	26400	30362	31057	33046	32664	35938	37374	35595	35311	35080	3.73
SAWLOGS,NON-CONIFEROUS	34891	32704	32986	30879	29957	31160	32017	32762	32106	31357	30608	-.65
PULPWOOD+PARTICLE	41400	36495	37710	41454	42094	44826	49046	50593	52401	51853	49877	3.59
FUELWOOD	2533	3158	3545	3924	4084	3866	3832	3465	4448	4133	3642	3.01
SAWNWOOD,CONIFEROUS	58813	59924	68071	70823	72870	73989	76251	76922	79348	77415	72620	2.53
SAWNWOOD,NON-CONIFEROUS	11816	11328	12306	12651	12640	12955	15834	15896	17791	17428	16675	4.87
WOOD-BASED PANELS	16649	15470	16856	18219	19126	20682	24213	25970	29357	29293	26407	7.03
PULP FOR PAPER	18517	17299	19597	20441	20725	22079	23928	24692	24939	24623	21286	3.10
PAPER AND PAPERBOARD	34218	33866	35686	39334	40231	43471	47040	49790	52806	54496	48271	5.06

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

6. VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	'000 TONNES											PERCENT
WESTERN EUROPE												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	14130	14674	12129	14292	16750	16868	15511	16162	14552	15422	16885	1.65
RICE,MILLED	1532	1718	1581	1746	1930	1833	1693	1623	1856	1765	1911	1.30
BARLEY	6548	6550	7939	6563	5358	6252	5588	6645	6144	5274	5006	-2.61
MAIZE	23563	22451	19536	16330	15528	11548	10899	12766	10895	12225	9980	-8.13
MILLET	130	162	129	145	142	127	128	126	133	130	172	.19
SORGHUM	1103	2149	685	1145	244	174	771	619	942	606	489	-7.22
POTATOES	3042	3508	3197	3257	3644	3951	4505	4394	4278	4242	5107	4.68
SUGAR,TOTAL (RAW EQUIV.)	3340	3400	3394	4103	3416	3416	3572	5060	5506	4323	4033	3.53
PULSES	938	1078	1316	1437	1874	2102	2895	2952	2936	3375	3581	15.18
SOYBEANS	14441	16472	15027	13643	13853	13816	15444	13399	12152	14326	13639	-1.27
SOYBEAN OIL	701	748	787	734	726	635	661	645	670	665	702	-1.18
GROUNDNUTS,SHELLED BASIS	391	432	387	396	425	460	465	481	474	514	553	3.26
GROUNDNUT OIL	297	350	396	255	274	273	299	304	288	258	250	-2.35
COPRA	189	284	117	137	135	153	128	104	103	136	81	-7.20
COCONUT OIL	564	539	514	373	422	594	576	553	496	641	620	1.98
PALM NUTS,KERNELS	140	106	96	100	81	97	110	84	89	62	50	-6.67
PALM OIL	723	735	859	717	828	1159	1100	1107	1293	1540	1745	9.26
OILSEED CAKE AND MEAL	19235	20449	22901	20756	23262	24553	24578	24324	23724	25221	24338	2.29
BANANAS	2254	2220	2054	2253	2371	2494	2679	3069	3255	3827	4203	6.97
ORANGES+TANGER.+CLEMEN.	3062	3270	3199	3389	3135	3565	3748	3792	3751	4032	3796	2.57
LEMONS AND LIMES	459	507	479	451	472	483	504	506	523	528	525	1.28
COFFEE,GREEN+ROASTED	2055	2057	2136	2065	2151	2223	2393	2380	2464	2686	2580	2.79
COCOA BEANS	686	739	664	759	818	800	815	883	951	1058	1134	4.96
TEA	246	289	268	309	280	292	265	283	279	279	282	.38
COTTON LINT	1103	1254	1351	1381	1459	1458	1634	1411	1499	1323	1152	.82
JUTE AND SIMILAR FIBRES	120	98	85	88	54	74	54	54	60	56	42	-8.30
TOBACCO,UNMANUFACTURED	697	688	702	692	698	656	690	653	680	702	771	.34
NATURAL RUBBER	875	875	875	909	968	961	996	1014	1053	1010	920	1.49
WOOL,GREASY	407	363	351	406	432	420	441	421	426	358	418	.68
BOVINE CATTLE 1/	3211	3478	3401	3335	3695	3840	3856	3546	3857	4160	3976	2.14
SHEEP AND GOATS 1/	2183	2274	2765	2747	3290	3307	3915	3952	4956	6508	7004	12.23
PIGS 1/	5496	4680	4889	4877	4973	7253	7221	7000	7542	7473	7807	5.63
TOTAL MEAT	3526	3837	3990	3897	4214	4397	4562	4728	4995	5196	5480	4.23
MILK,DRY	133	145	147	146	136	131	197	233	226	180	184	4.73
TOTAL EGGS,IN SHELL	431	444	441	467	466	482	526	506	548	566	561	2.96
FISHERY PRODUCTS												
FISH,FRESH FROZEN	1637	1745	1618	1650	1837	1929	2239	2456	2565	2572		
FISH,CURED	176	173	217	214	249	227	246	253	266	266		
SHELLFISH	405	465	509	581	623	647	744	804	883	883		
FISH,CANNED AND PREPARED	342	326	352	364	385	431	472	474	543	551		
SHELLFISH,CANNED+PREPARED	86	90	97	97	107	120	132	148	167	167		
FISH,BODY AND LIVER OIL	637	707	615	822	975	713	692	711	784	773		
FISH-MEAL	1050	1359	1255	1191	1502	1570	1434	1353	1520	1489		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	4507	4660	4456	4356	4756	4391	5062	5318	5415	5659	4928	2.09
SAWLOGS,NON-CONIFEROUS	6949	6199	6234	6397	6094	6172	6036	6864	7294	7578	6836	1.21
PULPWOOD+PARTICLE	22818	20226	19860	23330	24575	25326	28783	28947	28498	26772	24782	2.96
FUELWOOD	1539	1851	2238	2490	2631	2390	2276	2071	2753	2451	2031	2.41
SAWNWOOD,CONIFEROUS	23182	24149	25292	24469	23657	26376	27514	29013	29046	28952	23599	1.58
SAWNWOOD,NON-CONIFEROUS	5173	5119	5576	5504	5708	5840	6775	6945	6940	7183	6215	3.29
WOOD-BASED PANELS	9331	8837	9284	9790	10282	11352	12145	13245	14060	13834	10582	4.12
PULP FOR PAPER	9688	8964	9768	10250	10479	11186	11935	12109	12404	12564	9025	2.00
PAPER AND PAPERBOARD	16047	16063	17625	19077	18892	20898	22714	25071	27245	28977	22266	5.64

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

6. VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	'000 TONNES											PERCENT
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	24189	27265	26622	31380	25557	18373	21876	25452	17298	17032	20915	-3.99
RICE,MILLED	1599	1127	601	490	641	749	870	728	878	580	597	-4.74
BARLEY	6019	3258	3531	3326	5806	6600	4341	4382	5833	4355	5582	2.35
MAIZE	22495	15264	7872	13549	20023	9779	10806	13601	22541	15386	13635	.07
MILLET	1	1	1		1	7	3					-24.87
SORGHUM	3967	2709	2078	1990	1452	39	155	400	912	263		
POTATOES	331	468	158	131	244	265	482	735	947	1309	1064	19.34
SUGAR,TOTAL (RAW EQUIV.)	6397	8146	7029	6939	5844	6303	6360	5481	6960	5169	5645	-2.57
PULSES	85	60	35	77	40	81	41	59	39	30	25	-7.96
SOYBEANS	1653	1906	1938	1205	1113	2533	2229	1720	953	1048	1087	-4.63
SOYBEAN OIL	198	313	255	203	401	137	293	144	368	192	208	-1.47
GROUNDNUTS,SHELLED BASIS	61	67	54	76	74	82	83	91	82	82	81	3.69
GROUNDNUT OIL		1	1		1		1	1	2			-.09
COPRA	10	14	14	5	2	5	4	4	5	5		
COCONUT OIL	77	99	79	68	60	67	83	61	94	79	49	-2.30
PALM OIL	184	384	329	292	250	249	279	192	444	223	186	-1.77
OILSEED CAKE AND MEAL	5331	5069	6664	4010	4190	3930	6913	7090	7716	5610	4885	1.88
BANANAS	232	155	167	200	206	119	174	186	239	229	205	1.58
ORANGES+TANGER.+CLEMEN.	688	645	599	616	697	690	631	668	612	609	435	-2.16
LEMONS AND LIMES	308	363	289	272	273	274	232	257	227	205	188	-5.09
COFFEE,GREEN+ROASTED	211	210	215	247	257	223	247	263	322	271	157	.77
COCOA BEANS	199	178	243	246	253	251	248	244	269	169	119	-2.24
TEA	116	107	110	129	151	146	174	174	255	274	153	7.96
COTTON LINT	638	693	766	845	874	755	679	763	727	480	239	-6.16
JUTE AND SIMILAR FIBRES	111	122	93	45	57	87	85	65	53	57	35	-8.10
TOBACCO,UNMANUFACTURED	196	201	189	202	185	168	143	128	138	146	96	-6.14
NATURAL RUBBER	418	360	446	435	374	326	340	251	290	268	128	-8.32
WOOL,GREASY	174	173	219	135	153	157	177	164	172	99	86	-5.26
BOVINE CATTLE 1/	162	160	183	209	167	166	138	209	135	131	191	-.97
SHEEP AND GOATS 1/	439	373	471	475	345	456	420	28	85	45	175	-19.35
PIGS 1/	844	565	637	519	732	536	1009	916	829	1181	458	1.96
TOTAL MEAT	1226	1091	1132	923	848	896	758	714	812	1160	1215	-1.29
MILK,DRY	78	90	47	58	70	85	74	59	82	78	95	2.03
TOTAL EGGS,IN SHELL	34	36	31	28	21	24	14	13	11	17	21	-9.20
FISHERY PRODUCTS												
FISH,FRESH FROZEN	180	151	433	524	585	626	720	846	814	815		
FISH,CURED	26	20	40	30	36	33	44	52	44	44		
FISH,CANNED AND PREPARED	39	37	34	33	48	56	67	66	50	50		
FISH,BODY AND LIVER OIL	13	26	24	32	46	37	31	28	22	22		
FISH-MEAL	233	291	218	283	341	337	260	329	337	337		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	960	498	655	629	598	711	610	520	385	267	267	-9.40
SAWLOGS,NON-CONIFEROUS	487	385	367	375	405	368	370	388	358	338	298	-2.75
PULPWOOD+PARTICLE	1390	1248	1286	1323	1248	1261	1282	1127	1040	980	480	-6.35
FUELWOOD	25	20	25	25	12							
SAWNWOOD,CONIFEROUS	2897	2554	2692	2990	3679	3091	2638	2820	2360	2325	1368	-4.42
SAWNWOOD,NON-CONIFEROUS	344	224	233	229	223	197	158	156	154	161	123	-7.71
WOOD-BASED PANELS	1115	939	832	766	797	897	950	1051	1315	919	447	-2.23
PULP FOR PAPER	1093	1031	1101	1067	1063	1015	1124	1141	1120	878	699	-2.37
PAPER AND PAPERBOARD	1968	1965	1732	1703	1715	1528	1492	1579	1731	1478	1245	-3.32

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

6. VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... '000 TONNES											PERCENT
NORTH AMERICA, DEVELOPED												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR, WHEAT EQUIV.	11	74	63	110	282	279	392	487	384	705	626	41.30
RICE, MILLED	106	126	128	141	174	207	221	264	274	308	331	12.62
BARLEY	127	198	141	146	105	135	201	256	254	220	493	10.26
MAIZE	1276	807	352	541	567	937	348	527	969	713	505	-2.37
MILLET								2	9	7	4	51.95
SORGHUM		2		7				2	2	7	3	43.32
POTATOES	340	344	280	303	330	305	388	405	507	495	412	4.59
SUGAR, TOTAL (RAW EQUIV.)	5453	3466	3654	4150	3662	3199	2265	2125	2415	2861	2841	-6.24
PULSES	61	47	48	55	51	56	64	72	100	97	101	7.99
SOYBEANS	382	468	315	285	247	166	247	131	280	340	270	-4.38
SOYBEAN OIL	9	4	35	17	42	15	26	297	11	31	9	9.47
GROUNDNUTS, SHELLED BASIS	72	61	67	69	69	79	73	61	68	82	81	1.49
GROUNDNUT OIL	4	4	6	5	4	6	9	19	6	10	5	8.14
COPRA							1	1		1		
COCONUT OIL	476	427	475	400	474	558	534	470	413	473	410	-.29
PALM OIL	138	132	168	161	251	288	199	169	133	200	156	1.33
OILSEED CAKE AND MEAL	443	457	536	701	763	797	888	987	924	885	1164	9.45
BANANAS	2794	2935	2785	2922	3352	3350	3367	3212	3392	3582	3737	2.80
ORANGES+TANGER.+CLEMEN.	326	304	325	301	295	325	325	283	294	310	302	-.59
LEMONS AND LIMES	43	38	40	51	66	61	66	80	80	93	115	11.03
COFFEE, GREEN+ROASTED	1104	1150	1089	1178	1233	1283	1319	1051	1290	1307	1272	1.44
COCOA BEANS	264	213	233	218	292	224	283	259	286	361	422	5.01
TEA	107	103	97	109	97	110	93	106	101	91	98	-.88
COTTON LINT	63	52	61	59	57	54	42	41	48	40	47	-3.74
JUTE AND SIMILAR FIBRES	18	18	17	11	17	16	16	15	7	4	6	-11.57
TOBACCO, UNMANUFACTURED	176	167	153	214	177	207	220	168	195	200	269	3.07
NATURAL RUBBER	759	713	773	906	927	874	934	960	1009	924	874	2.46
WOOL, GREASY	20	16	20	23	17	24	32	31	33	24	26	5.40
BOVINE CATTLE 1/	816	1085	1004	801	894	1407	1295	1401	1514	2153	1983	9.41
SHEEP AND GOATS 1/	41	52	64	70	63	60	62	93	183	67	54	5.65
PIGS 1/	147	295	448	1322	1227	502	447	839	1074	891	1058	14.62
TOTAL MEAT	766	866	808	866	1010	1064	1170	1190	1078	1181	1204	4.79
MILK, DRY			2	3	4	4	5	6	4	3	3	
TOTAL EGGS, IN SHELL	12	11	22	30	19	20	14	12	28	25	19	3.87
FISHERY PRODUCTS												
FISH, FRESH FROZEN	735	676	700	688	760	810	894	745	850	858		
FISH, CURED	35	33	32	33	32	33	31	31	33	33		
SHELLFISH	156	175	213	222	235	261	287	298	350	350		
FISH, CANNED AND PREPARED	104	112	126	153	200	218	213	229	256	256		
SHELLFISH, CANNED+PREPARED	47	54	69	73	84	76	89	89	48	48		
FISH, BODY AND LIVER OIL	10	8	9	8	10	11	14	16	21	21		
FISH-MEAL	56	79	68	81	234	171	185	140	102	102		
FOREST PRODUCTS 2/												
SAWLOGS, CONIFEROUS	1674	1772	2683	2887	2837	2826	2710	3059	2567	2358	2358	2.57
SAWLOGS, NON-CONIFEROUS	415	335	424	585	576	645	757	636	793	758	758	8.13
PULPWOOD+PARTICLE	2348	2000	2409	2173	1976	2805	2142	2527	2653	2540	2540	1.85
FUELWOOD	137	113	113	161	160	154	160	172	188	268	268	8.01
SAWNWOOD, CONIFEROUS	22614	21747	28520	31389	34469	33697	34445	32675	33273	31437	31382	3.38
SAWNWOOD, NON-CONIFEROUS	1629	965	1283	1480	1494	1540	2115	1528	1488	2524	2469	6.36
WOOD-BASED PANELS	2851	2283	3366	3548	3956	4268	4392	4682	4752	4838	4838	6.90
PULP FOR PAPER	3563	3245	3645	4085	4069	4150	4489	4419	4539	4471	4471	3.07
PAPER AND PAPERBOARD	7773	7538	8434	10381	10973	11622	12494	12786	12755	12647	12647	5.89

