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# the state of food and agriculture 1974

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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

| | |
|---|---|
| 1957 | Factors influencing the trend of food consumption<br>Postwar changes in some institutional factors affecting agriculture |
| 1958 | Food and agricultural developments in Africa south of the Sahara<br>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 | Programing for agricultural development |
| 1961 | Land reform and institutional change<br>Agricultural exetension, education and research in Africa, Asia and Latin America |
| 1962 | The role of forest industries in the attack on economic underdevelopment<br>The livestock industry in less developed countries |
| 1963 | Basic factors affecting the growth of productivity in agriculture<br>Fertilizer use: spearhead of agricultural development |
| 1964 | Protein nutrition: needs and prospects<br>Synthetics and their effects on international trade |
| 1966 | Agriculture and industrialization<br>Rice in the world food economy |
| 1967 | Incentives and disincentives for farmers in developing countries<br>The management of fishery resources |
| 1968 | Raising agricultural productivity in developing countries through technological improvement<br>Improved storage and its contribution to world food supplies |
| 1969 | Agricultural marketing improvement programmes: some lessons from recent experience<br>Modernization of institutions to promote 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<br>Accelerating agricultural research in the developing countries |
| 1973 | Agricultural employment in developing countries |

# THE STATE OF FOOD AND AGRICULTURE 1974

# THE STATE OF FOOD AND AGRICULTURE 1974

WORLD REVIEW

REVIEW BY REGIONS

POPULATION, FOOD SUPPLY AND AGRICULTURAL DEVELOPMENT

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 1975

*The statistical material in this publication has been prepared from the information available to FAO up to 1 November 1974*

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# CONTENTS

# FOREWORD

*As I reminded the World Food Conference when I addressed it on 5 November, it is now almost thirty years since John Boyd-Orr, the first Director-General of FAO, evoked the idea of "a great world food scheme, which will bring freedom from want of food to all men." Yet the governments of the day were unable to rise to this challenge, so that now, a whole generation later, the world food problem is still unsolved and is worsening, and there are more people in want of food than at any time since then.*

*For the third consecutive year the world food and agricultural situation must be viewed with grave concern. During much of 1974 there were high hopes that this year would bring the bountiful harvests so badly needed for the world to begin to emerge from the food crisis that started with the widespread bad weather and poor crops of 1972. Although there was a substantial recovery in production in 1973, very large harvests were needed in 1974 if a beginning was to be made in returning to any reasonable degree of security in world food supplies.*

*It is now clear that these hopes were not realized in 1974. In many countries the expansion in acreage and other special efforts made to increase production were defeated by the weather. Any easing of the world food situation has thus been put off for at least another year.*

*Although bad weather was much less widespread in 1974 than in 1972, it affected production with particular severity in two vitally important regions of the world: North America, the largest food exporter, and the Far East, where the majority of the world's malnourished people are to be found. The final outcome of the cereal crops in some parts of the Far East is still unknown, but it is already certain that in both of these regions there has been a drop in cereal production and in total food and agricultural production.*

*World cereal production thus declined in 1974 for the second time in three years. FAO's early estimates indicate a fall of between 40 and 50 million tons. The gravity of this large drop in production, superimposed on the already precarious situation, is readily apparent when it is recalled that an increase of more than 20 million tons of cereals is needed merely to keep up with the annual growth of population at present average consumption levels. It is now likely that the total carry-over stocks of cereals (outside China and the U.S.S.R., for which there is as yet no information) will fall below 100 million tons by mid-1975. This would be less than half their 1970 volume and only 11 % of world consumption, as compared with the 17-18 % estimated by FAO to be the minimum required for world food security.*

*Any increase in total world food and agricultural production in 1974 is likely to have been very small. If 1974 production does turn out to have matched the 1973 level, this will mainly be the result of the unusually large upsurge in livestock slaughterings, especially in western Europe, and will thus bring no relief to the countries where food shortages are most critical. What is more, the big increase in livestock production reflects very serious difficulties in this sector and has benefited neither producers nor consumers.*

*Side by side with the continued general shortage of food, especially of staple cereals, the situation is critical for several of the main inputs essential for food production. The shortage and high price of chemical fertilizers show no sign of abating for some time to come. Some important pesticides are running short, and this may soon become a serious problem. A number of developing countries face shortages of fuel and power for irrigation pumping and other essential agricultural purposes.*

*In the face of these dual shortages of food and the means of producing it, there is an obvious need for urgent, immediate action if widespread starvation is to be avoided.*

*First, it is necessary to ensure an equitable distribution of the exportable food supplies that are available until next year's harvests begin to come in, with special attention to needs of the most seriously affected countries, some of which cannot be fully known until later. To this end, I have been engaged in special consultations with the main exporting and importing countries.*

*Second, in order to obtain the biggest possible harvests in 1975, it is necessary to secure a balanced distribution of the scarce means of production as well. Here FAO's International Fertilizer Supply Scheme is of particular importance.*

*Third, in the case of both food and inputs, it is not sufficient to earmark supplies. Many developing countries are very hard hit by the huge increases that have occurred in the prices of the food, fertilizers, fuel and many other essential items they have to import, and they face very serious balance-of-payments difficulties. Even if the necessary supplies can be set aside, these countries will need substantial financial assistance in order to pay for them. An important instrument in this regard is the United Nations Emergency Operation, with which FAO is cooperating actively.*

*I have dwelt at some length on the immediate aspects of the food crisis and the measures needed to deal with them. These are extremely serious and are the main subjects of the first two chapters of this issue of* The state of food and agriculture. *However, the longer term dimensions of the world food problem must not be neglected. Two or three years of good weather and good harvests are now most urgently needed; but it would be tragic if, once they are achieved, the world should again lapse into complacency about its longer term food problems.*

*When the World Food Conference met in Rome from 5 to 16 November 1974, it was under the shadow of a further worsening in the immediate situation because of the disappointing performance of food production during the year. However, the main objective of the Conference was to tackle the longstanding, underlying ills in the world's food and agricultural sector, and to agree on the necessary action to ensure that such short-term crises can never occur again. It focused mainly on the medium-term period of the next ten years or so.*

*The main decisions of the World Food Conference are summarized in Chapter 1 of this report. The Conference achieved a very encouraging degree of consensus on the nature and dimensions of the world food problem and on the national and international action needed to overcome it. It called for the establishment of a number of new bodies that could have a decisive role in mounting the necessary concerted action. It resolved that all governments should "accept the goal that within a decade no child will go to bed hungry, that no family will fear for its next day's bread, and that no human being's future and capacities will be stunted by malnutrition." Much will depend on how speedily the world's governments match these impressive goals with the action that they agree is necessary.*

*There is also a further time dimension to the world food problem. In looking mainly at the next ten years or so, the World Food Conference was concerned with a period during which the rate of population growth is virtually predetermined. Its task was therefore to consider the measures needed to meet an already inevitable growth of population. Looking farther ahead, however, the rate of population growth is far from inevitable. According to the United Nations population projections, the world's population in the year 2000 could be anywhere between 5 900 million and 7 200 million. This huge difference of 1 300 million would greatly affect the magnitude of the future challenge to the world's food and agricultural sector. Provided that the action agreed to by the World Food Conference is begun immediately, it should be possible to meet the expected increase in the demand for food up to 1985 and for some years beyond that date; but the action that has to be taken will need to be planned as a crash programme. It is therefore essential to take parallel action now to ensure that in the more distant future the rate of population growth and thus the increase in the demand for food are substantially reduced.*

*In these circumstances it is particularly appropriate that Chapter 3 of* The state of food and agriculture *is this year devoted to a study of population, food supply and agricultural development. This study was prepared with financial support from the United Nations Fund for Population Activities. Its findings have already formed the basis of part of FAO's documentary contribution to the World Food Conference and to the preceding World Population Conference, held from 19 to 30 August in Bucharest. The link between these two important United Nations conferences is self-evident. They in turn are linked with a series of important meetings, including the Conference on Human Environment, the Sixth Special Session of the United Nations General Assembly, and the forthcoming conferences on the role of women, human settlements, and water, all of which concern different aspects of the interlocking set of problems with which the world is now confronted. For, as FAO has always stressed, the food problem is not a problem of agriculture alone, but part of the whole complex problem of economic and social development and improving the quality of life.*

*A main feature of Chapter 3 of this report is FAO's new appraisal of the extent of hunger and malnutrition in the world. It is now estimated that the awesome number of at least 460 million of our fellow human beings are suffering from severe malnutrition. What is*

*worse, this estimate is based on the peak level of per caput food supplies before the situation began to deteriorate so seriously in 1972; since then, the number of severely malnourished people must have greatly increased. Many die at an early age from a combination of malnutrition and other related causes without being recorded as deaths by starvation. There is recent evidence in a number of developing countries of an ominous increase in death rates, to which there is little doubt the worsening of the nutritional situation has contributed significantly.*

*The challenge to the world's governments and to the international community could not be clearer. It was acknowledged by all at the World Food Conference. The efforts to meet the challenge will be watched anxiously in the coming months. There is no time to lose if these efforts are not to be too late to save the situation.*

A.H. BOERMA
*Director-General*

# EXPLANATORY NOTE

The following symbols are used in statistical tables:

— none or negligible

... not available

1971/72 signifies a crop, marketing or fiscal year running from one calendar year to the next; 1971-72 signifies the average for two calendar years.

Figures in statistical tables may not add up because of rounding. Percent changes from one year to another have been calculated from unrounded figures. Unless otherwise indicated, the metric system is used throughout.

## Production index numbers [1]

The indices of agricultural production are calculated by applying regional weights, based on 1961-65 farm price relationships, to the production figures, which are adjusted to allow for quantities used for feed and seed. The indices for food products exclude tobacco, inedible oilseeds, animal and vegetable fibres, and rubber. They are on a calendar year basis and are therefore not comparable with the indices for crop years published in the 1966 and prior issues of this report.

For fishery production, quantities are weighted by the average unit values of fishermen's landings in 1961-65. For forest production, roundwood production is weighted by 1961-65 prices.

## Trade index numbers [2]

In calculating trade index numbers of agricultural production for the present issue, both commodity and country coverages include all the commodities and countries shown in the 1973 issue of the FAO *Trade yearbook*.

All the different indices are calculated independently for the value, volume and unit value of exports and of imports.

Value indices represent the current values of exports (f.o.b.) and imports (c.i.f.), all expressed in U.S. 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 an error whenever the trend of insurance and freight diverges from the commodity unit values at export level.

Volume and unit value indices represent the changes in the price-weighted sum of quantities and of the quantity-weighted values of products traded between countries. The weights are respectively the price and quantity averages of 1961-65, which is the base reference period used for all the index number series currently computed by FAO. The Laspeyres formulas were used in the construction of the index numbers.

## Regional coverage

The regional grouping used in this publication follows the recently adopted "FAO country classification for statistical purposes." The coverage of the groupings is in most cases self-explanatory. It should be noted, however, that in line with the decision to divide countries into three broad economic categories (developed market economies, developing market economies, and centrally planned economies) Japan, Israel and South Africa have been removed from Far East, Near East and Africa respectively and are presented under "Developed market economies." For this reason, tables for the three regions are not always comparable with those shown in earlier issues.

The trade index numbers of a country group are based on the total trade of each country included in the group irrespective of destination, and in consequence generally do not represent the net trade of the group.

Among other regions, it should be noted that western Europe is defined as including Yugoslavia, and the Near East as extending from Cyprus and Turkey in the northwest to Afghanistan in the east, and including from the African continent Egypt, the Libyan Arab Republic and the Sudan.

[1] For full details, including a list of weights, see FAO, *Production yearbook 1973*, Rome, 1974.

[2] For full details see FAO, *Trade yearbook 1973*, Rome, 1974.

# HIGHLIGHTS

- World agricultural production is likely to have increased little in 1974 compared with 1973, when there had been a good recovery from the poor 1972 results. Performance in both developed and developing regions in 1974 was discouraging.

- Per caput food production in the developing countries as a whole in 1974 remained lower than in 1970, in Africa and the Far East very substantially so.

- Cereal production fell sharply in several regions in 1974, especially in the Far East, North America, and the U.S.S.R. Drought was again a principal cause. Livestock production expanded, especially in western Europe, but this sector faces serious problems.

- Total cereal stocks in all countries (excluding China and the U.S.S.R.) have dropped below minimum levels for world food security.

- The world fisheries catch again failed to expand in 1973.

- World roundwood production increased in 1973 at a higher rate than in recent years.

- The value of world trade in agricultural, fishery and forest products in 1973 increased about 26% in real terms. This large rise came from exceptional prices as trade volume only increased by 6%.

- Sharply rising food prices have been a major factor in high rates of inflation since 1973 in most countries.

- Population, food supply and agricultural development are examined in Chapter 3. Malnutrition affects around 460 million people, a conservative estimate. It is strongly correlated with poverty. The world food situation will remain perilous until a much higher, sustained rate of increase in food production is attained in the developing countries.

# Chapter 1. - WORLD REVIEW

World agricultural production, particularly of cereals, made a good recovery in 1973 from the poor results of the previous year, when the present food crisis began. Fishery production increased by about 5% and forest production by some 3%. The total output of agriculture, fishery and forest commodities rose by 4% (Table 1-1). Conditions in 1973 were generally good, especially in the U.S.S.R. and in the Far East, in contrast to the widespread bad weather of 1972. Most countries made special efforts to increase food production, and any remaining restrictions on output were removed. However, with a world population growth of 2%, per caput food production increased only slightly, and the gap in levels of food production per caput between rich and poor countries continued to widen. Many countries, particularly in Africa and the Far East, were still producing less food per caput in 1973 than in the base period, 1961-65 (100). The rise in food production in 1973, although substantial, did not prevent further depletion of cereal stocks in the main exporting countries, particularly those of North America; nor did it halt the steady rise in consumer food prices. Moreover, agriculture was afflicted with wider problems, including the energy crisis, inflation, monetary problems, a slowing down in the economic performance of major industrial countries and a general atmosphere of uncertainty.

TABLE 1-1. — INDICES OF WORLD PRODUCTION OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

| | 1969 | 1970 | 1971 | 1972 | 1973 [1] | Change 1972 to 1973 [2] |
|---|---|---|---|---|---|---|
| | ..... *1961-65 average = 100* ..... | | | | | *Percent* |
| TOTAL PRODUCTION | 117 | 120 | 124 | 124 | 129 | +4 |
| Agriculture . . . | 117 | 120 | 124 | 124 | 129 | +4 |
| Fishery[3] . . . . | 130 | 135 | 136 | 134 | 141 | +5 |
| Forestry . . . . | 112 | 114 | 116 | 117 | 120 | +3 |
| POPULATION . . | 112 | 114 | 117 | 119 | 121 | +2 |
| PER CAPUT TOTAL PRODUCTION . . | 104 | 105 | 106 | 104 | 106 | +2 |
| Agriculture . . . | 104 | 105 | 107 | 104 | 107 | +2 |
| Fishery[3] . . . . | 116 | 118 | 116 | 113 | 116 | +3 |
| Forestry . . . . | 99 | 100 | 100 | 99 | 99 | +1 |

NOTE: For details of the methodology and coverage of these indices, see the explanatory note on page xi.

[1] Preliminary. — [2] Percent changes from one year to another have been calculated from unrounded figures. — [3] Excluding China.

In 1973, for the first time in many years, world food supplies depended precariously on the outcome of the current season and therefore to a large extent on the weather. Again in 1974, with cereal stocks below safe levels, the situation remained unchanged or worsened. Even if the weather had been optimum for agriculture throughout the world in 1974, it would not have been possible to take full advantage of it because of the shortage and high prices of fertilizers. It is now clear that the weather was far from optimum for agricultural production in 1974. Although there were large harvests in most parts of Africa, Europe, Latin America and the Near East, earlier optimistic forecasts in North America and the U.S.S.R. were progressively scaled down. In the Far East, where the final results are not yet known, the monsoon was late and erratic, causing damaging droughts and floods in many areas.

Total world food and agriculture production in 1974 thus appears to have only increased slightly, if at all. Any increase resulted mainly from an expansion in livestock production, especially in western Europe, reflecting serious problems in this sector. Cereal production fell sharply in several regions in 1974, especially in the Far East and North America. The harvest in the U.S.S.R. was below the exceptional one of 1973, but it is reported to have been its second largest ever.

Current stocks are so depleted that grain supplies for 1975/76 will depend entirely on the outcome of 1975 harvests. While many governments are encouraging all-out expansion of production, the response of farmers may again be restricted by high

production costs and shortages of fertilizers and other inputs. Individual farmers in many regions have also been increasingly affected by inflation and by the cost/price squeeze in the livestock sector. There has been no easing of the fertilizer shortage, but prices may be reaching a peak as demand is discouraged by their present very high level. Some important pesticides will also be in short supply during 1975. The weather, of course, is an unknown factor. On the other hand, the world demand for foodgrains will probably continue to increase, while the short-term outlook for animal feedstuffs is very uncertain in view of the state of the livestock industry.

World production of cereals in 1974/75 will probably be below requirements for the third successive year. There are virtually no reserves left in exporting countries, and despite the efforts to expand production in 1974, stocks cannot be replenished until 1976, at the earliest. There is no assurance that the developing countries will be able to finance their increased food import bills. Food aid has already fallen sharply, and unless aid budgets are increased to offset inflated costs, its volume will shrink even further. The world food situation will remain perilous until a much higher and sustained rate of increase in food production is attained in the developing countries and cereal stocks are rebuilt to safer levels.

## Agricultural production

### Production 1973[1]

Both world food and agricultural production are estimated to have increased in 1973 by 4% in total and by 2% per caput (see Table 1-2), a good recovery from the 1972 setback. Food production rose by 5% in the developed regions and by 4% in the developing regions; it fell by 4% in two regions, Africa and the Near East. The most serious situation arose in Africa, where per caput food production in 1973 was some 7% below that of 1961-65, mainly because of drought, not only in the Sahelian zone, but also in other countries of west Africa and in east and southern Africa. The 1973 drop in the Near East followed a year in which there was an exceptionally large increase, but not all of the 1972 increase was lost, so production was still higher than in 1971.

The best result in the developing regions was in the Far East (up 8 to 9% for both food and agricultural production), where favourable monsoon conditions led to excellent paddy crops. In Latin America, food production rose by 3%, which contrasts favourably with the near-stagnancy of the two previous years.

There was a 5% gain in China, where the record grain harvest of slightly more than 250 million tons helped to overcome the setback caused by drought in 1972.

The best result in the developed regions was shown by eastern Europe and the U.S.S.R., where both food and agricultural production increased by 10%, a major factor being the record U.S.S.R. grain harvest of 222 million tons, one third larger than in 1972.

Also Oceania, with gains of 3% in agricultural production and 10% in food production, made an excellent recovery from the drought-stricken level of the previous year. Harvests were generally good to excellent in western Europe and North America, and production increased by 3% and 2% respectively.

The marked improvement in world food production in 1973 as compared with the very difficult situation in 1972 is further indicated in Table 1-3, which shows comparative results for ninety-seven developing countries in 1972 and 1973, using 1961-65 as the base period (100). Table 1-3 shows that forty-seven of the countries included produced less food per caput in 1972 than in the base period, and that per caput output in fifteen countries was down by more than 15% and in four others by more than 10%. The combined populations of those countries where food production per caput was lower than in 1961-65 — about 1 200 million — represent some 46% of the total population covered. Two main groups of countries were involved: in the Indian subcontinent and in west and central Africa. On the brighter side of the 1972 situation, as many as thirty-eight countries were producing at least 5% more food per caput than in 1961-65, seventeen of these as much as 15% and more. The change for the better in the world food situation in 1973 is indicated by the sharp fall, from about 1 200 million to 470 million, in the total populations of countries where per caput food production was still below 1961-65; the proportion of population affected thus dropped from about 46% to 17%. The number of countries with per caput production levels below the 1961-65 average fell slightly, the worst-affected area becoming concentrated largely in west, central and southern

[1] See also Food and agricultural production in 1973, by regions and countries, in FAO, *Monthly Bulletin of Agricultural Economics and Statistics*, 23, March 1974.

TABLE 1-2. — INDICES OF WORLD AND REGIONAL FOOD AND AGRICULTURAL PRODUCTION

| | Total | | | | | | Per caput | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1969 | 1970 | 1971 | 1972 | 1973 [1] | Change 1972 to 1973 | 1969 | 1970 | 1971 | 1972 | 1973 [1] | Change 1972 to 1973 |
| | ..... *1961-65 average = 100* ..... | | | | | *Per-cent* | ..... *1961-65 average = 100* ..... | | | | | *Per-cent* |
| **Food production** | | | | | | | | | | | | |
| DEVELOPED MARKET ECONOMIES [2] | 116 | 116 | 123 | 122 | 125 | + 2 | 109 | 108 | 113 | 112 | 113 | +2 |
| Western Europe | 115 | 117 | 121 | 121 | 124 | + 3 | 109 | 111 | 114 | 113 | 115 | +2 |
| North America | 115 | 113 | 124 | 122 | 125 | + 2 | 107 | 104 | 113 | 110 | 111 | +1 |
| Oceania | 121 | 121 | 127 | 127 | 139 | +10 | 108 | 107 | 109 | 107 | 115 | +8 |
| EASTERN EUROPE AND THE U.S.S.R. | 125 | 132 | 134 | 134 | 148 | +10 | 117 | 123 | 124 | 123 | 135 | +9 |
| *Total developed countries* | 119 | 121 | 127 | 126 | 132 | + 5 | 111 | 112 | 117 | 115 | 120 | +4 |
| DEVELOPING MARKET ECONOMIES [2] | 119 | 124 | 125 | 125 | 129 | + 3 | 102 | 103 | 101 | 99 | 99 | +1 |
| Latin America | 120 | 125 | 125 | 128 | 131 | + 3 | 101 | 102 | 100 | 99 | 99 | 0 |
| Far East | 118 | 124 | 124 | 120 | 130 | + 9 | 102 | 104 | 102 | 96 | 101 | +6 |
| Near East | 122 | 125 | 127 | 139 | 134 | — 4 | 104 | 103 | 102 | 108 | 101 | —6 |
| Africa | 117 | 119 | 122 | 124 | 119 | — 4 | 102 | 101 | 101 | 99 | 93 | —7 |
| ASIAN CENTRALLY PLANNED ECONOMIES | 116 | 122 | 125 | 123 | 129 | + 5 | 104 | 107 | 108 | 105 | 108 | +3 |
| *Total developing countries* | 118 | 123 | 125 | 124 | 129 | + 4 | 103 | 104 | 104 | 101 | 102 | +1 |
| **World** | 118 | 122 | 126 | 125 | 131 | + 4 | 105 | 106 | 108 | 105 | 108 | +2 |
| **Agricultural production** | | | | | | | | | | | | |
| DEVELOPED MARKET ECONOMIES [2] | 113 | 113 | 120 | 120 | 122 | + 2 | 106 | 105 | 110 | 109 | 110 | +1 |
| Western Europe | 114 | 117 | 121 | 120 | 123 | + 3 | 109 | 110 | 113 | 112 | 114 | +2 |
| North America | 110 | 109 | 119 | 118 | 120 | + 2 | 103 | 100 | 108 | 106 | 107 | +1 |
| Oceania | 119 | 121 | 123 | 123 | 127 | + 3 | 107 | 106 | 107 | 104 | 105 | +1 |
| EASTERN EUROPE AND THE U.S.S.R. | 124 | 131 | 134 | 134 | 147 | +10 | 117 | 123 | 124 | 123 | 134 | +9 |
| *Total developed countries* | 116 | 119 | 124 | 124 | 130 | + 5 | 109 | 111 | 115 | 114 | 118 | +4 |
| DEVELOPING MARKET ECONOMIES [2] | 119 | 123 | 124 | 124 | 128 | + 3 | 102 | 102 | 101 | 99 | 99 | 0 |
| Latin America | 119 | 122 | 122 | 125 | 128 | + 2 | 100 | 101 | 98 | 97 | 97 | —1 |
| Far East | 118 | 123 | 124 | 120 | 130 | + 8 | 102 | 104 | 102 | 96 | 101 | +6 |
| Near East | 122 | 124 | 128 | 139 | 133 | — 4 | 104 | 103 | 102 | 108 | 100 | —7 |
| Africa | 117 | 119 | 122 | 124 | 119 | — 4 | 102 | 101 | 100 | 99 | 93 | —7 |
| ASIAN CENTRALLY PLANNED ECONOMIES | 116 | 122 | 126 | 124 | 129 | + 5 | 104 | 108 | 109 | 105 | 108 | +3 |
| *Total developing countries* | 118 | 122 | 124 | 124 | 129 | + 4 | 103 | 104 | 103 | 101 | 102 | +1 |
| **World** | 117 | 120 | 124 | 124 | 129 | + 4 | 104 | 105 | 107 | 104 | 107 | +2 |

[1] Preliminary. — [2] Including countries in other regions not specified.

Africa. Conditions in the Far East improved significantly, particularly in such heavily populated countries as India, Indonesia and the Philippines.

## PRODUCTION OF MAIN COMMODITIES [2]

World wheat production in 1973 reached a new record, estimated at 377 million tons, with crop conditions good to excellent in the most important growing areas. The U.S.S.R. had a record crop of 110 million tons, about 30% larger than the disastrous 1972 crop. Production was also substantially higher in the United States, encouraged by changes in government policy, as well as in Canada; it almost doubled in Australia. However, output fell in many developing countries, including Argentina, Brazil, India and several Near East countries, as well as in north Africa, and in the developing countries as a group. The gains were thus concentrated in the U.S.S.R. and the developed exporting countries, while total production in wheat-importing countries declined slightly. Shipments to developing countries in 1973/

[2] For a more detailed review of the commodity situation, see *FAO Commodity review and outlook 1973-1974*, Rome, 1974.

TABLE 1-3. — FOOD PRODUCTION PER CAPUT IN DEVELOPING COUNTRIES, 1972 AND 1973 (1961-65 AVERAGE = 100)

| Index of food production per caput | 1972 | | 1973 | |
|---|---|---|---|---|
| | Number of countries | Population (%) | Number of countries | Population (%) |
| 84 and below . . | 15 | 6.1 | 18 | 5.1 |
| 85-89 . . . . . | 4 | 2.6 | 9 | 5.3 |
| 90-94 . . . . . | 13 | 5.1 | 12 | 4.3 |
| 95-99 . . . . . | 15 | 32.0 | 6 | 2.6 |
| | 47 | 45.8 | 45 | 17.3 |
| 100-104 . . . . | 12 | 6.0 | 19 | 37.4 |
| 105-109 . . . . | 14 | 37.1 | 9 | 34.8 |
| 110-114 . . . . | 7 | 7.2 | 12 | 9.0 |
| 115 and above . | 17 | 3.9 | 12 | 1.5 |
| | 50 | 54.2 | 52 | 82.7 |
| Total . . . . | 97 | 100.0 | 97 | 100.0 |

SOURCE: Annex table 2.

1974 rose by almost 30%, and larger amounts also went to China and eastern Europe, despite the fact that 1973 production had actually increased in these areas.

World production of coarse grains increased to approximately 675 million tons in 1973, 7% above the previous season and almost 4% above the record level of 1971. The increase was due mainly to the large crop in the U.S.S.R., as output in the rest of the world rose by only 2%. Some increase in production occurred in most areas, but not in Africa, the Near East and eastern Europe. All grains contributed to the increase in world production. Barley recorded the largest rise in both absolute and relative terms, almost exclusively owing to the record crop in the U.S.S.R.; in most other regions output decreased or remained relatively stable. World production of maize resumed its upward trend following recovery in Argentina and larger crops in western Europe, the United States and the U.S.S.R. There were larger crops of sorghum and millet in Argentina, India, the United States and to a lesser extent the U.S.S.R. Recovery in oats and rye production was mainly a result of larger harvests in the U.S.S.R.

The 1973 world paddy crop (most of which was available for consumption and trade in 1974) is estimated at 321 million tons, 4% above the previous record of 309 million tons (1971) and well above the low 1972 crop of 294 million tons. There were bigger crops in most countries, although the recovery was most marked in the developing countries of the Far East, where the 1972 setback had been more serious. The larger harvests were due not only to better weather conditions, especially in the Far East, but also to the response of farmers to sharply higher prices and other incentives.

Total world output of pulses increased by about 4% in 1973, largely because of a sharp rise of 2 million tons (25%) in eastern Europe and the U.S.S.R. Output continued its downward trend in India, the world's largest producer.

Expansion of world meat production came to a halt in 1973 after a slowdown in 1972. Red meat output in the developed countries actually declined, with production falling sharply in North America and remaining virtually unchanged elsewhere. Small gains were reported in eastern Europe and the U.S.S.R., and a substantial expansion took place in Latin America, which accounted for the moderately higher total production of the developing countries in 1973. Poultry meat production continued to rise, although the rate of increase in 1973 was probably one of the lowest in the past two decades. There was a slight reduction in North America. World egg production maintained its steady upward trend. World pigmeat production remained practically unchanged in 1973. Output fell by about 6% in North America, while for the third consecutive year it showed no significant increase in western Europe. Faced with an increasing cost/price squeeze and growing uncertainty about market conditions, many producers have apparently abandoned plans to expand output. World sheep numbers continued to decline. The major reductions occurred in Oceania, where adverse weather resulted in lower lambing rates and slaughterings remained high even some time after the marked rise in wool prices. The slow downward trend in numbers continued in the United States and in most western European countries, exceptions being France, the Federal Republic of Germany and the United Kingdom. The decline in flocks led to a further drop in world mutton and lamb production, and the wool clip also declined marginally.

World milk production again increased slightly, but at roughly half the rate of 1972. There was significant expansion in eastern Europe and the U.S.S.R., but output fell in Japan, North America and Oceania. There was only a marginal gain in western Europe. Both cow numbers and fodder production increased in eastern Europe and the U.S.S.R., in contrast to conditions in most other developed regions, where feed conditions were unfavourable. In addition to drought in some areas, particularly severe in New Zealand, prices of concentrate feeds reached unprecedented levels. Both cow numbers and milk yields were down in North America and New Zealand, although yields improved in Australia. In western Europe lower milk yields offset an increase in cow numbers.

Although world sugar production in 1973/74 is estimated to have reached a record total of about

80 million tons, raw sugar equivalent, demand was even greater, and world market prices more than doubled between September 1973 and April 1974. World stocks were insufficient to ensure the continuity of supplies, especially after the beginning of 1974. The decline in stocks was widespread in both importing and exporting countries. Beet sugar production is estimated to have reached nearly 32 million tons raw sugar equivalent, about 3% more than in the last two seasons. There was a substantial improvement in production in the U.S.S.R., mainly because of better weather conditions and yields. In western Europe output did not fully recover to the record level achieved with good weather in 1971/72, despite further expansions in the total area under beet. Production in the United States fell sharply and was the lowest for several years, owing to poor weather at planting time and competition from grains and soybeans. Output in eastern Europe was slightly down. Cane sugar production in 1973/74 increased by 6%, raising its share in total world sugar production to 60% as compared with 57% in the late 1960s. The increase came from developing countries, with production down in both Australia and South Africa. The largest increase, of about 1 million tons, came from Brazil; Cuba had another recovery and there were record crops in Argentina, Colombia and Peru. The secular decline in output of some of the Caribbean islands was reinforced by drought, notably in Puerto Rico, Barbados, Trinidad and Guadeloupe. In the Far East there was further recovery in India, and the expansion in Indonesia and Thailand is expected to continue. The upward trend of production in the African and Near East regions continued, with record crops in Mauritius and Egypt.

Output of citrus fruit is estimated to have fallen slightly in 1973/74, after five years of uninterrupted growth. There were smaller harvests of oranges and tangerines in most main producing areas in the northern hemisphere, especially in the Mediterranean zone and the United States. Exceptions are Italy and Egypt, where output rose by 5% and 10% respectively. Production of oranges and tangerines for marketing during the summer of 1973, consisting of the harvest in the southern hemisphere and the Valencia Late crop in California, fell by about 5%, mainly because of reductions in Australia and Brazil. Lemon supplies were also slightly down in 1973/74, as a 20% fall in United States production was not quite offset by an excellent Italian crop. World production of grapefruit was less, owing to poorer crops in Israel and the United States. In Cyprus and South Africa production was at the 1972/73 levels, while output continued to expand in Argentina.

World output of oils and fats decreased in 1973 for the first time in ten years. Production fell 0.6 million tons below the previous year's record of 46.7 million tons, and the drop was in sharp contrast to the average long-term increase of some 1.1 million tons annually. Production remained practically unchanged in developed countries but fell elsewhere. The fall by 3% in exports of oils and fats from developing countries led to a resumption, after a reversal in 1972, of the long-term decline in the relative importance of these countries in world trade. Among the soft oils the largest absolute drop in output was in groundnut oil, primarily because the Indian crop was drastically cut by drought, which also affected production in west Africa. An increase in world output of soybean oil largely offset the lower output of groundnut oil, mostly reflecting increased production in Brazil and the United States. Both production and trade of cottonseed oil expanded, mainly on account of developments in the United States, and there was a significant increase in exports of rapeseed oil despite a smaller world production. Sunflowerseed oil output and trade are estimated to have fallen slightly. For the fourth consecutive year there was a smaller crop in the U.S.S.R., the world's largest producer and exporter, owing to unfavourable weather. World output of olive oil was slightly down. Sharply lower production in Italy led to high imports, mainly from Spain, to maintain consumption levels. World exports of palm oil continued to expand, largely because of another expansion of output in Malaysia. Fish oil production, still drastically affected by low catches of anchoveta off South America, fell below the already reduced level of 1972.

The 1973/74 world coffee crop was about 15% lower than in 1972/73, mainly because of frost in Brazil and drought in Africa. Total carryover in producing countries was again sharply reduced, after tending to stabilize in the last two crop years. The final official estimate for Brazil places the crop at 855 000 tons, as compared with 1.4 million tons in 1972/73. The most serious losses were in the State of Paraná, but production was also down in São Paulo and other states. The African drought reduced crops in many countries, including the arabica crops of Ethiopia and Kenya and the robusta crops of Cameroon and Ivory Coast; the latter's output may be 40% lower. Colombia, on the other hand, is expected to have a record crop for the second year running, owing to good weather and the high yields being obtained from the recent and increasing plantings of Caturra varieties. Elsewhere in Latin America production was generally lower, notably in Mexico and El Salvador. Output in the main Far Eastern producers, India, Indonesia and the Philippines, is again at a high level.

Cocoa bean production in 1973/74, at some 1.4 million tons, was close to the previous season's level but about 10% down from 1971/72. The 1973/74 crops in the main west African producing countries

were again badly affected by drought, and the world supply situation continued very tight in spite of record production in Latin America. The very dry weather in west Africa came during the period of pod development, and most crops were therefore abnormally late. Decreases in the Ghana and Nigeria crops were only partially offset by better results in Cameroon and Ivory Coast, where the 1973/74 crops (at some 210 000 tons) were the second largest on record despite the dry weather. The good Latin American results are primarily due to increased output in Brazil, where there was a record Bahia main crop and a recovery in the temporão crop from the drought-affected 1972/73 level. A return to more normal weather conditions could result in improved world output next season, but the problem of the longer-term potential is one of increasing urgency.

World tea production reached another record in 1973, but the 2% increase over 1972 was less than expected. Production recovered sharply in Bangladesh (up 16%), and in India a good northern crop largely accounted for a 3% increase. Output was unchanged in Indonesia but fell sharply in Sri Lanka. Kenya had an 8% increase compared to less than 3% for Africa. Production fell sharply in Argentina, discouraged by higher costs and adverse weather.

World tobacco production continued to increase, by some 2%, in 1973, but in contrast to the previous year developing countries as a group did not share in this increase. Production gains in western Europe derived from a revival of output in Greece and continued increase in Yugoslavia. The tobacco crop in the U.S.S.R. made a good recovery, and China had a record crop of nearly 1 million tons. Lower total output in the developing countries stemmed mainly from a sharp reduction in India and smaller crops in Cuba, the Republic of Korea, Pakistan, Rhodesia and Turkey. World output of light cigarette leaf rose again in 1973, with notable increases in flue-cured leaf in Canada, China, Japan and the United States. Burley production, however, was far below the 1972 record even if it was the second highest reached.

World production of cotton remained unchanged in 1973/74 after substantial increases in the previous two years. There was a shift in cultivation from cotton to more remunerative crops in some areas, but this was balanced by high yields and the high quality of the fibre harvested. The United States crop was drastically reduced following extensive flooding in the Delta region, while shifts away from cotton led to lower production in western Europe, the Near and Far East, Mexico, Colombia and some African countries. There were increases in the U.S.S.R., where production reached its third consecutive record, and in China, where it staged a partial recovery from last season's setback. Total output in the developing countries was slightly below the high 1972 level.

Output of jute rose by about 10% over 1972/73. India had an exceptionally large crop resulting from a combination of favourable weather and higher yields on its intensive cultivation schemes. Production rose by about 25% in Thailand. However, the crop in Bangladesh was about 9% smaller, as a result of both floods and reduced sowings in favour of paddy cultivation because of the more favourable rice prices.

World production of sisal and henequen in 1973, still affected by the droughts of 1970-72 and the reduced replantings of the previous years, remained at about the same low levels as in 1972. Although weather conditions in east Africa returned to normal for a large part of the year, output in Tanzania declined slightly again; an increase of about 40% was obtained in Kenya, largely from hedge sisal on small farms, and because of the new government policy encouraging resumption of output on estates which had gone out of production during the previous low-price period. Production also continued to recover in Haiti, encouraged by better prices. No changes were reported from Brazil, now the major world sisal producer, or from Madagascar, Mozambique and other minor producing countries. The decline of more than 20% in Angola's output represented a return to more normal levels after the large increase obtained in 1972 by heavy cutting-out of old plantations. In Indonesia, production appears to have eased completely in 1973. Mexican henequen declined marginally.

World output of natural rubber rose considerably in 1973, as higher prices brought increased tapping in all producing countries. Demand was strong, partly as a result of uncertain supply conditions for synthetic rubber. The increase in output from Malaysian smallholdings, where tapping was reduced in 1972 because of low prices, was one third higher. Output in India and Thailand also rose substantially. Even in Indonesia, where the possibility of raising production is limited because of the low rate of replanting over the last decade, and in Sri Lanka, where political difficulties have discouraged production, output increased as a result of excessive tapping, as well as of chemical stimulation in some areas. The increase in African production was largely due to higher output in Nigeria.

After two years of reduced output, 1973 wine production expanded to record levels as a result of very large increases in most important producing countries. World output, estimated at 349 million hectolitres, was about 25% above the 1972 level, when production was adversely influenced by weather. Output in western Europe was more than 30% greater, and the harvest was also excellent in quality.

In eastern Europe the harvest increased by about 10%, with production higher in every country, particularly in Hungary and Romania. The U.S.S.R. harvest was for the first time above 30 million hectolitres. Production rose by 15% in Algeria despite further reductions in planted area. Good results were obtained in Morocco and Tunisia. Wine production in the United States was sharply up on the reduced 1972 crop as a result of excellent weather during spring and summer. In the southern hemisphere the crop harvested early in 1973 was about normal.

**Production 1974**

FAO's first tentative world and regional indices of food and agricultural production for 1974 reveal that the year failed to bring the very large harvests that are so urgently needed for replenishment of stocks and reestablishment of a reasonable degree of security in world food supplies. Thus, for the third year, the world continues to face a situation of shortage, uncertainty and crisis.

In 1973, and this should be emphasized, world food supplies depended precariously on the outcome of the current season and therefore to a large extent on the weather. Fortunately the weather was generally favourable in 1973, and there was a considerable increase in world food production, especially cereals. But a very large part of this increase was in eastern Europe and the U.S.S.R. (about 10%) and in the Far East (about 8%), so it did not lead to the necessary rebuilding of cereal stocks in the main exporting countries, in particular those of North America. These stocks were in fact still further reduced by mid-1974, the end of the 1973/74 crop season.

Therefore, again in 1974, world food supplies depended to an extreme degree on the current year's production of cereals. There were however additional difficulties because of the shortage and high price of fertilizers. While the difficult fertilizer situation began earlier because of cyclical conditions in the industry, it was exacerbated by the increase in the price of petroleum that began in October 1973 and reached a fourfold level by December 1973. The rise in petroleum prices caused shortages of fuel and power for irrigation pumping in many countries. Thus, even if the weather had been optimum for agriculture throughout the world in 1974, it would not have been possible to take full advantage of it.

It became increasingly clear in the last few months of 1974 that the weather had been very far from the optimum during the year. This particularly affected the production of cereals, the staple food of most of the world's poorest people. Cereal production fell sharply in several regions in 1974, but especially in the Far East and North America. The Far East is the most heavily populated region in the world and also the region where most of the world's malnourished people are concentrated. North America is the region on which world food security must greatly depend until the increase in food production can be sufficiently stepped up elsewhere, particularly in the needy, developing countries themselves.

World cereal production fell in 1974 for the second time in three years. In North America earlier optimistic expectations of record cereal harvests were gradually scaled down as a result of drought in the Midwest and early frost. Among the other developed regions, there were record wheat crops in western Europe. But in the U.S.S.R. cereal crops fell further below the very high record levels of 1973 than was earlier expected, and there was also a decline in Oceania. In Africa, Latin America and the Near East substantial gains were registered over the generally poor results of 1973. In the crucial Far East region, however, the monsoon was late and erratic, and although the final outcome is not yet known, cereal production appears to have been considerably below the high levels of 1973. The extent to which the fertilizer shortage contributed to the widespread failure of cereal harvests in 1974 cannot be determined at present, since its effects have been largely masked by those of the weather.

With the disappointing harvests of 1974, prices have started to rise again (Table 1-4). United States export prices for wheat and maize remain almost three times higher than in mid-1972, and Thai rice prices, although continuing to fall slightly, almost four times as high. These high prices, combined with the limited availability of food aid, continue to aggravate the balance of payments problems of the many developing countries requiring large imports of cereals. The rapid inflation of retail food prices also continues to bring hardship to the poorer consumers, although nonfood items have recently taken the lead in price increases in most countries.

The supplies of cereals available to the world for the 1974/75 season should be sufficient to meet all essential requirements for human consumption. However, the low level of these supplies makes their orderly management and equitable distribution an urgent matter. If they are allocated purely by price and cash purchase, many of the hardest-hit countries will be unable to obtain the imports they need. Moreover, some of these needs are still not fully known. For example, in India, where the immediate situation is in the words of the Prime Minister "extremely difficult," the outcome still depends largely on the results of the winter crops, which will not be known until March 1975. Thus it is necessary to earmark some supplies now, while they are still available in

TABLE 1-4. — RECENT CHANGES IN EXPORT PRICES OF SELECTED AGRICULTURAL COMMODITIES

| | Wheat (U.S. No. 2 Hard Winter, Ordinary, f.o.b. Gulf) | Rice (Thai white rice 5%, f.o.b. Bangkok) | Maize (Yellow No. 2, f.o.b. Gulf) | Soybeans (U.S., c.i.f. Rotterdam) | Sugar (ISA composite price, world market, f.o.b. and stowed Caribbean ports) | Coffee (ICO composite price New York ex-warehouse) |
|---|---|---|---|---|---|---|
| | *U.S. dollars/metric ton* | | | | *U.S. cents/pound* | |
| 1972: January | 60 | 131 | 51 | 125 | 7.90 | 44.80 |
| June | 60 | 136 | 53 | 138 | 6.33 | 47.76 |
| December | 104 | 186 | 69 | 174 | 9.15 | 55.12 |
| 1973: January | 108 | 179 | 79 | 214 | 9.40 | 57.03 |
| June | 106 | [1]205 | 102 | 470 | 9.38 | 62.78 |
| December | 199 | 521 | 113 | 254 | 11.85 | 65.11 |
| 1974: January | 214 | 538 | 122 | 261 | 15.40 | 66.24 |
| February | 220 | 575 | 131 | 271 | 21.10 | 70.77 |
| March | 191 | 603 | 126 | 265 | 21.10 | 72.04 |
| April | 162 | 630 | 114 | 235 | 21.60 | 72.89 |
| May | 142 | 625 | 114 | 229 | 23.63 | ... |
| June | 156 | 596 | 117 | 228 | 23.51 | ... |
| July | 169 | 519 | 132 | 276 | 25.03 | ... |
| August | 167 | 521 | 146 | 320 | 31.10 | ... |
| September | [2] 170 | 516 | 143 | ... | 34.15 | ... |
| AVERAGE: 1971 | 62 | 129 | 58 | 126 | 4.50 | 44.66 |
| 1972 | 70 | 151 | 56 | 140 | 7.27 | 50.34 |
| 1973 | 139 | [3] 368 | 98 | 290 | 9.45 | 62.16 |

[1] March (first week). — [2] Three weeks. — [3] Thai rice, as well as rice from most other regions, was not quoted regularly on the world market from the second week of March to November 1973; this average is estimated on the basis of the few quotations that are available and is only indicative of the change that has taken place in prices.

the market, for emergency needs that may arise until July to October 1975, when the next main crops in the northern hemisphere are harvested. The Director-General of FAO has therefore urged that the main cereal-exporting countries should take concerted action to set aside for emergency use a minimum of 8 to 12 million tons of cereals, in addition to imports already contracted for and quantities committed as food aid, for the group of most severely affected countries. He has also called for special measures, such as deferred payments and other concessions, to assist the developing countries in paying for the imports they require and for a continuing monthly review of the cereals situation as a basis for consultations among the major exporting and consuming countries. Other related contingency measures already under way include the United Nations Emergency Operation and the International Fertilizer Supply Scheme, both of which are still short of resources.

The world food situation at mid-October 1974 must therefore be viewed with considerable concern. The available supplies must be carefully managed during the subsequent nine to twelve months. Looking beyond this critical period, the outcome of the 1975 harvests will be decisive. The poor results of 1974 have postponed the replenishment of stocks for at least another year, and 1975 will be the successive third year in which food supplies depend perilously on current harvests. In addition to weather, fertilizer supplies will again be a crucial factor, underlining the importance of the International Fertilizer Scheme. While the shortage of fertilizer has not eased, prices may be reaching a peak, demand being discouraged by their present very high level. Some important pesticides will also be in short supply during 1975. The concern aroused by this fact is heightened by the consideration that prospects for increasing production in future years appear dim.

The close interconnection of cereals and livestock production remains a major element in the world food situation. In addition to any other possible policy implications, more cereals will have to be used for direct human consumption and less for meat production; the cost/price squeeze is already leading to this result.

Despite the decline in cereal production in 1974, total world food and agricultural production appears likely to have increased slightly (Table 1-5). The data available in mid-October, which are incomplete and highly tentative, indicate an increase of no more than 1%. This increase has resulted in the main from a sharp expansion in livestock production, especially in western Europe, and thus has not greatly benefited the food supplies of the countries where shortages are most critical.

In the developed countries as a whole, total food production in 1974 is estimated at about the same

TABLE 1-5. — ANNUAL CHANGES IN WORLD AND REGIONAL AGRICULTURAL PRODUCTION [1]

| | 1961-63 to 1971-73 (annual average) | 1970 to 1971 | 1971 to 1972 | 1972 to 1973 | 1973 to 1974 [2] |
|---|---|---|---|---|---|
| | ..... *Percent* ..... | | | | |
| DEVELOPED MARKET ECONOMIES [3] . . . | +2.1 | +6 | 0 | + 2 | 0 |
| Western Europe . . | +2.1 | +3 | —1 | + 3 | +3 to +4 |
| North America . . . | +2.0 | +9 | —1 | + 2 | [4]—4 to —3 |
| Oceania . . . . . | +2.6 | +2 | 0 | + 3 | [5]+2 to +3 |
| Eastern Europe and the U.S.S.R. . . . | +3.6 | +2 | 0 | +10 | [5]—1 to 0 |
| *Total developed countries* . . . . | +2.6 | +4 | 0 | + 5 | 0 |
| DEVELOPING MARKET ECONOMIES | +2.6 | +1 | 0 | + 3 | +1 to +2 |
| Latin America . . . | +2.6 | 0 | +2 | + 2 | +3 to +4 |
| Far East [6] . . . . . | +2.4 | +1 | —3 | + 8 | —3 to —2 |
| Near East [7] . . . . | +3.3 | +3 | +8 | — 4 | +5 to +6 |
| Africa [8] . . . . . | +2.3 | +2 | +1 | — 4 | +4 to +5 |
| Asian centrally planned economies . . | +2.8 | +3 | —2 | + 5 | +1 to +2 |
| *Total developing countries* . . . . . | +2.6 | +2 | 0 | + 4 | +1 to +2 |
| **World** . . . . . | +2.6 | +3 | 0 | + 4 | 0 to +1 |

[1] While these figures refer to total agricultural production, changes in food production are likely in most cases to have been of a similar order of magnitude; the slightly different figures for food production in 1974 in North America and Oceania are noted separately. — [2] Preliminary. — [3] Including Japan, Israel and South Africa. — [4] Food production: —5 to —4%. — [5] Food production: +1 to +2%. — [6] Excluding Japan. — [7] Excluding Israel. — [8] Excluding South Africa.

level as last year. A decline of 4 to 5% in North America and a possible slight fall in eastern Europe and the U.S.S.R. have been roughly balanced by increases in western Europe and Oceania. In the developing countries, for which the data are even more tentative, there appears to have been a slight rise in food production in 1974, but almost certainly less than the population growth. In Latin America the increase of 3 to 4% would, if confirmed, be the largest since 1969. There were large increases in Africa and the Near East, the two regions where food production had declined in 1973. In the Near East this recovery probably raised production above the very high record level of 1972, but in Africa production in 1974 was only 3 or 4% more than in 1970. The serious drop in food production in the Far East in 1974, tentatively estimated at 2 to 3%, and thus comparable to the 1972 decline, also implies a level of production only 3 to 4% above 1970. Food production in China probably increased by 1 or 2% in 1974. Per caput food production in the developing countries as a whole remains lower than in 1970 — in Africa and the Far East very substantially so.

## PRODUCTION OF MAIN COMMODITIES

As cereals and livestock products have been the main determinants of the overall level of food and agricultural production in 1974, they will be discussed in more detail below. First, however, some other main commodities must be mentioned.

Although total production of vegetable oils and oilseeds (in oil equivalent) is estimated to have decreased by about 2% in 1974, there were substantial variations in the production of certain products. Groundnut production rose by about 3%, with a large increase in Africa (30%) and declines in Latin America (16%) and the Far East (10%). Soybean production dropped by 9%, with a fall of 19% in the United States, the world's major producer, and an increase of 40% in Brazil; soybean prices have therefore begun to rise again. Although fishing has been resumed in the Peruvian anchoveta fishery, fishmeal production remains sharply reduced and prices high. Thus the general shortage of other concentrates besides grains for livestock feeding continues.

World sugar production increased by about 2% in 1974 but fell by 2½% in developed countries. Prices continued to rise steeply and by September were more than twice as high as in January 1974 and more than four times as high as in January 1972. The 1974 cocoa output is estimated to be 5% higher than in 1973.

Among the other main crops, coffee production increased by 16%. Brazil, where production recovered by about 50%, accounted for about 500 000 tons of the 700 000-ton increase. Cotton production rose by about 1%, probably reaching a new high, and a record crop is reported in the U.S.S.R. A drop of some 20% in the production of jute and kenaf could have serious consequences for the export earnings of Bangladesh and India. The production of natural rubber appears to have increased slightly to a new record level.

Preliminary estimates of world cereal production indicate a decline of between 2 and 3% in 1974 from the previous year's record level (Table 1-6). Production fell particularly sharply in North America, Oceania, the U.S.S.R. and the Far East.

There is likely to have been only a moderate decline in world wheat production in 1974 from the 1973 record level, with a reduced but still large volume of trade in the trading year 1974/75 (1 July-30 June) and little or no prospect of stock replenishment at the end of the season. The incentives provided by higher prices, together with favourable weather in some regions, contributed to larger har-

TABLE 1-6. — ANNUAL CHANGES IN WORLD AND REGIONAL CEREAL AND LIVESTOCK PRODUCTION 1973 TO 1974 [1]

| | Cereals | Livestock |
|---|---|---|
| | ..... *Percent* ..... | |
| DEVELOPED MARKET ECONOMIES [2] | — 4 to — 3 | +3 to +4 |
| Western Europe | + 4 to + 5 | +5 to +6 |
| North America | —11 to —10 | +1 to +2 |
| Oceania | — 6 to — 5 | +3 to +4 |
| Eastern Europe and the U.S.S.R. | — 6 to — 5 | +3 to +4 |
| *Total developed countries* | — 5 to — 4 | +3 to +4 |
| DEVELOPING MARKET ECONOMIES | 0 to + 1 | +1 to +2 |
| Latin America | + 9 to +10 | —1 to 0 |
| Far East [3] | — 6 to — 5 | +2 to +3 |
| Near East [4] | +12 to +13 | +2 to +3 |
| Africa [5] | +15 to +16 | —1 to 0 |
| Asian centrally planned economies | 0 to + 1 | +2 to +3 |
| *Total developing countries* | 0 to + 1 | +1 to +2 |
| **World** | — 3 to — 2 | +3 to +4 |

[1] Preliminary. — [2] Including Japan, Israel, South Africa. — [3] Excluding Japan. — [4] Excluding Israel. — [5] Excluding South Africa.

vests in many importing countries; however, drought, rain and early frost restricted wheat production to 48.5 million tons in the United States and 14.2 million tons in Canada, a total of about 15 million tons less than earlier predictions for the North American harvest. The U.S.S.R. wheat crop is currently estimated at around 90 million to 95 million tons, down 15 million to 20 million tons from the 1973 record crop. Excluding the U.S.S.R., total wheat production in 1974 was actually higher than in 1973, with record crops in both the United States and western Europe. Total production in developing countries increased in 1974. Estimates issued by the International Wheat Council (IWC) on 28 November 1974 forecast exportable supplies for 1974/75 of between 65.8 million and 69.1 million tons, compared with estimated imports of 65 million to 66.5 million tons and actual imports of 62.1 million tons in 1973/74. Thus the global supply and demand situation for wheat remains very delicately balanced.

Production of coarse grains is estimated to have increased or at least remained at the 1973 level in all regions except North America, the major exporter, and the Far East, where production declined substantially. United States maize production fell by 18% from the 1973 record. On the basis of present production forecasts, total exportable supplies of coarse grains will be much lower for 1974/75. More coarse grains are available for export in Argentina, Australia, South Africa and Thailand, but the increased supplies of these and some smaller exporting countries are far from sufficient to offset the heavy decline in the United States, where export supplies are currently estimated at about 28 million tons as compared with actual exports of almost 40 million tons in 1973/74. This implies that exports on the scale of 1973 can take place only by further reducing carryover stocks — which were already at minimum operating levels at the beginning of the season — and with a substantial reduction in domestic feedgrain use in the United States. There are however many uncertainties connected with the forecasting of export availabilities and import requirements for coarse grains in 1974/75. It is particularly difficult to make a reliable forecast of the likely demand for grains as animal feed, in both exporting and importing countries, because of the severe cost/price squeeze affecting the livestock industry and the slowdown in economic activity in many developed countries. Demand for coarse grains as feed may also be reduced because the poor quality of part of the wheat crop in some areas may necessitate its use for feed. Nevertheless, on the whole, it seems highly probable that the world supply and demand situation for coarse grains will remain very tight in 1974/75.

The tight grain situation has recently caused the United States to halt certain shipments of grain to the U.S.S.R. and Iran, and to introduce guidelines for export sales which are "intended to assure an adequate but not excessive flow of grain to traditional customers." The introduction of these guidelines followed closely on the United States Department of Agriculture's crop estimates, based on conditions as of 1 October, which showed that estimated total wheat and maize production had dropped by 1 and 6% respectively from the September estimates.

It is still too early for definite figures on the rice crop harvested in the Far East at the end of the year. Some countries, including China, Indonesia, Japan, the Republic of Korea and Malaysia, had or expected good harvests. In others, however, the monsoon, after a late start, seems to have departed early from some areas, and consequently the kharif crops (mainly rice) in India may not exceed 60 million tons, compared with 67 million tons in 1973 and the target of 69 million tons for 1974. On the basis of present indications the world's paddy crop is likely to be about 317 million tons, some 2% below 1973, and therefore the supply and demand situation for rice in 1974/75 is likely to remain very difficult, with sharply depleted stocks (except in China) and a continued increase in demand.

Livestock producers almost everywhere weathered the first year (1972/73) of the upsurge in grain prices remarkably well thanks to buoyant meat markets. Beef and, to some extent, sheep producers found themselves benefiting from a worldwide shortage as growing demand from a more prosperous world econ-

omy outstripped available supplies. This, in turn, encouraged the holding back of cattle to build up herds and increase production capacity — which for a time served only to make the shortage even worse and push prices still higher. It is true that most of the world's beef is produced off grass and is therefore relatively independent of grain market developments; but expensive beef provoked an analogous rise in the price ceiling on livestock products based almost wholly on grains and oilseeds (i.e., pigs, poultry and eggs). The producers concerned found they could still operate profitably despite the sharp rise in the price of their biggest single input, feedgrains.

In 1973/74, however, the expansion in livestock production encouraged by the high prices ran ahead of demand, the growth of which had already been reduced in many developed countries by high retail prices and consumer resistance in the face of falling real incomes. Livestock producers in developed countries are now severely affected by the cost/price squeeze, and many developing and other countries which depend on livestock exports are also facing great difficulties, while consumers have hardly benefited from these developments. The sudden change in demand has led in several countries to a sharp fall in producer prices and to various import restrictions.