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

6. VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... '000 TONNES											PERCENT
OCEANIA, DEVELOPED												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR, WHEAT EQUIV.	53	51	71	126	67	73	45	137	142	183	180	12.57
RICE, MILLED	9	10	12	15	19	21	29	33	37	41	45	19.33
MAIZE	5	11	14	9	11	9	9	6	16	41	22	12.02
MILLET	1	1	1	1	1	1	1	1	1	1	1	.58
SORGHUM		4							12	29		
POTATOES				1								
SUGAR, TOTAL (RAW EQUIV.)	120	147	157	169	172	149	182	167	152	183	169	2.33
PULSES	13	16	16	22	12	11	8	10	13	17	19	-.53
SOYBEANS	41	10	23	36	38			31	77	5	78	-2.10
SOYBEAN OIL	29	45	53	48	31	21	36	40	42	53	40	1.32
GROUNDNUTS, SHELLED BASIS	9	12	6	13	8	9	9	7	14	19	24	7.46
GROUNDNUT OIL	1	1	1	1	1	1	1	1	1	1	1	-1.64
COPRA	6	6	4							1		
COCONUT OIL	16	20	20	22	20	19	19	24	20	20	18	.83
PALM OIL	24	20	4	7	9	15	48	72	96	115	91	30.74
OILSEED CAKE AND MEAL	19	10	52	11	38	33	60	26	45	23	34	7.42
BANANAS	36	36	40	30	60	37	45	45	51	49	53	4.21
ORANGES+TANGER.+CLEMEN.	16	17	18	24	21	18	25	21	23	22	11	-.06
LEMONS AND LIMES	1	1	3	3	4	2	2	2	3	2	2	6.62
COFFEE, GREEN+ROASTED	38	42	39	37	37	39	36	43	38	41	46	1.03
COCOA BEANS	15	13	13	10	7	6	2	1				-43.52
TEA	28	30	28	28	27	26	25	25	24	23	22	-2.80
COTTON LINT	2	1	1	1	3	1			1			-28.54
JUTE AND SIMILAR FIBRES	11	8	8	6	8	9	7	8	7	7	6	-2.43
TOBACCO, UNMANUFACTURED	15	14	14	14	14	14	16	16	14	12	13	-.84
NATURAL RUBBER	50	47	40	40	44	43	45	47	52	49	41	.27
WOOL, GREASY									2		1	8.20
BOVINE CATTLE 1/				1	2			1	2	2		9.02
SHEEP AND GOATS 1/	1	1			5	9	9	4	1			-2.44
TOTAL MEAT	4	4	5	8	7	5	6	6	10	8	14	9.94
MILK, DRY	1		1		1	1		2	3	2	5	24.30
FISHERY PRODUCTS												
FISH, FRESH FROZEN	33	33	29	35	41	38	40	42	37	41		
FISH, CURED	4	4	4	5	5	5	4	5	3	3		
SHELLFISH	6	6	8	8	9	10	13	12	21	21		
FISH, CANNED AND PREPARED	27	28	25	31	30	31	31	28	35	36		
SHELLFISH, CANNED+PREPARED	7	8	8	8	9	9	9	9	4	3		
FISH, BODY AND LIVER OIL		1			1	1	1	1	2	1		
FISH-MEAL	8	8	11	8	13	10	12	17	30	42		
FOREST PRODUCTS 2/												
SAWLOGS, CONIFEROUS			1					1	2	12	12	55.11
SAWLOGS, NON-CONIFEROUS	1	7	1	1	1	2	4	3	7	4	4	12.48
FUELWOOD	1	1	1							19	19	
SAWNWOOD, CONIFEROUS	781	881	642	823	1113	1044	863	1051	1426	1170	1170	5.40
SAWNWOOD, NON-CONIFEROUS	307	290	210	282	317	265	260	271	321	260	260	-.23
WOOD-BASED PANELS	104	111	79	102	112	121	106	115	116	127	127	2.64
PULP FOR PAPER	286	262	220	243	208	239	280	303	274	278	278	1.38
PAPER AND PAPERBOARD	736	794	558	670	899	813	817	1046	1039	977	977	4.56

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

6. VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	.....				`000 TONNES							PERCENT
AFRICA,DEVELOPING												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	8979	9396	9412	10146	11083	9941	9304	10944	11868	10479	11571	2.18
RICE,MILLED	2573	2829	2725	2535	2766	2898	2923	2324	2748	2606	3110	.48
BARLEY	459	680	397	743	583	130	137	1102	743	443	269	-2.84
MAIZE	2358	2336	1732	2804	2705	2121	2088	2353	2559	2490	2598	1.19
MILLET	35	55	61	31	50	28	19	30	4	18	19	-14.27
SORGHUM	155	143	236	421	484	128	154	254	168	207	174	-1.01
POTATOES	214	274	456	351	429	313	233	287	263	302	300	-.51
SUGAR,TOTAL (RAW EQUIV.)	2320	2101	2399	2093	2134	2647	2954	2321	2501	2667	2834	2.40
PULSES	161	155	221	232	226	246	181	266	265	241	275	4.72
SOYBEANS	11	35	16	20	22	18	27	12	22	1	15	-11.41
SOYBEAN OIL	339	448	403	368	289	235	287	296	337	341	319	-2.14
GROUNDNUTS,SHELLED BASIS	17	11	8	6	35	33	25	26	26	34	20	10.89
GROUNDNUT OIL	16	21	28	11	4	28	7	4	1	2		-30.43
COPRA	2	2	3	5	2	2	3	4	3	3	3	2.73
COCONUT OIL	14	12	10	17	10	9	8	7	13	17	10	-1.27
PALM OIL	241	289	259	187	209	346	234	244	273	290	417	3.27
OILSEED CAKE AND MEAL	241	260	230	298	298	499	505	530	604	613	533	11.49
BANANAS	26	57	26	29	10	11	9	10	11	8	9	-14.91
ORANGES+TANGER.+CLEMEN.	11	12	13	11	9	12	12	12	14	13	13	1.37
LEMONS AND LIMES	1	1	1	1	1	1	1	1	1	1	1	1.71
COFFEE,GREEN+ROASTED	103	67	115	97	103	58	134	74	136	95	120	2.21
COCOA BEANS	1	2	4	11	18	14	8	1	2	1	1	-7.99
TEA	68	52	60	61	69	77	73	83	73	78	77	3.26
COTTON LINT	64	83	91	96	99	79	103	104	145	147	139	7.32
JUTE AND SIMILAR FIBRES	50	49	59	40	58	50	89	32	35	28	29	-5.80
TOBACCO,UNMANUFACTURED	49	49	52	46	56	75	58	61	60	49	56	1.48
NATURAL RUBBER	26	23	23	23	24	26	25	30	24	31	30	2.39
WOOL,GREASY	2	1	2	2	2	4	1	2	2	2		-4.66
BOVINE CATTLE 1/	894	839	919	1006	731	599	465	451	421	463	742	-6.77
SHEEP AND GOATS 1/	1240	1090	1152	1196	1195	1088	1517	1010	1064	1136	1296	.05
PIGS 1/	2	2	3	4	1		1	4		24	55	14.96
TOTAL MEAT	147	223	191	221	228	255	223	239	212	228	279	3.44
MILK,DRY	74	55	69	93	111	133	124	151	143	139	177	10.86
TOTAL EGGS,IN SHELL	52	71	78	49	47	20	12	8	11	8	9	-23.03
FISHERY PRODUCTS												
FISH,FRESH FROZEN	822	1044	828	795	756	799	936	901	788	789		
FISH,CURED	95	40	50	28	43	34	42	30	19	20		
SHELLFISH	3	3	1	4	3	3	3	8	8	8		
FISH,CANNED AND PREPARED	155	121	105	54	61	54	48	56	68	68		
FISH,BODY AND LIVER OIL	1	1	1									
FISH-MEAL	25	32	36	51	28	20	36	52	51	51		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	84	110	169	139	91	52	59	24	24	24	24	-18.19
SAWLOGS,NON-CONIFEROUS	225	241	321	318	325	323	335	337	293	289	289	1.68
FUELWOOD	1	41	43	33	33	33	33	33	33	33	33	18.04
SAWNWOOD,CONIFEROUS	1419	1557	1867	1823	1509	1445	1045	1288	1596	1439	1439	-1.60
SAWNWOOD,NON-CONIFEROUS	243	210	189	190	211	240	244	248	287	256	244	2.55
WOOD-BASED PANELS	332	263	296	203	212	156	119	134	159	134	134	-9.08
PULP FOR PAPER	135	116	149	147	148	129	118	161	187	187	187	3.86
PAPER AND PAPERBOARD	662	577	568	538	563	590	624	624	599	549	548	-.53

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

6. VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... '000 TONNES											PERCENT
LATIN AMERICA												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	12069	11126	11932	12276	11393	9108	10067	8769	7487	8767	11937	-2.87
RICE,MILLED	794	612	908	662	1062	2114	875	701	1176	1433	1800	7.73
BARLEY	448	339	531	537	466	398	402	451	519	385	554	.92
MAIZE	7027	3414	8160	5500	4065	5622	6535	5852	5906	8042	5062	1.30
MILLET	2	3	4	1	1			24	48	2	3	11.81
SORGHUM	3578	3226	3830	3168	3383	1561	1654	3078	3745	3002	3244	-1.46
POTATOES	198	190	184	197	162	269	185	166	160	206	209	-.02
SUGAR,TOTAL (RAW EQUIV.)	1617	1408	1608	1200	391	430	706	822	1306	2508	1814	1.93
PULSES	878	739	526	525	608	563	458	475	510	772	518	-2.73
SOYBEANS	2235	2198	1385	2858	2122	1432	2090	1802	1570	1251	2226	-2.54
SOYBEAN OIL	433	675	549	791	580	587	468	528	515	478	519	-1.52
GROUNDNUTS,SHELLED BASIS	13	19	10	19	24	16	20	43	24	19	32	8.06
GROUNDNUT OIL	4	1	2	2	1	1	1	4	2	2	3	.36
COPRA										15	10	27.24
COCONUT OIL	19	21	16	15	10	22	46	48	52	30	49	13.11
PALM NUTS,KERNELS	1	1	3	2							1	-26.04
PALM OIL	10	5	5	8	6	14	11	23	62	228	331	48.43
OILSEED CAKE AND MEAL	971	1141	1152	1224	1240	1262	1498	2066	1395	1593	1724	5.62
BANANAS	446	325	231	227	217	268	266	260	277	262	249	-2.48
ORANGES+TANGER.+CLEMEN.	33	26	20	18	17	19	23	29	31	36	38	4.16
LEMONS AND LIMES	5	2	3	5	5	3	4	3	2	2	2	-4.35
COFFEE,GREEN+ROASTED	56	64	49	56	44	43	44	49	44	43	60	-1.65
COCOA BEANS	10	13	3	6	9	5	5	5	4	9	10	-2.01
TEA	14	15	14	13	15	14	14	13	13	14	15	.16
COTTON LINT	94	79	79	122	119	202	222	218	273	233	244	14.21
JUTE AND SIMILAR FIBRES	34	14	14	14	4	49	47	27	4	16	17	-2.81
TOBACCO,UNMANUFACTURED	24	20	19	16	16	17	16	16	18	30	34	2.88
NATURAL RUBBER	182	158	165	201	197	218	248	262	256	253	252	5.20
WOOL,GREASY	12	13	8	9	12	8	8	7	8	5	9	-5.85
BOVINE CATTLE 1/	463	427	158	224	179	116	113	307	267	293	342	-1.17
SHEEP AND GOATS 1/	209	445	389	404	409	232	90	418	556	574	888	7.44
PIGS 1/	26	55	16	8	9	4	7	205	261	59	258	27.03
TOTAL MEAT	415	338	264	298	374	879	600	544	766	753	759	10.61
MILK,DRY	161	150	126	153	120	166	182	303	276	228	211	6.72
TOTAL EGGS,IN SHELL	18	27	13	10	10	12	14	22	24	19	22	3.51
FISHERY PRODUCTS												
FISH,FRESH FROZEN	97	100	84	66	83	139	168	162	167	167		
FISH,CURED	53	53	51	48	47	50	38	40	39	39		
SHELLFISH	10	9	7	5	7	6	6	7	6	6		
FISH,CANNED AND PREPARED	88	75	43	53	65	68	64	65	60	60		
SHELLFISH,CANNED+PREPARED	2	1		1	1		1	1	2	2		
FISH,BODY AND LIVER OIL	64	35	69	62	34	25	47	36	27	27		
FISH-MEAL	126	103	72	98	59	74	53	100	85	85		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	156	162	160	69	48	58	58	58	38	44	44	-13.52
SAWLOGS,NON-CONIFEROUS	30	29	30	75	82	72	77	52	35	35	35	.94
PULPWOOD+PARTICLE	24	16	16	8	8	8	8	8	8	8	8	-8.63
FUELWOOD	7	5	3	4	6	6	6	6	6	6	6	2.89
SAWNWOOD,CONIFEROUS	1951	1569	1744	1987	1516	1578	1503	1673	1732	1680	1681	-.76
SAWNWOOD,NON-CONIFEROUS	717	743	675	777	641	732	574	261	290	276	292	-11.37
WOOD-BASED PANELS	499	482	479	399	349	343	390	314	317	342	348	-4.26
PULP FOR PAPER	762	735	645	766	775	813	970	938	851	822	810	2.04
PAPER AND PAPERBOARD	2437	2278	1958	1798	1734	1882	1965	1859	1866	2029	2106	-1.04

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

6. VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... '000 TONNES											PERCENT
NEAR EAST,DEVELOPING												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR,WHEAT EQUIV.	14011	14157	16474	19465	17514	16011	19483	17996	22939	20648	17845	3.38
RICE,MILLED	2025	2006	2251	2362	2313	2302	2796	2095	2947	2544	2166	1.88
BARLEY	3292	4988	3871	9213	7762	9001	8973	5889	6915	6976	7043	5.74
MAIZE	3753	3711	4087	4190	4694	4841	5075	3984	5079	5321	4252	2.48
MILLET	2	3	4	4	5	1	1	1	1	1		-20.08
SORGHUM	133	340	71	317	448	50	11	62	395	188	610	3.19
POTATOES	426	462	420	430	334	315	301	357	380	331	406	-2.12
SUGAR,TOTAL (RAW EQUIV.)	3405	3946	3429	3925	3280	3254	3725	3031	3180	4808	3490	.27
PULSES	359	339	304	332	261	331	343	377	280	362	371	.62
SOYBEANS	97	82	69	29	155	83	90	62	87	45	4	-13.85
SOYBEAN OIL	504	529	717	667	630	656	672	457	965	710	620	2.21
GROUNDNUTS,SHELLED BASIS	9	8	7	7	7	6	12	9	8	10	9	2.02
GROUNDNUT OIL	1	1	1						1	1	1	2.18
COPRA								1	1	1	1	
COCONUT OIL	12	16	13	13	14	50	21	23	25	30	33	10.46
PALM NUTS,KERNELS						1						
PALM OIL	295	380	421	467	513	695	610	724	967	1077	1097	13.86
OILSEED CAKE AND MEAL	504	645	808	1057	1221	1163	1113	1594	1199	1444	1514	10.16
BANANAS	322	292	276	277	205	183	182	249	238	272	282	-1.56
ORANGES+TANGER.+CLEMEN.	622	634	631	644	531	421	399	524	487	479	360	-4.73
LEMONS AND LIMES	77	80	88	102	84	76	72	96	94	93	70	.07
COFFEE,GREEN+ROASTED	56	74	75	63	63	49	61	65	60	55	74	-.45
COCOA BEANS	5	5	6	5	5	7	8	6	5	6	7	3.11
TEA	171	168	194	239	216	230	209	309	189	261	284	4.35
COTTON LINT	24	27	27	29	55	71	155	84	112	140	114	22.00
JUTE AND SIMILAR FIBRES	25	37	34	32	34	28	30	30	36	32	31	.40
TOBACCO,UNMANUFACTURED	61	75	77	83	70	70	74	83	92	84	83	2.44
NATURAL RUBBER	52	65	86	82	80	82	89	104	102	108	106	6.33
WOOL,GREASY	19	13	18	25	26	22	29	28	24	31	33	6.77
BOVINE CATTLE 1/	739	735	632	650	496	432	577	366	302	459	509	-6.12
SHEEP AND GOATS 1/	13441	13806	15168	15026	13330	13375	13944	14797	13424	11463	11635	-1.64
PIGS 1/										1		
TOTAL MEAT	1328	1323	1272	1262	1208	1126	1088	1070	940	923	913	-4.14
MILK,DRY	44	48	43	56	45	53	62	62	52	59	61	3.42
TOTAL EGGS,IN SHELL	153	153	153	171	131	91	96	89	62	46	44	-13.00
FISHERY PRODUCTS												
FISH,FRESH FROZEN	107	121	141	152	111	131	145	143	156	156		
FISH,CURED	6	5	9	6	8	7	5	5	5	5		
SHELLFISH	2	2	2	2	4	2	3	2	2	2		
FISH,CANNED AND PREPARED	62	53	53	46	51	37	33	30	31	31		
SHELLFISH,CANNED+PREPARED	2	3	2	2	1	1	1	1	1	1		
FISH,BODY AND LIVER OIL	1	1		2								
FISH-MEAL	147	113	106	163	111	120	122	51	82	84		
FOREST PRODUCTS 2/												
SAWLOGS,CONIFEROUS	205	275	319	316	392	167	1157	1045	465	605	605	12.72
SAWLOGS,NON-CONIFEROUS	46	5	6	11	41	109	144	173	141	251	251	44.45
PULPWOOD+PARTICLE	38	52	69	57	42	106	47	47	1	1	1	-36.32
FUELWOOD	146	183	169	198	144	200	200	200	229	226	226	4.00
SAWNWOOD,CONIFEROUS	3517	3958	4190	4569	4149	3135	3088	2726	2761	3190	3725	-2.83
SAWNWOOD,NON-CONIFEROUS	568	651	769	816	847	612	597	596	600	632	622	-1.25
WOOD-BASED PANELS	1425	1588	1324	1450	1386	1129	1116	1167	1124	1125	1125	-3.31
PULP FOR PAPER	111	110	178	171	192	143	178	163	124	170	170	2.42
PAPER AND PAPERBOARD	1042	1008	1006	1205	1120	1155	1154	1099	999	1149	1149	.77

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

6. VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	'000 TONNES											PERCENT
FAR EAST, DEVELOPING												
AGRICULTURAL PRODUCTS												
WHEAT+FLOUR, WHEAT EQUIV.	23497	25268	24087	21544	16595	19295	25777	30963	28863	25927	29335	2.69
RICE, MILLED	4846	2661	3326	2961	3172	2130	2397	3325	3822	2401	1911	-4.18
BARLEY	623	1425	932	2054	466	484	659	452	532	938	1066	-3.00
MAIZE	8027	9168	12011	8086	8759	9286	12079	11831	13905	13788	13131	5.24
MILLET	3	6	4	5	4	5	5	7	13	14	14	14.84
SORGHUM	1017	1212	768	1018	955	1107	762	166	776	136	77	-20.67
POTATOES	145	147	160	149	150	164	138	154	179	161	127	.04
SUGAR, TOTAL (RAW EQUIV.)	4100	4682	4278	3750	6306	5349	6436	7366	5513	4846	5358	3.33
PULSES	468	504	525	627	649	1232	1255	1488	1086	1570	1103	12.95
SOYBEANS	2775	2736	2557	2715	2962	3776	4083	4329	3885	4193	4755	6.48
SOYBEAN OIL	1037	1039	892	1180	764	729	1507	1398	1169	1207	1105	2.52
GROUNDNUTS, SHELLED BASIS	93	159	144	82	110	166	180	180	160	230	285	8.99
GROUNDNUT OIL	34	36	75	39	44	44	50	48	69	54	44	3.04
COPRA	113	87	47	86	143	163	122	91	127	114	118	3.90
COCONUT OIL	177	114	116	115	104	149	125	162	111	201	138	1.67
PALM NUTS, KERNELS	8	4	13	6	4	1	18	3	8	8	8	2.05
PALM OIL	1462	1585	1703	1888	2630	3007	3026	2867	3185	3656	3584	10.20
OILSEED CAKE AND MEAL	1041	1354	1583	1805	1301	2082	2261	2439	2974	3126	3717	12.30
BANANAS	49	59	71	91	109	110	122	102	96	104	384	13.40
ORANGES+TANGER.+CLEMEN.	274	251	292	255	258	279	306	305	317	322	289	1.88
LEMONS AND LIMES	8	8	9	10	13	15	15	16	17	16	19	9.38
COFFEE, GREEN+ROASTED	43	68	102	114	110	113	86	103	91	136	136	7.33
COCOA BEANS	49	82	70	62	63	85	92	124	113	118	125	8.81
TEA	102	98	114	133	120	132	142	144	148	173	161	5.28
COTTON LINT	1798	1616	1384	1362	1331	1596	2000	1774	2385	2229	2280	4.69
JUTE AND SIMILAR FIBRES	132	207	187	204	138	193	190	120	173	211	170	.31
TOBACCO, UNMANUFACTURED	142	116	83	95	111	92	103	134	130	157	163	3.56
NATURAL RUBBER	428	458	536	583	504	628	804	992	959	929	896	9.32
WOOL, GREASY	117	130	133	115	161	186	185	164	126	86	202	1.64
BOVINE CATTLE 1/	366	360	354	305	313	304	332	332	340	335	315	-.84
SHEEP AND GOATS 1/	189	192	239	279	277	298	260	230	241	117	147	-3.27
PIGS 1/	3199	3418	3359	3252	3270	3520	3581	3686	3571	3623	3773	1.45
TOTAL MEAT	288	379	388	361	364	369	420	508	646	757	1031	11.02
MILK, DRY	193	179	200	204	216	246	282	274	284	277	317	5.74
TOTAL EGGS, IN SHELL	75	80	79	89	88	94	104	115	111	123	123	5.56
FISHERY PRODUCTS												
FISH, FRESH FROZEN	260	283	298	415	447	668	835	1063	1221	1221		
FISH, CURED	24	28	26	56	40	39	50	51	38	38		
SHELLFISH	118	137	145	147	172	200	219	289	288	288		
FISH, CANNED AND PREPARED	81	111	53	62	52	57	59	55	55	55		
SHELLFISH, CANNED+PREPARED	17	22	23	24	19	21	27	26	25	25		
FISH, BODY AND LIVER OIL	3	4	5	8	25	23	39	26	29	29		
FISH-MEAL	319	563	434	553	698	741	884	1078	1118	1118		
FOREST PRODUCTS 2/												
SAWLOGS, CONIFEROUS	2366	4662	7507	8849	9793	8408	8369	10796	9264	9650	10149	10.58
SAWLOGS, NON-CONIFEROUS	11271	10177	11220	9620	9034	10453	10254	11083	10809	11596	11588	.88
PULPWOOD+PARTICLE	1958	1193	2008	1680	2031	2836	2749	2018	1782	1983	1997	2.25
FUELWOOD	588	741	749	727	773	721	698	628	759	673	602	-.56
SAWNWOOD, CONIFEROUS	116	89	85	70	49	48	58	100	187	198	282	10.40
SAWNWOOD, NON-CONIFEROUS	2059	2240	2290	2303	1891	2294	3346	3865	5520	4393	4676	10.56
WOOD-BASED PANELS	1081	968	1108	1759	1592	1633	2777	2862	3761	4305	4665	18.29
PULP FOR PAPER	1340	1231	1773	1727	1844	2127	2383	2622	2319	2593	2807	8.11
PAPER AND PAPERBOARD	2935	2881	3000	3176	3486	4012	4803	4688	5079	5301	5711	7.98

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

7. INDEXES OF VALUE OF EXPORTS OF AGRICULTURAL AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	.....					1979-81=100						PERCENT
WORLD												
AGRICULTURAL PRODUCTS	104	95	93	98	92	99	108	122	129	137	136	4.04
FOOD	107	96	92	97	90	96	105	119	126	137	138	3.90
FEED	114	108	114	100	83	103	117	143	141	126	127	2.62
RAW MATERIALS	100	93	93	100	94	96	114	137	146	151	143	5.55
BEVERAGES	85	89	89	103	105	132	113	118	116	118	115	3.45
FOREST PRODUCTS	98	89	91	97	96	111	140	167	181	187	175	8.90
DEVELOPED COUNTRIES												
AGRICULTURAL PRODUCTS	106	96	92	95	88	96	110	125	133	144	143	4.61
FOOD	107	96	91	93	85	93	106	119	128	139	140	4.21
FEED	110	108	116	96	84	98	110	120	116	105	104	.30
RAW MATERIALS	100	98	94	102	98	100	123	146	157	165	149	6.20
BEVERAGES	96	95	93	98	107	134	148	161	165	192	190	8.79
FOREST PRODUCTS	100	91	92	99	98	115	144	171	184	193	178	8.97
WESTERN EUROPE												
AGRICULTURAL PRODUCTS	103	97	94	96	97	118	139	149	158	180	184	7.72
FOOD	104	96	92	94	95	117	137	148	157	178	184	7.71
FEED	118	127	133	118	107	105	131	125	133	120	101	-.65
RAW MATERIALS	96	96	97	104	106	124	151	158	161	188	195	8.48
BEVERAGES	96	96	93	98	109	139	156	169	174	207	205	9.76
FOREST PRODUCTS	98	89	89	97	97	121	157	183	195	214	185	10.30
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS	99	93	86	81	81	87	93	100	101	96	73	-.38
FOOD	99	88	81	80	78	81	85	93	93	91	70	-.70
FEED	91	116	106	71	95	105	199	161	246	206	138	8.80
RAW MATERIALS	104	104	96	83	86	98	111	121	121	111	81	.64
BEVERAGES	94	97	102	96	94	102	105	107	95	84	62	-2.33
FOREST PRODUCTS	99	97	100	100	99	108	112	134	132	114	105	2.31
NORTH AMERICA, DEVELOPED												
AGRICULTURAL PRODUCTS	110	95	94	99	76	69	76	98	104	107	105	.46
FOOD	112	95	94	98	73	63	68	91	96	94	95	-.96
FEED	105	93	107	83	69	95	96	119	103	96	108	1.10
RAW MATERIALS	101	96	92	109	96	83	108	130	144	172	156	5.92
BEVERAGES	95	91	79	91	88	123	105	127	125	135	141	5.38
FOREST PRODUCTS	102	91	96	104	100	111	140	170	184	183	183	8.55
OCEANIA, DEVELOPED												
AGRICULTURAL PRODUCTS	111	103	88	91	95	94	98	123	142	133	122	3.30
FOOD	114	104	88	90	94	89	87	96	113	123	120	1.59
FEED	106	103	95	73	60	74	103	144	145	115	127	4.48
RAW MATERIALS	102	99	90	93	99	105	124	184	208	156	120	6.29
BEVERAGES	132	139	157	177	158	182	283	527	607	599	836	22.03
FOREST PRODUCTS	111	94	83	89	85	87	114	122	185	204	204	8.97

7. INDEXES OF VALUE OF EXPORTS OF AGRICULTURAL AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... 1979-81=100											PERCENT
DEVELOPING COUNTRIES												
AGRICULTURAL PROOUCTS	102	92	94	106	99	106	103	117	120	123	123	2.83
FOOO	107	95	95	108	103	102	104	117	122	133	132	3.05
FEED	117	109	112	104	82	108	123	166	166	147	148	4.53
RAW MATERIALS	99	85	92	97	87	88	101	123	127	129	133	4.40
BEVERAGES	80	85	87	106	105	132	94	95	91	78	75	-.78
FOREST PROOUCTS	89	82	88	83	84	91	121	146	162	159	161	8.47
AFRICA,DEVELOPING												
AGRICULTURAL PRODUCTS	90	83	79	90	87	105	94	93	94	94	94	1.25
FOOO	92	81	73	85	81	96	100	93	92	98	100	2.06
FEED	75	78	81	51	47	50	56	67	81	77	76	.64
RAW MATERIALS	108	91	93	106	92	96	111	129	147	156	172	6.00
BEVERAGES	80	84	82	94	96	125	79	79	75	62	51	-3.84
FOREST PROOUCTS	85	71	68	69	66	73	81	94	90	107	104	4.00
LATIN AMERICA												
AGRICULTURAL PROOUCTS	102	91	97	105	101	102	91	104	104	113	104	.93
FOOD	109	92	99	108	105	95	89	103	104	127	110	1.16
FEED	125	104	122	109	85	103	115	171	172	140	140	3.70
RAW MATERIALS	104	93	82	84	81	61	68	87	92	104	106	.75
BEVERAGES	77	86	87	102	104	133	95	93	85	71	72	-1.23
FOREST PRODUCTS	109	90	96	115	98	107	130	188	194	201	202	9.17
NEAR EAST,DEVELOPING												
AGRICULTURAL PROOUCTS	112	110	104	111	97	105	117	126	135	135	147	3.13
FOOD	120	124	116	120	106	122	144	159	162	166	183	4.81
FEEO	84	60	48	67	20	39	54	83	64	62	22	-3.74
RAW MATERIALS	100	91	88	98	85	78	76	76	91	84	92	-1.09
BEVERAGES	112	72	73	81	62	87	47	83	152	170	118	5.24
FOREST PRODUCTS	136	152	164	205	156	134	140	155	173	156	156	.25
FAR EAST,DEVELOPING												
AGRICULTURAL PRODUCTS	104	94	96	113	104	112	121	144	151	148	158	5.51
FOOO	110	99	94	116	110	111	121	141	154	150	169	5.41
FEED	112	118	104	103	83	119	136	168	168	160	164	5.63
RAW MATERIALS	94	79	97	99	89	101	120	151	149	147	147	6.72
BEVERAGES	90	84	98	138	124	138	114	123	125	123	115	2.96
FOREST PRODUCTS	84	81	88	76	83	89	125	144	167	158	162	9.07

8. INDEXES OF VOLUME OF EXPORTS OF AGRICULTURAL AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	1979-81=100											PERCENT
WORLD												
AGRICULTURAL PRODUCTS	106	105	105	109	108	107	114	117	120	119	123	1.66
FOOD	106	104	104	108	106	104	111	114	116	116	121	1.45
FEED	113	122	119	116	124	126	134	148	157	147	144	3.13
RAW MATERIALS	99	97	99	102	102	108	115	111	118	115	112	1.97
BEVERAGES	102	104	103	110	115	106	110	110	119	121	122	1.70
FOREST PRODUCTS	97	93	103	107	109	114	124	134	138	138	130	4.20
DEVELOPED COUNTRIES												
AGRICULTURAL PRODUCTS	106	103	102	106	101	99	111	112	114	111	114	1.09
FOOD	106	102	101	106	100	98	109	111	113	111	113	1.11
FEED	109	119	125	109	115	116	132	124	122	118	122	.77
RAW MATERIALS	99	99	98	101	101	102	111	108	115	112	109	1.58
BEVERAGES	104	105	103	110	115	105	106	110	114	114	118	1.04
FOREST PRODUCTS	98	95	104	110	112	117	126	137	140	139	128	4.00
WESTERN EUROPE												
AGRICULTURAL PRODUCTS	109	109	115	125	132	138	144	142	152	154	158	4.08
FOOD	108	105	112	123	130	140	144	146	154	159	164	4.77
FEED	119	151	150	139	158	126	149	126	140	125	115	-1.23
RAW MATERIALS	103	100	108	120	123	124	135	124	136	139	153	3.83
BEVERAGES	104	107	110	119	124	121	124	126	131	133	136	2.63
FOREST PRODUCTS	99	97	107	117	119	122	132	144	149	150	130	4.34
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS	98	97	96	95	100	96	103	108	103	95	85	-.25
FOOD	98	96	96	98	106	101	107	113	110	103	96	.76
FEED	92	105	104	71	131	133	238	167	157	145	156	7.00
RAW MATERIALS	102	106	101	88	96	102	107	111	112	93	85	-.51
BEVERAGES	100	103	113	112	108	94	97	94	84	60	48	-6.35
FOREST PRODUCTS	97	98	102	104	103	111	111	111	103	89	81	-.98
NORTH AMERICA,DEVELOPED												
AGRICULTURAL PRODUCTS	104	100	98	99	80	75	91	97	96	92	95	-.74
FOOD	105	100	98	99	79	72	89	95	94	90	92	-1.06
FEED	104	99	111	92	88	113	123	128	114	119	132	2.75
RAW MATERIALS	97	96	91	95	90	86	93	95	103	101	94	.42
BEVERAGES	102	98	95	96	104	113	116	134	147	161	177	6.46
FOREST PRODUCTS	98	91	102	105	106	114	126	138	139	137	137	4.59
OCEANIA,DEVELOPED												
AGRICULTURAL PRODUCTS	99	105	94	107	140	139	135	119	112	110	111	1.30
FOOD	100	106	93	108	142	141	135	118	110	109	110	1.13
FEED	83	102	98	67	74	96	124	128	115	111	124	4.33
RAW MATERIALS	93	100	106	100	110	122	134	127	129	128	117	3.15
BEVERAGES	115	113	160	165	157	191	274	382	338	313	386	14.22
FOREST PRODUCTS	101	87	88	88	88	89	93	98	124	146	146	4.83

8. INDEXES OF VOLUME OF EXPORTS OF AGRICULTURAL AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... 1979-81=100											PERCENT
DEVELOPING COUNTRIES												
AGRICULTURAL PRODUCTS	108	110	114	116	126	125	122	132	137	139	145	2.95
FOOD	107	108	115	116	127	124	118	124	125	133	145	2.44
FEED	115	123	115	120	130	134	136	165	182	168	159	4.58
RAW MATERIALS	98	94	101	103	103	115	121	115	122	119	115	2.45
BEVERAGES	101	103	102	109	115	107	117	111	125	131	127	2.60
FOREST PRODUCTS	91	87	94	94	93	98	113	124	131	133	141	5.29
AFRICA, DEVELOPING												
AGRICULTURAL PRODUCTS	99	101	96	86	94	100	101	96	99	107	106	.89
FOOD	100	103	98	86	94	100	102	96	97	106	107	.68
FEED	76	89	96	56	76	77	81	82	92	100	98	2.23
RAW MATERIALS	102	95	96	105	105	116	120	125	144	141	144	4.67
BEVERAGES	102	104	88	88	100	98	86	85	96	99	87	-.89
FOREST PRODUCTS	85	85	84	93	86	78	78	81	77	87	87	-.38
LATIN AMERICA												
AGRICULTURAL PRODUCTS	111	104	121	116	127	109	106	114	115	129	127	1.11
FOOD	111	103	120	114	126	106	98	106	101	121	120	.15
FEED	117	113	132	129	142	134	139	158	175	170	164	4.22
RAW MATERIALS	95	85	83	80	89	70	73	80	86	87	84	-.56
BEVERAGES	98	103	110	117	122	104	135	118	131	138	141	3.34
FOREST PRODUCTS	104	94	113	127	117	124	120	159	159	165	165	5.68
NEAR EAS, DEVELOPING												
AGRICULTURAL PRODUCTS	115	136	136	136	113	128	150	198	176	150	204	4.72
FOOD	119	143	143	141	119	134	161	215	191	162	224	5.30
FEED	76	52	53	66	20	44	52	91	60	57	26	-2.61
RAW MATERIALS	94	99	99	104	87	100	82	77	77	68	70	-3.85
BEVERAGES	112	91	89	100	82	75	45	59	117	168	128	2.08
FOREST PRODUCTS	124	138	163	219	173	166	188	193	219	186	186	3.60
FAR EAST, DEVELOPING												
AGRICULTURAL PRODUCTS	104	110	108	119	130	147	142	150	167	165	174	5.65
FOOD	101	111	107	124	136	152	139	140	158	157	179	5.32
FEED	118	134	107	120	128	142	143	180	196	173	165	5.05
RAW MATERIALS	100	100	115	122	125	163	183	161	160	151	149	5.19
BEVERAGES	104	102	103	120	122	126	124	134	147	153	149	4.42
FOREST PRODUCTS	88	84	90	83	87	94	116	122	133	133	145	6.12