The expected 2 to 3% increase in world meat production in 1974 reflects both the record cattle inventories built up in 1973 and earlier in response to high meat prices and the heavy slaughterings in western European countries (up 10 to 20% in most of them) and in the United States from mid-year onward as an immediate consequence of the drought in the Midwest and the western ranges and the resulting high prices for maize, soybeans and other feeds. Beef consumption in nearly all major beef-importing countries failed to increase, as the decline in producer prices for cattle and calves was not reflected in consumer prices. From 16 July 1974 import licences were suspended for all products covered by the EEC beef regulations (with the exception of the GATT quotas for frozen beef) until the situation in the EEC markets improved, and imports from third countries were stopped. Imports of beef into Japan were temporarily suspended. In the United States the weakening of demand from feedlots for replacement cattle is keeping feeder cattle prices low. Pigmeat and poultry prices have come under strong pressure in recent months in western Europe and North America owing to difficulties in finding outlets for increased production. Sharp rises in costs and uncertainties about the future of the market in view of consumer resistance to high prices will in the coming months almost certainly discourage further expansion in the production of beef and other meats. Stagnant demand and the building up of livestock herds, in addition to the substantial stocks of meat in cold storage, may prevent any improvement in livestock prices until late in 1975.

## The influence of weather and climate on food production

Annual fluctuations in production are a major feature of the world food situation. Often they tend to offset one another to some extent at the regional or global level, but when, as in 1972, there are simultaneous drops in production (or increases short of the trend rate) in a large number of major countries and regions, the implications for the world food situation are serious. Therefore, in assessing the longer-term trends in food production, it is necessary to examine the annual fluctuations above and below these trends and to attempt to determine whether there has been any cyclical pattern in their magnitude or frequency which has affected the longer-term trends.

Variations in seasonal rainfall, temperature, and other climatic factors are generally the principal causes of fluctuations in food production; but isolating their effects from those of other factors involved is difficult, having been effected for only a few crops in some developed countries. Fluctuations in production lead to changes in price, employment, income, and demand, which in turn influence the course of production, generally accentuating the fluctuations caused by the weather. Changes in price and other agricultural policies can cause production to vary sharply from the trend. Civil disturbances, hostilities, natural disasters unrelated to weather, and pests and diseases (sometimes linked with weather) are other significant contributors.

Climatic variations over quite short periods are now generally recognized. For example, in the Sahelian zone of Africa, where from the 1920s to the 1960s the rainy season extended well to the north, the seasonal rainfall for the past six years has been far below average. On the basis of recorded changes of this kind over the last few decades, the World Meteorological Organization (WMO) concludes that the main overall changes appear to be a trend toward cooler conditions in parts of the northern hemisphere (at least until the beginning of the 1970s) and more frequent extreme weather conditions such as floods, droughts, and cold and warm spells in widely scat-

tered areas. Nevertheless, except for the cooling noted in parts of the northern hemisphere, there does not appear to be any overall trend toward drier, wetter, colder, or warmer weather; rather, it seems that certain areas have become more subject to drought and flood and to temperature extremes. Although the basic causes of these changes are unknown, they are associated with changes in the atmospheric circulation in the northern hemisphere.

While such changes have, of course, substantially affected fluctuations in food production in particular areas, there is no evidence that any of the global climatic trends have had any significant influence on either their magnitude or frequency. According to WMO, the numbers of countries where yields per hectare of wheat and rice fell in any year during the period 1962-72 are distributed at random, showing no unusual or significant trend. An FAO analysis gives no evidence of significant change in the distribution of the "instability indices" of total food production in 125 countries between the periods 1952-62 and 1962-72.[3] Although neither of these analyses deals with the effect of climate as a separate factor, they indicate that all the factors affecting variability, such as expanded or more effective irrigation, extension of cultivation into marginal land, other positive and negative effects of technological change, pest and disease outbreaks, policy changes, hostilities, and earthquakes, as well as changes in the weather, tended to balance one another at the global level during the periods considered; it is even possible that the effects of changes in the weather were offset by changes in other factors. In the future, however, the balance could change, and it is therefore necessary to give greater attention to studying the effects of weather anomalies on agricultural production.

The instability indices calculated by FAO for total food production in individual countries for the period 1952-72 range from less than 2 to 37. Because one country offsets another, the indices are smaller for broad zones and regions. In the main regions the indices for cereal production (for which the index is higher than that for food production as a whole) range from 4 in the Asian centrally planned economies through 6 to 8 in most regions, to 10 in North America, 13 in eastern Europe and the U.S.S.R., and 42 in Oceania. The overall index for the developed countries is 6, as compared with 3 in the developing countries, reflecting the effect of changes in agricultural policies as well as climatic conditions.

The worldwide instability index for cereal production in 1952-72 is 4, indicating that normal fluctuations can be expected to lie within the limits of 8%; in fact, the 1972 shortfall in crop production lay within these fluctuation limits.

Seasonal fluctuations in harvests can also be measured as the amount by which a particular harvest falls below that of the preceding year (instead of below the trend). This deviation may be larger than that given by the instability index because quite often a poor year follows a very good one. This deviation is extremely relevant for most developing countries because, lacking storage, they tend to use up most of the good crop in the year of reaping and are defenceless against the hunger experienced by their people and animals when a harvest turns out badly. A survey of the yearly cereal output in thirty-nine countries over an eleven-year period showed that one fifth of the declines were in the range of 20% or more. Large declines were most frequent in countries of northern Africa and the Near East which are subject to droughts; declines of more than 30% occurred in as many as three of the eleven years in Algeria, Senegal and the Syrian Arab Republic.

Although there is no evidence that fluctuations in production have worsened at the global level in recent years, there is little doubt that the effects are now much greater and more widely felt. Formerly, lower production was to a large extent counteracted domestically in many countries by reductions in consumption or by the slaughter of livestock in years of shortage. At present, because of widespread reluctance to counteract fluctuations in this way, there is an increasing tendency, most recently in the U.S.S.R., to attempt to maintain consumption levels by recourse to imports. Since the volume of international trade is so much smaller than that of domestic production, fluctuations in trade are even more pronounced.

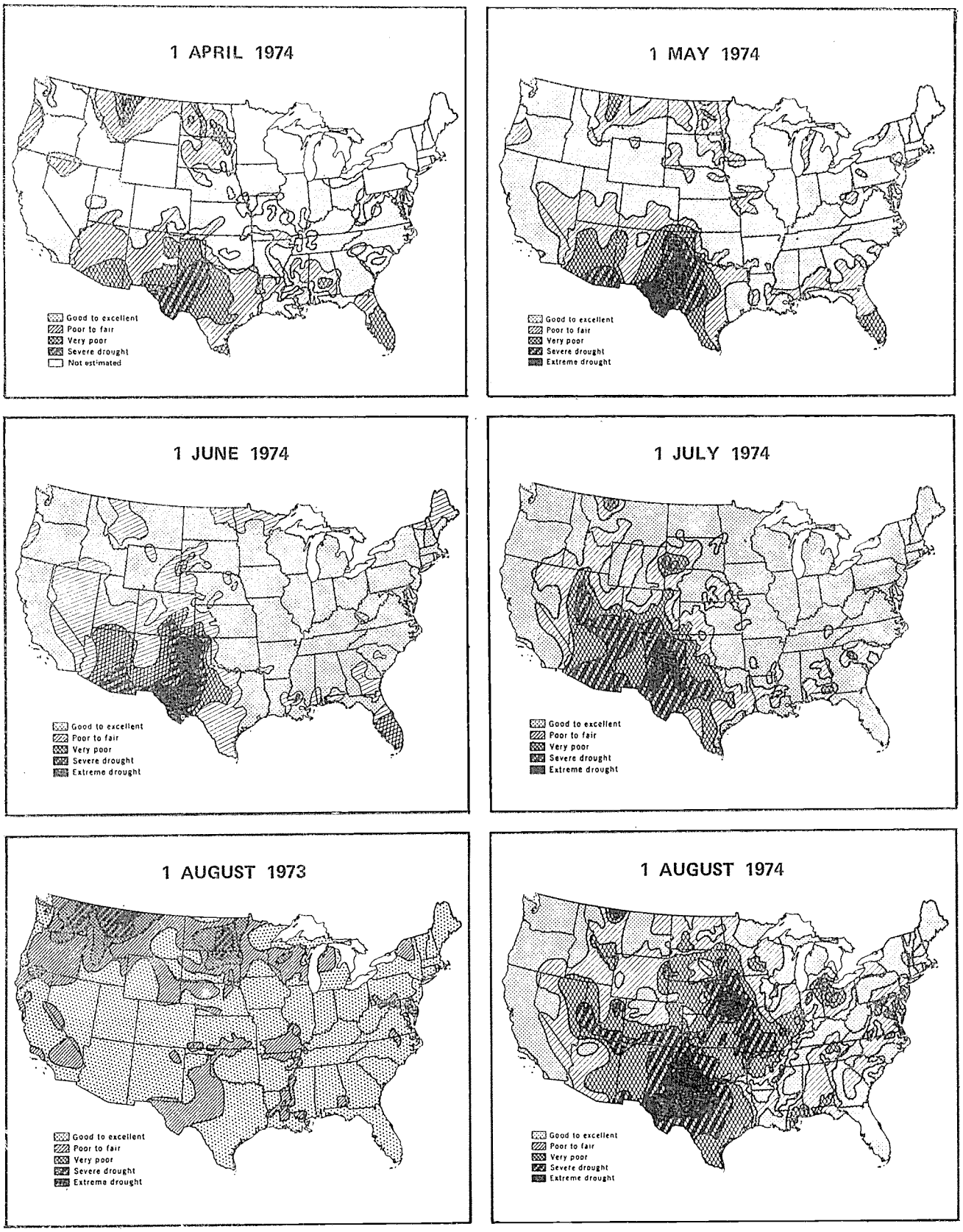
A recent analysis of the relative roles of improved technology and weather in determining crop yields in the United States has underlined the usefulness of this type of work.[4] By statistical means the specific weather factors that contribute to high or low yields of several crops in the various grain-producing regions are also evaluated. The conclusions of this analysis are particularly relevant in view of the drought-affected 1974 U.S. harvests, as the report (published in December 1973) indicates that "the probabilities of one or more drought years in the next three years are 7% for soybeans, 26% for corn [maize], and 29% for wheat."

Drought is defined as a lack of rainfall that results in yields 10% or more below normal. This accurate assessment is dramatically illustrated in the series of maps in Figure 1-1, showing the spread of

[3] The instability index is defined as the percentage standard deviation of the annual change in production from the trend rate; e.g., an index of 4 means a fluctuation of 4% above or below the trend.

[4] *The influence of weather and climate on United States grain yields: bumper crops or droughts.* The Associate Administrator for Environmental Monitoring and Prediction, National Oceanic and Atmospheric Administration, U.S. Dept. of Commerce. December, 1973, p. 29.

FIGURE 1-1. — THE SPREAD OF DROUGHT IN THE UNITED STATES, 1 APRIL-1 AUGUST 1974 (COMPARED WITH 1 AUGUST 1973) [1]




SOURCE: U.S. Department of Agriculture, Crop Reporting Board, Statistical Reporting Service, *Crop production*, issues of 10 April, 8 May, 10 June, 11 July and 12 August 1974.

[1] Based on correspondents' reports on current supply of feed for grazing on nonirrigated pastures and ranges relative to expectations from existing stands under very favourable weather conditions.

drought into the grain areas of the United States from April through August 1974. The study points out that "in recent years there has been a remarkable run of near-normal weather — or even that relatively unusual weather that produces even higher yields. The reliability of the grain yields in recent years is due to an extraordinary sequence of favourable growing seasons. *This cannot be expected to continue.*" [italics added]. Apparently, preliminary estimates of the 1974 U.S. wheat and maize crops did not take this warning into account.

### AGROMETEOROLOGY

Agrometeorology is the application of meteorological knowledge to agricultural development. Until recently relatively neglected, it has become the subject of a new collective effort in belated recognition of its immense potential importance. The main objectives of agrometeorology in relation to the knowledge of climates are the following:

1. Appraisal of the climatological and agroclimatological characteristics of various natural regions of a country.
2. Agricultural and livestock diversification, and the introduction of new species, varieties, and breeds based on thorough agroclimatological investigations. This can be achieved in particular by testing crop and animal performances in various agroclimatological conditions.
3. Preparation of cropping calendars by region and smaller areas so as to make the best use of the seasonal agroclimatic cycles.
4. Adjustment of cropping methods to compensate for harmful aspects of climates or microclimates in relation to an ecophysiological optimum.
5. The carrying out of special investigations on crop water requirements through experimentation in lysimetric tanks, in order to define standards for rational irrigation of these crops.
6. The undertaking of study or research on any questions of specific interest with regard to agricultural development and conservation of the environment.
7. Study of the problem of the effects of climatic variations on world food production, in order to organize the latter on the basis of logical deductions and conclusions.

Agrometeorological activities related to weather forecasting can provide the following:

1. Regular information to farmers on weather evolution, and the broadcasting of special bulletins based on the regional cropping calendar.
2. Special advice concerning the risk of crop diseases and insect outbreaks related to weather evolution, and the forecasting of the movements of locust swarms.
3. Special vigilance in the forecasting of crop-destroying phenomena, such as droughts, tropical hurricanes and typhoons, hailstorms, floods, and frosts.
4. Regional crop forecasts based on present crop conditions, past weather since the start of the cropping season, and probable weather until the end of the vegetative cycle.
5. Meteorological advice concerning the drying of harvested crops and their conservation.
6. Special meteorological forecasts of forest fire hazards, and the broadcasting of adequate warnings.

If agrometeorology were well organized at national, regional and world levels to carry out daily operations in the above activities, world agricultural and food production would clearly reach a much higher level, nearer its potential, and would at the same time present much smaller fluctuations.

Currently there are many inadequacies in this field. There is, for example, the absence in the developing countries of valid agrometeorological forecasts and of adequate agricultural extension services to ensure the implementation of broadcasted warnings and advice. This is particularly regrettable as the World Weather Watch (WWW) has been operating since 1968 and medium-term forecasts (two to seven days) may reasonably be expected for the whole world within the next decade. Furthermore, meteorological and ERT satellites will provide even more sophisticated tools for observations of weather and crop status on a planetary scale; but there is as yet no means of correlating the results of this dual series of observations for agrometeorological purposes. In developing countries, weather forecasts are seldom directed toward agriculture owing to a lack of agrometeorological divisions and agrometeorologists. Moreover, implementation of forecasts at the farmer level through adequate extension services poses the problem of agrometeorological training at all levels.

Besides, agrometeorology, being the field application of meteorology to agriculture and thereby deriving its objectives from the two broad sciences of micrometeorology and agricultural ecophysiology, has a general weakness. The real problem of agrometeorology is to establish laws of growth and production in the light of meteorological factors as they fluctuate in the field during the vegetative cycle. This is a more difficult problem than those encountered by micrometeorology and ecophysiology, which generally take into consideration short periods of time

with meteorological conditions that are assumed to be stable or with controlled environments. This problem calls for a specific methodology of investigation, such as the study of yields of a given variety grown on similar soils under various climatic conditions.

So far, because of the lack of real agrometeorological investigation programmes, the agrometeorological laws remain little known. Broad knowledge of ecophysiology and agronomy on the one hand and of meteorology and climatology on the other is of little use in agrometeorology, as such knowledge consists of the juxtaposition of fragmentary laws which are quite separate from agrometeorological reality. In this connection the scarcity of specific agrometeorological investigations in the numerous publications dealing with agricultural ecophysiology and micrometeorology is noticeable.

The international lack of field agrometeorologists, especially in the tropical and subtropical regions of the developing world, is also a major deficiency. Agrometeorologists may come from very diverse scientific backgrounds: agronomy or ecology, geography or meteorology. They are to be found in the agrometeorological divisions of national meteorological services, in agricultural research institutes, in agricultural services, and in the research divisions of universities.

The precise number of active meteorologists throughout the world is not known. However, an investigation on the organization of the meteorological services, carried out by WMO in 1971, gives some information on the agrometeorologists employed by such agencies. Of an estimated total of 19 000 class I and II meteorologists working throughout the world, 620, or nearly 3.5%, are agrometeorologists. In developing countries, of a total of 5 100 class I and II meteorologists, only 305, or 6%, are agrometeorologists. In developed countries, of 13 900 class I and II meteorologists, only 315, or 2%, are agrometeorologists. These figures indicate that there are 17 agrometeorologists per 10 million inhabitants for developed countries and only 5 per 10 million inhabitants for developing countries. Southeast Asia, where food problems are most critical, has only one agrometeorologist for every 20 million inhabitants.

These figures dramatically show the lack of agrometeorologists, particularly in developing countries, where their action could be the most effective. This scarcity can be attributed to the lack of interest of many agronomists in agrometeorology, which belongs too much to the physical sciences. Likewise, meteorologists are mainly uninterested in agronomy, which belongs too much to the biological sciences. Consequently there is a lack of effective collaboration between meteorologists and agronomists.

To remedy the scarcity of agrometeorologists, solutions for each aspect of the problem must be considered: definition of programmes at national, regional, and international levels; appraisal of the personnel required to carry out these programmes; training of agrometeorologists by means of specifically tailored courses; and establishment of career schemes, especially in developing countries. In connection with this last point, another serious deficiency of agrometeorology at the institutional level is the lack of coordination at a national level between services and institutions with complementary responsibilities for the success of agrometeorology: the meteorological service, agricultural research, and the agricultural service.

The practical value of agrometeorology lies in its three complementary extensive and intensive aspects: (1) the meteorological study of weather and climate on a country-wide basis and the broadcasting of information; (2) research into crop yield/weather relations; and (3) its effect on the organization of activities throughout the farming community as a result of the broadcast information. In many developing countries the influence of agrometeorology with regard to each of the above aspects is weak or nonexistent; moreover, there is generally a lack of coordination between such activities.

At the meteorological service level the agrometeorological divisions or sections are generally either weak or nonexistent, and agrometeorological stations are few and poorly equipped with instruments.

At the agricultural research level the interest of agronomists is more often oriented toward the relations between crops and soils. Investigations concerned with the influence of climatic factors are more often directed toward bioclimatology, rather than agrometeorology, which explains crop yields in terms of the influence of meteorological factors.

Finally, international coordination at the operational level remains poor. The Interagency Group on Agricultural Biometeorology in Aid to World Food Production, established by the Fifth Congress of WMO in 1967, has the task of coordinating the agrometeorological activities of FAO, WMO, and Unesco; however, because of the lack of adequate funds, activities are limited to the preparation of regional agroclimatology surveys.

Surprisingly, in the specialized agencies of the United Nations concerned with agricultural meteorology — FAO and WMO — only three agrometeorologists are occupied on a permanent basis with the related worldwide problems of agrometeorology. The organizational charts do not show any agrometeorological subdivision ranked at a level appropriate to the importance of the world food problem.

Against this unfortunate background, the World Agrometeorological Watch is being conceived, It would be a worldwide system of agrometeorological

forecasts and a permanent watch over crop conditions based on a network of regional and world centres and a direct application of the forecast-broadcast system of the World Weather Watch combined with the use of ERT satellites. The weather forecasts broadcast by the world and regional meteorological centres of the WWW would be analysed systematically from the agrometeorological point of view by specialized centres, which would then broadcast appropriate information and emergency warnings to farmers.

The system would consist of world and regional centres. National centres would be based in suitably strengthened agrometeorological divisions of national meteorological services, thus enabling continuous collaboration between forecasting agrometeorologists and agronomists belonging to the agricultural services responsible for the transmission of information to farmers.

Seven regional centres could be established according to broad ecological zones: two for the temperate zone of the northern hemisphere (North America and Europe); one for South America; one for the semi-arid climates of north Africa and the Near East; one for intertropical Africa south of the Sahara; one for the humid region of southeast Asia; and one for the southwest Pacific. Two world centres could be selected from the regional ones to centralize data concerning temperate and tropical agriculture, respectively.

Crop forecasts and the regular publication of world agrometeorological conditions, in close collaboration with the World Food Programme, would be one of the main objectives of the system.

By ensuring a continuous global view of the agrometeorological evolution through the centralization of information and the broadcasting of emergency warnings on a national, regional, and world scale, the system would, in particular, detect the onset of meteorological disasters and make possible the timely launching of any measures required to protect agriculture and livestock.

This proposed world system of agrometeorological forecasting, the central purpose of the World Agrometeorological Watch, would require complementary programmes of research, training, and aid to the developing countries.

## Agricultural trade [5]

### Trade in 1973

During 1973 the value of world trade in agricultural, fishery, and forest products rose by 43%, as compared with a 14% increase in 1972. Growth in the value of agricultural exports accounted for about three fourths of the increase, but earnings from both fishery and forestry exports also expanded rapidly (by 24% and 39% respectively). The value of world exports of major agricultural commodities [6] rose by a record 46%, from US$41 000 million in 1972 to about US$60 000 million in 1973. This increase was more than treble the rate of 1972 and nine times the average annual growth during the 1960s.

A large part of the enormous increase in the value of agricultural trade was the result of exceptional commodity prices, as volume of trade increased by only about 6%. The United Nations Export Prices Index for all primary agricultural commodities rose by 48% in 1973, almost four times the rate of increase in the previous year. Prices accelerated from a 9% annual increase rate in the first quarter of 1972 to 61% in the third quarter of 1973, after which there was a slight fall in the rate. For the first time since 1966, the Index of Agricultural Export Prices stood far above that for manufactured goods. There was a radical change in the rate of improvement in primary prices in relation to the unit value of manufactures, despite the fact that the rate of increase in unit value of manufactures also accelerated. (The rise in unit value of manufactures in 1973 was nearly the same as for the entire decade of the 1950s and somewhat above that of the 1960s, but the rate of acceleration was less than that in primary prices.) However, this comparison between export prices of agricultural and of manufactured goods takes no account of the major changes in prices of oil products. Countries relying heavily on imports of food and oil were at a serious disadvantage.

Large price increases took place in both food and nonfood agricultural commodities (by 47% and 51% respectively), but prices of temperate zone food products rose considerably more (by 50%) than those of tropical products (32%). The largest increases were in prices of cereals, oilcakes and meals, fats and oils and agricultural raw materials. Rice, wheat, oilcakes and meals, wool (64's) and sisal more than

[5] For detailed review, see *FAO Commodity review and outlook 1973-1974*, Chapter 1, Rome, 1974.

[6] Excluding most processed commodities and wool, hides and skins, for which data were not available at the time of writing.

doubled in price over 1972. There were increases of between 70 and 80% for maize and barley, fats and oils, cocoa, cotton, rubber and wool (46's). Relatively much lower price increases occurred for meat, particularly beef (25%). The few commodities not sharing in the extraordinary price increases included bananas and tea, which remained virtually unchanged, while prices fell for butter, jute and lemons. A noticeable feature of the 1973 price movements was the relatively greater rise for products used in feeding livestock or as inputs in other activities. For instance, prices of feedgrains and oilcakes and meals rose much more than the prices of meat and dairy products, with a resulting narrowing in the cost/price ratios of the livestock industry. Prices of agricultural raw materials, except for jute, also had increases far above average.

Inflation sharply reduced the increase in the real value of agricultural exports in 1973. The UN Index of Export Unit Values of Manufactures rose by 16% in 1973; using this indicator alone, the real increase in the value of agricultural exports was about 26%. But this particular deflator no longer means very much, since trading patterns of most developing countries have now shifted from a simple exchange of agricultural commodities and raw materials for manufactured goods to a more complex relationship. The effect of changing currency exchange rates does not substantially affect this estimate of a 26% increase in the real value of agricultural exports, as both the value of exports and the UN export unit value index are calculated in U.S. dollars.

Volume of agricultural exports increased by about 6% in 1973, or roughly as in 1972, but well above the trend of the 1960s. This increase in volume, compared with about a 38% increase in the average unit value of agricultural exports, indicates clearly the major impact of price rises in the boom in agricultural trade. There were significant increases in the volume of exports of coarse grains, particularly maize, oilcakes, cotton, jute and rubber, while the volume traded in wheat, rice, fishmeal, mutton and lamb, cocoa and sisal actually fell in 1973.

The exceptional increase in the volume of world agricultural trade was widely shared, but as in recent years the major part of the total increase went to the developed countries. Their gain of 56% above 1972 trade increased the developed countries' share of world agricultural exports to about 64%, compared with 61% in 1972 and 59% in 1971. Although the value of exports from developing countries rose by about 36% in 1973, their share of the world total fell to 29%, compared with 32% in 1972. Similarly, the share of centrally planned countries dropped marginally to 7%, although export earnings also increased by about 36%. Cereals, oilcakes and meat made the largest gains for developed countries, but there were also substantial increases in fats and oils, cotton and wine. A wide range of commodities, including cereals, coffee, cotton, fats and oils, oilcakes and meals, sugar and rubber, contributed to the increase in export earnings from the developing countries. Availability of supplies for export appears to have been of key importance in the relative performance of these two groups of countries. The commodity composition of their exports was less important: the developed countries, for example, did well in cotton and rice, in which the developing countries enjoy a major share of the world market. Again, the volume of exports from developing countries actually fell for rice, cotton, fats and oils, oilcakes, beef and veal and tobacco, while the developed countries increased their volume of exports of these commodities, except for rice and tobacco. For sugar, however, the volume traded increased from developing and decreased from developed countries, a reverse situation.

The benefits from the boom in agricultural trade varied widely by individual countries, depending on the pattern of exports and supplies available. The commodity boom bypassed such products as bananas, citrus fruits, jute and tea, with severe consequences for the countries that were heavily dependent on them such as Sri Lanka (tea) and Bangladesh (jute). The largest gain was made by the United States, the world's biggest exporter of agricultural commodities, whose earnings rose from US$9 400 million in 1972 to $17 655 million in 1973, or by 88%. This increase in U.S. farm exports was about 40% of the total increase in world agricultural trade in 1973.

Several factors underlay the dramatic increase in prices and trade values in 1973. Agricultural production failures in major producing and consuming countries in 1972 had led to sharp expansion in import demand, and in 1973 there were an acceleration of demand and inflationary expectations. Exportable supplies did not keep pace with the increased import demand. The reduced output of most agricultural commodities in 1972 was largely met by withdrawals from carryover stocks, and this moderated the increase in prices. Although world agricultural production increased by 4% in 1973, the gap between supply and demand widened because stocks were already low; only sharply rising prices could close this gap. The high level of demand for agricultural commodities in 1973 largely resulted from exceptionally high rates of GNP growth in industrialized countries in that year. All the major industrial countries achieved peak rates of growth simultaneously. In OECD member countries the real rate of growth of GNP averaged 6.6%, the highest rate since 1955. As the greater part of import demand for agricultural commodities comes from developed countries, the

impact of their high levels of economic activity on commodity markets is self-evident. High rates of economic growth were mainly attributable to expansionary government policies in 1972 and 1973, following the economic slowdown of 1970-71. With such rapid expansion occurring simultaneously in the industrial countries, imports could only relieve demand pressure to a small extent. Price levels came under great pressure and the rate of inflation rose sharply. High rates of inflation, together with continuing uncertainty in the international monetary situation, lowered confidence in the value of holding money and encouraged the movement from cash liquidity into commodity markets. Large-scale speculation took place in many commodities, particularly cocoa, coffee, cotton, pepper and sugar, and in the major currencies, as shown by the extraordinary rise in the market price of gold during the same period. Inflationary expectations also fuelled increases in commodity prices. The world energy crisis, which suddenly flared up in October 1973, only added to these difficulties, one of its immediate effects being to introduce a new element of uncertainty in the outlook for international trade.

Higher export prices and earnings have their counterpart in greatly inflated import bills, which have led to serious balance of payments problems, particularly for developing countries. The cost of their commercial cereal imports (i.e., excluding food aid) rose from US$3 000 million in 1971/72 to US$4 000 million in 1972/73 and is estimated at US$9-10 000 million in 1973/74. The problem of finding foreign exchange to meet such bills has been made vastly more difficult by the rise in the cost of oil, fertilizers and freight. The developing countries face probable increases in their import bill for basic foods this year over 1972, comparable to the increase in their outlays for oil. Some sixteen countries, accounting for more than 40% of the developing world's total food consumption, have been identified by UNCTAD as belonging to the "food trade problem" group, where the increase in the food import bill between 1972 and 1974 would be more than 30% of their gross earnings. These sixteen countries would have to spend more than 50% of their gross export earnings at the 1972 level to pay for the costlier food imports in 1974 if their food production does not increase. However, total export earnings of these countries are likely to rise, thus easing somewhat the problem of buying food at high prices. Even so, some developing countries, particularly the heavily populated countries in south Asia and the least developed countries, face serious problems in paying for their food imports.

The sixth Special Session of the United Nations General Assembly requested that the Secretary-General "launch an emergency operation to provide timely relief to the most seriously affected developing countries with the aim of maintaining unimpaired essential imports for the duration of the coming 12 months." Industrial countries and other potential contributors were invited to announce their contributions to the Emergency Operation by 15 June. Relief and assistance measures by contributing countries are to be provided to the maximum possible extent on a grant basis and, where this is not possible, on soft terms, either bilaterally or multilaterally. The General Assembly also decided to establish a special fund under United Nations auspices for emergency relief and development assistance, to begin operations by 1 January 1975 at the latest. Studies of the needs of the most seriously affected countries were also begun, and have subsequently been estimated at US$4 600 million for the years 1974 and 1975.