9. INDEXES OF VALUE OF IMPORTS OF AGRICULTURAL AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	.....					1979-81=100						..... PERCENT
WORLD												
AGRICULTURAL PRODUCTS	104	96	92	97	93	99	107	120	126	134	132	3.71
FOOD	107	97	92	96	92	96	105	118	126	137	136	3.74
FEED	113	109	113	100	88	102	120	149	137	136	126	2.89
RAW MATERIALS	98	91	90	100	95	96	115	133	136	132	127	4.43
BEVERAGES	87	88	87	97	99	125	108	110	109	109	106	2.66
FOREST PRODUCTS	97	94	91	97	95	111	140	161	178	189	169	8.51
DEVELOPED COUNTRIES												
AGRICULTURAL PRODUCTS	101	94	90	95	93	103	113	124	126	137	135	4.39
FOOD	103	95	89	94	93	102	115	126	130	147	147	5.08
FEED	112	107	110	93	83	96	116	138	126	126	116	2.13
RAW MATERIALS	96	90	90	99	95	93	109	124	124	118	107	2.99
BEVERAGES	86	87	86	95	98	126	108	110	110	108	104	2.63
FOREST PRODUCTS	94	91	88	94	94	111	141	162	179	188	163	8.82
WESTERN EUROPE												
AGRICULTURAL PRODUCTS	96	93	89	90	91	108	122	133	131	149	152	6.06
FOOD	96	93	87	87	88	106	126	136	136	161	168	7.15
FEED	110	110	107	95	84	99	111	126	109	120	110	1.16
RAW MATERIALS	91	89	89	100	102	101	116	128	128	129	118	4.16
BEVERAGES	86	86	87	93	95	130	117	122	120	122	121	4.44
FOREST PRODUCTS	96	90	85	89	88	112	144	168	182	203	159	9.38
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS	114	99	94	97	90	82	85	94	100	94	68	-2.47
FOOD	119	101	90	97	90	79	79	87	93	95	72	-2.71
FEED	124	100	133	78	65	71	127	173	182	117	97	2.40
RAW MATERIALS	98	92	101	98	94	89	96	106	102	80	45	-3.80
BEVERAGES	92	90	94	102	102	109	98	99	111	96	59	-1.40
FOREST PRODUCTS	107	99	90	90	93	88	91	105	111	99	78	-.61
NORTH AMERICA, DEVELOPED												
AGRICULTURAL PRODUCTS	100	92	86	104	103	110	108	112	117	125	124	3.11
FOOD	106	94	90	109	110	111	118	124	131	151	148	4.68
FEED	103	91	114	142	118	128	143	206	200	166	197	7.81
RAW MATERIALS	105	90	79	99	79	81	92	103	112	96	109	1.55
BEVERAGES	85	89	80	95	97	119	92	87	86	78	76	-1.04
FOREST PRODUCTS	100	102	115	134	137	143	167	189	200	197	197	8.11
OCEANIA, DEVELOPED												
AGRICULTURAL PRODUCTS	104	111	99	118	117	115	113	132	161	157	159	4.80
FOOD	106	128	111	136	134	129	128	154	198	205	210	6.83
FEED	165	75	338	107	192	171	309	164	372	153	201	5.10
RAW MATERIALS	105	90	78	90	82	78	85	103	111	92	87	.44
BEVERAGES	96	92	87	103	111	116	101	105	116	106	108	1.77
FOREST PRODUCTS	110	122	83	103	117	115	130	177	202	199	199	8.29

9. INDEXES OF VALUE OF IMPORTS OF AGRICULTURAL AND FOREST PRODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	..... 1979-81=100											PERCENT
DEVELOPING COUNTRIES												
AGRICULTURAL PRODUCTS	114	102	98	103	92	87	92	110	125	125	123	1.89
FOOD	117	104	98	102	90	83	84	99	117	116	111	.55
FEED	119	123	140	163	132	156	161	252	243	232	230	8.09
RAW MATERIALS	106	93	91	102	97	102	131	158	167	171	182	7.68
BEVERAGES	97	89	96	111	108	115	114	116	106	124	128	2.88
FOREST PRODUCTS	112	108	105	107	103	112	136	154	169	190	198	7.11
AFRICA, DEVELOPING												
AGRICULTURAL PRODUCTS	114	99	93	92	92	84	81	90	107	104	104	-.04
FOOD	115	101	93	92	91	82	75	86	104	101	101	-.60
FEED	124	116	91	123	114	155	185	226	267	216	183	8.89
RAW MATERIALS	105	102	101	104	110	102	110	121	127	135	137	3.16
BEVERAGES	102	71	85	76	82	85	118	88	103	95	102	2.17
FOREST PRODUCTS	124	108	111	98	95	95	92	103	116	110	116	-.03
LATIN AMERICA												
AGRICULTURAL PRODUCTS	112	87	84	86	77	76	71	85	99	107	106	.85
FOOD	114	87	85	85	76	73	66	78	95	104	102	.16
FEED	116	119	122	124	94	108	124	224	147	145	154	3.93
RAW MATERIALS	99	82	73	101	90	97	112	133	141	128	141	5.85
BEVERAGES	80	75	52	52	52	77	64	67	66	84	90	2.23
FOREST PRODUCTS	115	114	89	84	81	88	95	98	96	100	103	-.33
NEAR EAST, DEVELOPING												
AGRICULTURAL PRODUCTS	123	117	113	127	109	97	97	107	124	122	106	-.68
FOOD	124	118	111	124	106	92	91	101	121	116	98	-1.39
FEED	130	137	200	240	256	237	211	365	284	286	298	8.35
RAW MATERIALS	116	105	124	132	122	120	139	125	146	163	155	3.44
BEVERAGES	99	105	115	151	131	122	112	140	97	131	136	1.50
FOREST PRODUCTS	119	116	107	111	105	103	121	122	147	206	211	6.05
FAR EAST, DEVELOPING												
AGRICULTURAL PRODUCTS	110	101	96	98	88	88	105	134	149	147	154	4.91
FOOD	112	103	98	96	85	80	92	118	133	130	134	2.96
FEED	116	121	139	168	113	159	165	233	300	282	272	10.52
RAW MATERIALS	104	91	85	95	90	98	134	175	182	185	202	9.54
BEVERAGES	109	107	134	173	187	204	176	179	177	213	212	6.50
FOREST PRODUCTS	104	101	111	118	115	133	175	211	230	248	261	11.47

10. INDEXES OF VOLUME OF IMPORTS OF AGRICULTURAL AND FOREST PODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	.....	.....	.....	.....	1979-81=100	.....	.....	.....	.....	.....	.....	PERCENT
WORLD												
AGRICULTURAL PRODUCTS	105	106	105	109	110	107	114	117	120	120	121	1.64
FOOD	105	105	103	108	107	104	111	113	117	116	119	1.40
FEED	111	125	121	116	132	130	142	156	148	161	148	3.44
RAW MATERIALS	99	96	98	103	104	108	116	112	118	111	108	1.65
BEVERAGES	102	103	103	108	112	107	110	110	117	119	120	1.63
FOREST PRODUCTS	96	94	101	106	108	115	125	131	138	139	126	4.07
DEVELOPED COUNTRIES												
AGRICULTURAL PRODUCTS	104	105	100	104	109	104	109	112	113	114	115	1.24
FOOD	103	102	97	103	105	100	104	107	109	110	113	1.07
FEED	111	125	119	111	128	123	135	144	134	146	132	2.26
RAW MATERIALS	98	96	98	104	106	105	108	104	106	98	92	-.01
BEVERAGES	102	103	102	107	112	107	110	109	117	117	118	1.50
FOREST PRODUCTS	95	92	99	105	107	115	125	131	139	139	121	4.14
WESTERN EUROPE												
AGRICULTURAL PRODUCTS	100	106	100	99	105	106	111	111	109	116	116	1.49
FOOD	98	100	96	96	101	103	108	109	108	114	116	1.87
FEED	110	127	116	111	125	124	134	136	124	140	133	1.85
RAW MATERIALS	95	95	98	104	108	110	111	104	106	101	99	.66
BEVERAGES	102	103	104	104	111	111	116	116	124	131	134	2.90
FOREST PRODUCTS	96	95	101	106	107	116	126	135	143	147	117	4.08
USSR AND EASTERN EUROPE												
AGRICULTURAL PRODUCTS	114	105	94	103	107	84	91	100	106	87	84	-1.94
FOOD	116	107	91	106	110	83	89	95	101	84	87	-2.25
FEED	115	114	156	86	102	102	159	210	240	182	118	5.17
RAW MATERIALS	101	96	108	106	103	94	94	91	90	69	36	-6.52
BEVERAGES	102	99	98	105	108	85	85	85	93	71	55	-4.58
FOREST PRODUCTS	103	95	90	90	94	86	84	87	90	74	59	-3.53
NORTH AMERICA, DEVELOPED												
AGRICULTURAL PRODUCTS	104	99	101	117	121	123	121	124	134	142	144	3.71
FOOD	105	98	99	115	119	122	118	122	134	144	145	3.84
FEED	100	100	126	164	173	167	188	231	206	196	253	9.10
RAW MATERIALS	106	93	97	111	113	106	112	112	126	119	118	2.10
BEVERAGES	101	106	108	120	126	125	127	115	123	122	115	1.40
FOREST PRODUCTS	96	88	107	122	130	135	144	144	147	146	146	5.11
OCEANIA, DEVELOPED												
AGRICULTURAL PRODUCTS	99	114	120	128	129	118	132	148	175	187	186	6.19
FOOD	97	119	123	139	133	121	136	161	191	212	209	7.32
FEED	150	84	392	82	298	258	460	204	374	194	274	8.00
RAW MATERIALS	98	91	84	87	95	86	87	90	93	90	79	-.72
BEVERAGES	102	111	102	105	112	111	102	118	125	127	136	2.51
FOREST PRODUCTS	104	113	83	100	125	117	115	142	147	136	136	4.10

10. INDEXES OF VOLUME OF IMPORTS OF AGRICULTURAL AND FOREST PODUCTS

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	ANNUAL RATE OF CHANGE 1981-91
	.....					1979-81=100						PERCENT
DEVELOPING COUNTRIES												
AGRICULTURAL PRODUCTS	108	109	114	118	111	112	124	127	134	132	133	2.37
FOOD	108	109	114	117	110	110	122	123	129	126	128	1.88
FEED	114	132	150	180	189	219	224	301	333	362	344	12.70
RAW MATERIALS	102	98	97	100	98	116	134	130	144	141	145	4.88
BEVERAGES	104	103	107	114	111	108	115	118	119	132	142	2.71
FOREST PRODUCTS	106	104	110	113	110	116	130	131	134	142	148	3.72
AFRICA,DEVELOPING												
AGRICULTURAL PRODUCTS	107	110	109	117	123	113	110	117	124	116	125	1.15
FOOD	107	110	109	117	123	112	109	115	123	113	124	.96
FEED	124	129	115	148	153	250	246	253	288	292	259	10.78
RAW MATERIALS	101	101	105	109	117	116	125	122	135	142	129	3.34
BEVERAGES	114	100	110	109	117	104	116	99	122	106	117	.47
FOREST PRODUCTS	117	105	116	106	101	94	85	95	102	91	91	-2.33
LATIN AMERICA												
AGRICULTURAL PRODUCTS	108	92	106	102	93	89	93	94	95	108	115	.42
FOOD	108	91	106	101	91	87	89	89	92	105	111	-.03
FEED	110	127	127	133	137	142	168	230	160	185	209	6.30
RAW MATERIALS	98	91	87	109	108	144	144	144	154	147	164	6.59
BEVERAGES	92	88	69	66	65	72	74	72	77	100	115	2.08
FOREST PRODUCTS	106	99	88	83	78	85	90	84	85	88	90	-1.09
NEAR EAST,DEVELOPING												
AGRICULTURAL PRODUCTS	114	122	128	151	138	136	148	136	153	147	136	1.84
FOOD	114	122	127	150	136	134	147	133	151	144	133	1.62
FEED	118	150	188	264	279	273	271	355	312	412	418	11.99
RAW MATERIALS	117	113	129	129	124	117	145	123	143	142	125	1.47
BEVERAGES	104	117	119	137	119	115	116	149	108	130	143	1.69
FOREST PRODUCTS	110	118	119	130	121	104	108	104	96	107	112	-1.33
FAR EAST,DEVELOPING												
AGRICULTURAL PRODUCTS	104	109	114	106	102	111	131	146	147	143	148	4.17
FOOD	103	109	114	106	101	107	126	140	136	131	136	3.17
FEED	115	134	156	190	202	234	244	339	509	533	459	17.09
RAW MATERIALS	99	95	92	92	90	110	133	130	146	141	149	5.68
BEVERAGES	109	119	148	159	158	169	175	182	198	231	230	7.21
FOREST PRODUCTS	101	99	116	121	124	144	172	177	187	199	209	8.47

11. THE IMPORTANCE OF AGRICULTURE IN THE ECONOMY

	AGRIC.POPULATION AS % OF TOTAL POPULATION 1990	AGRIC.EXPORTS AS % OF TOTAL EXPORTS 1990	AGRIC.IMPORTS AS % OF TOTAL IMPORTS 1990	SHARE OF TOTAL IMPORTS FINANCED BY AGRIC. EXPORTS % 1990
ALGERIA	24		28	1
ANGOLA	70		31	
BENIN	61	42	17	17
BOTSWANA	63	5	10	6
BURKINA FASO	84	35	19	20
BURUNDI	91	93	10	30
CAMEROON	61	42	20	38
CAPE VERDE	43	27	32	1
CENTRAL AFRICAN REP.	63	19	19	20
CHAD	75	63	6	19
COMOROS	79	86	36	29
CONGO	59	1	16	2
COTE D`IVOIRE	56	66	25	106
DJIBOUTI	77	17	35	2
EGYPT	40	22	35	5
EQUATORIAL GUINEA	55	19	18	13
ETHIOPIA	75	76	22	21
GABON	68		15	
GAMBIA	81	43	35	7
GHANA	50	41	15	31
GUINEA	74	4	17	3
GUINEA-BISSAU	79	48	28	13
KENYA	77	68	7	32
LESOTHO	80	32	25	5
LIBERIA	70	18	24	27
LIBYAN ARAB JAM.	14		19	
MADAGASCAR	77	48	13	34
MALAWI	75	91	8	66
MALI	81	85	21	60
MAURITANIA	64	6	21	5
MAURITIUS	23	31	12	23
MOROCCO	36	15	11	9
MOZAMBIQUE	82	28	21	4
NAMIBIA	35	19	3	20
NIGER	87	14	18	10
NIGERIA	65	2	10	4
REUNION	11	79	17	7
RWANDA	91	86	16	34
SAO TOME AND PRINCIPE	64	37	22	12
SENEGAL	78	24	28	16
SEYCHELLES	78	1	16	
SIERRA LEONE	62	12	63	11
SOMALIA	71	85	23	20
SOUTH AFRICA	15	7	6	10
SUDAN	60	98	19	43
SWAZILAND	66	38	8	28
TANZANIA	79	62	5	20
TOGO	70	32	23	16
TUNISIA	24	7	12	5
UGANDA	81	86	3	25
ZAIRE	66	11	26	17
ZAMBIA	69	2	3	2
ZIMBABWE	68	48	3	61
BARBADOS	7	28	16	8
BELIZE	33	60	20	37
BERMUDA	2		15	
CANADA	3	7	6	8
COSTA RICA	24	59	8	42
CUBA	19	88	13	64
DOMINICA	28	65	21	30
DOMINICAN REP.	36	49	15	20
EL SALVADOR	37	55	12	25
GRENADA	28	62	24	16
GUADELOUPE	10	77	18	6
GUATEMALA	51	69	10	50
HAITI	60	28	58	15
HONDURAS	57	70	9	60
JAMAICA	30	20	14	12
MARTINIQUE	8	61	17	10
MEXICO	30	10	15	8
NICARAGUA	38	73	15	35
PANAMA	25	59	11	13
TRINIDAD AND TOBAGO	8	5	20	9
UNITED STATES	3	12	5	9

11. THE IMPORTANCE OF AGRICULTURE IN THE ECONOMY

	AGRIC.POPULATION AS % OF TOTAL POPULATION 1990	AGRIC.EXPORTS AS % OF TOTAL EXPORTS 1990	AGRIC.IMPORTS AS % OF TOTAL IMPORTS 1990	SHARE OF TOTAL IMPORTS FINANCED BY AGRIC. EXPORTS % 1990
ARGENTINA	10	55	5	168
BOLIVIA	42	22	9	29
BRAZIL	24	28	10	44
CHILE	13	15	5	18
COLOMBIA	28	35	7	43
ECUADOR	31	29	10	42
FRENCH GUIANA	25	17	15	2
GUYANA	22	41	12	33
PARAGUAY	48	88	6	71
PERU	37	9	17	8
SURINAME	16	11	15	15
URUGUAY	14	47	9	59
VENEZUELA	10	2	12	5
AFGHANISTAN	55	65	24	17
BANGLADESH	69	13	26	5
BHUTAN	91	5	7	4
BRUNEI DARUSSALAM	52		21	1
MYANMAR	47	31	9	15
CHINA (MAINLAND)	67	13	10	15
CYPRUS	21	31	10	12
HONG KONG	1	4	8	4
INDIA	63	17	5	13
INDONESIA	44	11	7	13
IRAN, ISLAMIC REP.	27	3	22	4
IRAQ	21	1	37	2
ISRAEL	4	11	8	9
JAPAN	6		12	
JORDAN	6	12	28	4
CAMBODIA	70	56	6	16
KOREA, DEM. POP. REP.	34	2	9	1
KOREA, REP.	22	2	10	2
KUWAIT	1	1	22	1
LAOS	72	38	15	14
LEBANON	9	33	26	7
MALAYSIA	30	14	7	14
MALDIVES	64		11	
MONGOLIA	30	12	5	9
NEPAL	92	31	16	9
OMAN	40	1	18	2
PAKISTAN	53	20	20	14
PHILIPPINES	47	15	11	10
QATAR	2		15	
SAUDI ARABIA, KINGDOM	39	1	19	2
SINGAPORE	1	5	6	4
SRI LANKA	52	39	19	28
SYRIAN ARAB REP.	24	14	30	23
THAILAND	60	23	5	16
TURKEY	44	24	10	14
UNITED ARAB EMIRATES	3	2	14	4
VIET NAM	61	30	6	25
YEMEN		7	41	3

11. THE IMPORTANCE OF AGRICULTURE IN THE ECONOMY

	AGRIC.POPULATION AS % OF TOTAL POPULATION 1990	AGRIC.EXPORTS AS % OF TOTAL EXPORTS 1990	AGRIC.IMPORTS AS % OF TOTAL IMPORTS 1990	SHARE OF TOTAL IMPORTS FINANCED BY AGRIC. EXPORTS % 1990
AUSTRIA	5	3	6	3
BELGIUM-LUXEMBOURG	2	10	10	9
BULGARIA	12	12	7	12
CZECH SLOVAK FED. REP.	9	6	12	6
DENMARK	5	23	10	26
FINLAND	8	3	5	3
FRANCE	5	15	9	14
GERMANY, NEW LANDER	8	3	12	5
GERMANY, FEDERAL REP.	3	5	11	6
GREECE	21	31	15	12
HUNGARY	12	24	9	27
ICELAND	6	2	9	2
IRELAND	13	22	11	25
ITALY	6	7	13	6
MALTA	4	3	10	2
NETHERLANDS	4	23	13	23
NORWAY	5	1	5	1
POLAND	18	15	13	24
PORTUGAL	17	6	11	4
ROMANIA	18	3	15	2
SPAIN	10	14	9	9
SWEDEN	4	2	6	2
SWITZERLAND	3	3	7	3
UNITED KINGDOM	2	7	10	6
USSR	13	2	16	2
YUGOSLAVIA	20	7	14	6
AUSTRALIA	5	31	4	29
FIJI	39	41	11	29
FRENCH POLYNESIA	13	3	17	
KIRIBATI	13	28	32	3
NEW CALEDONIA	46		13	
NEW ZEALAND	9	53	7	52
PAPUA NEW GUINEA	67	18	19	20
SOLOMON ISLANDS	46	24	18	19
TOKELAU	13			
TONGA	13	54	30	10
VANUATU	46	59	13	11