A target of US$3-4 000 million has been set for the Emergency Operation over a 12-month period. Commitments of $2 400 million for bilateral and multilateral emergency assistance were announced at the second meeting of contributors and potential contributors held on 27 September; however, this sum did not include the $500 million in conditional commitments by the EEC and the additional food aid announced by President Ford of the United States on 18 September. Subsequently, on 3 October, the EEC Council of Ministers agreed to an initial allocation of $150 million, of which $30 million are to go to the emergency fund and the remaining $120 million are to be granted directly to such countries as Bangladesh, Sri Lanka and several smaller African nations. Of the total sum of about $2 400 million pledged by 27 September, $1 825 million represented pledges by oil-exporting countries, $373 million by the industrial countries, $80 million by the Arab Fund for Economic and Social Development, and $100 million prospective assistance by the World Bank. The concessions included in commitments by oil-exporting countries were more than $450 million and by industrial countries more than $300 million.[7]

## Trade outlook for 1974/75

It is more difficult than usual to judge the outlook for world agricultural commodity markets for 1974/1975 as economic growth prospects are uncertain. There are, however, certain broad tendencies which will influence the situation in the short run. It is almost certain that 1974 will have been a year of low rates of economic growth in the industrialized coun-

[7] These amounts committed are from Note No. 3876, 27 September 1974, issued by the Press Section of the United Nations.

tries. After the decline in real output in OECD countries in the first half of 1974, a moderate recovery of 3 to 3½% is forecast over the succeeding twelve months. The decline in total OECD output in the first six months of 1974 was largely caused by the marked fall in output in the United States, Japan and the United Kingdom, and the recovery expected for the second half of the year reflects to a great extent the reversal of these exceptional fluctuations. Inflation has recently further accelerated and is now running at an unprecedented and alarming rate.

A continuation of inflation at such very high rates is likely as the price rises for oil and other commodities continue to permeate industrialized economies. The sudden swing in the balance of payments of OECD countries will give them a total deficit of as much as $40 000 million in 1974. The distribution of the total deficit among countries is very lopsided. Although some progress toward redistributing the deficit among countries can be expected by the first half of 1975, this is a problem which cannot be solved quickly. A series of national competitive reactions of a trade-restricting, or deflationary, kind could markedly increase the risk of world recession without, in all probability, having much effect on redistributing the deficits.

Current account deficits will prove acceptable only if they can be financed. So far the strains connected with financing have been limited, but the problem is a cumulative one. To date much of the oil money has gone into very short-term money market instruments, whereas the demand for funds by countries needing to finance current account deficits is relatively long term, thus posing a problem of intermediation. Though changes in the structure of interest rates may help somewhat in solving the problems, official recycling arrangements are also desirable as a safety net. Special financing arrangements may be needed on short notice for some of the harder-hit poor countries.

Failure to finance the deficits could have widespread repercussions, not only in its likely effects on policy action. There is an implicit assumption in the OECD and other forecasts that confidence factors will be reasonably favourable. If confidence among consumers and investors were to collapse because of difficulties arising from national or international monetary developments, cumulative contractional forces which would be difficult to arrest could be set loose.

The cumulative effects of government policies or business decisions moving simultaneously in the same direction in many countries can easily be underestimated. This was indeed the case in the general boom of 1972/73. It is essential that excessive and mutually reinforcing impulses, either deflationary or inflationary, be avoided in the coming year. It is therefore of the greatest importance that governments consult closely and frequently about developments in one another's countries.

Against this uncertain background the demand for agricultural commodities in 1974 is likely to have grown only moderately, much less than in the last two years. Purchases by the U.S.S.R. and China have recently been a major factor in the buoyancy of world import demand, but preliminary indications suggest that the U.S.S.R., at least, has not entered world markets on a similar scale in 1974. Speculative interest in agricultural commodities has probably decreased with the increasing cost of financing these activities. Interest rates in most industrialized countries rose sharply in 1973 and reached record levels in the first quarter of 1974, thus raising the costs of speculative holdings. A positive demand factor during 1974/75 is likely to be the replenishment of normal working stocks, but restocking will be limited until prices have moderated, although some stockbuilding for strategic and security purposes may occur even at the current high level of prices.

Since mid-1974 the prices of some agricultural commodities have moved downward from the unusually high peak levels reached by the end of 1973 and in the early months of 1974. But the extent of the decline has been generally modest and has varied between commodities. For some commodities the downward movement of prices continued steadily since the beginning of the year because of either slackening demand or improvement in prospects of supplies, even though the level of prices has remained higher than in 1973. Agricultural raw materials in particular, except those for which supply difficulties are acute, have experienced a decline in demand due to the slowdown of economic activity in most countries. With prospects of larger output the prices of tropical beverage commodities such as coffee and tea have also gradually gone down, causing concern among exporting countries, which are faced with heavy import costs of food, fertilizer, and fuel.

However, for some major food and feed commodities, coarse grains and sugar in particular, prices have further increased, even beyond the peak levels reached earlier, as a result of crop prospects in recent months having become unfavourable, with reports of adverse weather and natural calamities in several major producing and consuming countries. Consequently, the outlook for overall world food supplies in 1974/75 has worsened. The improvement in supplies and carryover stocks of principal food commodities hoped for at mid-1974 is now not likely to materialize.

In general, prices have not advanced much beyond the peaks touched earlier in 1974. The United Nations Export Prices Index for all primary commodities had shown a continuing acceleration in prices from the first quarter of 1972; but from the first to the

second quarter of 1974, as the rate of increase of prices declined, the index increased by only 1%.

The most striking divergence in price movements in the latter part of 1974 has occurred between feedgrains, prices of which have risen sharply, and meat, especially beef, prices of which have fallen with increases of domestic supplies in nearly all major beef-importing countries; this decline is not, however, reflected as yet in retail prices. The divergence is all the more striking in the context of the deterioration in the world food situation: while prices of cereals have remained high and beyond the reach of many poor people, livestock products, mainly consumed by the rich, have become relatively cheaper. This divergence is also ominous inasmuch as low returns to livestock producers, owing to low meat prices and high feed costs, could discourage production.

Despite the modest decline in prices and a relative improvement in market supplies of some commodities, the overall outlook is that world commodity markets in 1974/75 will remain under the shadow of shortages and severe instability due to the inadequacy of carryover stocks and the uncertainties of output and import demand in the coming months. For commodities of which markets are currently oversupplied, greater instability — steep increases in costs, together with shortages of inputs and deficiency of demand — may lead to adverse repercussions on output in the coming year. For the other commodities with limited possibilities of a further drawing down of carryover stocks, exportable supplies in 1974/75 will be critically dependent on 1974 crops, which for some major food and feed products are likely to be below the harvests of 1973. Even though a slackening in the pressure of demand due to reduced levels of economic activity may ease the extent of shortages somewhat as compared with those experienced in 1973, the inadequacy of supplies, especially of grains and sugar, is likely to be severe; if so, markets will remain highly unstable.

## Stocks of agricultural products

The recent disappearance of surplus grain stocks, the tight supply/demand situation and the dramatic changes in world grain prices in the last two years have led many governments, in both importing and exporting countries, to reassess their national grain policies. Many importing countries, concerned about the availability and import costs of basic foods, are reconsidering their production and stockpiling policies, while governments in several of the major exporting countries are giving farmers incentives for increasing their wheat production to a level that will allow some replenishment of stocks. While expanding production in response to these incentives and to record world market prices, farmers are concerned about the possible effect on export prices if world grain (particularly wheat) production should expand beyond immediate consumption requirements in 1974/75. Producers and consumers, exporters and importers, are in basic agreement that long-lasting, large-scale instability in world supplies and prices would be detrimental to all. Unremunerative producer prices in times of glut pose the threat of underproduction in the future, and periodic shortages and high prices cause hardship to consumers and also increase pressures for greater self-sufficiency in countries where production costs are comparatively high.

There exists however the danger that uncoordinated national action on production and stock policies could introduce a new element of instability into world markets and encourage uneconomic production to the detriment of consumers and efficient producers alike. National stock policies could, however, make a substantial contribution to world food security, if they were undertaken in consultation with other countries on the basis of the fullest possible information and understanding of policy actions, intentions, and requirements elsewhere, and if they respected certain guidelines and safeguards, to ensure that food security stocks would not depress prices or in any other way endanger the necessary long-term world production growth.

It is in this context that the Director-General of FAO proposed international action to coordinate stock policies. The FAO Conference in 1973 endorsed his initiative in drawing up proposals for a world food security policy. It also examined a draft International Undertaking on World Food Security and requested that the Director-General convene a special working group, open to all governments substantially interested in cereals production, consumption, and trade, to revise it. In accordance with this request an *ad hoc* Working Party on World Food Security met in May 1974 at FAO headquarters, Rome, to prepare a revised text for consideration by the Committee on Commodity Problems (CCP) and the Council and for adoption by governments. While preparing a revised undertaking, the group observed that a number of unresolved problems relating to stockpiling policies required further study; at the same time it agreed,

however, that international action on world food security is urgently needed.

Opening stocks of wheat in the main exporting countries (Argentina, Australia, Canada, EEC, and the U.S.A.) fell by more than 20 million tons in 1973 and are estimated to have dropped by an additional 3 million tons in 1974. By the opening of the 1974/1975 season, wheat stocks, at 24 million tons, were the lowest since 1951/52 and represented barely a month of world consumption. Stocks of wheat in importing countries were also reported to be abnormally small. A replenishment of world wheat stocks appears unlikely to occur in the near future. The fall in the stocks of coarse grains of the major exporters (Argentina, Australia, Canada, and the U.S.A.) was 15 million tons in 1972/73, and a further drop of roughly 11 million tons to a level of only 28 million tons was estimated for the 1973/74 season. The much smaller stocks of the major exporters of rice (Pakistan, the U.S.A., and Japan; no recent information on Thailand's stocks is available) fell from approximately 6 million tons in 1972 to about 4 million tons at the opening of 1973.

Stocks of most other storable agricultural commodities were substantially reduced in 1973. Butter stocks, in particular, fell considerably in western Europe as a combined result of the levelling off of milk output, measures to stimulate domestic consumption, and large exports (at heavily subsidized prices) to the U.S.S.R. EEC butter stocks were about 290 000 tons on 1 December 1973, about one third less than a year earlier. However, stocks of skim milk powder increased in the EEC, as exportation was curbed in order to safeguard domestic supplies of protein foodstuffs.

Stocks of sugar on 1 September 1974 declined further from the already low levels reached the previous year, having fallen to 15.7 million tons, the lowest level since 1965. Stocks of other commodities such as cocoa and tea were sharply reduced, while those of coffee levelled off during 1972 and 1973, but probably declined in 1974.[8]

While the stock levels of most agricultural commodities decreased considerably in absolute terms in 1973/74, their decline in relation to annual output was even more marked; this was especially true of cereals (Table 1-7).

The world's cereal stocks (excluding China and the U.S.S.R.) are forecast to fall to less than 100 million tons by the end of the 1974/75 season (30 June). This amount would be sharply below minimum levels for world food security, some 16 million tons below the previous year's total and less than half the 1970 reserves. Stocks of 100 million tons would represent only 11% of consumption as compared with an estimated "safe" minimum ratio of about 17-18% for assuring world food security (Table 1-8).

[8] Stocks of selected agricultural commodities are given in Annex table 10.

TABLE 1-7. — STOCKS OF CEREALS AND DAIRY PRODUCTS IN SELECTED COUNTRIES [1] AS PERCENT OF WORLD PRODUCTION, 1961-65, 1972 AND 1973

| Commodity | 1961-65 | 1972 | 1973 |
|---|---|---|---|
| | Stock level as percent of average world production in the same period | Stock level as percent of average world production during the period 1970-72 | Stock level as percent of average world production during the period 1971-73 |
| All cereals . . . | 11 | 6 | 2 |
| Wheat . . . . . | 19 | 8 | 5 |
| Coarse grains . . | 13 | 7 | 5 |
| Rice (paddy) . . | 1 | 3 | 1 |
| Butter . . . . . | 9 | 9 | 2 |
| Skim milk powder | ... | 14 | 14 |

[1] Wheat: Argentina, Australia, Canada, EEC, United States.
Coarse grains: Argentina, Australia, Canada, South Africa, United States.
Rice: Japan, Pakistan, Thailand.
Butter: 15 selected countries.
Skim milk powder: 10 selected countries.

TABLE 1-8. — WORLD [1] CEREAL STOCKS, 1970-75 [2]

| | Crop year beginning in: | | | | | |
|---|---|---|---|---|---|---|
| | 1970 | 1971 | 1972 | 1973 | 1974 (estimated) | 1975 (forecast) |
| | ..... *Million metric tons* ..... | | | | | |
| WHEAT | | | | | | |
| Main exporting countries [3] . . | 65 | 50 | 49 | 27 | 24 | 20 |
| Main importing countries . . . | 9 | 11 | 13 | 10 | 8 | 7 |
| Others . . . . . | 13 | 11 | 12 | 11 | 10 | 9 |
| *Total* . . . . | 87 | 72 | 74 | 48 | 42 | 36 |
| RICE | | | | | | |
| *Total* . . . . | 25 | 24 | 21 | 13 | 14 | 13 |
| COARSE GRAINS | | | | | | |
| Main exporting countries [4] . . | 54 | 39 | 54 | 39 | 28 | 20 |
| Main importing countries . . . | 12 | 11 | 12 | 12 | 12 | 11 |
| Others . . . . . | 23 | 21 | 22 | 20 | 18 | 18 |
| *Total* . . . . | 89 | 71 | 88 | 71 | 58 | 49 |
| **Total cereal stocks** | 201 | 167 | 183 | 132 | 114 | 98 |
| *As percent of consumption* . . . | *26* | *19* | *22* | *14* | *13* | *11* |

SOURCE: FAO (preliminary estimates compiled from official and unofficial sources).
[1] Excluding China and the U.S.S.R. — [2] Stocks at the opening of the countries' respective crop seasons. — [3] Argentina, Canada, EEC and the United States. — [4] Argentina, Australia, Canada, South Africa and the United States.

## Consumer food prices

Sharply rising world food prices (Table 1-9) have been a major factor in the high rates of price inflation since 1973 in most developed and developing countries. Food prices generally rose faster than other prices in 1973, but by about mid-1974 they were falling behind other prices, and this trend has continued. During 1973 and the first half of 1974 many food commodities were strongly affected by the price boom. Of these, wheat, maize, cocoa, sugar, edible fats and oils showed particularly sharp price increases on the world market, seriously affecting the balance of payments situation in numerous import-dependent countries. Although the rate of price acceleration has recently slowed down, there are few indications as yet that the upward trend will be reversed or that food prices will return again to their former levels. In all countries affected, rising food prices have inevitably hardest hit the poorest people, particularly those of the developing countries, where the margin for coping with higher prices and food shortages is most limited.

Consumer prices in the OECD area rose on the average by over 14% in the twelve months prior to September 1974. After a relative slowdown in the summer months, the average increase for the area as a whole accelerated again. Although the different impact of energy price rises and seasonal movements in food prices somewhat obscured the global picture, the divergence in underlying national inflation rates became increasingly confirmed. Two groups of countries emerged clearly. In one group, including Austria, the Federal Republic of Germany, the Netherlands, Norway, Sweden and Switzerland, the rate of inflation was significantly below the OECD average. At the other extreme, countries such as Australia, Belgium, Italy and Japan continued to experience above-average rates of inflation. Experiences in most other OECD countries were rather erratic, reflecting partly the timing of changes in government-controlled prices, indirect taxes and differing behaviour of food prices.

During 1974, food price increases have remained high, reflecting tight stock positions, uncertainty about some major food crops and, in some countries, revision of government price control policies. Rising food prices are still a major component of the general inflationary process, having accounted in 1973 for about half the inflation in western Europe and the United States. Little information is available about food prices in eastern Europe and the U.S.S.R., but official figures suggest, in general, a fairly stable price front.

In developing countries, also, the price situation has deteriorated sharply. The most severe price increases were recorded in the countries with a tradition of heavy inflation in Latin America and the Far East, Chile and the Khmer Republic representing the extreme examples. In the year ending September 1974 several countries recorded increases of from 50% to more than 100% (Argentina, Uruguay, Bangladesh, the Republic of Viet-Nam), while rates of 30 to 50%

TABLE 1-9. — CHANGES IN CONSUMER FOOD PRICES 1970-71 TO 1972-73

| Price increase | 1970/71 | 1971/72 | 1972/73 |
|---|---|---|---|
| ..... *Percent* ..... | ..... *Number of countries* ..... | | |
| DEVELOPED COUNTRIES (25) | | | |
| 0-5 | 11 | 5 | — |
| 5-10 | 11 | 17 | 9 |
| 10-15 | 2 | 1 | 8 |
| 15 and above | 1 | 2 | 8 |
| DEVELOPING COUNTRIES (29) | | | |
| 0-5 | 14 | 7 | 3 |
| 5-10 | 6 | 10 | 7 |
| 10-15 | 2 | 6 | 4 |
| 15 and above | 7 | 6 | 15 |

SOURCE: Annex table 11.

were far from exceptional. Densely populated countries such as India, Indonesia, Pakistan and western Malaysia have suffered heavily from rising costs of living, particularly food prices. Inflation was, in general, comparatively moderate in Africa (5 to 25%), except for Ivory Coast, the Sudan and Zaire, where food prices rose by 30 to 50%.

Despite some apprehension concerning the 1974/1975 crop outlook, a slight easing in the commodity market situation is expected; however, this market improvement is likely to be offset by the increasingly dangerous wage/price spiral. The normal inflationary process arising from stronger economic activity and better wages has been aggravated by monetary instability and a number of factors generally related to the adoption of indiscriminate expansionary policies in many countries. The recent energy crisis, with the quadrupling of oil prices late in 1973 and early in 1974, has been a major element in the steep costs of transport, machinery and a wide range of petrochemical components of agricultural inputs. It has contributed to a deterioration in the terms of trade for manufactured goods, thus affecting domestic prices of food in most developed countries which are food importers, particularly Japan and the United Kingdom. Many food-importing countries in the developing world also suffered from the higher inter-

national prices of foodstuffs, to an extent which depended on their degree of self-sufficiency. Large importers such as India, Nigeria, Sri Lanka and Tanzania are in this category, as is Bangladesh, which had to import large quantities of high-priced cereals after independence had been achieved. Furthermore, food-exporting countries in Latin America, such as Argentina, Brazil and Colombia, also reported booming food prices, demonstrating the prevalence of chronic inflationary tendencies in this part of the world.

Government policy measures have generally been unable to prevent acceleration of the inflationary process. Fiscal and monetary restrictions have often resulted in a fall in the rate of economic growth without any real effect on prices. The need for coordinated action at the international level has been recognized among OECD countries, particularly within the EEC, but the results of such efforts have been disappointing; for instance, the 1973 target price increase of 4% set by the EEC Council of Ministers has proved to be totally unrealistic.

To curb increases in food prices, a larger number of countries adopted intervention policies, such as subsidies and price control measures. France introduced a system of guidelines on incomes and prices combined with a compulsory review procedure for prices. In the Netherlands, advance notification of price increases is required. Under the new anti-inflationary programme for 1974, the Spanish Government has set up a system of price surveillance. In Sweden, a law passed in July 1973 gives the Government power to freeze prices and to require notification of price increases. Price control of basic food items has also been adopted, in varying degrees, in countries such as Ireland, Italy, Luxembourg, New Zealand and Sweden.

The Federal Republic of Germany and Japan are among the few countries with government regulatory action that does not include direct price control; another is Australia, where in December 1973 the electorate rejected a referendum vesting the Government with powers of price control. Some countries — for example, Canada, Denmark, Sweden and the United Kingdom — have created special subsidiary funds intended to protect consumers against rising prices. Many developing countries have also introduced price control measures. Such policy measures have been relatively successful in a number of countries; but, clearly, they tend to mitigate the effects rather than to eliminate the causes of food price increases. Moreover, they are generally onerous to the governments, difficult to implement and often a cause of serious market disturbances. There is no quick or easy solution to high and rising consumer food prices.

## Development assistance

### The flow of aid

The flow of financial aid to developing countries remains well below Second United Nations Development Decade and other targets. Total official and private financial flows from the seventeen-country Development Assistance Committee (DAC) of the OECD — which in 1973 provided about 95% of such assistance — increased from US$9 200 million in 1961 to $19 860 million in 1972 and to $24 150 million in 1973.[9] Allowing for inflation and currency changes, however, the real increase has been only 6%. Official aid rose from $8 670 million in 1972 to $9 415 million in 1973 (Table 1-10), a record level, but fell in real terms by about 6%. The level of aid is also dwarfed by the recent increases in the oil import bills of both recipient and donor countries. In 1973 the flow of official aid as a percentage of the collective GNP of DAC countries declined marginally to 0.30%, less than half of the 1975 target of 0.7%.[10] (See Figure 1-2 for the DAC countries' individual performances.)

Only approximate data are available on the amount of total development assistance going to agriculture (see Table 1-11), although efforts are being made to improve the available information. It may be roughly estimated however that in 1970/72 the commitment of DAC and multilateral assistance to agriculture (excluding food aid and the technical assistance com-

[9] Only small amounts of Eurocurrency borrowing by developing countries are included in these totals. In 1973 their Eurocurrency borrowing may have reached some US$9 000 million (gross), compared with $5 000 million (gross) in 1972. While no figures are available for individual countries, it is known that DAC members accounted for a major part of these funds. Thus the total net flow of financial resources to developing countries increased substantially in 1973. The target of 1% of GNP recommended by the United Nations and accepted by all DAC members would probably have been reached and possibly exceeded in 1973 if all lending were included.

[10] DAC members have taken various positions with regard to this target. Four (the Netherlands, Belgium, Sweden and Norway) have accepted it without reservation; eight (Australia, Denmark, France, Canada, the Federal Republic of Germany, Japan, New Zealand and the United Kingdom) have accepted a date after 1975; and five have not subscribed to it at all.

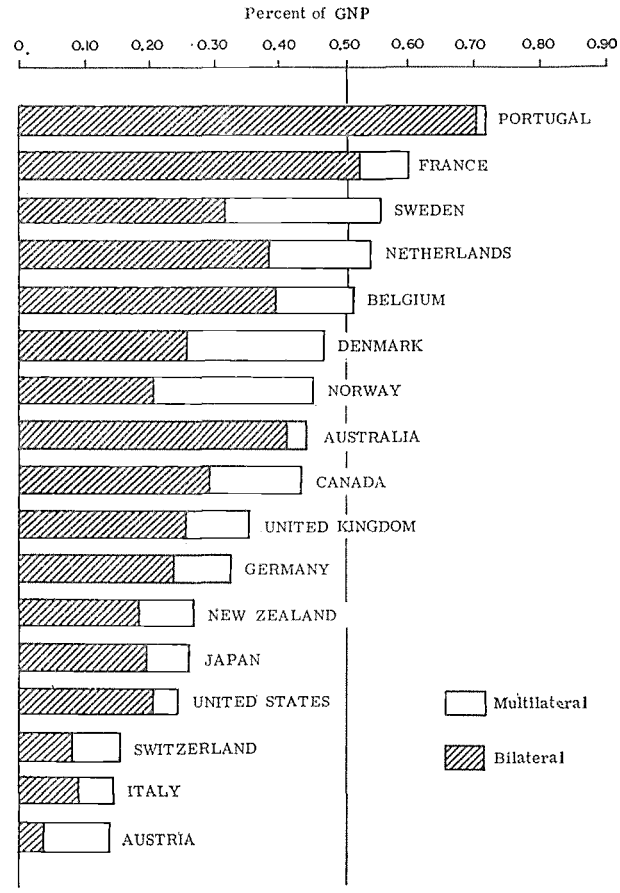
TABLE 1-10. — NET FLOW OF FINANCIAL RESOURCES [1] FROM DAC COUNTRIES, 1969-73

| | 1969 | 1970 | 1971 | 1972 | 1973 [2] |
|---|---|---|---|---|---|
| | ..... *Million U.S. dollars* ..... | | | | |
| OFFICIAL DEVELOPMENT ASSISTANCE [3] | | | | | |
| Bilateral grants . . . . | 3 251 | 3 323 | 3 634 | 4 370 | 4 482 |
| Bilateral development loans on concessional terms . . . . . | 2 320 | 2 384 | 2 786 | 2 396 | 2 684 |
| Contributions to multilateral institutions . . . | 1 050 | 1 124 | 1 339 | 1 904 | 2 249 |
| TOTAL ABOVE . . . . | 6 621 | 6 832 | 7 759 | 8 670 | 9 415 |
| OTHER OFFICIAL FLOWS | | | | | |
| Bilateral . . . . . | 586 | 879 | 1 004 | 1 204 | 2 119 |
| Multilateral . . . . . | —15 | 273 | 267 | 375 | 400 |
| TOTAL ABOVE . . . . | 571 | 1 152 | 1 271 | 1 579 | 2 519 |
| TOTAL OFFICIAL FLOWS | 7 192 | 7 984 | 9 030 | 10 249 | 11 934 |
| PRIVATE FLOWS | | | | | |
| Direct investment . . . | 2 919 | 3 563 | 3 874 | 4 411 | 5 867 |
| Bilateral portfolio . . . | 1 201 | 726 | 760 | 2 067 | 3 167 |
| Multilateral portfolio . . | 419 | 474 | 771 | 667 | 259 |
| Export credits . . . . | 2 047 | 2 185 | 2 810 | 1 430 | 1 575 |
| TOTAL ABOVE . . . . | 6 586 | 6 949 | 8 215 | 8 575 | 10 868 |
| GRANTS BY PRIVATE VOLUNTARY AGENCIES | ... | 858 | 913 | 1 033 | 1 348 |
| **Total official and private** | 13 778 | [4]15 791 | [4]18 158 | [4]19 857 | [4]24 150 |

SOURCE: Organisation for Economic Co-operation and Development.

[1] Data refer to gross disbursements minus amortization receipts on earlier lending. — [2] Preliminary. — [3] Flows which are intended primarily to promote the economic development and welfare of developing countries, and which are intended to be concessional in character. — [4] Including grants by private voluntary agencies.

FIGURE 1-2. — OFFICIAL DEVELOPMENT ASSISTANCE OF DAC MEMBER COUNTRIES IN RELATION TO GROSS NATIONAL PRODUCT, 1973




SOURCE: *The OECD Observer*, 71, August 1974, Paris.

ponent of DAC bilateral aid) ran to approximately $1 000 million a year. In 1973 these commitments rose sharply to about $1 500 million, almost entirely because of an increase in World Bank/International Development Association commitments from $436 million in 1971/72 to $938 million in 1972/73.

There was a slight decline in the share of grants in official development assistance (ODA) (including grants to multilateral agencies), which slipped from the record level of 72 % in 1972 to 71 % in 1973. Bilateral grants increased by only 2.6% in nominal terms and fell to less than half the total outflow of ODA; their relative stagnation was due mainly to lower expenditures on bilateral food and programme aid.

As for the other main components of ODA, contributions to multilateral agencies (24% of ODA in 1973) rose in nominal terms by 18%, an increase of 3% in real terms. Bilateral loans roughly maintained their share of 28% in total ODA.

## Terms of assistance

The terms of official development assistance (ODA), which have been improving over recent years, continued to do so in 1973, as the grant element increased to 87% from 84% in 1972 (the share of grants in new commitments rose and loan terms softened). The main provision of the Recommendations on Terms and Conditions of Aid adopted by DAC in 1972 is that members should exert their best efforts to reach and maintain an average grant element of at least 84% in their ODA programmes. In 1973, thirteen of the seventeen DAC countries complied with this general terms objective. Of these thirteen, eight raised their grant element above the levels of 1972: Denmark, France, the Federal Republic of Germany, the Netherlands, New Zealand, Sweden, the United Kingdom and the United States. Australia, Belgium, Canada and Norway roughly maintained the already high concessional levels of their ODA programmes. Switzerland's commitments were considered too low to meet the terms target. Of the remaining four coun-

tries, Japan, whose aid programme is relatively recent, raised its ODA grant element from 61 to 68%; Italy softened the terms of its small programme; and information for Austria and Portugal is incomplete.

No information is published by the centrally planned economies on the terms of their official aid.

### Repayment burden

The publicly guaranteed debt of the developing countries has continued to increase rapidly in recent years. Analysis by the World Bank [11] indicates that by the end of 1972 the total debts of eighty-six developing countries had nearly doubled over 1967. Bilateral debts accounted for half the total, compared with 55% in 1967, while the share of private debts increased from 27 to 31%. Total debt service payments (amortization plus interest) rose to nearly 20% in 1972 from 17% in 1971 and 13% in 1970. The gradual hardening of the composition of flows to the developing countries and the expiration of grace periods on concessional loans of the early 1960s are the main causes for this deterioration in debt position. The ratio of debt service to foreign exchange earnings, although by itself only a rough indicator of the seriousness of a country's debt problem, has been rising persistently and in 1972 averaged around 10%; for some countries, including Argentina, Egypt, India and Pakistan, it exceeds 20%.