12 a. RESOURCES AND THEIR USE IN AGRICULTURE

	ARABLE LAND AS % OF TOTAL LAND 1989	IRRIGATED LAND AS % OF ARABLE LAND 1989	FOREST LAND AS % OF TOTAL LAND 1989	AGRIC.POPULATION PER HA OF ARABLE LAND 1989	AGRIC.LABOUR FORCE AS % OF AGRIC.POPULATION 1989
ALGERIA	3	4	2	.8	23
ANGOLA	3		42	1.9	41
BENIN	17		32	1.5	47
BOTSWANA	2		19	.6	33
BURKINA FASO	13		24	2.1	53
BURUNDI	52	5	3	3.6	52
CAMEROON	15		53	1.0	37
CAPE VERDE	10	5		4.1	34
CENTRAL AFRICAN REPUBLIC	3		57	.9	47
CHAD	3		10	1.3	35
COMOROS	45		16	4.2	44
CONGO		2	62	7.8	38
COTE D`IVOIRE	12	2	24	1.8	38
DJIBOUTI					45
EGYPT	3	100		8.1	28
EQUATORIAL GUINEA	8		46	.8	41
ETHIOPIA	13	1	25	2.6	42
GABON	2		78	1.7	44
GAMBIA	18	7	16	3.8	46
GHANA	12		35	2.7	37
GUINEA	3	3	60	5.7	43
GUINEA-BISSAU	12		38	2.2	47
KENYA	4	2	4	7.4	41
LESOTHO	11			4.3	47
LIBERIA	4	1	18	4.7	37
LIBYAN ARAB JAM.	1	11		.3	25
MADAGASCAR	5	29	27	2.9	43
MALAWI	26	1	40	2.7	41
MALI	2	10	6	3.5	32
MAURITANIA		6	4	6.4	32
MAURITIUS	57	16	31	2.3	39
MOROCCO	21	14	18	1.0	31
MOZAMBIQUE	4	4	18	4.0	53
NAMIBIA	1	1	22	.9	30
NIGER	3	1	2	1.8	51
NIGERIA	34	3	13	2.2	38
REUNION	21	12	35	1.3	38
RWANDA	47		23	5.5	49
SAO TOME AND PRINCIPE	39			2.1	38
SENEGAL	27	3	31	1.1	43
SEYCHELLES	22		19	8.8	44
SIERRA LEONE	25	2	29	1.4	35
SOMALIA	2	11	14	5.0	40
SOUTH AFRICA	11	9	4	.4	33
SUDAN	5	15	19	1.2	32
SWAZILAND	10	38	6	3.1	40
TANZANIA	6	3	46	4.0	48
TOGO	27		30	1.7	41
TUNISIA	30	6	4	.4	33
UGANDA	34		28	2.2	44
ZAIRE	3		77	2.9	37
ZAMBIA	7	1	39	1.1	32
ZIMBABWE	7	8	50	2.3	39
BARBADOS	77			.5	51
BELIZE	2	4	44	1.1	34
BERMUDA			20		49
CANADA	5	2	39		50
COSTA RICA	10	22	32	1.4	34
CUBA	30	27	25	.6	42
DOMINICA	23		41	1.4	47
DOMINICAN REP.	30	16	13	1.8	32
EL SALVADOR	35	16	5	2.7	31
GRENADA	38		9	1.9	47
GUADELOUPE	17	10	41	1.2	46
GUATEMALA	17	4	35	2.5	29
HAITI	33	8	1	4.3	47
HONDURAS	16	5	30	1.6	30
JAMAICA	25	13	17	2.7	45
MARTINIQUE	19	30	36	1.4	47
MEXICO	13	21	23	1.1	35
NICARAGUA	11	7	29	1.1	31
PANAMA	8	6	44	1.0	36
TRINIDAD AND TOBAGO	23	18	43	.8	38
UNITED STATES	21	10	32		44

12 a. RESOURCES AND THEIR USE IN AGRICULTURE

	ARABLE LAND AS % OF TOTAL LAND 1989	IRRIGATED LAND AS % OF ARABLE LAND 1989	FOREST LAND AS % OF TOTAL LAND 1989	AGRIC.POPULATION PER HA OF ARABLE LAND 1989	AGRIC.LABOUR FORCE AS % OF AGRIC.POPULATION 1989
ARGENTINA	13	5	22	.1	36
BOLIVIA	3	5	51	.8	31
BRAZIL	9	3	65	.5	37
CHILE	6	28	12	.4	34
COLOMBIA	5	10	49	1.7	32
ECUADOR	10	21	40	1.2	31
FRENCH GUIANA			83	2.2	35
GUYANA	3	26	83	.4	37
PARAGUAY	6	3	36	.9	33
PERU	3	34	54	2.1	31
SURINAME		87	95	1.0	34
URUGUAY	7	8	4	.3	38
VENEZUELA	4	7	35	.5	36
AFGHANISTAN	12	33	3	1.1	30
BANGLADESH	71	29	15	8.4	29
BHUTAN	3	26	55	10.3	44
BRUNEI DARUSSALAM	1	14	45	19.5	42
MYANMAR	15	10	49	1.9	44
CHINA (MAINLAND)	10	47	13	7.9	60
CYPRUS	17	22	13	.9	46
HONG KONG	7	29	12	10.4	52
INDIA	57	25	22	3.1	40
INDONESIA	12	36	63	3.9	43
IRAN, ISLAMIC REP.	9	39	11	1.0	29
IRAQ	12	47	4	.7	27
ISRAEL	21	49	5	.5	38
JAPAN	12	62	67	1.7	53
JORDAN	4	15	1	.5	25
CAMBODIA	17	3	76	1.9	46
KOREA, DEM. PEOPLE`S REP.	17	70	74	3.7	51
KOREA, REP.	22	64	66	4.7	48
KUWAIT		50		7.2	39
LAOS	4	13	55	3.2	47
LEBANON	29	29	8	.8	30
MALAYSIA	15	7	58	1.1	42
MALDIVES	10		3	44.8	36
MONGOLIA	1	6	9	.5	47
NEPAL	19	36	18	6.5	42
OMAN		85		12.4	28
PAKISTAN	27	78	5	3.1	27
PHILIPPINES	27	20	35	3.6	36
QATAR				1.3	46
SAUDI ARABIA, KINGDOM	1	37	1	4.6	29
SINGAPORE	2		5	27.8	48
SRI LANKA	29	29	27	4.6	37
SYRIAN ARAB REP.	30	12	4	.5	25
THAILAND	43	19	28	1.5	56
TURKEY	36	8	26	.9	47
UNITED ARAB EMIRATES		13		1.1	52
VIET NAM	20	28	30	6.1	48
YEMEN	3	21	8		

12 a. RESOURCES AND THEIR USE IN AGRICULTURE

	ARABLE LAND AS % OF TOTAL LAND 1989	IRRIGATED LAND AS % OF ARABLE LAND 1989	FOREST LAND AS % OF TOTAL LAND 1989	AGRIC.POPULATION PER HA OF ARABLE LAND 1989	AGRIC.LABOUR FORCE AS % OF AGRIC.POPULATION 1989
AUSTRIA	19		39	.3	56
BELGIUM-LUXEMBOURG	25		21	.2	42
BULGARIA	38	30	35	.3	51
CZECH SLOVAK FED. REP.	41	6	37	.3	53
DENMARK	60	17	12	.1	56
FINLAND	8	3	76	.2	50
FRANCE	35	6	27	.2	48
GERMANY, NEW LANDER	47	3	28	.3	57
GERMANY, FEDERAL REP.	31	4	30	.3	57
GREECE	30	30	20	.6	44
HUNGARY	57	3	18	.3	48
ICELAND			1	1.9	62
IRELAND	14		5	.5	40
ITALY	41	26	23	.3	47
MALTA	41	8		1.1	37
NETHERLANDS	28	59	9	.6	41
NORWAY	3	11	27	.3	48
POLAND	48	1	29	.5	58
PORTUGAL	41	17	32	.5	43
ROMANIA	45	33	28	.4	57
SPAIN	41	17	31	.2	38
SWEDEN	7	4	68	.1	46
SWITZERLAND	10	6	26	.6	59
UNITED KINGDOM	28	2	10	.2	49
USSR	10	9	42	.2	50
YUGOSLAVIA	30	2	37	.6	50
AUSTRALIA	6	4	14		48
FIJI	13		65	1.2	34
FRENCH POLYNESIA	7		31	1.0	33
KIRIBATI	52		3	.2	37
NEW CALEDONIA	1		39	3.8	31
NEW ZEALAND	2	55	27	.6	45
PAPUA NEW GUINEA	1		84	6.6	47
SOLOMON ISLANDS	2		91	2.5	33
TOKELAU					33
TONGA	67		11	.3	33
VANUATU	12		75	.5	31

12b. RESOURCES AND THEIR USE IN AGRICULTURE

	AGRIC. GFCF $ PER HA OF ARABLE LAND 1989	AGRIC. GFCF $ PER CAPUT OF AGRIC.LABOUR FORCE 1989	FERTILIZER USE KG/HA OF ARABLE LAND 1989	NO. OF TRACTORS PER `000 HA OF ARABLE LAND 1989	OFFICIAL COMMITMENTS TO AGRIC. $ PER CAPUT 1990
ALGERIA			15	13	6.5
ANGOLA			7	3	2.4
BENIN			2		7.1
BOTSWANA	3.1	16.8	1	4	15.6
BURKINA FASO	.3	.3	6		13.1
BURUNDI			4		10.8
CAMEROON			4		15.6
CAPE VERDE					18.6
CENTRAL AFRICAN REP.					13.4
CHAD			2		6.8
COMOROS					6.3
CONGO			3	4	18.1
COTE D`IVOIRE			11	1	25.3
EGYPT	494.5	227.5	373	20	4.6
EQUATORIAL GUINEA					38.6
ETHIOPIA			7		.8
GABON			3	3	30.8
GAMBIA			11		17.4
GHANA			3	1	5.5
GUINEA			1		21.9
GUINEA-BISSAU			3		26.8
KENYA	39.6	12.9	48	4	4.0
LESOTHO			14	6	8.8
LIBERIA			7	1	.7
LIBYAN ARAB JAM.	275.5	3959.5	37	14	8.9
MADAGASCAR			2	1	3.5
MALAWI			23	1	9.9
MALI			9		13.3
MAURITANIA			12	2	51.6
MAURITIUS	125.5	138.5	304	3	3.2
MOROCCO			35	4	6.9
MOZAMBIQUE			1	2	5.8
NAMIBIA				5	1.7
NIGER			1		13.8
NIGERIA			12		2.0
REUNION			282	44	
RWANDA			1		5.8
SAO TOME AND PRINCIPE				3	20.7
SENEGAL			2		14.9
SEYCHELLES				7	90.6
SIERRA LEONE			1		
SOMALIA			3	2	7.0
SOUTH AFRICA	56.7	424.0	59	14	
SUDAN	8.0	22.1	4	1	2.2
SWAZILAND	61.7	46.8	46	20	1.8
TANZANIA	5.0	1.7	9	1	11.5
TOGO			8		5.9
TUNISIA	79.2	549.4	22	6	6.6
UGANDA				1	7.4
ZAIRE			1		1.5
ZAMBIA			15	1	4.2
ZIMBABWE	27.7	31.4	53	7	11.9
BARBADOS			91	19	
BELIZE			88	19	21.0
CANADA	74.7	7532.9	47	17	
COSTA RICA	223.7	470.5	203	12	20.2
CUBA			199	23	
DOMINICA			259	5	
DOMINICAN REP.			50	2	1.0
EL SALVADOR	12.7	15.1	106	5	10.3
GRENADA				2	37.4
GUADELOUPE			307	35	
GUATEMALA	25.7	36.5	66	2	4.7
HAITI			4		11.5
HONDURAS	61.8	162.2	18	2	17.5
JAMAICA			116	11	64.3
MARTINIQUE			945	45	
MEXICO			70	7	1.5
NICARAGUA			28	2	15.7
PANAMA			58	9	
TRINIDAD AND TOBAGO	67.5	213.2	57	22	
UNITED STATES	77.4	4928.6	99	25	

12b. RESOURCES AND THEIR USE IN AGRICULTURE

	AGRIC. GFCF $ PER HA OF ARABLE LAND 1989	AGRIC. GFCF $ PER CAPUT OF AGRIC.LABOUR FORCE 1989	FERTILIZER USE KG/HA OF ARABLE LAND 1989	NO. OF TRACTORS PER `000 HA OF ARABLE LAND 1989	OFFICIAL COMMITMENTS TO AGRIC. $ PER CAPUT 1990
ARGENTINA			4	6	.6
BOLIVIA			3	1	21.0
BRAZIL			43	9	.7
CHILE			69	8	23.2
COLOMBIA			101	7	6.6
ECUADOR			29	3	.9
FRENCH GUIANA			64	25	
GUYANA			33	7	48.8
PARAGUAY			9	5	2.4
PERU			41	4	1.6
SURINAME			26	19	9.1
URUGUAY			54	27	.2
VENEZUELA	118.7	573.1	138	12	
AFGHANISTAN			7		1.8
BANGLADESH			98	1	4.8
BHUTAN			1		8.1
BRUNEI DARUSSALAM			57	10	
MYANMAR			8	1	
CHINA (MAINLAND)	11.3	2.4	261	9	1.0
CYPRUS	412.2	959.7	144	88	
HONG KONG				1	
INDIA	41.2	33.4	69	5	.3
INDONESIA			110	1	7.1
IRAN, ISLAMIC REP.	189.9	677.0	80	8	
IRAQ	204.1	1068.6	40	7	.8
ISRAEL	482.6	2768.4	252	66	.1
JAPAN			418	442	
JORDAN	94.0	729.8	61	15	8.8
CAMBODIA			1		
KOREA, DEM. PEOPLE`S REP.			407	36	
KOREA, REP.	1847.4	818.1	454	15	1.9
KUWAIT			200	30	
LAOS				1	9.8
LEBANON			92	10	
MALAYSIA	193.1	388.4	170	2	4.6
MALDIVES					17.9
MONGOLIA			12	8	
NEPAL	21.8	8.1	25	2	8.8
OMAN			111	3	5.7
PAKISTAN	34.5	41.4	91	12	8.2
PHILIPPINES			67	1	6.5
QATAR			230	18	
SAUDI ARABIA, KINGDOM			401	2	
SINGAPORE			5600	60	
SRI LANKA			111	16	4.6
SYRIAN ARAB REP.	89.7	670.8	45	11	8.2
THAILAND			36	7	1.3
TURKEY			64	24	1.1
UNITED ARAB EMIRATES	1564.1	2904.8	311	6	
VIET NAM			82	5	
YEMEN	27.7	31.0	12	4	6.2

12b. RESOURCES AND THEIR USE IN AGRICULTURE

	AGRIC. GFCF $ PER HA OF ARABLE LAND 1989	AGRIC. GFCF $ PER CAPUT OF AGRIC.LABOUR FORCE 1989	FERTILIZER USE KG/HA OF ARABLE LAND 1989	NO. OF TRACTORS PER `000 HA OF ARABLE LAND 1989	OFFICIAL COMMITMENTS TO AGRIC. $ PER CAPUT 1990
AUSTRIA	760.5	5155.3	201	229	
BELGIUM-LUXEMBOURG	780.0	7896.3	496	149	
BULGARIA			195	13	
CZECH SLOVAK FED. REP.			314	27	
DENMARK	420.3	7670.0	255	65	
FINLAND	717.0	8257.3	210	99	
FRANCE	352.2	4809.6	319	77	
GERMANY, NEW LANDER			359	35	
GERMANY, FEDERAL REP.	862.5	5697.4	384	190	
GREECE	66.9	261.9	175	52	
HUNGARY			231	10	9.7
ICELAND	11862.5	9490.0	2529	1425	
IRELAND	878.6	4430.2	741	173	
ITALY	865.1	5236.3	151	117	
MALTA	503.1	1308.0	39	34	
NETHERLANDS	3686.1	14195.3	628	210	
NORWAY	1020.0	7688.9	242	176	
POLAND			219	78	2.6
PORTUGAL	96.2	350.9	73	35	.2
ROMANIA			133	15	
SPAIN			101	35	
SWEDEN	502.6	8240.8	127	64	
SWITZERLAND			430	267	
UNITED KINGDOM	307.7	3561.3	376	76	
USSR			106	12	
YUGOSLAVIA			115	143	1.5
AUSTRALIA			28	7	
FIJI	40.0	97.0	96	18	1.2
FRENCH POLYNESIA			33	6	
KIRIBATI					31.1
NEW CALEDONIA			60	66	2.9
NEW ZEALAND	857.1	2589.9	741	152	
PAPUA NEW GUINEA			40	3	4.0
SOLOMON ISLANDS					14.2
TONGA	87.2	820.0		2	39.9
VANUATU					18.2