### The World Bank Group and the financing of agriculture

Another considerable expansion took place during 1973/74 in the financial and technical operations of the World Bank Group. The Group as a whole approved lendings and commitments amounting to US$4 517 million, a 21% increase over the previous year's total. Of this. the World Bank accounted for $3 218 million, its soft-loan affiliate, the International Development Association (IDA), for $1 095 million, and the International Finance Corporation (IFC) for $203 million. The resources available to IDA for soft-term development projects, including those provided by the third replenishment, were almost totally committed by mid-1974. Also, the amount of IDA loans and credits in 1973/74 was 19% smaller than in 1972/1973. A fourth replenishment of resources, agreed upon in September 1973, is expected to provide IDA with an additional $4 500 million for fiscal years 1975-77. Agriculture gets proportionally more support from IDA credits than from World Bank loans.

The World Bank Group attaches particular importance to the agricultural sector as a primary source of food, export earnings and government revenues in developing countries (Figure 1-3). Therefore a large and increasing share of total World Bank Group loans is being channelled toward agriculture. Of total World Bank loans and IDA credits approved in 1973/74, 22% went to agriculture as compared with about 10% in the early 1960s. However, IDA soft-term credits to agriculture declined by $127 million to a total of $309 million in 1973/74. The Bank Group is expected to continue playing an important role in external funding for agriculture, particularly by helping small farmers improve their productivity and by supporting land reform efforts in developing countries. Substantial assistance is also being given to agricultural research, as the Bank, together with FAO and UNDP, is a sponsor of the Consultative Group on International Agricultural Research.

TABLE 1-11. — REGIONAL DEVELOPMENT BANK LOANS TO THE AGRICULTURAL SECTOR

| | Asian Development Bank | Inter-American Development Bank | African Development Bank |
|---|---|---|---|
| | *... Million U.S. dollars ...* | | *Million units of account* |
| 1961 | | 44.6 | |
| 1962 | | 71.0 | |
| 1963 | | 99.9 | |
| 1964 | | 53.2 | |
| 1965 | | 32.8 | |
| 1966 | | 104.6 | |
| 1967 | | 143.6 | |
| 1968 | 2.0 | 83.1 | 2.8 |
| 1969 | 27.3 | 202.9 | |
| 1970 | 35.3 | 216.5 | |
| 1971 | 27.3 | 115.3 | 1.5 |
| 1972 | 32.8 | 130.4 | 6.1 |
| 1973 | 47.3 | 182.2 | 9.2 |

SOURCE: FAO, Investment Centre.

[1] One unit of account (UA) = 1 predevaluation U.S. dollar.

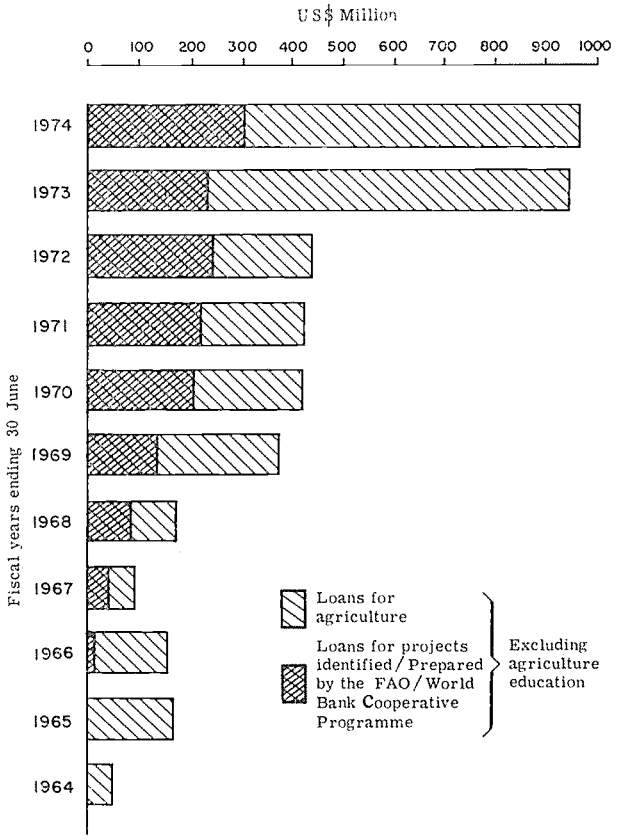
### Regional development banks and new sources of aid

The loan and credit operations of regional development banks expanded considerably in the period 1973/74, and a number of new development and relief funds, operating on a regional basis, were created partly as a consequence of the energy crisis. Loans from regional banks to agriculture continue to increase (Table (1-11).

Total loans approved by the Asian Development Bank rose to a record US$421 million in 1973 as compared with $316 million in 1972. During the same period the number of loan projects increased from thirty to thirty-nine. Loans to agriculture in 1973 were the largest since loan operations started in 1968, amounting to $47 million, some 45% above 1972. The Bank's ability to meet the needs of its developing member countries has been considerably enlarged by the Asian Development Fund, created in 1973 to finance the Bank's concessional loans.

[11] See International Bank for Reconstruction and Development, *Annual Report, World Bank and IDA, 1974*, p. 84, Washington, D.C.

FIGURE 1-3. — WORLD BANK LENDING FOR AGRICULTURE BY FISCAL YEAR, 1964-74




SOURCE: World Bank.

Contributions to the Fund by developed member countries are to be made available to the Bank under a two-stage programme. During the first stage an aggregate amount of $350 million was to be committed by June 1974; commitments to the second stage, to total $175 million, are expected by June 1975 or at any later date determined by the board of directors.

Following the measures increasing the authorized capital of the Inter-American Development Bank (IDB), the number of loans approved in 1973 rose to fifty-seven, and a new record was achieved in lending operations, which amounted to $884 million. The IDB Fund for Special Operations (FSO), which finances most of the Bank's agricultural loans, also increased its disbursements to $312 million in 1973. IDB's agricultural loans, which account for nearly one quarter of its total loan authorizations, totalled $182 million in 1973. The Central American Bank for Economic Integration (CABEI) had granted more than five hundred loans amounting to CA$108.8 million by mid-1973, of which CA$2.6 million had been disbursed for agriculture. Although these amounts remain relatively modest, CABEI's credit operations are expected to triple between 1973 and 1980 according to the development plan drawn up for this period. The Caribbean Development Bank and the Andean Development Corporation are other relatively new institutions which have already provided substantial contributions to development in their respective areas of operation. The Andean Development Corporation has an authorized capital of US$100 million, of which $25 million are being expended in 1974.

Loans approved by the African Development Bank in 1973 increased sharply to 35.75 million units of account (1 UA = 1 predevaluation U.S. dollar), about 40% above 1972. Agriculture's share, which was about 15% in the period 1967-72, rose to about 9 million UA in 1973, or nearly 25% of the total. However, the Bank's activities still remain far from adequate in view of the large development needs of the region. The newly established African Development Fund is an encouraging step toward broadening the Bank's activities. African countries are also served by the European Development Fund (EDF), the main instrument of financial and technical cooperation between the European Economic Community and the associated countries and territories. The European Investment Bank (EIB) supplements EDF activities with loans on normal terms. During the period covered by the Second Yaoundé Convention (1969-75), the combined total of EDF resources and EIB loans will amount to 1 million UA. Other financial resources for Africa are being made available through the African Development Fund and the Special Relief Fund, both of which were in operation by mid-1973.

High prices of oil, fertilizers and food imports have considerably worsened the balance of payments of a large number of developing countries and have created the need for new, expanded forms of international aid. In view of this situation, a number of constructive efforts are being undertaken at the national and international level to help overcome the financial problems of the countries hit by the crisis. International organizations such as the World Bank, the International Monetary Fund (IMF), and various United Nations agencies are taking positive action to provide and coordinate supplementary aid resources.

At the sixth Special Session of the United Nations General Assembly, an Emergency Operation was created to provide bilateral or multilateral assistance on a grant basis or on soft terms (see p. 18). As of October 1974, US$29 million had been allocated under the Emergency Operation to ten countries in south Asia and Africa, including $14 million to Bangladesh and India. The General Assembly also approved the establishment, by January 1975, of a special fund, which should serve as central monitor for bilateral and multilateral assistance and, in general, as a focal point for emergency relief and development assistance to the countries most seriously affected by the crisis. The IMF focused on the possibility of coordinating

the transfer of surplus oil revenues from oil-exporting countries to those facing balance of payments difficulties. The IMF "Oil Facility," created in June 1974, provides a means of payment in the form of special drawing rights (SDR) to all member countries with balance of payments problems caused by high oil prices. The initial contributions to the Oil Facility, provided by seven oil-producing countries amounted to US$3 400 million. As of October 1974, purchases had been made by eighteen countries and already amounted to SDR 526 million; however, Italy, a developed member country, accounted for a major part of these purchases. The World Bank has also signed a number of investment agreements with oil-exporting countries for concessional loans.

At the national level, substantial new forms of bilateral aid are being provided by oil-producing states, which are building up large surpluses from high oil prices. Assistance from Arab states — Saudi Arabia, the Libyan Arab Republic and the United Arab Emirates — is being provided mainly through development banks and emergency funds. Financial assistance is directed particularly to poorer Arab and friendly African and Asian countries, through the Kuwait, Abu Dhabi and Saudi Arabia funds for Arab economic development. By the beginning of 1973, commitments amounted to US$309 million and grants to $23 million. The Arab Fund for Economic and Social Development, created in 1972, approved three concessional loans totalling US$22 million in 1973.

The Arab oil producing and exporting countries (OPEC) established a US$200 million fund in August 1974 to help certain African countries (Ethiopia, Morocco, the Sudan, Tanzania, Uganda, Zaire and Zambia) meet higher oil costs. The fund will be administered by the African Development Bank. The choice of countries was influenced by such factors as drought conditions, the state of being landlocked and the individual country's balance of payments position.

## Food aid

Between 1963 and 1972 DAC members' bilateral and multilateral food aid amounted on the average to $1 300 million a year (15% of total ODA). For many years the purchasing power of these funds was relatively stable. This situation changed abruptly in 1973 following large increases in food prices (Table 1-12). Deliveries of cereals, the principal commodities supplied under food aid, which had ranged between 10 and 16 million tons annually in the years 1963-72, dropped to almost 6 million tons in 1973.

The sources of food aid — formerly extended only by the United States, which remains the principal donor — have gradually become diversified and include most DAC member countries. Between 1963 and 1973, out of a total average yearly flow of food and funds of about $1 300 million, the United States share was 82%. In 1973, total food aid of $1 100 million was divided between the United States (55%), the EEC (23%), Canada (9%), and other countries (13%). The share of food aid in each country's total ODA varies considerably: for the United States about 25%, for Canada around 19% and for the EEC some 5%.

In the last ten years the proportion of food aid extended multilaterally has grown from practically none to 25%, but the major part is still provided under bilateral programmes and projects. The largest multilateral institution for food aid is the World Food Programme (WFP) — created in 1963 under the aegis of the United Nations and FAO — which received pledges of $841 million between 1963 and 1972, principally from DAC member countries. Three quarters of the contributions to WFP are given in kind and one quarter in cash and services. Some DAC countries, such as Denmark, Norway and Sweden, have channelled the bulk of their food aid contributions through WFP. Total shipments under the programme fell from 632 000 tons in 1972 to 524 000 tons in 1973. Another important multilateral programme is that of EEC, started in 1969; its disbursements rose from $20 million in 1969 to $144 million in 1973. The World Health Organization (WHO) and the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) have small programmes of their own, and in 1972 a part of U.S. food aid to the Sahel was extended through the UNDP.

TABLE 1-12. — TOTAL FOOD AID OF DAC COUNTRIES AT BOTH CURRENT AND 1967 PRICES

| | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 |
|---|---|---|---|---|---|---|---|---|---|---|
| Food aid at current prices (million U.S. dollars) | 1 529.1 | 1 311.3 | 1 329.2 | 1 124.8 | 1 159.2 | 1 174.0 | 1 257.3 | 1 217.1 | 1 276.0 | 1 129.7 |
| Food price index[1] (1968 = 100) | 110 | 97 | 104 | 105 | 100 | 95 | 93 | 101 | 113 | 231 |
| Food aid at 1968 prices (million U.S. dollars) | 1 390.1 | 1 351.9 | 1 278.1 | 1 071.2 | 1 159.2 | 1 235.8 | 1 351.9 | 1 205.1 | 1 129.2 | 489.0 |

SOURCE: DAC and United Nations, *Monthly bulletin of statistics*, August 1974.

[1] Based on export price of U.S. wheat.

The following pattern (Table 1-13) emerges from an analysis of food aid distribution among countries with relatively low, medium and high per caput income in 1972 and 1973.

TABLE 1-13. — DISTRIBUTION OF FOOD AID AMONG DEVELOPED COUNTRIES ACCORDING TO LEVELS OF PER CAPUT INCOME 1972 AND 1973

| Per caput income | Food aid | | | |
|---|---|---|---|---|
| | 1972 | 1973 | 1972 | 1973 |
| | *Million U.S. dollars* | | .... *Percent* .... | |
| Low (less than $200) . . | 339 | 577 | 33 | 57 |
| Medium ($200 to $375) . | 477 | 411 | 47 | 41 |
| High (more than $375) | 202 | 22 | 20 | 2 |

Bangladesh, the Khmer Republic, Indonesia and Pakistan accounted for four fifths of the total aid received by low-income countries. Among middle-income countries, the Republic of Viet-Nam and the Republic of Korea were heavily favoured. The principal high-income recipients were Israel, Iran and Spain.

Although food aid has played an important role in helping developing countries meet their urgent and essential food needs as well as their domestic and external financing difficulties, it raises a number of problems which are now receiving more attention. These relate to the adverse effects such aid may have on domestic agricultural production and international trade, as well as to proper management of food aid. Other food aid problems concern fluctuations in available supplies, the composition of commitments, whether it should be given within the framework of projects or programmes and efficient transportation, storage and distribution. The importance of the last item was clearly demonstrated by relief operations in the Sahel.

## Agricultural production requisites

### The energy crisis

The vital role of energy in food and agricultural production and the consequent importance of adequate energy supplies for the functioning of existing food systems are obvious. For example, it is estimated that about 12% of the total energy consumed in the United States is used, directly or indirectly, in the production, processing, transportation, distribution and cooking of food,[12] and that farm production accounts for 24%, food processing industries (including transportation) for 39%, and refrigeration and cooking for 37% of the total food-related energy consumption in the United States.[13]

Energy from almost all conceivable sources is consumed at different stages in the functioning of existing food systems. It would indeed be fanciful to imagine that these systems could continue to function if any one of the major sources were to be eliminated. Although the input of energy provided by the sun, which is crucially important for the plants upon which the entire food supply depends, is far greater than that from any other source,[14] it is not involved in the present crisis, since the supply of solar energy is steadily renewed. Nor are inputs of energy in the form of animal and man power directly involved, although the crisis may have implications for them since they are to some extent substitutes for mechanical and electrical power. Thus, with respect to food and agricultural production, the present energy crisis relates almost entirely to production requisites derived from petroleum, including that consumed in the form of electrical power. (Energy from other sources may however assume additional relevance when the longer term is taken into account).

The major short-term effects of the energy crisis on food and other agricultural production are to limit supplies and raise prices of major farm production requisites: fertilizers, fuels and pesticides. Farm production costs rise, and incentives for increased production that would otherwise be provided by the current, relatively high, prices of most agricultural commodities are reduced. On the farm, limited supplies of requisites make the farmers unable to respond fully to price incentives for increased production, and higher prices for the requisites in any case make it less profitable for them to do so. For the nation, limited supplies of and higher prices for these requisites increase the amount of foreign exchange required to pay for the increased cost of importing the requisites or additional agricultural commodities, or both.

Prices of both fuels and fertilizers have risen sharply during the last year. Fertilizer prices have more than doubled, and export prices for petroleum have

[12] J.S. and C.E. Steinhart, Energy use in the U.S. food system. *Science*, 183, April 1974; and E. Hirst, Food-related energy requirements, *ibid.*

[13] Steinhart, *op. cit.* The allocation of United States food-related energy consumption estimated by Hirst is farm production: 17 %; food processing including transportation: 36 %; "trade and households": 47 %.

[14] Of the total energy used in maize production in the United States in 1970, it is estimated that the input of solar energy represented about nine times that from petroleum and other fossil fuels. D. Pimentel, Food production and the energy crisis. *Science*, 182, November 1973.

quadrupled. The disruption of petroleum supplies from the Near East in October 1973 created shortages in the fuel available for use in connection with the 1974 harvest (for tractors, irrigation and drainage pumps, driers, etc.) in many of the importing countries, particularly those that lack foreign exchange. Supplies of nitrogen and phosphate fertilizers have also fallen short of requirements, not as a consequence of the oil crisis but primarily because production capacity in major exporting countries failed to keep pace with increasing demand during recent years.

Disruption of petroleum supplies from the Near East has however been but one of the factors that have contributed to significant changes in the level and structure of farm production costs and their relationships to agricultural commodity prices for the 1974 season. Strong inflationary pressures have persisted generally. Petroleum prices had in any event been rising even before October 1973. World reserves of most major agricultural commodities were depleted during 1972 and 1973, and market prices rose to record levels. Fertilizers were in short supply. Higher prices for fuel and other sources of power have increased food processing and distribution costs, thus widening the margin between prices received by farmers and those paid by consumers. As the impact of higher prices for petroleum and other sources of power come to be fully reflected in the costs of producing the full array of farm production requisites, the upward pressure of the energy crisis on the prices of farm production requisites will spread to other items, and ultimately the costs of practically all requisites are likely to be affected to some extent. The increasing control over petroleum and natural gas production in some of the major exporting countries promises to have far-reaching implications for the future expansion and location of fertilizer production capacity, particularly of nitrogen fertilizers.

The impact on production of higher prices for these purchased requisites is, of course, not spread evenly among agricultural commodities or among countries. The impact on individual farms also varies widely, according to the commodities produced, the technologies employed, the efficiency of production, and other factors. Higher prices for fuel directly increase the costs to producers using mechanical or electrical power but have little if any effect on those to producers relying on animal or man power. Similarly, higher prices for chemical fertilizers have no direct effect on the costs to producers relying on manures and other organic fertilizers. Higher prices for fertilizers have little direct effect on livestock production, although their indirect effect, as a result of higher feed prices, can be expected to be almost immediate. Again, since soybeans show a limited response to applications of nitrogen fertilizers, applications are relatively light, so that higher prices for nitrogen fertilizers have limited effects on soybean production.

The relative position of agriculture in the national consumption of power of course varies widely between countries. Available data on this subject are fragmentary and can serve only to provide some general notions.

The relative importance of fertilizers, fuels, and pesticides among total energy inputs varies widely among countries and commodities and also among individual farms producing the same commodities in the same country. Available data in the form of national averages, or of averages derived from farm accounting records for sample farms, serve however to provide some general indication of relevant ranges. An analysis of energy inputs (excluding solar energy) in United States maize production estimates that fertilizers account for 36% of the total (of which nitrogen fertilizers account for 32%), petrol 29%, production and maintenance of machinery 14%, electricity 11%, pesticides 1%, etc.[15] Although irrigation accounts for relatively little of the total energy input for United States maize production, since less than 4% of the maize area is irrigated, the energy input for irrigation on the area irrigated is estimated to approach that for fertilizers. A World Bank study [16] reports recent motor fuel and power costs on farms in developing countries to have varied from zero to 20% of total farm cash costs. A United States Department of Agriculture study [17] based on 1971 records from a sample of midwestern farms indicates that total expenditures for fuel and electricity represented about 6% of total cash expenditures for dairy farms and grain farms, 3% for pig farms and 2% for beef cattle farms. If fuel and electricity prices had doubled, the increase in these percentages would have been somewhat more than proportional, in view of the effects of fuel and electricity prices on the costs of other purchased inputs.

Production on farms that make the greatest use of fuel and fertilizers is obviously the most vulnerable to higher prices for these items. Such farms account for a far larger part of total agricultural production in developed market and centrally planned economies than in developing countries. Total agricultural production in developing countries therefore appears

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[15] Pimentel, *op. cit.* Maize was selected for this analysis since it generally typifies the energy inputs in United States crop production, being intermediate in energy inputs between the extremes of high-energy fruit production and low-energy hay and small grain production.

[16] *Fertilizer and fuel supply effects on agriculture.* Provisional document prepared by the International Bank for Reconstruction and Development, February 1974.

[17] The fuel cost of food, *Marketing and Transportation Situation*, February 1974, MTS-192.

likely to be less seriously affected by higher prices for these inputs than in the developed market and centrally planned economies. Within developing countries, however, the production from areas that have moved farthest in adopting modern technologies is most vulnerable to higher prices for these inputs. Generally these tend to include irrigated lands, areas specializing in export crops (particularly cotton and sugar), and areas in which high-yielding varieties of cereals have been widely adopted. Thus the impact in developing countries is likely to be concentrated in areas that have tended to provide "success stories" under past and current development efforts.

On the farm, higher prices for fuel and fertilizers have the effect of reducing the volume of these inputs, which, all other factors unchanged, it will prove most profitable to apply. For example, as additional fertilizer is applied, the yield response per additional increment declines. One study [18] shows a yield response to nitrogen fertilizer on continuous maize of about 44 bushels per acre for the first 60 pounds of nitrogen applied, 33 bushels for the next 60 pounds, but only 9 bushels for the third 60 pounds. Thus farms on which heavy applications of fertilizers have become usual may find it profitable to "move backward on the response curve" in order that the value of the increment of production will compensate for the higher cost of the marginal increment of fertilizer applied. Meanwhile, the fertilizer saved in this way is that which should be transferred to developing countries, where the marginal increment of production is much higher. It is much cheaper and involves less bulk (about one eighth) to transfer fertilizer rather than grain. With respect to fuel use, field operations have demonstrated that tractor fuel requirements can be sharply reduced (by from 40 to 80%) by switching from conventional cultural methods (plough-disc, harrow, plant, cultivate) to one of the systems of minimum or no tillage. Higher prices for fuel provide distinct incentives for farmers to make such a change in cultivation methods in areas where it is feasible to do so.

In the more modern agricultural systems, such as that of the United States, the amount of energy now used to produce food exceeds by several times the amount of food energy the crops themselves yield. Additional inputs of energy in countries like the United States and Japan are bringing rapidly diminishing returns in food production. In most developing countries, by contrast, additional energy inputs to operate irrigation pumps and in the form of fertilizers yield increasing returns and are an essential key to exploitating their potential food production.

[18] Reported in *Technology and use of inputs*, H. Owens at U.S. Department of Agriculture National Agricultural Outlook Conference, Washington, D.C., 18 December 1973.

The manner in which national governments act, individually or jointly, to deal with the energy crisis will obviously have profound implications for the supply and, perhaps even more important, the prices of farm production requisites during the 1970s and beyond. Increased use of fertilizers will be a major means of realizing the expansion of food production that is needed if food consumption levels for the increasing world population are to be improved or even maintained. It has been estimated [19] that world demand for fertilizers in 1980 will be almost 50% above 1973 consumption. The additional energy requirements for the production, transportation, and application of fertilizers will likely be of similar proportions. The extent to which 1980 fertilizer requirements are covered and their cost will of course be important elements in determining the 1980 level of food prices. Although similar projections of 1980 fuel requirements for agricultural production are not available, the increase will undoubtedly be relatively large, since it must be anticipated that replacement of animal and man power by mechanical and electrical power will proceed, perhaps at an accelerated pace.

**Fertilizers**

Since mid-1973, and more particularly in recent months, there have been shortfalls in supplies of some fertilizer products to a number of markets, especially in developing countries. The tight supply, accentuated by inflation, the energy crisis and rising freight costs, has led to a rapid increase in market prices of all fertilizer products as well as of fertilizer raw materials and intermediates.

The dominant factor in the present supply situation has been the severe restraint on new investment in production facilities for fertilizers, intermediates and raw materials, coupled with the impact on production capacity of the closure of obsolescent plants during the five-year period to 1972, when overcapacity and oversupply were reflected in low fertilizer and fertilizer raw materials prices and a drop in profit margins. These developments affected the fertilizer industry primarily in the western industrial countries, mostly in the private sector. Although the need for new investment was recognized in many quarters, a variety of factors held up new construction. Probably the main factor hindering expansion was the low priority given to fertilizer products within the investment budgets of the chemical and minerals industry. Cost inflation required constant upward revision of costs, there was uncertainty about

[19] Documentation presented at first session, FAO Commission on Fertilizers, 1-5 July 1974, Rome.

the availability and relative cost of energy supplies, and the problem of pollution became more important. Another discouraging factor for new investment was that existing plants were often working far below capacity owing to serious malfunctioning of manufacturing plants, in particular large-capacity ammonia plants. Starting dates for new plants were often delayed, and their completion was often followed by prolonged periods of operation at a fraction of design capacity, especially in developing countries. The change from relative plenty to scarcity of fertilizers became evident quite suddenly, as fertilizer demand continued to grow and carryover stocks were exhausted.

Nitrogen fertilizer prices have risen rapidly since early in 1972 under the combined pressure of greater demand and limited supply. By early 1974, f.o.b. prices for bagged urea were quoted at US$250-310 per ton (equivalent to US$443-673 per ton of plant nutrient) and ammonium sulphate at US$70-100 per ton (equivalent to $333-476 per ton of plant nutrient), as compared with US$120-140 per ton of plant nutrient in 1972. The price situation has remained unchanged since then, as demand continues high and supply tight. World market prices at their peak reached about US$700 per ton of plant nutrient, but these prices generally applied to "distress purchases," and the bulk of deliveries were made at substantially lower prices. Prices of nitrogen are expected to remain firm and may harden further during the next two or three years, as little expansion in supply is expected before 1975/76.

Prices of phosphate fertilizer also rose sharply as a result of heavy increases in the prices of phosphate rock and sulphur. Early in 1974 triple superphosphate was quoted at US$150 per ton f.o.b. (equivalent to US$326 per ton of plant nutrient) in comparison with US$140-150 per ton of plant nutrient in 1972. Prices went up as high as US$800 per ton of plant nutrient for some "distress purchases" of phosphate fertilizers. However, prevailing world prices for phosphate fertilizers are between US $240-420 per ton of plant nutrient. The short- and medium-term outlook for prices of phosphate fertilizers depends on the cost of raw materials as well as of energy and freight. Morocco, the world's largest exporter of phosphates, trebled the export price of phosphate rock to US$42 per ton f.o.b. from 1 January 1974, thus virtually doubling the cost of manufactured phosphate fertilizers for many producers. Other rock producers aligned with Morocco's price. A further increase to about US$63 per ton f.o.b. took effect on 1 July 1974.

Before 1973, potash prices were largely determined by the floor prices set by the Government of Saskatchewan, Canada, at Can$33.75 per short ton (Unit $K_2O$ ex mine). In the second half of 1973, following the conclusion of a number of major export contracts at Can$45-50 (f.o.b. Vancouver), the availability of Canadian potash for export has been substantially reduced and prices have risen accordingly, with Can$60 being quoted for small spot deals. Currently Canadian potash is supplied to export markets at about Can$50 per ton (f.o.b. Vancouver), while European potash is priced at Can$65-70 per ton f.o.b. A further increase in potash prices can be expected in the short term as a result of continuing cost inflation and pressure on supplies. Freight rates, which affect the landed costs of all fertilizer inputs, have been rising, with most rates at least twice and often three times those reported at the end of 1972.

In summarizing the fertilizer situation, it appears that the current shortage, particularly of nitrogenous fertilizers but also of phosphatic fertilizers, is likely to persist and possibly worsen during 1974/75 and 1975/76. There is no way of bridging the gap between expected demand and supply in the short run. Capacity in addition to that already planned cannot be brought into use before 1977 (and probably 1978), so the world has to live with a worsening shortage in the meantime. Most fertilizer consumers have no alternative but to economize. Major importers in the developing countries are likely to be affected by the shortage far more than the others. The physical shortage of material itself and, more important, the contraction of exportable surpluses in western Europe and North America are, unless international action can be agreed upon, likely to result in government insistence on priority for domestic supplies and in competition among developing countries for limited export supplies. The importers who will suffer most, unless some action is taken, are countries in southeast Asia, parts of Latin America and Africa.

The difficult fertilizer situation led the Seventeenth Session of the FAO Conference in November 1973 to endorse a recommendation of the FAO Council to establish the Commission on Fertilizers, which held its first session in July 1974, attended by sixty members of the Commission, by representatives of the EEC, the United Nations and Specialized Agencies, and by twenty-one observers from the fertilizer industry. The Commission gave detailed consideration to the FAO Director-General's proposals for setting up an international fertilizer supply scheme in view of the extremely tight fertilizer supply/demand situation. Earlier, on 14 May 1974, a resolution adopted by ECOSOC had requested that the Director-General draw up an emergency plan of operations for increasing the supply of fertilizers to developing countries, including the establishment of a fertilizer pool, and call an emergency session of the FAO Council (held July 1974) to approve the plan of

operations and put it into effect. In preparation for this emergency session an FAO working party estimated the 1973/74 shortfall in fertilizers for developing countries (excluding China) at about 1.5 million tons of plant nutrients, consisting roughly of 70% in nitrogen (N) and 30% in phosphorus ($P_2O_5$).[20] This is equivalent to about 15% of the total consumption of fertilizer plant nutrients of developing countries. Since a ton of plant nutrients is required to produce about 8 tons of foodgrains, this shortfall may result in a reduction of some 12 million tons in the foodgrains production of developing countries. The working party estimated that the deficit in supplies of fertilizer plant nutrients would again be at least 1.5 million tons in 1974/75 unless remedial action was taken by the international community. Since this mid-1974 assessment the supply of all fertilizers has continued to remain tight and prices have risen further.

The FAO Council noted that the Director-General's proposal was a comprehensive framework within which urgent action could be initiated bilaterally and multilaterally, and that an important element in the scheme was an information system. This system would receive and make available a regular flow of information on the requirements of the developing countries, on supply availability, and on possible sources of finance. Contacts would be established with governments of both fertilizer producing and consuming countries, with governments having bilateral aid programmes, and with industry regarding the supply situation. There would also be constant liaison with the UN Emergency Operation, the World Bank, and other international and national sources of finance. Thus, as a "clearinghouse," FAO would play an active role with a view to reallocating part of current fertilizer production to needy countries. With reference to the ECOSOC resolution the Council authorized the establishment of a fertilizer pool, to which contributions are to be made either in fertilizer or in cash. The pool is not intended to meet the overall fertilizer needs of developing countries, but is meant to fill gaps when an otherwise insoluble problem arises in the present emergency situation. Fertilizers would be supplied on a grant or subsidy basis. Cash contributions would be used to supply fertilizers to countries with balance of payments difficulties, to meet shipping costs, and to improve the efficiency and output of plants in developing countries.

The Director-General proposed that targets of the international fertilizer supply scheme should relate to individual developing countries, and that no developing country should have a lower aggregate supply of fertilizer in 1974/75 than it did in 1973/74, an increment of at least 12% to be achieved wherever feasible. This would result in an increase in total fertilizer imports by developing countries of 1 million tons of nutrients over 1973/74. Priority should be given to those countries which qualify for assistance from the United Nations Emergency Operation — that is, developing countries most seriously affected by the present situation, bearing in mind the particular problems of the least developed and landlocked countries.

The criteria adopted for allocating fertilizers should relate to the objective assessment of all factors that determine the real need for importing fertilizers; the criteria would be reviewed by the Commission on Fertilizers. A number of members pointed out their countries' efforts in supplying fertilizers to developing countries on a bilateral basis. The Council noted that this form of aid could be an important element of international solidarity and should be taken into account in the international fertilizer supply scheme. It was agreed that priorities for the allocation of fertilizer or cash from the pool should be the responsibility of the Director-General, who would apply these same priorities in directing requests from developing countries for consideration by countries offering bilateral aid. The Council agreed that the Commission on Fertilizers be designated as the body responsible for overall surveillance of the scheme and requested that the Director-General report progress on the operation of the scheme in time for consideration by the World Food Conference, the November 1974 Council session, and any other appropriate body.

The Council expressed general interest in the principles underlying the Sri Lanka proposal for the establishment of a world fertilizer fund and supported its consideration at the World Food Conference.

### Pesticides

The pesticide situation is extremely serious, and the outlook for developing countries is perhaps even worse than that concerning fertilizers. During 1973/1974 there seems to have been an increase of about 25% in worldwide orders for pesticides, while production decreased slightly. Since the inventory policy of the pesticide industry allocates current production for use in the following crop season, the increase in demand for 1973/74 has so far largely been met by drawing on current production. In other words, stocks for 1974/75 have been sold in 1974, and the result is expected to be a deficit of 20 to 30% of pesticide requirements in 1974/75. The basic feed-

[20] In terms of urea (46% nitrogen) and triple superphosphate (46% phosphorus), this is equivalent to 3.25 million tons of fertilizer in product weight.

stocks are manufactured almost entirely in developed countries, which are likely to give themselves priority in satisfying their own needs. Thus, unless a system of international allocation is agreed upon soon, the global shortfall could mean that developing countries will have very little pesticides in 1974/75.

The medium-term outlook is also most disquieting, as the pesticide industry has recently been under public pressure because of the environmental effects of pesticides. Legislative obstacles have greatly increased the amount of time and money needed to develop new products. There are, however, some prospects for poorer countries in increased production of a limited number of components which do not require the basic feedstocks produced in developed countries.

# Fisheries

## Production and trade [21]

World fishery production again failed to expand in 1973, and preliminary estimates indicate that landings were similar to those of 1972, when the world catch was some 5 million tons less than in 1970 and 1971 (Table 1-14). The sharp decline in yields from Peruvian stocks, used mainly for fishmeal, is causing world production to fall in the 1970s, in contrast to the 1960s when the rapid increase in world output came largely from expansion in Peruvian catches. A further drop in Peruvian production was again the main reason for stagnant world output. Landings for direct human consumption continued to rise despite the drop in all landings, and supplies of fish entering markets for direct human consumption in 1973 increased by more than a million tons over 1972.

In western Europe and North America the catch in 1973 was virtually unchanged from the previous year. Most members of the EEC attained somewhat higher levels of production, and for the first time their combined catches may well have exceeded 5 million tons. Iceland attained its highest landings since 1967 (mainly increased catches of capelin), but Norway's recent recovery was not maintained. Japan, to the contrary, increased its landings by an esti-

[21] For a detailed account of the fisheries situation, see FAO, *Yearbook of fishery statistics, 1973,* Vol. 35, Rome, 1974.

TABLE 1-14. — ESTIMATED WORLD CATCH OF FISH, CRUSTACEANS AND MOLLUSCS

| | 1969 | 1970 | 1971 | 1972 | 1973 [1] | Change 1972 to 1973 |
|---|---|---|---|---|---|---|
| | *Thousand metric tons* | | | | | *Percent* |
| DEVELOPED MARKET ECONOMIES | 24 990 | 26 260 | 26 480 | 26 680 | 27 450 | + 3 |
| Western Europe | 10 440 | 11 000 | 11 080 | 11 230 | 11 360 | + 1 |
| North America | 3 900 | 4 170 | 4 080 | 3 820 | 3 820 | — |
| Oceania | 140 | 160 | 180 | 180 | 190 | + 6 |
| Other developed market economies [2] | 10 510 | 10 930 | 11 140 | 11 450 | 12 080 | + 6 |
| EASTERN EUROPE AND THE U.S.S.R. | 7 400 | 8 240 | 8 410 | 8 880 | 9 820 | +11 |
| *Total developed countries* | 32 390 | 34 500 | 34 890 | 35 560 | 37 270 | + 5 |
| DEVELOPING MARKET ECONOMIES | 23 080 | 27 010 | 26 240 | 20 610 | 18 980 | — 8 |
| Latin America | 11 960 | 15 520 | 14 000 | 7 630 | 5 200 | —32 |
| Far East [3] | 8 140 | 8 430 | 9 010 | 9 390 | 10 010 | + 7 |
| Near East [4] | 570 | 550 | 560 | 560 | 640 | +14 |
| Africa [5] | 2 330 | 2 410 | 2 430 | 2 770 | 2 840 | + 3 |
| Other developing market economies | 80 | 100 | 240 | 260 | 290 | +11 |
| ASIAN CENTRALLY PLANNED COUNTRIES | 7 200 | 7 970 | 8 630 | 8 670 | 8 700 | — |
| *Total developing countries* | 30 280 | 34 980 | 34 870 | 29 280 | 27 680 | — 5 |
| **World** | 62 670 | 69 480 | 69 760 | 64 840 | 64 950 | — |

NOTE: Figures refer to the weight of the catch in metric tons. The annual changes in percentage terms may therefore differ considerably from those in Table 1-15 where the quantities of production are weighted by the unit values, as indicated in the explanatory note on page xi.

[1] Preliminary. — [2] Israel, Japan, South Africa. — [3] Excluding Japan. — [4] Excluding Israel. — [5] Excluding South Africa.

TABLE 1-15. — INDICES OF VOLUME, UNIT VALUE AND TOTAL VALUE OF WORLD TRADE IN FISHERY PRODUCTS [1]

| | 1969 | 1970 | 1971 | 1972 | 1973 [2] | Change 1972 to 1973 |
|---|---|---|---|---|---|---|
| | *1961-65 average = 100* | | | | | *Percent* |
| Volume | 122 | 130 | 134 | 144 | 141 | — 2 |
| Average unit value | 110 | 118 | 154 | 169 | 231 | + 37 |
| Value | 152 | 179 | 204 | 244 | 312 | + 28 |

[1] Excluding China and other Asian centrally planned economies. — [2] Preliminary.

mated 10%, largely from greater catches of skipjack and Alaska pollack; and South Africa's landings also rose markedly, by some 18%. Landings by the developed market economies continued to expand steadily, totalling more than 27 million tons as compared with an annual catch of 23 million tons in the mid-1960s.

A very considerable increase in catch, some 850 000 tons, was reported by the U.S.S.R. A number of important fishing nations in Asia and Africa also increased their catches, including the Republic of Korea, Malaysia, the Philippines, Morocco and Senegal; the rise in the latter country was due to more fishing by the national fleet. The catches of Ghana and Angola fell appreciably. Total landings in Latin America were of course sharply influenced by the further drop in output of Chile, Peru and Brazil. Higher landings were maintained however by Mexico and Cuba, the latter having almost quadrupled its fish catch during the last ten years.

A dominant feature of world fisheries in 1973 was the widespread and very marked acceleration in the upswing of prices, partly as a result of supply difficulties, but also in consequence of the maintenance of very firm demand for most fishery products (Table 1-15). Increases of 25% and more in the unit value of landings were typical. In the United Kingdom, for example, values at first-hand sale rose by well over a third with a fall of 5% in the amount of cod, haddock and other demersal species available. Landing prices and values of processed products rose to unprecedented levels in many other countries.

Stagnant production combined with relatively low inventory levels caused a reduction in the total volume of world trade in fish and fishery products. The reduction derived almost entirely from a severe shortage of fishmeal supplies, as trade in fish and fishery products for direct human consumption remained virtually unchanged in volume and reached record levels of value. These trends were especially marked in such major markets as the United States and Japan. Supplies of edible fish products in the United States were maintained only by means of increased imports, domestic production being lower than in 1972. In Japan the constantly rising domestic demand for marine products led to a rise in value of fishery commodity imports of about 50% during the first nine months of the year over the corresponding period in 1972. The increased value of international trade, up 28%, was again influenced by the continuing series of currency realignments (Table 1-16).

Markets for fishmeal were characterized throughout 1973 by severe shortages in supply and rapidly rising prices. While a number of western European countries and South Africa succeeded in achieving some-

TABLE 1-16. — INDICES OF THE VALUE OF FISHERY EXPORTS BY REGION

| | 1969 | 1970 | 1971 | 1972 | 1973 [1] | Change 1972 to 1973 |
|---|---|---|---|---|---|---|
| | *1961-65 average = 100* | | | | | *Percent* |
| Western Europe | 143 | 171 | 198 | 244 | 339 | +39 |
| North America | 164 | 178 | 195 | 230 | 361 | +57 |
| Oceania | 311 | 314 | 392 | 527 | 611 | +16 |
| Other developed market economies [2] | 114 | 125 | 135 | 176 | 212 | +20 |
| Latin America | 169 | 228 | 249 | 225 | 178 | —21 |
| Far East [3] | 229 | 284 | 349 | 479 | 678 | +41 |
| Near East [4] | 114 | 156 | 169 | 211 | 293 | +39 |
| Africa [5] | 137 | 154 | 173 | 204 | 297 | +45 |
| Other developing market economies | 198 | 235 | 344 | 406 | 450 | +11 |
| Eastern Europe and the U.S.S.R. | 177 | 195 | 203 | 211 | 262 | +24 |

[1] Preliminary. — [2] Israel, Japan, South Africa. — [3] Excluding Japan. — [4] Excluding Israel. — [5] Excluding South Africa.

what higher fishmeal outputs in 1973, these were insufficient to compensate for the sharp fall in Peruvian production. Trade in fishmeal in 1972 was maintained roughly at previous levels largely by drawing on record stocks. These had to a large extent been liquidated by the beginning of 1973, and a serious shortage developed because other meal-producing countries were unable to fill the gap left by Peru and Chile. Moreover, the concurrent shortage of soybean meal and other alternative sources of high-protein feedstuffs made it difficult for compounders to reconstitute feed formulas. Prices for fishmeal, which during 1972 had averaged even a little below 1971, rose spectacularly, reaching some US$450 per ton by the end of September 1973, compared with US$180 per ton a year earlier. The pressure lifted a little toward the end of the year, but prices equivalent to US$420 per ton (c.i.f. west European ports) were being quoted early in 1974.

The first half of 1974 saw a significant change in the market for a number of fishery commodities, whose prices fell sharply from previous record levels. However, this seems to be a short-term phenomenon caused partly by large stocks and consumer resistance to high fish prices. With interest rates an increasingly heavy burden, many traders in the key North American and European markets for ground fish have tended to work with as low a level of stocks as possible. Thus, with stocks still high in relation to the first half of 1973, with below-normal landings in some areas and with declining market prices, a number of producers have been facing a severe cost/price squeeze. Nevertheless, no further severe drop in prices seems likely in the immediate future, and the likelihood of increased prices for meat may well bring at least stability and possibly a recovery in fish prices and consumption. Considering the limited opportunities for further increases in the production of these commodities, it seems unlikely that the present situation denotes any significant change in the secular trend of fish prices.

There has been an improvement in the yield from the southeastern Pacific anchoveta fishery in 1974. The quota of 2 million tons of anchoveta established by Peru for the period March-September had already been taken by May, and catches from the end-of-the-year fishing season are likely to affirm this improvement; but it is as yet too early to express optimism that the fishery is returning to previous levels of production and that consequently the current high prices of fishmeal will fall.

## Policies and other issues

A number of events during 1973, including the poor performance of several major fisheries, served to concentrate attention on the need for more effective management of the world's fishery resources. Among these was the Technical Conference on Fishery Management and Development, convened by FAO in Vancouver in February 1973 and attended by delegates from nearly seventy nations and international bodies. The Conference recognized that the world's fishery resources are not unlimited, noted that management to protect resources and maintain yield is already overdue in many instances and recommended that, even where comprehensive scientific and economic data are lacking, management systems should be introduced at the earliest possible stage in the development of a fishery.

However, it remains difficult to obtain international agreement for implementing effective measures. Nevertheless, significant progress was made during 1973 toward fishery conservation by agreement within the International Commission for the Northwest Atlantic Fisheries (ICNAF) on measures affording better protection for commercially important fisheries off the North American coast. The new regulations provide for a two-tier system of national quotas designed to control not only the catches of particular species but also the overall catch level, so that by 1976 the biomass being exploited will have recovered to a level that will produce the maximum sustainable yield. Negotiations elsewhere have been less successful however.

Progress has been slow in the northeast Atlantic, where many valuable stocks are either seriously depleted or in danger of becoming so. Among these are the North Sea sole and plaice and the west of Scotland and North Sea herring, which together support fisheries worth some US$125 million annually. Agreement on a catch-restriction scheme for 1975 has so far been possible only for North Sea herring, and then only at a level which offers little possibility of long-run improvement in total yield. Much of the difficulty in reaching agreement on these matters stems from the fact that many coastal communities, and often entire economies, are heavily dependent on fishing for their livelihood. The need for regulation and the consequences of failure are, in general, well understood; the main problem is how to impose a restriction on growth, and in some areas a reduction in the level of activity, in a major sector of the economy. The problem can be solved in the long run only by industrial diversification — which will be necessary in any event, since continuing economic growth cannot possibly be based on a single, finite resource.

Areas other than the north Atlantic have seen a quickening of interest in international collaboration for the conservation of fishery resources. The General Fisheries Council for the Mediterranean has recently taken steps that will permit it to play a more positive

role in the management of the fishery resources of the area — some of which, particularly the western Mediterranean, are now very heavily fished. The International Commission for the Western Central Atlantic, the only part of the Atlantic not previously covered by a formal regional body, was established in 1973, and it is due to hold its first session during the first half of 1975. In the Pacific, the Inter-American Tropical Tuna Commission has continued to implement management measures, but it encountered difficulties concerning the international distribution of the allowable catch, which prevented agreement on a management régime for the 1974 fishery until the season was well advanced.

A number of countries also took steps to conclude bilateral agreements or to introduce management measures under national jurisdiction. Norway, for example, enforced new measures to conserve the stocks of mackerel, capelin and North Sea herring at the national level. The United Kingdom and the U.S.S.R. also joined Norway in fixing quotas for Arcto-Norwegian cod. Moreover, a *modus vivendi* was finally reached late in 1973 which permitted resolution of the long dispute between Iceland and the United Kingdom regarding fishing activities in the waters around Iceland. Other specific agreements were negotiated between Italy and Yugoslavia, settling licences to fish off the latter's coast during 1974-76, and between Japan and New Zealand. Agreements governing major fisheries in the Pacific and the central and south Atlantic were also reached. A number of joint fisheries ventures were concluded between developing nations and countries with greater technical experience. A high degree of risk attends such projects, and many have failed for such reasons as inadequate preinvestment study and changes in political and economic situations. Steps have already been taken to improve the manner of instituting joint ventures, thus increasing their chances of success. Notwithstanding the many difficulties, a further expansion of such ventures can confidently be expected.

Further impetus is being given to joint venture agreements by the trend of extending national jurisdiction over the exploitation of living resources. More than thirty countries now claim areas ranging from 15 to 200 miles offshore; many others favour an extension of national jurisdiction, but consider that this should be agreed upon under the proposed law of the sea. At the national level, substantial increases in gross earnings by fishing enterprises in many developed countries have in a number of instances led to government reappraisals of financial support for the fishing industry. The United Kingdom Government, for example, in June 1973 discontinued the system of granting inshore vessels subsidies for every voyage made, and operational subsidies were later withdrawn for long-range trawlers. Vessel-building grants and loans are also under scrutiny, partly as a result of uncertainty concerning access to traditional fishing grounds, but also because of the industry's relative prosperity.

The world's fleet of fishing craft of over 100 gross registered tons (GRT) has been growing at an annual rate of about 6% in number of units and approximately 10% per annum in total GRT, with new vessels tending to be bigger and more powerful. If factory ships and carrier vessels are also included, the expansion is even more pronounced: the aggregate GRT of the combined global fleet in mid-1973 was some 43% larger than in 1969. As an example of national efforts to promote more orderly development of fishing fleets in relation to fish resources, the Canadian Government in August 1973 imposed a three-month freeze on new building subsidies for Atlantic coastal vessels and announced a new scheme to restrict entry to the fishery. Few governments, however, feel it appropriate to check the expansion of their national fleets while the activities of foreign competitors continue unabated. In Europe this situation should logically be a matter for joint policy decision at the EEC level, but so far there have been few signs of any emerging consensus.

However the impressive evidence of rising gross earnings has to be weighed against rising fuel prices, higher wages and increasing costs of materials and equipment. In the third quarter of 1973 and the early part of 1974 the international energy crisis created serious problems of fuel shortages and accelerating fuel costs. Many vessels, especially long-range units, encountered difficulties in refuelling away from and, in some instances, even at their base ports. The supply situation has now improved, but undoubtedly the long-term profitability of many fishery sectors will be seriously affected by increased costs of fuelling. A number of countries have introduced fuel subsidies for fishing fleets in an attempt to mitigate the burden of the three- to fourfold increase in oil prices.

Fishing operations in some countries were also hampered by the continuing gradual decline in man power. Sectors of the industry which necessitate relatively long absences from home have, in particular, been finding it harder to attract crews despite the opportunities for higher earnings. There is competition not only from the rewarding and socially preferable coastal fisheries but also, in certain areas, from the urgent demands of the seabed oil industry, which in some instances is being superimposed upon traditional fishery facilities.

### Outlook

With fish production lagging behind growing demand, increasing attention is being directed not only

to conserving already heavily exploited, traditional fisheries, but also to presently underutilized species and the waste of fish in catching, processing and distribution. The greater contribution which could be made by inland water fisheries and particularly by aquaculture is also receiving more recognition. The unrealized potential of inland water fisheries is of particular importance to many of the world's developing nations. Whereas freshwater fish, especially cultivated species, are mainly for luxury markets in most developed countries, in developing regions the produce of inland and brackish water bodies tends to consist of species which are mainly staple, traditional food items. World output of finfish, crustaceans and molluscs from inland waters is about 10 million tons per annum, of which about half is from aquaculture. Asia — notably China (whose extensive inland water resources yield a total approaching 5 million tons annually), Bangladesh, India and Indonesia — and the lakes of Africa are the major producers. Output from "wild" fisheries on large lakes, rivers and marshes could undoubtedly be considerably increased by introducing improved fishing techniques, more effectively controlling fishing efforts and improving natural stocks through artificial recruitment and transplantation; but the most exciting possibilities rest with the further development of aquaculture operations.

The rate at which output from aquaculture can be increased will depend upon the progress made in bringing additional inland and brackish water areas under cultivation, the extent to which technical research findings can be translated into practical application and the priorities given by governments and industry to the investment of money and effort in the expansion of this form of food production. An important factor will be the attention given to the supply and distribution of sufficient quantities of fry.

No comprehensive information is available about potential sites for aquaculture, but preliminary studies, indicating that at least 2.2 million hectares are now under pond culture for finfish, suggest that only a small percentage of potentially usable areas are being cultivated. In the Philippines, for example, an additional 500 000 hectares of fresh and brackish water, with a potential estimated as high as 2 tons of fish per hectare per year, await development. Plans to exploit the extensive water resources of the vast Mekong basin offer a great opportunity for rational expansion of fish culture in Laos, the Khmer Republic, Thailand and the Republic of Viet-Nam. Other studies indicate that potential production from expanded coastal aquaculture in southeast Asia alone might be more than 2.5 million tons per annum.

Aquaculture is already significantly contributing to the food production and the economies of a number of countries, and the economic viability of many types of culture has been demonstrated under suitable conditions. In addition, many new technical developments leading to higher yields and lower production costs have resulted from experimental work, and further advances can confidently be expected in the future. Thus, while an accelerated research programme is needed to solve some of the outstanding problems, particularly in new types of aquaculture such as shrimp and marine fish culture, there is already enough knowlege to permit expansion of activities in many parts of the world. Such expansion requires well-prepared aquaculture programmes within national fishery development plans which make adequate provision for financial and technical support.

Closer interaction between agricultural and aquacultural food production is necessary. The potential output from aquaculture is likely to be restricted not so much by physical limitations (e.g., available water area) as by supplies and costs of energy, fertilizers and feedstuffs — that is, by alternative-use considerations. Conflicts are at present arising in connection with the use of flood plains and swamp areas.

A very significant expansion in fish output from inland waters and especially aquaculture operations is feasible once these problems are solved. Estimates prepared by FAO for the Vancouver Conference suggest that production may reasonably be expected to reach some 17 million tons by 1980; in the opinion of the TAC Working Group on Aquaculture (Spoleto, July 1973), by the year 2000 an annual world production of 50 million tons could be achieved, provided that the necessary research and development measures are undertaken. Moreover, aquaculture, in particular, can play an important potential socioeconomic role in addition to its contribution to food and protein supplies. Both subsistence and commercial fish farming can help to improve the rural economy of developing countries by providing employment and earning foreign exchange through the cultivation and export of high-value species. Its employment potential is especially significant. While aquaculture can be mechanized if labour is scarce, where it is plentiful and jobs scarce a 20-hectare pond can give full employment to four or five workers plus casual employment during harvesting or when repairs have to be undertaken. Already, for example, in the Republic of Korea 130 000 full-time and some 300 000 part-time workers are engaged in aquaculture, in the Philippines a total of more than 170 000 and in Indonesia over 500 000.

Although aquaculture and other fishery activities on inland waters undoubtedly have very great potential, the majority of the world's fish supplies will continue to come from marine resources. Moreover,

the larger part of future increases in the world demand for fish will inevitably have to be supplied by marine resources which at present are only lightly exploited, either because they are located in waters distant from today's major markets or because they consist of species which present serious marketing problems.

Thus there is the paramount need for new product development, which must convert unfamiliar species into foods that are consistent with market needs, social habits and consumer preferences and incomes. Considerable interest is currently being shown in compounded, comminuted and otherwise minced products, particularly of species which in whole-fish form are unattractive in appearance or which cannot conveniently be converted into other more traditional types of products. Encouraging results have also been obtained with the introduction of dry-powdered fish (fish protein concentrate) into human nutrition, mainly as an additive or condiment for staple foods; considerable technical marketing difficulties remain to be resolved before consumption of such concentrates can become widespread.

An associated and significant problem is the need to reduce the waste of fish in catching, processing and distribution. This is particularly important in many developing parts of the world, regarding not only marine fish but also production from inland waters, especially those remote from centres of consumption. So-called "trash fish" results from all types of fishing operations. It is not an exclusive problem of major-unit fisheries, but also occurs on a larger scale than is generally realized in the artisanal fisheries of developing countries. However, it is a particularly prominent feature of shrimp trawling, where for every pound of shrimp brought on deck as much as 6 to 10 pounds of various fish are usually discarded; this suggests that more than 5 million tons of such fish may be discarded annually.

Losses on a similar scale are probably incurred through poor methods of preservation and distribution. Spoilage and weight losses caused by deficiencies in processing, storage and transport are estimated to be equivalent to one quarter or more of the landed catch in some regions. Low standards of preservation and hygiene together with inefficient distribution and marketing are indeed believed to be the major obstruction to the achievement of higher levels of fish consumption in many parts of Asia, Africa and Latin America.

## Forestry

### Production and trade

The high level of economic activity in 1973 resulted in exceptionally favourable market conditions in most regions of the world for the sale of forest products. Production reached peak levels and prices rose sharply. Total removals of industrial roundwood increased by as much as 3% over 1972 (Tables 1-17 and 1-18) and possibly more. The volume of trade in coniferous roundwood increased by 16% and its value by 84%. Trade in tropical hardwood logs, among the most important timber exports of developing countries, increased by 20% in volume and 98% in value. Production of sawn softwood increased by 3% and of sawn hardwood by 5%. The trade in these commodities increased by 16% and 20% respectively in volume and by about 50% in value. Pulp and paper output increased to an amount which fully used available capacity, so that further increases will be restricted to the rate at which new capacity can be brought into production.

The situation in forest products markets in 1974 has been influenced by the oil crisis and government policies to overcome inflation; however, the products have not been uniformly affected.

TABLE 1-17. — INDICES OF WORLD ROUNDWOOD PRODUCTION, BY MAIN COMMODITY GROUPS

| | 1969 | 1970 | 1971 | 1972 | 1973[1] | Change 1972 to 1973 |
|---|---|---|---|---|---|---|
| | *... 1961-65 average = 100 ...* | | | | | *Percent* |
| Logs | 110 | 113 | 117 | 120 | 125 | +4 |
| Pulpwood | 131 | 141 | 138 | 137 | 142 | +4 |
| Pitprops | 83 | 85 | 81 | 75 | 70 | —7 |
| Other industrial wood | 125 | 122 | 124 | 121 | 119 | —2 |
| ALL INDUSTRIAL WOOD | 114 | 118 | 120 | 122 | 127 | +4 |
| Fuelwood | 105 | 106 | 107 | 107 | 108 | +1 |
| TOTAL ROUNDWOOD | 112 | 114 | 116 | 117 | 120 | +3 |

[1] Preliminary.

In many countries restricted access to credit has affected construction activities, resulting in a sharp decline in the number of dwellings started and completed. This drop has been especially marked in the United Kingdom, the United States and Japan. Nevertheless, considering that the production and trade of forest products reached exceptionally high levels in 1973, the consumption of sawnwood and wood-based panels appears not to have declined ap-

TABLE 1-18. — INDICES OF TOTAL WORLD ROUNDWOOD PRODUCTION, BY REGION

| | 1969 | 1970 | 1971 | 1972 | 1973[1] | Change 1972 to 1973 |
|---|---|---|---|---|---|---|
| | ... *1961-65 average = 100* ... | | | | | *Percent* |
| DEVELOPED MARKET ECONOMIES | 110 | 112 | 114 | 116 | 119 | +3 |
| Western Europe | 106 | 113 | 113 | 109 | 112 | +3 |
| North America | 115 | 115 | 118 | 124 | 129 | +3 |
| Oceania, developed | 115 | 116 | 118 | 120 | 124 | +3 |
| Other developed market economies[2] | 95 | 92 | 90 | 88 | 91 | +3 |
| DEVELOPING MARKET ECONOMIES | 121 | 125 | 129 | 129 | 139 | +8 |
| Latin America | 115 | 120 | 123 | 124 | 134 | +8 |
| Far East[3] | 127 | 131 | 134 | 138 | 149 | +8 |
| Near East[4] | 122 | 118 | 118 | 116 | 117 | +1 |
| Africa[5] | 119 | 122 | 126 | 123 | 133 | +8 |
| Eastern Europe and the U.S.S.R. | 103 | 107 | 107 | 107 | 108 | +1 |
| Asian centrally planned economies | 115 | 118 | 120 | 125 | 126 | +1 |
| *World* | 112 | 114 | 116 | 117 | 120 | +3 |

[1] Preliminary. — [2] Israel, Japan, South Africa. — [3] Excluding Japan and Asian centrally planned countries. — [4] Excluding Israel. — [5] Excluding South Africa.

preciably in relation to their long-term trend. The new situation seemed to be evidenced more in the price levels: after the sharp price increases for most forest products during 1973, which reflected a particularly vigorous demand, prices tended to stabilize at the end-of-year level, showing some decline in a few cases.