13. MEASURES OF OUTPUT AND PRODUCTIVITY IN AGRICULTURE

	INDEX OF FOOD PROD. PER CAPUT 1979-81=100 1989-91	INDEX OF TOT.AGRIC. PROD. PER CAPUT 1979-81=100 1989-91	PER CAPUT DIETARY ENERGY SUPPLIES 1988-90	INDEX OF VALUE OF AGRIC.EXPORTS 1979-81=100 1989-91
ALGERIA	99	100	1901	24
ANGOLA	80	77	1190	5
BENIN	119	124	1544	145
BOTSWANA	76	76	1581	74
BURKINA FASO	113	115	1524	115
BURUNDI	93	92	1305	59
CAMEROON	81	80	1621	65
CAPE VERDE	118	117	1818	102
CENTRAL AFRICAN REPUBLIC	94	94	1348	63
CHAD	99	102	1179	53
COMOROS	90	90	1285	99
CONGO	91	91	1533	42
COTE D`IVOIRE	96	93	1731	60
EGYPT	118	109	2221	48
ETHIOPIA	88	87	1108	55
GABON	82	82	1635	30
GAMBIA	92	93	1600	27
GHANA	108	106	1496	42
GUINEA	88	87	1452	59
GUINEA-BISSAU	106	106	1779	111
KENYA	106	104	1346	68
LESOTHO	74	75	1546	115
LIBERIA	75	66	1620	56
LIBYAN ARAB JAM.	81	81	2222	
MADAGASCAR	89	89	1429	41
MALAWI	74	81	1360	91
MALI	95	98	1476	95
MAURITANIA	84	84	1781	55
MAURITIUS	104	103	1897	94
MOROCCO	133	133	2017	67
MOZAMBIQUE	82	81	1117	17
NAMIBIA	83	81	1313	104
NIGER	71	72	1537	40
NIGERIA	117	117	1545	33
REUNION	72	72	2057	87
RWANDA	84	88	1327	85
SAO TOME AND PRINCIPE	65	65	1606	14
SENEGAL	104	104	1589	99
SEYCHELLES			1565	9
SIERRA LEONE	93	97	1221	22
SOMALIA	86	86	1275	36
SOUTH AFRICA	86	86	2066	55
SUDAN	71	71	1409	69
SWAZILAND	87	86	1754	72
TANZANIA	84	83	1464	47
TOGO	98	101	1447	81
TUNISIA	107	107	2068	78
UGANDA	99	99	1369	41
ZAIRE	95	96	1369	51
ZAMBIA	95	96	1384	168
ZIMBABWE	87	95	1541	94
BARBADOS	78	78	2172	55
BELIZE	91	91	1778	83
BERMUDA			2019	
CANADA	111	110	2317	80
COSTA RICA	94	98	1867	79
CUBA	100	100	2102	68
DOMINICA	139	139	1883	302
DOMINICAN REP.	98	94	1572	41
EL SALVADOR	99	76	1550	26
GRENADA	85	85	1781	45
GUADELOUPE	99	99	1816	66
GUATEMALA	91	82	1428	57
HAITI	91	89	1358	42
HONDURAS	91	94	1455	75
JAMAICA	96	96	1749	100
MARTINIQUE	124	124	1835	135
MEXICO	97	96	2110	91
NICARAGUA	61	52	1526	31
PANAMA	89	90	1695	69
TRINIDAD AND TOBAGO	81	80	1917	83
UNITED STATES	95	94	2454	69

13. MEASURES OF OUTPUT AND PRODUCTIVITY IN AGRICULTURE

	INDEX OF FOOD PROD. PER CAPUT 1979-81=100 1989-91	INDEX OF TOT.AGRIC. PROD. PER CAPUT 1979-81=100 1989-91	PER CAPUT DIETARY ENERGY SUPPLIES 1988-90	INDEX OF VALUE OF AGRIC.EXPORTS 1979-81=100 1989-91
ARGENTINA	94	95	2068	68
BOLIVIA	113	111	1299	135
BRAZIL	134	132	1824	72
CHILE	115	115	1687	199
COLOMBIA	111	107	1660	57
ECUADOR	112	112	1605	78
FRENCH GUIANA			1897	2926
GUYANA	62	62	1824	46
PARAGUAY	118	126	1838	234
PERU	94	93	1445	63
SURINAME	80	80	1955	67
URUGUAY	116	118	1789	102
VENEZUELA	102	101	1754	176
AFGHANISTAN	74	73	1346	41
BANGLADESH	97	95	1341	61
BHUTAN	85	85		74
BRUNEI DARUSSALAM	111	111	1886	262
CHINA (MAINLAND)	134	136	1758	156
CYPRUS	97	97		92
HONG KONG	103	103	1896	398
INDIA	120	119	1492	85
INDONESIA	132	130	1739	84
IRAN, ISLAMIC REP.	112	111	2100	205
IRAQ	89	88	2137	85
ISRAEL	111	99	2124	80
JAPAN	96	93	1969	63
JORDAN	94	94	1802	42
CAMBODIA	145	149	1444	203
KOREA, DEM. PEOPLE`S REP.	105	106	1871	13
KOREA, REP.	97	95	1917	83
KUWAIT			2122	28
LAOS	113	112	1737	2088
LEBANON	138	135	2127	46
MALAYSIA	160	133	1768	75
MALDIVES	92	92	1586	81
MONGOLIA	85	83	1642	48
MYANMAR	99	97	1644	34
NEPAL	124	122	1387	39
OMAN				65
PAKISTAN	105	110	1471	87
PHILIPPINES	90	90	1427	40
SAUDI ARABIA, KINGDOM	333	328	1909	326
SINGAPORE	101	101	2083	106
SRI LANKA	90	88	1538	69
SYRIAN ARAB REP.	75	77	2039	124
THAILAND	105	108	1545	104
TURKEY	97	97	2128	101
UNITED ARAB EMIRATES			2210	121
VIET NAM	123	125	1480	475
YEMEN	74	75	1415	132

13. MEASURES OF OUTPUT AND PRODUCTIVITY IN AGRICULTURE

	INDEX OF FOOD PROD. PER CAPUT 1979-81=100 1989-91	INDEX OF TOT.AGRIC. PROD. PER CAPUT 1979-81=100 1989-91	PER CAPUT DIETARY ENERGY SUPPLIES 1988-90	INDEX OF VALUE OF AGRIC.EXPORTS 1979-81=100 1989-91
AUSTRIA	108	108	2343	117
BELGIUM-LUXEMBOURG	114	114	2636	111
BULGARIA	98	92	2459	61
CZECH SLOVAK FED. REP.	124	123	2431	73
DENMARK	131	131	2431	102
FINLAND	109	109	2136	66
FRANCE	101	101	2320	116
GERMANY, NEW LANDER	102	103	2559	74
GERMANY, FEDERAL REP.	117	117	2324	118
GREECE	100	103	2545	133
HUNGARY	112	111	2410	70
ICELAND	79	79	2346	31
IRELAND	114	114	2516	93
ITALY	99	100	2336	113
MALTA	120	120	2180	47
NETHERLANDS	109	110	2118	116
NORWAY	110	110	2202	74
POLAND	109	108	2328	133
PORTUGAL	119	119	2302	132
ROMANIA	81	82	2137	19
SPAIN	115	115	2344	138
SWEDEN	99	99	1968	92
SWITZERLAND	107	107	2393	116
UNITED KINGDOM	108	109	2128	98
USSR	107	105	2251	60
YUGOSLAVIA	91	91	2415	77
AUSTRALIA	95	103	2168	91
FIJI	92	92	1838	63
FRENCH POLYNESIA	75	74	1858	28
KIRIBATI			2022	37
NEW CALEDONIA	88	86	1892	30
NEW ZEALAND	101	96	2244	93
PAPUA NEW GUINEA	103	102	1605	55
SOLOMON ISLANDS	92	92	1479	51
TONGA	90	90	1982	55
VANUATU	84	83	1706	41

14. CARRYOVER STOCKS OF SELECTED AGRICULTURAL PRODUCTS

	CROP YEAR ENDING IN:				
	1988	1989	1990	1991	1992
CEREALS	..... MILLION TONNES				
DEVELOPED COUNTRIES	277.0	185.1	163.6	191.6	168.5
CANADA	13.5	9.9	10.7	16.1	14.9
UNITED STATES	169.4	86.1	61.1	72.1	44.9
AUSTRALIA	3.1	3.1	3.4	2.9	2.6
EEC	28.7	28.5	29.3	34.9	46.6
JAPAN	5.6	5.4	4.9	4.7	4.3
CIS 1/	39.1	36.2	39.1	45.6	34.7
DEVELOPING COUNTRIES	124.3	125.3	141.2	152.9	155.7
FAR EAST	82.5	82.9	97.6	114.2	119.3
BANGLADESH	1.5	1.2	1.1	1.0	1.2
CHINA	48.0	43.0	43.0	56.0	60.0
INDIA	5.4	4.4	11.3	12.6	9.1
PAKISTAN	1.7	2.0	2.6	2.6	2.4
NEAR EAST	17.4	18.1	17.8	17.9	17.0
TURKEY	1.1	0.8	1.0	0.8	0.8
AFRICA	9.7	11.7	13.0	10.2	9.3
LATIN AMERICA	14.5	12.3	12.6	10.2	9.8
ARGENTINA	1.0	1.0	1.1	1.2	1.6
BRAZIL	5.7	4.8	5.2	2.2	2.1
WORLD TOTAL	401.3	310.4	304.7	344.5	324.1
WHEAT	143.0	115.7	119.2	141.9	135.4
RICE,MILLED	45.6	47.3	57.5	63.7	60.7
COARSE GRAINS	212.6	147.4	128.1	138.9	128.1
SUGAR (RAW VALUE)					
WORLD TOTAL AS OF 1 SEPT.	33.4	31.2	30.4	34.5	35.5

1/ FAO estimates: up to crop years ending in 1991, former USSR; thereafter, Commonwealth of Independent States plus Georgia.

15. ANNUAL CHANGES IN CONSUMER PRICES: ALL ITEMS AND FOOD

	ALL ITEMS				FOOD			
	1975 TO 1980	1980 TO 1985	1985 TO 1990	1990 TO 1991	1975 TO 1980	1980 TO 1985	1985 TO 1990	1990 TO 1991
	PERCENT/YEAR							
DEVELOPED COUNTRIES								
WESTERN EUROPE								
AUSTRIA	3.8	4.8	2.2	3.3	4.4	4.1	1.6	4.1
BELGIUM	6.4	7.1	2.0	3.2	4.6	7.5	1.7	2.0
DENMARK	10.4	7.9	3.9	2.4	...	8.1	2.2	0.6
FINLAND	10.6	8.5	5.0	4.1	10.8	9.3	3.1	2.3
FRANCE	10.4	9.6	3.1	3.2	10.0	9.7	3.0	3.0
GERMANY, FED. REP.	4.0	3.8	1.3	3.4	3.3	3.2	1.1	2.8
GREECE	16.3	20.5	17.4	19.5	17.6	20.6	16.6	19.3
ICELAND	42.0	50.5	20.0	6.8	41.0	53.1	21.0	2.5
IRELAND	12.9	12.1	3.3	3.2	13.7	10.0	24.0	1.4
ITALY	3.0	13.8	5.6	6.4	15.6	12.5	5.2	6.7
NETHERLANDS	6.1	4.0	0.8	3.8	...	3.3	0.2	3.1
NEW LANDER	...	...	...	14.8	...	...	...	8.1
NORWAY	8.4	8.9	6.3	3.4	7.4	6.6	5.8	1.7
PORTUGAL	...	23.9	11.3	11.4	21.0	24.2	11.1	9.9
SPAIN	18.6	12.3	6.5	6.0	16.0	12.3	6.7	3.5
SWEDEN	10.5	8.9	6.2	9.4	10.7	11.7	5.8	4.6
SWITZERLAND	2.4	4.1	2.5	5.9	2.9	4.9	2.4	4.5
UNITED KINGDOM	14.4	6.8	5.9	5.9	13.9	5.5	4.7	5.1
YUGOSLAVIA	18.2	45.7	65.0	78.6	19.4	47.1	60.0	68.8
NORTH AMERICA								
CANADA	8.4	7.3	4.4	5.6	9.9	5.9	4.0	3.5
UNITED STATES	8.9	5.2	4.0	4.2	7.6	3.8	4.6	4.8
OCEANIA								
AUSTRALIA	10.6	8.4	7.9	3.3	12.0	7.8	7.1	3.4
NEW ZEALAND	14.8	11.3	9.3	2.5	16.8	9.6	9.4	0.9
OTHER DEVELOPED COUNTRIES								
ISRAEL	60.0	193.7	24.0	19.0	65.0	192.9	23.0	13.8
JAPAN	6.5	2.6	1.4	3.3	5.5	2.6	1.2	4.8
SOUTH AFRICA	12.0	13.7	15.3	15.3	13.0	12.9	17.1	19.6
DEVELOPING COUNTRIES								
LATIN AMERICA								
ARGENTINA	100.0	207.9	1432.0	202.4 1/	...	327.0	1280.0	186.9 1/
BAHAMAS	6.9	5.5	5.1	7.4	7.7	5.1	7.4	8.6
BARBADOS	10.0	6.1	3.8	6.3	9.1	6.1	5.3	4.8
BOLIVIA	17.0	46.0	67.9	21.4	16.4	...	44.0	21.6
BRAZIL	46.0	133.7	1075.0	432.8	49.0	142.8	991.0	394.5
CHILE	70.0	41.0	19.4	21.8	70.0	18.0	21.0	25.8
COLOMBIA	23.0	21.9	24.0	30.4	25.0	22.5	...	29.9
COSTA RICA	8.1	36.3	17.1	28.7	9.6	38.5	16.6	26.0
DOMINICAN REP.	8.3	26.0	28.0	...	3.4	8.6	32.0	...
ECUADOR	11.7	27.2	46.0	48.7	11.2	35.6	48.0	48.6
EL SALVADOR	...	14.0	24.0	14.4	...	14.3	28.0	17.9
GUATEMALA	10.7	...	20.0	33.2	9.4	...	23.0	30.9
GUYANA	12.8	19.6	3.2	2.3	14.1	26.5	3.1	0.7
HAITI	8.0	8.8	4.3	...	9.3	6.6	3.3	...
HONDURAS	9.2	7.1	4.3	33.9	9.6	4.2	9.8	43.7
JAMAICA	22.0	26.0	13.2	51.2	24.0	15.7	15.3	54.
MEXICO	21.0	18.9	75.8	22.6	19.5	63.7	65.0	20.1
PANAMA	6.9	3.3	0.3	1.7	6.6	3.6	0.5	3.2
PARAGUAY	14.7	15.8	28.0	38.2 2/	14.9	...	31.0	25.4 2/
PERU	37.0	100.2	2761.0	409.2	50.0	87.8	829.0	348.2
PUERTO RICO	5.6	2.9	2.9	2.9	5.5	2.8	4.1	4.6
SURINAME	11.5	6.4	18.4	26.0	12.2	4.8	24.0	18.6
TRINIDAD AND TOBAGO	12.9	13.1	9.7	3.8	11.1	14.8	16.4	6.1
URUGUAY	55.0	43.7	80.0	102.0	55.0	43.1	80.0	85.4
VENEZUELA	11.4	10.5	36.0	35.0 2/	15.7	13.6	50.0	33.7 2/

15. ANNUAL CHANGES IN CONSUMER PRICES: ALL ITEMS AND FOOD

	ALL ITEMS				FOOD			
	1975 TO 1980	1980 TO 1985	1985 TO 1990	1990 TO 1991	1975 TO 1980	1980 TO 1985	1985 TO 1990	1990 TO 1991
	PERCENT/YEAR							
FAR EAST								
BANGLADESH	7.6	10.3	10.4	7.1	5.0	10.9	18.6	6.1
INDIA	1.3	6.9	7.5	18.0	0.8	6.7	7.5	19.4
INDONESIA	...	10.1	7.4	9.3	...	8.4	10.1	8.0
KOREA, REP.	17.2	6.3	5.4	9.7	17.2	5.4	6.4	10.7
MALAYSIA	4.6	4.5	2.0	4.4	3.7	2.5	2.3	4.7
MYANMAR	3.8	4.5	18.8	32.3	2.6	4.2	20.0	37.5
NEPAL	6.7	11.6	11.3	15.5	6.1	4.1	12.0	18.2
PAKISTAN	9.0	7.6	6.7	11.8	8.0	7.5	7.3	10.6
PHILIPPINES	12.0	20.6	7.2	17.7	11.0	20.2	7.3	13.8
SRI LANKA	9.9	12.6	12.4	12.2	10.7	12.6	12.8	11.9
THAILAND	10.4	4.6	4.2	5.7	10.6	3.0	5.2	6.9
AFRICA								
ALGERIA	12.4	9.9	14.7	22.8	15.7	11.4	9.8	19.6
BOTSWANA	12.4	8.5	10.2	11.8	13.8	...	9.9	11.9
BURKINA FASO	...	5.5	-0.5	3.5 3/	...	6.5	-2.9	12.0 3/
BURUNDI	18.3	8.9	6.4	8.9	16.2	9.4	4.8	6.3
CAMEROON	10.7	11.6	...	...	11.8	...	...	...
CENTRAL AFRICAN REP.	...	10.1	-1.7	-2.9	...	10.1	-2.3	-4.1
COTE D'IVOIRE	16.7	11.7	6.2	1.7	19.3	4.2	9.7	...
ETHIOPIA	15.7	6.6	1.3	35.8	19.2	6.8	-0.8	41.3
GABON	12.9	10.1	...	0.4	...	...	...	-1.2
GAMBIA	10.2	12.0	21.0	6.6 4/	9.7	13.4	22.0	6.3 4/
GHANA	70.0	118.5	30.0	18.0	45.0	51.3	31.0	9.0
KENYA	9.8	15.3	9.7	19.3	10.2	12.9	6.4	23.5
LESOTHO	15.1	13.7	...	17.5 1/	18.6	13.1	...	17.4 1/
LIBERIA	8.8	3.4	6.0	...	8.1	2.1	6.6	...
MADAGASCAR	9.2	20.0	15.3	8.6	9.0	19.8	13.8	9.
MALAWI	9.2	...	19.2	10.8	9.5	...	20.0	13.1\
MALI	...	...	...	1.5	16.1	9.0	...	3.4
MAURITIUS	16.9	...	...	7.0	16.3	...	...	4.2
MOROCCO	9.7	9.7	4.7	8.1	9.3	10.3	3.9	8.4
NIGER	14.6	6.8	-3.6	-8.0 1/	14.8	8.4	-6.5	-9.4 1/
NIGERIA	14.4	19.9	23.0	13.0	20.0	21.3	19.6	11.9
RWANDA	...	...	...	19.6	...	...	...	13.6
SENEGAL	6.8	12.3	0.1	-1.8 1/	6.4	11.5	-0.2	-3.0 1/
SIERRA LEONE	13.8	45.0	...	95.7 4/	12.9	43.1	...	96.3 4/
SOMALIA	...	40.0	...	...	...	33.0	...	...
SWAZILAND	13.2	13.9	11.9	...	14.0	13.7	12.5	...
TANZANIA	14.5	30.2	30.0	22.3	13.4	30.5	31.0	22.5
TOGO	8.1	6.3	0.7	0.5	9.9	5.3	-0.6	-4.2
TUNISIA	...	10.2	6.7	8.3	...	10.8	7.2	8.5
UGANDA	...	...	...	31.8	...	...	...	23.3
ZAMBIA	15.2	19.4	50.0	92.6	13.7	19.9	65.0	91.0
ZIMBABWE	9.8	15.9	12.7	24.3	8.4	17.8	13.7	25.3
NEAR EAST								
AFGHANISTAN	...	3.1	...	62.5 2/	...	4.8	...	57.7 2/
CYPRUS	...	6.4	3.1	5.0	...	7.2	3.9	6.8
EGYPT	12.9	14.9	19.6	19.7	14.4	15.9	22.0	16.5
IRAN, ISLAMIC REP.	16.1	16.1	...	17.2	18.9	15.4	...	22.1
IRAQ	...	14.5	...	186.5	...	...	...	263.9
JORDAN	11.6	...	9.2	8.2	9.8	...	8.9	11.1
KUWAIT	7.1	4.6	1.5	...	6.1	2.6	0.5	...
SAUDI ARABIA, KINGDOM	11.3	-0.1	-0.7	4.5	9.5	0.9	-0.7	7.6
SUDAN	16.8	27.2	...	105.2	14.2	26.6	...	105.1
SYRIAN ARAB REP.	10.9	12.0	31.0	7.7	...	11.2	34.0	3.5
TURKEY	50.0	30.0	37.0	65.9	47.0	18.7	55.0	67.1

[1] JANUARY-OCTOBER.
[2] JANUARY-SEPTEMBER.
[3] JANUARY-JULY.
[4] JANUARY-AUGUST.
Source: ILO, *BULLETIN OF LABOUR STATISTICS.*

16. PER CAPUT DES IN SELECTED DEVELOPED AND DEVELOPING COUNTRIES

	1976-78	1979-81	1982-84	1985-87	1988-90
	CALORIES PER CAPUT PER DAY				
ALGERIA	2317	2612	2682	2803	2944
ANGOLA	2095	2117	1975	1919	1881
BENIN	2188	2145	2171	2240	2383
BOTSWANA	2158	2155	2255	2200	2260
BURKINA FASO	1734	1815	1751	2192	2219
BURUNDI	2143	2059	1972	2060	1948
CAMEROON	2383	2340	2212	2217	2208
CAPE VERDE	2503	2587	2754	2830	2778
CENTRAL AFRICAN REP.	2218	2136	1970	1809	1846
CHAD	1792	1710	1505	1803	1735
COMOROS	1780	1783	1743	1697	1760
CONGO	2167	2235	2321	2326	2295
DJIBOUTI	1620	1739	1899	2089	2362
EGYPT	2800	3088	3273	3325	3310
ETHIOPIA	1579	1795	1690	1634	1699
GABON	2359	2382	2503	2485	2443
GAMBIA	1971	2101	2172	2380	2290
GHANA	2038	1973	1952	2145	2144
GUINEA	2264	2268	2246	2264	2242
GUINEA BISSAU	2040	2057	2198	2266	2235
COTE D`IVOIRE	2586	2844	2747	2670	2568
KENYA	2273	2148	2097	2100	2064
LESOTHO	2281	2354	2316	2167	2121
LIBERIA	2359	2400	2378	2365	2259
LIBYAN ARAB JAM.	3428	3472	3461	3340	3293
MADAGASCAR	2485	2472	2422	2322	2156
MALAWI	2375	2273	2191	2082	2049
MALI	1928	1898	1979	2203	2259
MAURITANIA	1992	2081	2216	2348	2447
MAURITIUS	2588	2701	2760	2846	2897
MOROCCO	2654	2696	2804	2950	3031
MOZAMBIQUE	1952	1951	1882	1791	1805
NAMIBIA	1958	1952	1938	1945	1969
NIGER	2149	2224	2263	2229	2239
NIGERIA	2106	2129	2083	2228	2200
REUNION	2698	2820	2903	2923	3082
RWANDA	2068	2064	2063	1963	1913
SAO TOME AND PRINCIPE	2049	2060	2083	2103	2153
SENEGAL	2314	2415	2320	2416	2322
SEYCHELLES	2179	2282	2315	2353	2356
SIERRA LEONE	2065	2096	1906	1924	1899
SOMALIA	1734	1942	2052	1964	1874
SOUTH AFRICA	2935	2981	3060	3083	3133
SUDAN	2267	2215	2049	2133	2043
SWAZILAND	2487	2462	2550	2541	2634
TANZANIA	2245	2239	2238	2264	2195
TOGO	2043	2266	2198	2050	2269
TUNISIA	2653	2800	2829	3002	3122
UGANDA	2225	2114	2184	2024	2178
ZAIRE	2174	2133	2153	2170	2130
ZAMBIA	2277	2186	2130	2030	2016
ZIMBABWE	2172	2180	2160	2180	2256
ANTIGUA AND BARBUDA	1989	2089	2172	2202	2307
BAHAMAS	2229	2449	2690	2695	2777
BARBADOS	2933	3072	2955	3127	3217
BELIZE	2564	2679	2567	2470	2575
BERMUDA	2847	3020	3095	3093	2960
CANADA	3160	3107	3143	3289	3242
COSTA RICA	2585	2581	2608	2716	2711
CUBA	2823	2954	3150	3156	3129
DOMINICA	2301	2360	2463	2716	2911
DOMINICAN REP.	2216	2268	2310	2348	2310
EL SALVADOR	2191	2317	2362	2364	2331
GRENADA	2147	2245	2321	2354	2400
GUADELOUPE	2355	2426	2552	2646	2777
GUATEMALA	2122	2146	2198	2246	2254
HAITI	2038	2067	2080	2088	2006
HONDURAS	2160	2133	2094	2111	2210
JAMAICA	2700	2632	2572	2573	2558
MARTINIQUE	2560	2597	2721	2739	2768
MEXICO	2799	3000	3105	3120	3062
NETHERLANDS ANTILLE	2849	2956	3004	2767	2681
NICARAGUA	2375	2281	2319	2358	2235
PANAMA	2272	2321	2432	2471	2269
ST. KITTS AND NEVIS	2181	2164	2279	2421	2435
SAINT LUCIA	2078	2194	2271	2402	2424

16. PER CAPUT DES IN SELECTED DEVELOPED AND DEVELOPING COUNTRIES

	1976-78	1979-81	1982-84	1985-87	1988-90
	CALORIES PER CAPUT PER DAY				
SAINT VINCENT/GRENADINES	2230	2454	2445	2435	2460
TRINIDAD AND TOBAGO	2714	2930	3057	2978	2770
UNITED STATES	3345	3353	3418	3584	3642
ARGENTINA	3194	3195	3091	3111	3068
BOLIVIA	2087	2120	2072	2060	2013
BRAZIL	2621	2707	2652	2673	2730
CHILE	2558	2645	2555	2443	2484
COLOMBIA	2339	2409	2459	2422	2453
ECUADOR	2278	2292	2314	2391	2399
FRENCH GUIANA	2350	2487	2637	2716	2804
GUYANA	2535	2499	2460	2510	2495
PARAGUAY	2659	2660	2676	2662	2684
PERU	2151	2102	2027	2018	2037
SURINAME	2314	2440	2484	2451	2436
URUGUAY	2817	2810	2732	2658	2691
VENEZUELA	2579	2719	2625	2514	2443
AFGHANISTAN	2275	2179	2098	1900	1766
BANGLADESH	1969	1973	1955	1980	2037
BRUNEI DARUSSALAM	2601	2650	2855	2856	2858
MYANMAR	2155	2313	2443	2510	2454
CHINA	2131	2324	2558	2592	2641
HONG KONG	2626	2652	2693	2777	2860
INDIA	2086	2098	2127	2201	2229
INDONESIA	2183	2462	2545	2627	2605
IRAN, ISLAMIC REP.	2881	2915	3004	3027	3022
IRAQ	2434	2755	3016	3219	3096
ISRAEL	3062	3023	3110	3093	3220
JAPAN	2735	2764	2816	2866	2921
JORDAN	2447	2550	2646	2689	2711
CAMBODIA	1724	1657	1876	2091	2122
KOREA, DEM. PEOPLE`S REP.	2557	2652	2704	2796	2843
KOREA, REP.	2766	2747	2810	2835	2826
KUWAIT	2849	3019	3085	3073	3043
LAOS	2033	2365	2390	2431	2465
LEBANON	2438	2668	2909	2996	3142
MACAU	2230	2252	2248	2258	2294
MALAYSIA	2634	2685	2693	2654	2671
MALDIVES	1954	2193	2314	2358	2400
MONGOLIA	2429	2478	2474	2468	2361
NEPAL	1900	1846	1900	2003	2205
PAKISTAN	2195	2155	2173	2139	2280
PHILIPPINES	2074	2200	2183	2185	2341
SAUDI ARABIA, KINGDOM	2240	2760	2861	2738	2929
SINGAPORE	2742	2695	2911	2957	3121
SRI LANKA	2287	2243	2303	2292	2246
SYRIAN ARAB REP.	2594	2957	3132	3156	3122
THAILAND	2285	2292	2281	2298	2280
TURKEY	3055	3053	3030	3092	3196
UNITED ARAB EMIRATES	3308	3325	3323	3245	3285
VIET NAM	2006	2097	2143	2182	2216
YEMEN	2016	2056	2084	2104	2230

16. PER CAPUT DES IN SELECTED DEVELOPED AND DEVELOPING COUNTRIES

	1976-78	1979-81	1982-84	1985-87	1988-90
	CALORIES PER CAPUT PER DAY				
ALBANIA	2664	2752	2836	2726	2587
AUSTRIA	3299	3400	3443	3475	3486
BELGIUM-LUXEMBOURG	3381	3474	3650	3742	3925
BULGARIA	3571	3631	3650	3648	3695
CZECH SLOVAK FED. REP.	3336	3359	3437	3453	3574
DENMARK	3317	3464	3399	3570	3639
FINLAND	3079	3054	3042	2998	3066
FRANCE	3401	3435	3454	3519	3593
GERMANY, NEW LANDER	3446	3562	3674	3726	3710
GERMANY, FEDERAL REP.	3238	3306	3331	3441	3472
GREECE	3445	3442	3631	3623	3775
HUNGARY	3418	3459	3510	3588	3608
ICELAND	2997	3229	3421	3547	3448
IRELAND	3779	3886	3859	3876	3952
ITALY	3392	3561	3379	3450	3498
MALTA	2990	2904	2949	3096	3169
NETHERLANDS	3073	3070	3072	3115	3078
NORWAY	3231	3350	3197	3272	3221
POLAND	3565	3499	3321	3385	3426
PORTUGAL	3036	2913	2944	3142	3342
ROMANIA	3431	3388	3424	3230	3081
SPAIN	3168	3248	3288	3352	3472
SWEDEN	3017	3018	3039	2978	2978
SWITZERLAND	3576	3560	3522	3499	3508
UNITED KINGDOM	3178	3171	3162	3241	3270
USSR	3379	3368	3373	3373	3380
YUGOSLAVIA	3519	3568	3552	3588	3545
AUSTRALIA	3175	3088	3150	3291	3302
FIJI	2477	2567	2659	2707	2726
FRENCH POLYNESIA	2744	2780	2780	2813	2756
KIRIBATI	2553	2731	2616	2679	2517
NEW CALEDONIA	2789	2813	2801	2815	2909
NEW ZEALAND	3543	3480	3415	3391	3461
PAPUA NEW GUINEA	2272	2327	2368	2484	2589
SAMOA	2592	2557	2572	2708	2695
SOLOMON ISLANDS	2211	2287	2246	2308	2278
TONGA	2762	2825	2860	2922	2967
VANUATU	2552	2565	2625	2718	2736

17. ANNUAL AGRICULTURAL (BROAD DEFINITION) SHARES OF TOTAL OFFICIAL COMMITMENTS TO ALL SECTORS, BY MULTILATERAL AND BILATERAL SOURCES, 1982-1990

	1982	1983	1984	1985	1986	1987	1988	1989	1990 1)
	PERCENT								
TOTAL COMMITMENTS									
MULTILATERAL AGENCIES 2)	35	35	29	31	33	29	29	22	25
WORLD BANK 3)	32	38	27	28	32	22	24	19	22
REGIONAL DEVELOPMENT BANKS 3)	36	25	26	32	34	40	32	29	29
OPEC MULTILATERAL 3)	17	21	25	28	35	23	19	28	..
BILATERAL									
DAC/EEC	10	11	11	12	12	12	11	12	..
OPEC BILATERAL	..	..	..	..	..	..	..	..	..
ALL SOURCES	..	..	..	..	..	..	..	..	..
CONCESSIONAL COMMITMENTS ONLY									
MULTILATERAL AGENCIES 2)	49	48	47	55	42	55	52	..	..
WORLD BANK 3)	45	52	49	54	29	35	37	..	..
REGIONAL DEVELOPMENT BANKS 3)	56	38	33	51	51	63	65	..	..
OPEC MULTILATERAL 3)	30	26	47	65	45	73	21	..	..
BILATERAL	16	14	15	15	15	(15)	(16)	..	..
DAC/EEC	17	17	17	16	16	16	(16)	..	..
OPEC BILATERAL	12	4	6	5	6	4	6	..	..
ALL SOURCES	22	20	21	22	19	(20)	(21)	..	..

1) PRELIMINARY
2) INCLUDING UNDP, CGIAR, FAO(TF/TCP), IFAD
3) EXCLUDING COMMITMENTS TO CGIAR

SOURCE: FAO

18. PERCENTAGE DISTRIBUTION OF OFFICIAL COMMITMENTS TO AGRICULTURE(BROAD DEFINITION), BY MULTILATERAL AND BILATERAL SOURCES, 1982-1990

	1982	1983	1984	1985	1986	1987	1988	1989	1990 1)
				PERCENT					
TOTAL COMMITMENTS									
MULTILATERAL AGENCIES	59	63	55	59	61	53	46	49	55
WORLD BANK 2)	35	44	29	36	38	28	25	27	30
REGIONAL DEVELOPMENT BANKS 2)	15	11	17	15	15	18	15	14	17
OPEC MULTILATERAL 2)	2	2	3	2	3	2	1	2	1
OTHER 3)	7	6	6	6	5	5	5	6	7
									0
BILATERAL	41	37	45	41	39	47	54	51	45
DAC/EEC	35	35	43	39	37	46	53	49	43
OPEC BILATERAL	6	2	2	2	2	1	1	2	2
ALL SOURCES (MULTILATERAL + BILATERAL)	100	100	100	100	100	100	100	100	100
CONCESSIONAL COMMITMENTS ONLY (ODA)									
MULTILATERAL AGENCIES	40	41	37	42	31	37	33	34	43
WORLD BANK 2)	20	18	19	24	11	14	14	14	19
REGIONAL DEVELOPMENT BANKS 2)	7	11	7	8	9	14	11	11	14
OPEC MULTILATERAL 2)	2	2	2	2	3	2	2	2	2
OTHER 3)	11	10	8	8	8	7	6	7	9
BILATERAL	60	59	63	58	69	63	67	66	57
DAC/EEC	51	56	60	56	66	62	66	64	54
OPEC BILATERAL	9	3	3	2	3	1	1	3	3
ALL SOURCES (MULTILATERAL + BILATERAL)	100	100	100	100	100	100	100	100	100

1) PRELIMINARY
2) EXCLUDING COMMITMENTS TO CGIAR
3) INCLUDING UNDP, CGIAR, FAO(TF/TCP), IFAD

SOURCE: FAO DATA BANK ON EXTERNAL ASSISTANCE TO AGRICULTURE

19. DAC COUNTRIES: BILATERAL ODA COMMITMENTS FROM INDIVIDUAL COUNTRIES AND PROPORTION TO AGRICULTURE (BROAD DEFINITION), 1985-1990

	BILATERAL ODA TO ALL SECTORS						PROPORTION TO AGRICULTURE					
	1985	1986	1987	1988	1989	1990 1)	1985	1986	1987	1988	1989	1990 1)
	US$ MILLIONS						PERCENT					
AUSTRALIA	532	532	527	927	478	499	9	13	13	6	8	..
AUSTRIA	60	126	147	341	407	336	3	5	3	5	1	..
BELGIUM	132	318	404	449	366	...	23	14	18	10	(10)	..
CANADA	1172	1179	1643	1911	1875	1802	24	24	19	20	13	..
DENMARK	340	480	415	642	492	599	33	29	38	31	32	..
FINLAND	233	276	222	413	616	610	11	19	41	37	21	..
FRANCE	3756	4822	5492	6367	7172		10	12	10	10	7	..
GERMANY	2427	3337	4303	4842	4597	5859	15	18	13	18	9	..
IRELAND	17	25	27	22	19	23	..	8	7	14	14	..
ITALY	1178	2327	3135	3040	2309	2092	17	16	21	21	20	..
JAPAN	4076	4342	7342	12326	7870	10233	25	18	13	19	21	..
NETHERLANDS	731	1299	1709	1808	1764	2037	18	29	34	25	19	..
NEW ZELAND	47	34	51	78	89	(4)	26	15	10	8	8	..
NORWAY	346	548	514	313	427	624	23	20	20	16	26	..
SWEDEN	566	779	789	1078	1275	1349	25	19	21	20	13	..
SWITZERLAND	307	329	462	519	509	...	32	27	26	29	23	..
UNITED KINGDOM	731	1081	1442	1692	1738	...	14	17	9	9	3	..
UNITED STATES	9157	8746	7412	7929	7871	20446	11	11	13	11	10	..
TOTAL/DAC COUNTRIES	25808	30580	36039	44695	39874	46511	17	18	15	16	12	..