On the other hand, the log market situation early in 1974 seemed to suggest that the strong demand of 1973 had apparently not only satisfied the high level of consumption, but had also replenished the stocks in the distributive systems. This may explain the present low level of activity, particularly noticeable in the market for tropical hardwood logs.

Despite economic developments since the beginning of 1974, activity in the pulp and paper industry has remained very close to full capacity utilization in the main producing countries, and prices for most products have continued to rise. As a result, demand has been very high for all types of raw material for pulping. This has particularly affected pulpwood production, which had previously been depressed by low profitability conditions. The shortage of fibres has led to an increasing use of wastepaper as raw material and to higher prices for pulpwood.

Prospects for the forest products market will be strongly affected by future developments in the general economic situation, which at present appears very uncertain.

## ROUNDWOOD

World production of industrial roundwood increased by 3 to 4% in 1973, an appreciably higher rate than in recent years. Growth in the total production and consumption of roundwood has been reflected in sharp trade increases in industrial roundwood.

Trade in broadleaved logs increased by about 20% in 1973, reaching 52 million cubic metres. As in 1972, most of the trade originated in the Pacific Basin, mainly in southeast Asia, exports from Malaysia, Sabah, and the Philippines, not only to Japan but also to Europe, showing a marked increase. Exports of tropical hardwood logs from west Africa also rose, but several countries limited exports of some major commercial species in order to ensure the supply of roundwood for domestic industries and to encourage the export of semiprocessed products such as sawnwood. Efforts were also made in some major importing countries to promote the use of lesser known species. Demand for all broadleaved logs was strong throughout 1973, and prices rose sharply for both tropical and temperate species. By the end of the year demand and supply seemed to be in better balance, although supplies were affected by the energy crisis and the scarcity and increased cost of freight.

About 12% of the value of world trade in forest products is from trade in logs, more than half of which are hardwood logs from developing countries. Substantial price increases are reported for logs in all regions, resulting in a considerably greater increase in the value of trade than in the volume. The value of trade increased by 84%, while the volume of trade in coniferous logs increased by 16% to a total of 30 million cubic metres.

International trade in pulpwood accounts for only about 2% of the total value of trade in forest products and is mainly between western developed countries and eastern Europe and the U.S.S.R. During 1972 there was a strong recovery of the pulpwood-using industries and a consequent increase in consumption of this raw material over 1971. The expansion continued in 1973, by some 20%, and the market for pulpwood developed strongly in response to increased demand. Stocks of pulpwood at the end of 1973 were very low, in sharp contrast with the previous year.

There are few reliable indicators to show how production of fuelwood changed in 1973. It seems, however, that any tendency for fuelwood production to fall in the developed countries is likely to have been more than offset by increases in the use of fuelwood in developing countries, which will have gained impetus from the rise in cost of alternative fuels. Wood is important as a domestic and

industrial fuel in developing countries, and recent difficulties in obtaining alternative fuels have led them to show increased interest in the possibility of both using and growing more wood for fuel.

### SAWNWOOD

World production of sawn softwood increased by about 3% in 1973, reaching 345 million cubic metres, mainly as a result of greater production in western Europe. There were significant increases in production in Finland and Sweden, and some growth also occurred in Austria, the Federal Republic of Germany, and Poland. Production of sawn softwood in North America was 109 million cubic metres, compared with 106 million cubic metres in 1972, owing to an increase in Canadian production. United States production remained unchanged, as demand for sawn softwood eased slightly. The outstanding feature of the sawn softwood market in 1973 was the rapid rise in prices in all regions of the world; prices more than doubled in many instances. The volume of trade increased by about 9%, while its value grew by about half. Exports from the main exporting regions, North America and western Europe, reached a peak level of 48 million cubic metres. The increase from western Europe was exceptionally high, total exports rising by 2.4 million cubic metres to reach 20.3 million cubic metres, 13% above 1972. Imports into western European countries also increased by 10% to reach a record level of 28 million cubic metres, resulting in a slight increase in net imports, which had been declining since the mid-1960s.

World sawn hardwood production increased by nearly 5% in 1973, reaching an estimated record level of 98 million cubic metres. Production rose in western Europe by 7% and in developing countries by nearly 9%. Demand was notably strong in most importing countries during the first half of the year, owing to the low level of stocks at the end of 1972 and to the vigorous activity prevailing in consuming sectors such as furniture manufacture. At the end of 1973, supply and demand appeared in most countries to have reached an equilibrium, with stocks well replenished and demand continuing relatively high. Exporting countries of southeast Asia seem to have strengthened their trading position, supplying most of the increased demand for tropical hardwoods, at least until the freight situation created difficulties. In 1973 imports in North America rose by 14% and in western Europe by 40%.

Prices on international markets, especially for tropical species, increased sharply, reflecting the prevailing demand. Prices for temperate hardwoods followed the same trend after some delay and rose substantially toward the end of the year. The overall increase of 15% in the volume of trade was associated with an increase in value of 47%. For tropical hardwoods from developing countries, volume increased by 7% and value by 52%.

### WOOD-BASED PANEL PRODUCTS

Wood-based panels had a very good year in 1973 for all three groups of products — particle board, plywood, and fibreboard. World production of particle board continued to expand at a higher rate than other wood-based panels. As in preceding years, and owing to the heavy demand, the expansion took place mainly in the developed countries of North America and in Europe, where a rate of growth of more than 18% was reported in the production of Austria, Belgium, Finland, Spain and Sweden. During the second half of 1973, however, there was some difficulty in the procurement of the wood raw material in several countries because of competing demand for small-sized wood from the pulp and sawmilling industries. Certain types of glue were also in short supply. The strong demand for particle board was also reflected in a vigorous expansion of trade, largely confined to Europe. Increases in exports of more than 40% were recorded in Austria, Finland, the Federal Republic of Germany and Sweden, while imports into the United Kingdom increased by 14%. The faster expansion of the particle board trade in 1973 is at least partly explained by the high level of activity in the building and furniture sectors and by the fact that price increases of other forest products were greater than those of particle board.

In western Europe imports of plywood grew by 26% in 1973, while production and exports increased by only 8%; as a result, apparent consumption of plywood rose by 17% to 5.7 million cubic metres and net imports by 47%. As the United Kingdom alone accounted for more than half of the total European increase, the importance of this country as a major importer is clear. Southeast Asia strengthened its position in international trade in plywood, increasing its exports to the United Kingdom by nearly 90%. Japan's plywood production increased by nearly 10% while imports grew by 20%, both stimulated by the boom in the construction industry. Demand eased at the end of 1973, however, as house construction seemed to level off. The Japanese plywood industry has been growing at a much lower rate since 1970 despite the high rate of building, and it is expected that the increase in demand will be met mainly by imports from Indonesia, Malaysia and the Philippines, where plywood industries are expanding vigorously. There were substantial price

increases on international markets, especially during the first half of the year, followed later on by increases in domestic prices in the major consuming countries in response to rises in the cost of imported plywood logs. Wholesale price indices rose in 1973 by 20% for okoumé plywood in France, and by 18% for domestic plywood in the Federal Republic of Germany.

World production of fibreboard increased by 8% in 1973, a higher rate than the long-term rate of growth. This expansion came from an increase in output of hardboard panels, as production of non-compressed panels remained stable or tended to decline in all regions. Prices of fibreboard also tended to rise, although more moderately.

### Pulp and paper

Production of wood pulp increased by 4% in 1973 as a result of the strong demand in all regions of the world. This was still not sufficient to meet the demand from the paper-making industry, which had to make increasing use of wastepaper. The recovery of the pulp and paper sector in North America took place in 1972, and major increases in wood pulp production were reported for that year. Production reached 60 million tons in 1973. Meanwhile there were increases of 10% in western Europe and 7% in Japan. Trade in wood pulp also increased by approximately 10% and its value rose by 29%. Japan's imports of wood pulp reached 1.1 million tons, an increase of 37% over 1972.

World production of paper and paperboard increased by 6% in 1973, with expansion of all types of paper and board except newsprint. Output of newsprint remained stable, and this led to a worsened supply/demand imbalance. Major increases in production took place in western Europe (9%) and in Japan (20%). Capacity was in full use almost everywhere at the end of 1973, and the industry was unable to meet further increases in requirements for many products and in most regions.

The price of pulp increased by about half between July 1973 and July 1974. Similiar rises were recorded for paper and paperboard. Great difficulty in obtaining pulp and paper supplies has been experienced in countries which have not entered into long-term contracts with suppliers, and spot market prices have often risen to very high levels. Improved prices have substantially modified the prospects for these industries, which have had to face rising costs not only in normal production items but also for environmental protection and energy conservation, while the capital requirements for new investment have been growing sharply. The current improved returns and buoyant demand may prove sufficient incentives for the pulp and paper industry to make new investments to expand its production capacity.

## Forest policies

### Developed countries

Forestry in the developed countries has continued to be affected by the heightened impact of environmental considerations on forest policies and interpretation of them. The oil shortage and the greatly increased cost of oil also introduced a significant new element into forestry in many countries.

In the United States there have appeared a number of important studies which reflect growing public interest and involvement in the formulation of forest policy and illuminate the main areas of concern. Principal among these is the need for more balanced management of forests to improve non-timber benefits, such as amenity and recreation, and more intensive management within this framework to ensure a continued flow of timber products to meet the nations' physical needs for wood-based building materials and other products. Among these studies are a new review of the outlook for wood and wood products in the United States, a report of the President's Advisory Panel on Timber and the Environment, and a draft long-term forestry plan, entitled *Environmental programme for the future*. The reports conclude that growing demands for timber and other services of the forest can be met in the decades ahead without substantial increases in the prices of wood and wood products and without jeopardizing environmental quality. through intensified management of all forest lands. Emerging features of the public planning and management process are more direct contact between forest land managers and the public and the growing practice of preparing "environmental impact" statements for practically any action which might disturb the forest.

In Canada, as a result of environmental awareness, the Lands, Forests and Wildlife Service has evolved into an Environmental Management Service within the Department of the Environment. In addition to its responsibilities for research and development in relation to federal interests in forests, lands, wildlife and inland waters, the Service has been given responsibility for environmental impact assessment of major new developments. Concern for more efficient and effective management of forests was evident in a number of studies and developments at the provincial level. For example, in New Brunswick, enabling legislation has been passed to cancel all licences on Crown forest lands in favour of selling wood to the mills without giving up rights to the land. Furthermore, new legislation enables the formation of a Crown corporation to harvest and

distribute wood from Crown lands if efficient distribution cannot be achieved in the private sector.

Also in Europe the role of forestry in improved land use and as a tool for rural development has received attention. The EEC Commission has submitted a proposal designed to encourage in its member countries afforestation of marginal farmlands and improvement of less productive and unproductive forest areas. A major element in the reformulation of forest policy in the United Kingdom has been the role of forestry in creating jobs — more jobs than agriculture — in areas subject to undesirable depopulation.

Another element has been the recreational role of forests and the need to tailor new planting to criteria of amenity. Increasing recreational demands have also resulted in the establishment of new parks, notably in Hungary and Poland. The Council of Europe has initiated a chain of protection areas along the main migration routes of birds through Europe. In Europe there is now a tendency, reinforced by legislation, to reduce the use of chemicals in forestry to the absolute possible minimum; fertilization, which has been a means of improving timber growth and revenues, is being reduced as a result.

The Forestry and Wood-based Industries Development Conference (FORWOOD) held in Australia was a joint initiative of State and Federal governments, research bodies, and forestry and wood industries. Eight widely representative panels had worked for about two years to prepare reports which would enable FORWOOD to consider the place of the forest and the forest products industry in the economic and community life of Australia. The Conference was concerned with the whole range of topics related to the forest and forestry: recreation, soil protection, watershed management, wildlife and conservation, as well as wood. Environmental issues loomed large in the discussions. Conservationist concern was focused on certain large export chipping operations in natural eucalypt forests and on the pine planting programme, as man-made forests of exotic pine species represent a rapidly growing share of Australia's indigenous wood supply. Discussions at FORWOOD went far toward allaying conservationist criticism, as some States were able to show model examples of multipurpose forestry.

As regards productive forestry the dramatic rise in the price of oil has introduced an important new element into the pattern and level of wood use. In Europe, for example, wood has in many areas become more competitive as a fuel, thus creating outlets for wood qualities and sizes which could not be disposed of earlier. This situation has also tended to divert to fuel use some wood processing residues which were earlier used as raw material for the pulp and board industries.

### DEVELOPING COUNTRIES

The energy crisis is likely to prove to have a far more fundamental effect on forestry in developing countries. By far the greater part of all wood produced and consumed in developing countries is used as fuel. In many areas this demand exceeds local forest supplies, leading to the progressive removal of all woody cover to the detriment of soil stability and protection against water and wind erosion. The major increases in oil prices will inevitably retard, if not reverse, the substitution of kerosene for wood fuel and therefore increase these detrimental pressures on the environment. In many countries a renewed effort is probably going to be needed to meet a continuing and possibly rising demand for wood fuel through afforestation and a greater use of charcoal.

The protective and rural role of forestry was emphasized by the Sahelian drought, which affected Upper Volta, Mali, Mauritania, Niger, Chad and the Gambia and extended into Ethiopia. During the Ouagadougou Ministerial Meeting, 7-10 September 1973, the first six countries named above proposed the creation of a Sahelian "green front" by large-scale reforestation to change the macroclimate and slow down the advance of the desert. While there exist doubts as to the favourable effects of reforestation on more than the local ecological conditions and as to the technical feasibility of and financial resources for such a large-scale programme, it is evident that improved and expanded forest management must constitute an integral part of rehabilitation of the Sahel. The national forestry services in the countries concerned are committed to undertake a major forestry programme in collaboration with the United Nations and its Specialized Agencies; it is part of this commitment to determine more precisely the possibilities and limitations of forestry in the area.

The widespread conditions for exceptionally efficient and rapid production of wood for industry provided by man-made forests of quick-growing species continued to be reflected in expanding afforestation programmes in many developing countries. In the past year an increasing number of such plantation developments reached the stage at which work could commence on the planning or implementation of the processing phase. In Africa, for example, such studies were carried out or initiated in Kenya, Malawi, Madagascar, Nigeria, Tanzania and Zambia. In Asia, industrial afforestation efforts have been intensified in India and the Republic of Korea as well as in other countries. In Latin America, Brazil is continuing its massive programme both of planting and of the construction of pulp and paper manufacturing capacity to process wood from its man-made forests.

Interest in plantation-grown pulpable woods was heightened during the year by the acute world shortage of pulp, in particular for cultural papers. The shortage, along with the exceptional rise in prices, has particularly affected developing countries, most of which heavily depend on imports for their supplies of pulp and paper. This situation, which is likely to persist for several years unless global demand slackens, has reinforced the need for expansion of pulp manufacturing capacity in developing countries.

The pulp shortage has also heightened interest in natural tropical forests as a potential source of pulpable fibre; at present these forests are very seldom used for this purpose. The harvesting of tropical forests for lumber and other products continued on a massive scale. There was also a further huge reduction in the area of productive tropical high forest due to agricultural encroachments of various sorts. Rising concern about the rate at which these forests are being destroyed or depleted and the possible economic, social and environmental implications has led FAO to organize a worldwide technical conference on tropical moist forests, which will be held in Brazil from 22 September to 3 October 1975.

In the Far East, the principal tropical hardwood producing area, a noticeable development has been the move toward implementing earlier policy decisions to increase the amount of timber diverted to domestic processors as opposed to exportation in log form. The creation of various timber industry boards is a step in this direction, whereas the Philippines adopted a comprehensive forestry reform code to accomplish this and other objectives. Similarly, efforts have been intensified to exert greater control over concessionaires.

Continued efforts to strengthen overall administrative capacity for forestry development have been evident in many countries, particularly in Latin America. An interesting example of forceful institutional reform in a small country well-endowed with forest resources is the Corporación Hondureña de Desarrollo Forestal (Honduran Forestry Development Agency), a semiautonomous state agency established in January 1974. The purpose of this agency is to ensure optimum utilization, protection and improvement of public and private forest resources and their contribution toward accelerating the country's social and economic development. A similar agency established in Guatemala in June 1974 is the Instituto Nacional Forestal (National Forestry Institute).

In Chile, the Corporación Nacional Forestal is actively involved in regional planning and has introduced a programming manual. In Ecuador, the Forest Service has been experimenting with an advanced system of programming, budgeting and control and emphasizes public relations. In Colombia, sectoral planning for forestry and its links with national planning has been successfully developed. In Mexico, the "organization and methods" approach to administrative efficiency is being applied to the Forest Service with far-reaching goals and considerable skill. In Peru, forestry personnel development, including continuing education and systematic evaluation, is receiving great attention.

## The United Nations World Food Conference and Other Special UN Conferences, 1974

The World Food Conference, held in Rome from 5 to 16 November 1974, was one of several major recent actions within the United Nations system to reorient the approach to economic and social development and to review international economic relationships with the principal objectives of securing better use of the world's resources and the attainment of social justice. The stated aims of the Food Conference included possible action programmes to increase food production in the developing world, improve the consumption and distribution of food, achieve a better system of world food security and bring about a more orderly system of agricultural trade and adjustment. The themes of the other two United Nations Conferences held in 1974 were population and the law of the sea. All three Conferences placed emphasis on selected aspects of the interlocking set of social and economic problems with which the world is faced. In addition, the Sixth Special Session of the United Nations General Assembly, held from 9 April to 2 May 1974, was specifically concerned with control, production and exchange of the world's raw material resources and adopted a Declaration governing their future use. Earlier there had been United Nations Conferences on human rights (Tehran, 1968) and on human environment (Stockholm, 1972); in the future there are to be Conferences on the status of women (Bogotá, 1975), human settlements (Vancouver, 1976) and water (Buenos Aires, 1977).

### World Food Conference

The convening of a world meeting on food was discussed at the Conference of Non-Aligned Countries

held in Algiers from 5 to 9 September 1973. This Conference urged that in the context of the serious food crisis confronting vast areas and populations of the world, an emergency joint conference of FAO and UNCTAD should be convened at the ministerial level for the purpose of formulating a programme of international cooperation to overcome increasing shortages of food and other commodities and to maintain stable prices.

The subject was raised again by the Secretary of State of the United States, Henry Kissinger, during the 28th Session of the General Assembly, in September 1973. Noting "the growing threat to the world's food supply," Dr. Kissinger announced the United States proposal that "a World Food Conference be organized under United Nations auspices in 1974 to discuss ways to maintain adequate food supplies, and to harness the efforts of all nations to meet the hunger and malnutrition resulting from natural disasters."

In its 28th Session on 17 December 1973 the United Nations General Assembly, following a recommendation by the 1973 FAO Conference, decided to convene a World Food Conference, under the auspices of the United Nations, for about two weeks in November 1974, in Rome, with the following agenda:

1. Assessment of the world food situation based on the reports of the Secretary-General of the Conference and the Preparatory Committee.
2. National and international programmes of action:
   (*a*) Measures for increasing food production in developing countries within the wider framework of development.
   (*b*) Measures for increasing food production in developed countries.
   (*c*) Policies and programmes for improving consumption patterns in all countries, also aimed at ensuring adequate availability of food in developing countries, particularly to vulnerable groups.
   (*d*) Strengthening of world food security through such measures as better early warning and food information systems, more effective national and international stockpiling policies and improved arrangements for emergency relief and food aid.
   (*e*) Specific objectives and measures in the area of international trade and adjustment relevant to the food problem, including measures toward stabilization and expansion of markets for exports from developing countries.
   (*f*) Arrangements for following up the recommendations and resolutions of the Conference, including appropriate operational machinery.

A detailed review of the world food situation, present and future, was drafted for the secretariat of the World Food Conference by its Preparatory Committee, together with proposals for national and international action to resolve the world food problem. The proposed action programmes kept in view the wider framework of development and the goals and objectives agreed upon by governments in the contexts of the Second United Nations Development Decade and the Declaration on the establishment of a New International Economic Order adopted at the Sixth Special Session of the United Nations General Assembly. Special importance was attached to effective implementation and follow-up of the action programmes. The first major resolution approved by the World Food Conference declared that "all governments should accept the removal of the scourge of hunger and malnutrition ... within a decade," and that "highest priority should be given to policies and programmes for increasing food production and improving food utilization in developing countries, so as to achieve a minimum agricultural growth rate of 4% per annum." The Conference called for five main initiatives:

1. A World Food Council to coordinate the activities of various international agencies in the agricultural field. The Council would be established at the ministerial or plenipotentiary level and function as an overall coordinating mechanism for policies concerning food production, nutrition, food security and food aid, as well as other related matters of concern to all the agencies of the United Nations system. The Council membership would consist of Member States of the United Nations or of its Specialized Agencies, including the International Atomic Energy Agency, and would be nominated by the Economic and Social Council and elected by the General Assembly. The Council would be serviced within the framework of FAO, and its secretariat will be located in Rome.

2. An International Fund for Agricultural Development to channel additional investment funds for increasing food and agricultural production in the developing world. Contributions would be voluntary, both by those nations which are traditional sources of foreign assistance and by developing countries with ample means. The Fund would be established by the Secretary-General after he had determined, in consultation with Member States, that sufficient resources would be made available by this means to give "a reasonable prospect of continuity." The Board of Directors of the proposed International Fund for Agricultural Development would report periodi-

cally to the World Food Council and take into consideration its advice and recommendations.

3. A Consultative Group on Food Production and Investment in Developing Countries (CGFPI) composed of bilateral and multilateral donors and representatives of developing countries and organized jointly by FAO, the World Bank and the UNDP. This Consultative Group would keep the World Food Council informed of its activities to increase, coordinate and improve the efficiency of financial and technical assistance to agricultural production in developing countries.

4. The International Undertaking on World Food Security, initiated by FAO, was fully endorsed. To strengthen work in this field, the Conference recommended that FAO establish a Committee on World Food Security as a standing committee of the FAO Council. This Committee would submit periodic and special reports to the World Food Council. The Conference also resolved that a Global Information and Early Warning System on food and agriculture should be established and agreed that FAO was the most appropriate organization to operate and supervise the system. It requested all governments to participate in the system on a voluntary and regular basis.

5. An improved policy for food aid with better coordination between bilateral and multilateral food aid programmes. The Conference recommended the reconstitution of the World Food Programme's Inter-Governmental Committee as a Committee on Food Aid Policies and Programmes. The Conference also approved a commitment to provide, on a three-year forward plan basis, commodities and financing for food aid to a minimum level of 10 million tons of cereals per year plus certain other food commodities.

Left unresolved by the Conference was the question of how urgent short-term food needs could be met in a number of critically affected areas. However, informal gatherings among major cereal exporters and importers called during the Conference by the Director-General of FAO led to a full-scale meeting of these countries on 29 November 1974.

The question of agricultural trade, a controversial issue throughout the Conference, was dealt with in a resolution which recognizes the relationship between world food problems and international trade. In effect this resolution gives political impetus to the ongoing activities of the United Nations Conference on Trade and Development (UNCTAD) and the General Agreement on Tariffs and Trade (GATT).

The trade resolution gives high priority to improved access for agricultural and food products from developing countries in the markets of the industrialized world. It asks governments to devise, through appropriate organizations, effective steps to deal with the problems of stabilizing world food markets and to take measures to prevent speculative practices which disrupt markets. Developed nations are urged "in the determination of attitudes toward domestic farm support programmes to take into account the interests of food exporting developing countries." [1]

The vital role of fertilizers and pesticides in increasing food production was recognized by the Conference. It noted the recent increased activity of the international community in respect to fertilizers, including the establishment of the FAO Commission on Fertilizers, the International Fertilizer Supply Scheme and the funding operations of the United Nations Emergency Operation (UNEO) and recommended that during the current period of supply shortages and high prices increased material and financial support should be given to the International Fertilizer Supply Scheme. Among its recommendations was that FAO, UNIDO and the World Bank jointly organize a programme to assist developing countries in improving the efficiency of their fertilizer plant operations. As for pesticides, the Conference called for an urgent government and industry consultation on the whole problem, including very short supplies, standardization of regulatory procedures and alternative methods of pest control.

In addition to proposals for the main follow-up action, the Conference also passed resolutions dealing with specific aspects of the world's food problem and agricultural development, including:

priorities for agricultural and rural development;

food and agricultural research, extension and training;

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[1] This "Urgent Consultation" on cereal supply and ways of meeting short-term requirements of developing countries was convened by the Director-General at FAO Headquarters, Rome. It agreed that the uncovered import requirements of the "most seriously affected" (MSA) countries in 1974/75 could be estimated, on the basis of current conditions, to be of the order of 7.5 million tons of wheat, rice and other cereals, and that the uncommitted export supplies of cereals available for shipment in the rest of the season up to 30 June 1975, as currently foreseen, were sufficient to satisfy the estimated uncovered import requirements of the MSA countries, as well as to meet the known needs of other importing countries. The exporting countries gave assurances that all possible action was being taken to maximize the 1974/75 export availabilities and confirmed that they have the means to keep a close watch on the destinations and quantities of grain exports. These procedures should help to ensure that the available exportable supplies required for immediate human consumption in importing countries are not directed into unnecessary stockpiling or less essential uses, and that the urgent needs of MSA countries are not prejudiced.
From the Consultation it appeared that as much as one fourth to one third of the yet uncovered import requirements of MSA countries might be met by present food aid programmes.

policies and programmes to improve nutrition;

world soil charter and land capabilities assessment;

scientific water management: irrigation, drainage and flood control;

greater involvement of women in decision-making on food and nutrition policies;

achievement of a desirable balance between population and food supply;

programme for the control of African animal trypanosomiasis;

seed industry development;

reduction of military expenditures in favour of increasing food production;

food aid to victims of colonial wars in Africa.

The Conference requested that greater emphasis be given to social criteria in rural development programmes. National, regional and international research institutions were requested to intensify their efforts on a wide range of subjects, from the improvement of the nutritional quality of both conventional and nonconventional foods, to the opening up of new lands and a better understanding of the motivation of rural people. FAO, in cooperation with WHO, UNICEF, WFP and other international agencies, was requested to prepare a project proposal for assisting governments to develop intersectoral food and nutrition plans. The Conference recommended that all governments and international agencies, such as FAO and WMO, take urgent action to develop agricultural water supply, safeguard its use and improve the administration and management of water delivery systems.

A Declaration on the Eradication of Hunger and Malnutrition, adopted by the Conference, sets forth the basic aims of all follow-up activities, maintaining the right of "every man, woman and child ... to be free from hunger and malnutrition" and the "fundamental responsibility of the governments to work together for higher food production and more equitable and efficient distribution of food between countries and within countries."

### Sixth Special Session of the United Nations General Assembly

The main outcome of this Special Session, held on the initiative of President Boumedienne of Algeria with wide support from other Member Nations, were the declaration on the establishment of a New International Economic Order and a Programme of Action for its implementation. The declaration lays down certain basic principles concerning the sovereignty of states over their natural resources, the need for equitable terms of trade for developing countries, for improvements in the position of natural over synthetic raw materials, preferential treatment of the exports of developing countries, conservation of natural resources and the role which producers' associations may play in accelerating the development of developing countries.

The Programme of Action covers a wide range of measures. In general, it calls on governments, particularly of the developing countries, to take steps to bring about accelerated development and "to facilitate the functioning and to further the aims of producers' associations, including their joint marketing arrangements, orderly commodity trading, improvement in export income of producing developing countries and in their terms of trade, and sustained growth of the world economy for the benefit of all." It also requires that all efforts be made to evolve a just and equitable relationship between the prices of goods exported by developing countries and those imported by them, including appropriate measures to reverse the continued stagnation or decline in the real price of several commodities exported by the developing countries, as well as to expand the markets for natural products in relation to synthetics and to promote the processing of raw materials in the developing producer countries. Regarding food, the Programme of Action stipulates that developed countries, in framing their food policies, make every effort to take full account of the interests of developing countries and to ensure that the latter can import the necessary quantities of food without undue strain on their balance of payments. It stresses that concrete measures should be undertaken to increase food production and storage facilities in the developing countries by, among other means, ensuring an increase in all essential inputs, including fertilizers, from developed countries on favourable terms. It also provides for exports of food products from developing countries to be promoted through just and equitable arrangements, including "the progressive elimination of such protective and other measures as constitute unfair competition."