1) PRELIMINARY

SOURCE: FAO DATA BANK ON EXTERNAL ASSISTANCE TO AGRICULTURE

20. PERCENTAGE DISTRIBUTION OF OFFICIAL COMMITMENTS TO AGRICULTURE, BY PURPOSE, 1983-1990

	1983	1984	1985	1986	1987	1988	1989	1990 1)
	PERCENT							
LAND AND WATER DEVELOPMENT 2)	17	19	20	16	12	15	14	14
AGRICULTURAL SERVICES	15	14	10	16	13	9	13	12
SUPPLY OF INPUTS	6	6	4	3	6	6	2	2
CROP PRODUCTION	6	6	5	5	4	5	6	9
LIVESTOCK	2	2	3	2	2	3	3	1
FISHERIES 3)	2	2	2	2	2	2	2	2
RESEARCH,EXTENSION,TRAINING 4)	4	6	5	4	5	3	3	5
FORESTRY	2	3	5	2	3	4	3	6
AGRIC. ADJUSTMENT AND UNALLOCATED	11	17	17	23	22	27	25	21
TOTAL NARROW DEFINITION	66	75	71	73	69	74	71	72
RURAL INFRASTRUCTURE	11	6	7	7	8	9	6	12
MANUFACTURE OF INPUTS 5)	1	4	3	4	2	6	5	2
AGRO-INDUSTRIES	6	3	4	3	2	3	4	2
INTEGRATED RURAL AND REGIONAL DEV.	17	12	15	13	19	8	14	12
TOTAL BROAD DEFINITION	100	100	100	100	100	100	100	100

NOTE: THIS TABLE NOW INCLUDES FORESTRY IN THE NARROW DEFINITION

1) PRELIMINARY
2) INCLUDING RIVER DEVELOPMENT
3) INCLUDING INPUTS SUCH AS FISHING TRAWLERS,FISHING GEAR
4) INCLUDING COMMITMENTS TO CGIAR
5) MOSTLY FERTILIZERS

SOURCE:FAO DATA BANK ON EXTERNAL ASSISTANCE TO AGRICULTURE

21. DISTRIBUTION OF OFFICIAL COMMITMENTS TO AGRICULTURE (BROAD DEFINITION) FROM ALL SOURCES, BY REGION AND ECONOMIC GROUPS, 1983-90

	1983	1984	1985	1986	1987	1988	1989	1990 1)
TOTAL COMMITMENTS	..... PERCENT							
FAR EAST AND PACIFIC	48	54	52	49	51	56	50	51
AFRICA	23	24	23	23	27	22	31	29
LATIN AMERICA	21	16	17	20	18	16	11	14
NEAR EAST	8	6	8	8	4	6	8	6
TOTAL FOUR DEVELOPING REGIONS	100	100	100	100	100	100	100	100
OF WHICH								
LOW-INCOME FOOD-DEFICIT COUNTRIES 2)	58	64	62	53	63	62	58 A)	77 B)
CONCESSIONAL COMMITMENTS								
FAR EAST AND PACIFIC	57	60	58	62	59	60	60	54
AFRICA	25	26	25	27	30	24	27	31
LATIN AMERICA	10	8	10	5	6	8	6	9
NEAR EAST	8	6	7	6	5	8	7	6
TOTAL FOUR DEVELOPING REGIONS	100	100	100	100	100	100	100	100
OF WHICH								
LOW-INCOME FOOD DEFICIT COUNTRIES 2)	68	68	67	58	68	68	64 A)	84 B)
NON-CONCESSIONAL COMMITMENTS								
FAR EAST AND PACIFIC	33	39	40	32	33	40	23	42
AFRICA	19	18	18	18	21	13	41	26
LATIN AMERICA	40	36	30	41	46	43	24	28
NEAR EAST	8	7	12	9	-	4	12	4
TOTAL FOUR DEVELOPING REGIONS	100	100	100	100	100	100	100	100
OF WHICH								
LOW-INCOME FOOD-DEFICIT COUNTRIES 2)	42	56	52	45	52	44	39 A)	58 B)

1) PRELIMINARY
2) 74 COUNTRIES DEFINED ACCORDING TO THEIR GNP PER HEAD IN 1988
A) 76 COUNTRIES
B) 74 COUNTRIES

SOURCE:FAO DATA BANK ON EXTERNAL ASSISTANCE TO AGRICULTURE

WHERE TO PURCHASE FAO PUBLICATIONS LOCALLY
POINTS DE VENTE DES PUBLICATIONS DE LA FAO
PUNTOS DE VENTA DE PUBLICACIONES DE LA FAO

• ANGOLA
Empresa Nacional do Disco e de Publicações, ENDIPU-U.E.E.
Rua Cirilo da Conceição Silva, No. 7
C.P. No. 1314-C
Luanda

• ARGENTINA
Libreria Agropecuaria
Pasteur 743
1028 Capital Federal

• AUSTRALIA
Hunter Publications
P.O. Box 404
Abbotsford, Vic. 3067

• AUSTRIA
Gerold Buch & Co.
Weihburggasse 26
1010 Vienna

• BAHRAIN
United Schools International
P.O. Box 726
Manama

• BANGLADESH
Association of Development Agencies in Bangladesh
House No. 1/3, Block F, Lalmatia
Dhaka 1207

• BELGIQUE
M.J. De Lannoy
202, avenue du Roi
1060 Bruxelles
CCP 000-0808993-13

• BOLIVIA
Los Amigos del Libro
Perú 3712, Casilla 450, Cochabamba
Mercado 1315, La Paz

• BOTSWANA
Botsalo Books (Pty) Ltd
P.O. Box 1532
Gaborone

• BRAZIL
Fundação Getúlio Vargas
Praia do Botafogo 190, C.P. 9052
Rio de Janeiro

CANADA (See North America)

• CHILE
Libreria - Oficina Regional FAO
Avda. Santa Maria 6700
Casilla 10095, Santiago
Tel. 228-80-56
DILIBROS - Importadora y Distribuidora de Libros
J.J. Pérez, Nº 3654 - Villa del Mar
Coquimbo - Tel. (051)314 487

• CHINA
China National Publications Import & Export Corporation
P.O. Box 88
100704 Beijing

• COLOMBIA
Banco Ganadero,
Revista Carta Ganadera
Carrera 9ª Nº 72-21, Piso 5
Bogotá D.E.
Tel. 217 0100

• CONGO
Office national des librairies populaires
B.P. 577
Brazzaville

• COSTA RICA
Libreria, Imprenta y Litografia Lehmann S.A.
Apartado 10011
San José

• CUBA
Ediciones Cubanas, Empresa de Comercio Exterior de Publicaciones
Obispo 461, Apartado 605
La Habana

• CYPRUS
MAM
P.O. Box 1722
Nicosia

• CZECHOSLOVAKIA
Artia
Ve Smeckach 30, P.O. Box 790
11127 Prague 1

• DENMARK
Munksgaard, Book and Subscription Service
P.O. Box 2148
DK 1016 Copenhagen K.
Tel. 4533128570
Fax 4533129387

• ECUADOR
Libri Mundi, Libreria Internacional
Juan León Mera 851,
Apartado Postal 3029
Quito

• ESPAÑA
Mundi Prensa Libros S.A.
Castelló 37
28001 Madrid
Tel. 431 3399
Fax 575 3998
Libreria Agricola
Fernando VI 2
28004 Madrid
Libreria Internacional AEDOS
Consejo de Ciento 391
08009 Barcelona
Tel. 301 8615
Fax 317 0141
Llibreria de la Generalitat de Catalunya
Rambla dels Estudis, 118
(Palau Moja)
08002 Barcelona
Tel. (93) 302 6462
Fax 302 1299

• FINLAND
Akateeminen Kirjakauppa
P.O. Box 218
SF-00381 Helsinki

• FRANCE
La Maison Rustique
Flammarion 4
26, rue Jacob
75006 Paris
Librairie de l'UNESCO
7, place de Fontenoy
75700 Paris
Editions A. Pedone
13, rue Soufflot
75005 Paris

• GERMANY
Alexander Horn Internationale Buchhandlung
Kirchgasse 22, Postfach 3340
D-6200 Wiesbaden
Uno Verlag
Poppelsdorfer Allee 55
D-5300 Bonn 1
S. Toeche-Mittler GmbH
Versandbuchhandlung
Hindenburgstrasse 33
D-6100 Darmstadt

• GREECE
G.C. Eleftheroudakis S.A.
4 Nikis Street
10563 Athens
John Mihalopoulos & Son S.A.
75 Hermou Street, P.O. Box 10073
54110 Thessaloniki

• GUYANA
Guyana National Trading Corporation Ltd
45-47 Water Street, P.O. Box 308
Georgetown

• HAÏTI
Librairie "A la Caravelle"
26, rue Bonne Foi, B.P. 111
Port-au-Prince

• HONDURAS
Escuela Agricola Panamericana, Libreria RTAC
Zamorano, Apartado 93
Tegucigalpa
Oficina de la Escuela Agricola Panamericana en Tegucigalpa
Blvd. Morazán, Apts. Glapson - Apartado 93
Tegucigalpa

• HONG KONG
Swindon Book Co.
13-15 Lock Road
Kowloon

• HUNGARY
Kultura
P.O. Box 149
H-1389 Budapest 62

• ICELAND
Snaebjörn Jónsson and Co. h.f.
Hafnarstraeti 9, P.O. Box 1131
101 Reykjavik

• INDIA
Oxford Book and Stationery Co.
Scindia House, New Delhi 110 001;
17 Park Street, Calcutta 700 016
Oxford Subscription Agency, Institute for Development Education
1 Anasuya Ave., Kilpauk
Madras 600 010

• IRELAND
Publications Section, Stationery Office
4-5 Harcourt Road
Dublin 2

• ITALY
FAO (See last column)
Libreria Scientifica Dott. Lucio de Biasio "Aeiou"
Via Coronelli 6
20146 Milano
Libreria Concessionaria Sansoni S.p.A. "Licosa"
Via Duca di Calabria 1/1
50125 Firenze
Libreria Internazionale Rizzoli
Galleria Colonna, Largo Chigi
00187 Roma

• JAPAN
Maruzen Company Ltd
P.O. Box 5050
Tokyo International 100-31

• KENYA
Text Book Centre Ltd
Kijabe Street, P.O. Box 47540
Nairobi

• KOREA, REP. OF
Eulyoo Publishing Co. Ltd
46-1 Susong-Dong, Jongro-Gu
P.O. Box 362, Kwangwha-Mun
Seoul 110

• KUWAIT
The Kuwait Bookshops Co. Ltd
P.O. Box 2942
Safat

• LUXEMBOURG
M.J. De Lannoy
202, avenue du Roi
1060 Bruxelles (Belgique)

• MAROC
Librairie "Aux Belles Images"
281, avenue Mohammed V
Rabat

• MEXICO
Libreria, Universidad Autónoma de Chapingo
56230 Chapingo
Libros y Editoriales S.A.
Av. Progreso Nº 202-1º Piso A
Apdo Postal 18922 Col. Escandón
11800 México D.F.
Only machine readable products:
Grupo Qualita
Kansas Nº 38 Colonia Nápoles
03810 México D.F.
Tel. 682-3333

• NETHERLANDS
Roodveldt Import B.V.
Browersgracht 288
1013 HG Amsterdam
SDU Publishers Plantijnstraat
Christoffel Plantijnstraat 2
P.O. Box 20014
2500 EA The Hague

• NEW ZEALAND
Legislation Services
P.O. Box 12418
Thorndon, Wellington

• NICARAGUA
Libreria Universitaria, Universidad Centroamericana
Apartado 69
Managua

• NIGERIA
University Bookshop (Nigeria) Ltd
University of Ibadan
Ibadan

• NORTH AMERICA
Publications:
UNIPUB
4611/F, Assembly Drive
Lanham MD 20706-4391, USA
Toll-free 800 233-0504 (Canada)
800 274-4888 (USA)
Fax 301-459-0056
Periodicals:
Ebsco Subscription Services
P.O. Box 1431
Birmingham AL 35201-1431, USA
Tel. (205) 991-6600
Telex 78-2661
Fax (205) 991-1449
The Faxon Company Inc.
15 Southwest Park
Westwood MA 02090, USA
Tel. 6117-329-3350
Telex 95-1980
CableF W Faxon Wood

• NORWAY
Narvesen Info Center
Bertrand Narvesens vei 2
P.O. Box 6125, Etterstad
0602 Oslo 6

• PAKISTAN
Mirza Book Agency
65 Shahrah-e-Quaid-e-Azam
P.O. Box 729, Lahore 3
Sasi Book Store
Zaibunnisa Street
Karachi

• PARAGUAY
Mayer's Internacional - Publicaciones Técnicas
Gral. Diaz 629 c/15 de Agosto
Casilla de Correo Nº 1416
Asunción - Tel. 448 246

• PERU
Librería Distribuidora "Santa Rosa"
Jirón Apurimac 375, Casilla 4937
Lima 1

• PHILIPPINES
International Book Center (Phils)
Room 1703, Cityland 10
Condominium Cor. Ayala Avenue & H.V. dela Costa Extension
Makati, M.M.

• POLAND
Ars Polona
Krakowskie Przedmiescie 7
00-950 Warsaw

• PORTUGAL
Livraria Portugal,
Dias e Andrade Ltda.
Rua do Carmo 70-74, Apartado 2681
1117 Lisboa Codex

• ROMANIA
Ilexim
Calea Grivitei No 64066
Bucharest

• SAUDI ARABIA
The Modern Commercial University Bookshop
P.O. Box 394
Riyadh

• SINGAPORE
Select Books Pte Ltd
03-15 Tanglin Shopping Centre
19 Tanglin Road
Singapore 1024

• SLOVENIA
Cankarjeva Zalozba
P.O. Box 201-IV
61001 Ljubljana

• SOMALIA
"Samater's"
P.O. Box 936
Mogadishu

• SRI LANKA
M.D. Gunasena & Co. Ltd
217 Olcott Mawatha, P.O. Box 246
Colombo 11

• SUISSE
Librairie Payot S.A.
107 Freiestrasse, 4000 Basel 10
6, rue Grenus, 1200 Genève
Case Postale 3212, 1002 Lausanne
Buchhandlung und Antiquariat Heinimann & Co.
Kirchgasse 17
8001 Zurich
UN Bookshop
Palais des Nations
CH-1211 Genève 1
Van Diermen Editions Techniques
ADECO
Case Postale 465
CH-1211 Genève 19

• SURINAME
Vaco n.v. in Suriname
Domineestraat 26, P.O. Box 1841
Paramaribo

• SWEDEN
Books and documents:
C.E. Fritzes
P.O. Box 16356
103 27 Stockholm
Subscriptions:
Vennergren-Williams AB
P.O. Box 30004
104 25 Stockholm

• THAILAND
Suksapan Panit
Mansion 9, Rajdamnern Avenue
Bangkok

• TOGO
Librairie du Bon Pasteur
B.P. 1164
Lomé

• TUNISIE
Société tunisienne de diffusion
5, avenue de Carthage
Tunis

• TURKEY
Kultur Yayiniari is - Turk Ltd Sti.
Ataturk Bulvari No. 191, Kat. 21
Ankara
Bookshops in Istambul and Izmir

• UNITED KINGDOM
HMSO Publications Centre
51 Nine Elms Lane
London SW8 5DR
Tel. (071) 873 9090 (orders)
(071) 873 0011 (inquiries)
Fax (071) 873 8463
HMSO Bookshops:
49 High Holborn, London WC1V 6HB
Tel. (071) 873 0011
258 Broad Street
Birmingham B1 2HE
Tel (021) 643 3740
Southey House, 33 Wine Street
Bristol BS1 2BQ
Tel. (0272) 264306
9-21 Princess Street
Manchester M60 8AS
Tel. (061) 834 7201
80 Chichester Street
Belfast BT1 4JY
Tel. (0232) 238451
71 Lothian Road
Edinburgh EH3 9AZ
Tel. (031) 228 4181
Only machine readable products:
Microinfo Limited
P.O. Box 3, Omega Road, Alton, Hampshire GU342PG
Tel. (0420) 86848
Fax (0420) 89889

• URUGUAY
Librería Agropecuaria S.R.L.
Buenos Aires 335
Casilla 1755
Montevideo C.P. 11000

• USA (See North America)

• VENEZUELA
Tecni-Ciencia Libros S.A.
Torre Phelps-Mezzanina, Plaza Venezuela
Caracas
Tel. 782 8697-781 9945-781 9954
Tamanaco Libros Técnicos S.R.L.
Centro Comercial Ciudad Tamanaco, Nivel C-2
Caracas
Tel. 261 3344-261 3335-959 0016
Tecni-Ciencia Libros, S.A.
Centro Comercial, Shopping Center
Av. Andrés Eloy, Urb. El Prebo
Valencia, Edo. Carabobo
Tel. 222 724
Fudeco, Libreria
Avenida Libertador-Este, Ed. Fudeco, Apartado 254
Barquisimeto C.P. 3002, Ed. Lara
Tel. (051) 538 022
Fax (051) 544 394
Télex (051) 513 14 FUDEC VC

• YUGOSLAVIA
Jugoslovenska Knjiga, Trg.
Republike 5/8, P.O. Box 36
11001 Belgrade
Prosveta
Terazije 16/1
Belgrade

Other countries / Autres pays / Otros países
Distribution and Sales Section, FAO
Viale delle Terme di Caracalla
00100 Rome, Italy
Tel. (39-6) 57974608
Telex 625852 / 625853 / 610181 FAO I
Fax (39-6) 57973152 / 5782610 / 5745090

ISBN 92-5-103226-2 ISSN 0081-4539

9 789251 032268

P-70 T0656E/1/1.93/4800