Regarding general trade, the Programme of Action urges that all efforts be made to undertake measures for the amelioration of the terms of trade and for the elimination of chronic trade deficits of developing countries, and it insists on the principles of non-reciprocity and preferential treatment for the exports of developing countries. It mentions, in particular, improved access to markets in developed countries through the progressive removal of obstacles to trade,

the implementation, improvement and enlargement of the Generalized System of Preferences and "the setting up of general principles for pricing policy for exports of commodities of developing countries with a view to rectifying and achieving satisfactory terms of trade for them." To the same end, the Programme of Action calls for efforts to secure the expeditious formulation of commodity agreements where appropriate, together with the setting up of buffer stocks within the framework of commodity arrangements and the preparation of an overall integrated programme for a comprehensive range of commodities of export interest to developing countries. Reimbursement to the developing countries of the taxes and duties levied on their goods when imported by the developed countries is proposed, and, where necessary, the adoption of improved compensatory financing schemes for meeting the needs of the developing countries is also suggested.

The General Assembly also adopted a special programme to provide emergency relief and development assistance to the developing countries most seriously affected by the present economic crisis, natural calamities and foreign aggression and occupation. As a first step in the programme, the Assembly requested the Secretary-General of the United Nations to launch an emergency operation to provide timely relief to the most seriously affected developing countries for the purpose of maintaining, unimpaired, essential imports over the coming months. This is to be followed and succeeded by a special fund, to be established on 1 January 1975, for providing emergency relief as well as development assistance.

**World Population Conference**

The main outcome of the United Nations World Population Conference, held in Bucharest from 19 to 30 August 1974, was the adoption of a World Population Plan of Action. It represents the formal recognition by governments of the legitimacy of and necessity for population policies as an integral part of overall policies for economic and social development. Food and agricultural problems and the rural sector as a whole received considerable attention at the Conference.

The major Conference recommendations of concern to FAO were the following:

Governments should develop national policies and programmes relating to the growth and distribution of their populations.

In formulating measures to harmonize population trends and socioeconomic change, plans for economic and social development and for international assistance for this purpose should emphasize the health and educational aspects. Likewise, patterns of production and technology should be adapted to each country's endowment in human resources. Decisions to introduce technologies that would afford significant savings in manpower must take into account the relative abundance of human resources. To this end, efforts should be intensified to determine for each country the technologies and production methods that are best suited to its working population and to study the relationship between population factors and employment.

In order to increase the production and distribution of food for the growing world population, governments should give high priority to improving methods of food production, to investigating and developing new sources of food and to more effectively utilizing existing sources.

Developing countries should consider the possible economic, social and demographic effects of population shifts from agriculture to nonagricultural industries.

Highest priority should be given to the reduction of high death rates. National and international efforts to reduce general morbidity and mortality levels should be accompanied by efforts to eradicate undernutrition and malnutrition and to improve health and nutritional conditions which adversely affect working-age populations and their production, and thus development efforts. To this effect, health and nutrition programmes designed to reduce morbidity and mortality should be integrated within a comprehensive development strategy and supplemented by supporting social policy measures.

Countries should encourage appropriate education, in both rural and urban areas, for responsible parenthood and make available to persons who so desire advice and the means of following it. Wherever needed and appropriate, use should be made of adequately trained professional and auxiliary health personnel, rural extension, home economists and social workers and nongovernmental channels.

Governments should ensure full participation of women in the educational, economic, social and political life of their countries on an equal basis with men. The economic contribution of women in the household and farming should be recognized in national economies.

Countries should be encouraged to develop both a continuing capability for taking multisubject household surveys and long-term plans for securing

statistics of various demographic and interrelated socioeconomic variables on a regular basis.

Training in population matters should be extended to labour, community and other social leaders and to senior government officials, so that they will better be able to identify the population problems of their countries and communities and to help in the formulation of related policies.

All countries should further develop their formal and informal programmes for promoting education among youth and should abolish factors discriminating against women.

Governments should use all available means for disseminating population information, among both rural and urban populations, through the assistance of governmental agencies.

Policies should be developed to reduce the undesirable consequences of excessively rapid urbanization and to develop opportunities in rural areas and small towns. Intensive programmes of economic and social improvement should be carried out in the rural areas through balanced agricultural development, so as to provide better income for the agricultural population, permit effective expansion of social services and afford measures to protect the environment and conserve and increase agricultural resources. In rural areas and areas accessible to rural populations, new employment opportunities, including industries and public works programmes, should be created, systems of land tenure improved and social services and amenities provided.

National efforts should be intensified, through expanded research programmes, to develop knowledge of social, economic and political interrelationships with population trends. Work on projections of demographic and related variables should be encouraged.

International, intergovernmental and nongovernmental agencies and national governments should increase their ability to provide assistance in the population field on request.

The Conference also adopted seventeen substantive resolutions, a number of which further strengthened the above recommendations.

The World Population Plan of Action is to be closely coordinated with the International Development Strategy for the Second United Nations Development Decade and other sectoral international strategies, such as FAO's Indicative World Plan for Agricultural Development and the Concerted Action for the Advancement of Women.

**Conference on the Law of the Sea**

The first session of the Third United Nations Conference on the Law of the Sea, held in New York from 3-14 December 1973, dealt with the organization of the Conference itself; the second session was held in Caracas, Venezuela, from 20 June to 29 August 1974. Few expected that the 148 countries invited to take part would be able to restore some law and order to the world's oceans in this ten-week Conference. A further Conference, in 1975, was foreseen from the start, and a decision was reached to hold it in Geneva from 12 March to 3 May. Resumption in March rather than July, as was originally planned, will improve the chances of concluding a treaty before the end of 1975.

Nearly all countries that took part in the Conference referred in some detail to jurisdiction over fisheries and problems of fishery conservation and management. The legal nature and breadth of areas under national jurisdiction and the claims and rights of nations over living resources in those areas received the greatest attention. Another important matter before the Conference was the management of highly migratory species and of anadromous species (e.g., salmon). The regime which should govern fisheries in areas beyond national jurisdiction was also discussed.

The main areas of agreement are becoming clear. Claims by coastal countries to 12 miles of territorial water, already claimed by about sixty governments, might well be generally accepted; so, probably, will the principle of their special rights in a much larger economic zone, most likely extending 200 miles from shore. The status of the ocean beyond these zones will be subject to considerable discussion. However, the taking of minerals from the ocean floor is expected to be controlled by a new international authority, and all countries will be required to accept curbs on their freedom to pollute the sea. These general propositions have met with widespread agreement. It is in connexion with their implementation that difficulties arise. For example, a universal 12-mile rule would turn more than one hundred important straits into territorial waters. Problems arise over islands and archipelagos with the 200-mile zones. Then, the powers of the proposed seabed authority have produced major differences between the main industrialized countries and the developing ones. The debate concerns whether the authority is to be obliged to award seabed mining contracts to companies that

comply with terms to be specified in the Treaty or whether the authority itself is to have wide discretionary powers and the right to undertake mining itself through joint ventures. The recommendation on pollution control has already received broad agreement, but it is only general in nature. At present there seems little prospect for the creation of a strong international system that will effectively induce coastal and maritime countries to refrain from polluting the seas. A number of sectoral or regional agreements to protect the marine environment against pollution are however being concluded outside the framework of the Conference.

These are the issues to be presented for decision at the next session of the Law of the Sea Conference in 1975.

# Chapter 2. - REVIEW BY REGIONS

## Western Europe

### Agricultural policies and problems

In general, production price policies have allowed increases to farmers which are sufficiently high to take account of their considerable increase in costs, but not so large as to intensify general inflation.

Prices for the 1974/75 campaign have been fixed in Denmark, Ireland and the United Kingdom within the framework of a progressive alignment with EEC prices. In the United Kingdom the dairy sector has been the most seriously affected by the increase in feed prices. That is why the Annual Review which fixes guaranteed prices and subsidies has raised the standard quantity of milk production (the volume which benefits from guaranteed prices) by 6% and the guaranteed price by 7%. There have been the following increases for other products: wheat and barley 8%, oats 7%, potatoes 29% and lamb and mutton 11%. The guarantees for eggs and sugar beet were abolished at the end of 1973/74 in accordance with previous decisions. In Denmark the differences between national prices and EEC prices are now relatively small: only about 10% for dairy products and less for cereals, eggs, pork and poultry.

In Sweden farm prices continue to be fixed by periodic agreements between the Government and professional organizations, although certain new principles have been introduced into this bargaining arrangement. In 1974, as in 1973, the Government put a freeze on consumer prices of essential food items and paid subsidies to farmers as part of the programme. A new agreement on prices, with special provisions to compensate farmers for increases in production costs, came into force on 1 July 1974; in particular, the agreement stipulates that remuneration for agricultural work adhere to that of the national labour market. Also, some price supplements will be paid to certain categories of milk producers. In addition to the annual price agreements, it has now been decided to review farm prices twice a year because of the recent sharp increases in production costs and in prices on the international markets.

In Norway, where the level of agricultural prices has had to be increased to keep them in line with the rise in consumer food prices, a new general agreement on farm prices came into effect in the middle of 1974.

In southern European countries, livestock (especially meat) production has benefited most from government measures. In Italy, meat imports (mainly of beef and live cattle) have steadily increased in recent years, as internal production only covers about 25 to 30% of domestic consumption. In 1973 the trade deficit for meat again increased, by 33%, equivalent to about half Italy's total trade deficit. Again in 1974, as in 1973, there has been a serious crisis in Italian cattle production with meat consumption tending to fall because of high prices and with imports rising and domestic farm prices declining. As Italian beef breeders increased slaughterings, prices fell even more. Milk production was also cut during the first half of 1974. At the beginning of 1974, in order to restore confidence to the livestock industry, the Government brought in a bill to encourage cattle and sheep breeding. Within a five-year plan covering 1975-79, and with a budget of 305 000 million lire, regional programmes will give incentives to production and to improvements in marketing. Loans will be made available for approved breeding programmes at low rates of interest. Within a package programme, centres are to be established to supply members with both calves and fodder and to buy back finished animals at guaranteed prices prior to slaughter and marketing.

Also in Spain recent decisions have mainly concerned breeding. From June 1974 the slaughtering of cattle of less than 125 kilograms carcass weight is forbidden. Premiums are paid on a progressive scale based on slaughter weight for steers for the purpose of encouraging the replacement of dairy by beef cattle. The slaughtering of sheep of less than 5 kilograms carcass weight is forbidden, and an extra payment is to be made for carcasses weighing more than 13 kilograms.

In Greece, too, subsidies have been introduced on young cattle imported for fattening, and financial aid

is being provided for improvement of local beef breeds and importation of pedigree stock, as well as for the extension and improvement of pastures. Finally, in 1973, four institutes were created in Portugal to supervise the production, processing and marketing of cereals, olive oil and oilseeds, textiles and forest products.

The agricultural situation in the European Economic Community (EEC) in 1973/74 has been marked by three major factors: new relationships between Community prices and world prices, monetary instability, and surpluses in certain commodity markets. Against this background the EEC Commission presented a programme of adjustment to the Common Agricultural Policy (CAP) which provided a framework for the decisions of the 1973/74 campaign. Also, in June 1974, the United Kingdom after her first year and a half of EEC membership presented a number of radical proposals.

From the founding of the EEC until 1972/73, Community farm prices were generally fixed well above those in world markets, necessitating certain financial measures for foreign trade in agricultural produce — namely variable import levies and export refunds or bounties. Since the drastic price increases which occurred in the world market from about the middle of 1972, the relationship between Community farm prices and world prices has radically changed. The gap between the two has become much smaller or even reversed as world prices edged above Community prices. In this new situation the Community decided to end import levies and export refunds and to apply, instead, levies on exports of such commodities as cereals and cereal products, rice and sugar. For items such as pigmeat, eggs and poultry, for which production costs depend largely on cereal prices, import levies were sharply reduced in 1973/74.

These new relationships between world and Community farm prices, even if only transitory, have had certain important consequences. New members of the Community, especially the United Kingdom, have been able to buy from it at better prices than on the international markets, probably encouraging the beginnings of a system of Community preference. Furthermore, the Common Market system has not only given producers guaranteed prices, but also protected consumers from sharp increases in external prices and speculative exports. However, the Community has had to face the difficult task of establishing a balance between maintaining adequate supplies and reserves for the internal market and supplying its traditional foreign customers.

Then, in 1973/74, more than in any of the preceding years, CAP has been influenced by the monetary instability which has affected most members of the Common Market. In January 1974 the French franc joined the pound and the lira among the currencies floating downward, the Deutschmark and the florin having been revalued in June and September 1973 respectively. The agricultural sector has been particularly influenced by monetary changes because CAP established guaranteed prices (intervention prices) on a unique basis, using a unit of account determined by a gold parity. Thus the decision of a country in the Community to change the value of its currency should not, in theory, give rise to any difficulties, as agricultural prices expressed in the national currency would be decreased if revalued and increased if devalued to keep the same value in units of account. In reality, problems arise because governments are generally opposed to this automatic effect on national prices: a reduction in prices affects farm profit levels, for which it is not always convenient or advisable to recompense by direct payments (the solution chosen by the Netherlands in September 1973); a rise in farm prices may contribute to further inflation.

Therefore, if a change in exchange rates is not followed by a revision of national farm prices, those countries which have revalued are at a disadvantage, as their national prices converted into units of account become higher than general prices and therefore less competitive than those of their partners, whereas those which have devalued benefit from the rate of exchange. Consequently there has arisen the practice of paying farmers compensation in order to keep conditions of competition unchanged and maintain the "unity of the market," along with import taxes and export subsidies when a currency is revalued and vice versa when devalued. To complicate matters even further, compensatory payments in floating currencies are likely to vary from one week to the next.

Compensatory payments have become current market practice despite the resulting uncertainties and complications for trade. In the middle of 1974 the compensatory payments were 12% for the Federal Republic of Germany and 2.7% for the Benelux countries; they varied from about 7 to 10% for the floating currencies.

The most striking irregularities from the use of compensatory payments concerned Italian imports of beef and dairy products. During the winter of 1973/74 the subsidies paid by Italy to importers varied between 15 and 25% of Community prices, while the Federal Republic of Germany granted exporters a bounty of 12%. As a result, meat imports into Italy from the Federal Republic of Germany increased greatly, there was a fall in production in Italy, and French consignments to Italy were also affected. Finally, at a time when Italy was suffering from a record balance of payments deficit largely due to agricultural and food products, it became apparent that the system of compensatory payments to stimulate imports was contrary to Italy's national interest. In May 1974 the Italian authorities an-

nounced temporary restrictions on most imports (with the notable exception of cereals and vegetable oils). This system has since been studied by the Community. Italy's "safety measures" are provided for in the Treaty of Rome, but they reveal the extent to which CAP is subject to the monetary instability of member countries. If CAP is to function well, economic and monetary union must eventually be realized; such is the opinion which increasingly prevails in the Community.

The third factor affecting the agricultural situation in the EEC has been farm surpluses. Such surpluses — usually of soft wheat, sugar, butter and skim milk powder — have been a regular feature of the Community since its beginning. In 1973/74 there were major surpluses of beef as well as dairy products.

There was a scarcity of beef in world and Community markets in 1972 and until spring 1973. Market prices in the Community stayed well above orientation prices, and customs duties and levies had been suspended in varying degrees according to category of meat. By summer 1973 the situation had already begun to change, partly because of the cyclical nature of beef production, but also because of increased slaughterings caused by the high cost of livestock feed (especially soybean meal) and stagnation in retail demand due to high consumer prices.

The decree of June 1972 concerning scarcity was repealed in September 1973, but market prices have nevertheless progressively declined, especially for heavier beef cows. In March 1974, at the end of the 1973/74 campaign, market prices fluctuated around the orientation price for heavy-weight beef cows. For the 1974/75 campaign orientation prices had been raised considerably, and consequently at the beginning of April market prices fell below intervention price. Various measures were taken to protect the market as it deteriorated, including: exportation (agreed to for the first time since the inception of a common market for beef); authorization of privately owned storage with a limit of 40 000 tons; extension of the permanent price support regulations established in 1973 to new categories of meat; application of the security clause (suspension of imports coming from third countries by France, Italy and the Benelux countries); and obligation for importers to buy the same quantity of frozen meat externally and from intervention bodies of the Community. In May 1974 the situation worsened as Italy announced new import restrictions. Nevertheless, the Community is a net importer of beef, and current surpluses are likely to prove only a temporary embarrassment.

The dairy sector has continued to have surplus problems similar to those of preceding years. The cost of supporting this sector in 1973 was 1 480 million units of account, or about 43% of the expenditure of the "garantie" section of Community funds.

The profound changes undergone on international markets in 1973/74 as well as the particular problems of the Community have led to new debates on the general orientation of CAP. In autumn 1973 the Commission presented a memorandum to the Council containing an adjustment programme for the period 1973-78. It includes three main themes:

1. Price and market policies must be based on modern farming and remain the principal instrument of CAP. A system of direct subsidies to farmers is not a valid alternative. It is acknowledged, however, that some adjustments with certain changes in price relationships are necessary. For cereals, for example, the programme proposes a change in price relationship between wheat and secondary cereals and a stock policy centred on soft wheat.

2. Price and market policies are complementary to those pertaining to agricultural structures. To complete the existing series of resolutions (a sociostructural directive adopted in 1972 and a directive on poor rural areas of autumn 1973), the Commission is preparing some proposals concerning forestry and the processing and marketing of agricultural products.

3. Benefits of CAP must extend to new areas such as the protection of consumers and the environment. The Commission also proposes to stimulate better quality products. In July 1973 the Council adopted an action programme for the protection of consumers, providing for the development of agricultural production techniques not harmful to the environment.

## Prices 1974/75

The adjustment programme of CAP is not always a subject of general agreement among member countries; however, it does serve and is likely to continue to serve as a framework of reference for different decisions. Thus some points of the proposed programme, outlined above, had already been accepted at the time prices were set for 1974/75.

The new way of fixing prices resulted from a compromise between two conflicting needs: to maintain the revenue of farmers affected by increases in production costs, and to moderate increases in agricultural prices. The eventual compromise for 1974/75 was an increase in prices of about 9% on the average, with more for livestock than for vegetable products.

Increases in orientation prices for cereals are as follows: soft wheat 6%, hard wheat 15% (this is the last year Italian producers are to receive direct subsidies), rye 5% and barley and rice 6%. For barley

the "regionalization" of prices has been suspended in order to increase the fluidity of the market. There has been an increase in orientation price of 11% for wine, 9% for tobacco, 10% for fruit and vegetables (but 7% for apples and 4% for pears), 3 to 6% for oilseeds and 7% for sugar. Production quota B (which only profits from a reduced guaranteed price) on sugar has been lifted. For livestock there are the following price increases: heavy-weight beef cattle 12%, calves 9% and pigs 8%. The indicative price of milk has increased 8%.

Various temporary price rulings to lessen the price increases foreseen during the transitory period have been agreed upon in the United Kingdom. Thus the price of heavy beef cattle has gone up less there than in the rest of the Community and subsidies for veal production have been maintained until 1 February 1975, while the butter subsidy has been raised to 17 units of account per 100 kilograms compared with 10 units of account in the other EEC countries.

In September 1974 agreement was reached on a further 5% increase in farm prices to help farmers meet inflated farm costs and depressed incomes. This intermediate price award to EEC farmers was accepted by the Council of Ministers only after agreement to three "prerequisites" demanded by the German (F.R.) Government, which had earlier opposed the price increases as inflationary. The three conditions were a reexamination of CAP to be completed early in 1975, an end to the illegal introduction of national agricultural subsidies and grants contrary to the Treaty of Rome, and the taking into account of the 5% price rise in drawing up next season's price package.

The German (F.R.) request for a reexamination of CAP followed closely United Kingdom proposals, made early in 1974, which had four main principles: a more rational pricing policy; a tighter control over the costs of farm price supports; the avoidance of surpluses; and greater attention to consumers' interests. While these principles may eventually face no serious objections from other EEC members, problems are likely to arise in their practical application. Already a number of Community members are seeking to introduce greater flexibility into the market intervention system so as to avoid the accumulation of costly surpluses and to fight inflation.

## Eastern Europe and the U.S.S.R.

### Investment and current inputs

Investment efforts continued in 1973 in all eastern European countries, but changes in the volume of investment were somewhat less uniform than in earlier years. Compared with 1972 the volume of investment increased considerably in Poland and moderately in Czechoslovakia, but was down in the German Democratic Republic and Romania. The share of agriculture in total investment varied considerably, from 10 to 11% in Czechoslovakia and 12% in the German Democratic Republic to 16% in Poland and about 19% in Hungary. Deliveries of machinery and fertilizers and other chemicals increased, though at highly varying rates, in the majority of eastern European countries. Compared with 1972, tractor deliveries rose some 3 to 4% in Poland, more than 7% in Hungary and as much as 25% in the German Democratic Republic. Deliveries of grain combine-harvesters expanded by more than 35% in Poland, by about 14% in the German Democratic Republic and by 8% in Hungary. For fertilizers by far the largest increase in deliveries, some 34% above the 1972 level, occurred in Romania, the country with the lowest application rate of fertilizers per hectare in the area.

Capital investments in U.S.S.R. agriculture in 1973 amounted to 25 800 million rubles as compared with 23 900 million rubles in 1972, 21 900 million rubles in 1971 and an average of 16 400 million rubles in the period 1966-70; in 1974 capital investments in agriculture should reach about 28 000 million rubles. Noteworthy investments in 1973 included the construction of livestock barns, large animal complexes (the Kuznetsovsky complex, near Moscow, announced for construction four years ago, with a breeding capacity of 108 000 pigs per year, is now functioning), fertilizer storage buildings and mixed-feed factories. Land improvement was also a major investment item. Newly irrigated land in 1973 amounted to 980 000 hectares and more than 900 000 hectares were drained. Under the 1974 budget 6 900 million rubles are allotted for further land reclamation, with special attention to irrigated lands used for the cultivation of vegetables around big cities and industrial centres; about 89 000 hectares are to be reclaimed in 1974 under state control. Agriculture received 322 000 tractors in 1973 (against 313 000 in 1972), and the total number of tractors in use reached 2.2 million by the end of 1973, or 10% more than in 1970. The supply of trucks and special vehicles (225 000) also increased, but fewer grain combines were delivered than in 1972. By 1974 the supply of tractors should reach 358 000, and the total production of agricul-

tural machinery is to increase by 10%. Priority is being given to the high-powered tractor, K-700, and its use is to be extended. In 1973 U.S.S.R. agriculture received 58 million tons of mineral fertilizers (standard gross weight), or 8% more than in 1972, and a substantial increase is planned for 1974. Various measures were taken to enlarge the production and delivery of mineral fertilizers, and by 1980 agriculture should be receiving some 120 million tons. Cereals will receive an even bigger share of total mineral fertilizer supplies, and organic fertilizers are also to be increased substantially.

Expected increases in labour productivity should enable collective and state farms to reduce their labour force by 270 000 workers in 1974. At the same time a campaign is being conducted to increase amenities and improve labour conditions in agriculture with the aim of reducing the outflow of young people from rural areas. The census of 1970 showed the reduction of workers under thirty years of age since 1959, their share in the total number of agricultural (manual) workers going down from 40 to 24%. Facilities have been provided for people desiring to migrate with the intention of working in agriculture. A decision taken in May 1973 regulates the migration of agricultural man power and provides for the payment of subsidies, advances and credits. The rights to these facilities depend however on the choice of migration areas offered by the state programmes. This act even considers the transfer of entire kolkhozes from one area to another, in which event the expenditure for transferring collective movable property is covered by the State. Although the eastern areas of the U.S.S.R. are more interested in receiving agricultural migrants, facilities are also provided in the European area, under the decision concerning the Russian Soviet Federated Socialist Republic (R.S.F.S.R.) non-black soil area (see below), for the people transferring from small villages into kolkhoz or sovkhoz settlements.

**Farm incomes, prices and policies**

Information on agricultural incomes is sparse, but further advances are reported in all countries. In Czechoslovakia the average earnings of cooperative farmers (including earnings in kind) are reported to have risen faster than the average earnings of wage and salary earners, which increased by 3.5% in 1973. Incomes from agriculture in Hungary rose by 10%, as compared with a 9% increase in wage and wagelike incomes; this fast rise of agricultural incomes in this country was the result of larger output and sales combined with higher milk and livestock prices. For similar reasons the 9% rise of agricultural incomes provided for by the Polish plan was exceeded, although no definitive figure has yet been released. In Romania, where total output remained stagnant, although the cooperative farms must have accumulated considerable reserves in the preceding highly favourable year, agricultural incomes in 1973 went up by as much as 11%, as compared with an 8% expansion in wage and salary earnings.

In Poland new regulations were adopted concerning the wages of workers engaged in various services related to agriculture, since it has been felt for some time that wages in this particular occupational field were not sufficiently attractive for properly qualified people. As of 1 April 1974 the wages of tractor and combine drivers and of repair-shop workers in the so-called economic units of agricultural circles were increased to the level of wages paid for similar work at state farms and machinery centres. Further increases in wages came into effect at the beginning of July 1974 for virtually all services (mechanization, veterinary services, seed inspectorates, etc.) in a large number of agricultural organizations, and in accordance with the general pattern in recent years, price and other material incentives to farmers, in particular to livestock producers, were improved in several countries. In Hungary, where in 1973 the impressive expansion in pig raising was the result of incentives introduced a couple of years earlier, measures were taken to encourage cattle breeding, and the procurement price for cattle was fixed at a level which will ensure a 15% profit to the producer. In Poland, also, purchasing prices for prime-quality beef, for calves and slaughter horses and for a number of livestock products (sheep hides, wool, etc.) were increased in early 1974, but procurement prices were likewise raised for sugar beet, rapeseed and some industrial crops. In 1973 the Bulgarian authorities introduced a series of measures to improve incentives for animal breeding in both the socialized and small-scale private sectors; for example, it was decided to allocate greater quantities of feedstuffs to private plots against the commitments of farmers to increase deliveries of animals for slaughter. Credit facilities will be extended to collective farms and smallholders for the purchase of breeding stock, construction material, mechanized equipment, and other necessities; in addition, premiums for deliveries of animals for slaughter were increased.

Consumer food prices remained on the whole remarkably stable, but developments were not exactly the same in all countries. In Czechoslovakia, for instance, the retail prices of foodstuffs have remained unchanged for many years. In the German Democratic Republic, prices have also remained under strict control, the declared policy being to meet greater consumer demand exclusively by increasing supplies. The price freeze for basic food products in Poland, having been extended to 1973 and 1974, did not ex-

clude a rise of certain prices; there was a rise in the price of restaurant meals, as well as a 22-23% increase in prices of wine, hard liquors and other alcoholic beverages. In Hungary, on the other hand, the authorities aim to develop a system of consumer prices that will correspond to production costs; but this aim is being pursued with extreme caution and is not expected to be reached for about ten to fifteen years. In line with this policy the retail price index for food rose by 5% in 1973 (compared with 1972), reflecting higher retail prices for milk and dairy products, which, in turn, were induced by higher procurement prices, increased prices of liquor and tobacco and unforeseen increases in free market prices of fruit and vegetables caused by poor output in this particular sector.

The policy of maintaining stable or relatively stable consumer food prices while systematically increasing prices paid to producers has met with problems in most countries. Subsidies in the food sector in Poland, for instance, amounted in 1973 to more than 10% of the value of food retail sales. Retail price stability in a number of other countries was even costlier to the governments; in Hungary, for example, stable prices of basic foodstuffs require subsidies amounting to some 35% of total receipts. It now appears that the eastern European countries, which until recently have been in a good position to provide incentives to farmers and to improve the terms of agricultural trade by systematically increasing producer prices, have almost exhausted the possibilities for further upward adjustments. Complaints are common in many countries about the high level of subsidies required to keep retail prices stable, and there is much talk about the need to stabilize the level of subsidies. The situation will become more difficult if, as is widely expected, the higher prices of oil and related products used in agriculture result in higher production costs.

## Plans and policies

Plan figures for 1974 vary greatly from country to country. Bulgaria expects an overall growth of about 5%, with emphasis on animal production. The plan targets set in Czechoslovakia are very much in line with the actual 1973 results, whereas the Polish plan continues to provide for modest increases in output. The Hungarian target is also on the modest side, except that the increase in total output (2 to 2.5%) is expected to come entirely from considerable expansion in the livestock sector (6 to 7%). By contrast, the projected increases in the plans of the German Democratic Republic (6.8%) and, especially, Romania (21.5%) appear to be very ambitious, even though the output target in the latter country hardly exceeds the spectacular results obtained in 1971.

In the U.S.S.R. a special development plan is being prepared for the non-black soil area of the R.S.F.S.R. (north-central part of the European U.S.S.R.). This long-range plan, which extends to 1990, will cover three five-year periods. (The current U.S.S.R. five-year plan ends in 1975.) Details are to be completed in 1974/75 but much information, such as input targets, is already available for the whole period or for 1976-80. The plan covers 29 *oblats* (provinces) and autonomous republics representing an area of 52 million hectares of land devoted to agriculture and 32 million hectares of arable land (14% of total arable lands). As this huge territory includes some of the biggest cities and important industrial centres, the programme is working toward bringing production (especially of animal products and vegetables) closer to the consumer. Relatively poor soil conditions and population outflow from rural areas had reduced the exploitation of land resources in the past: between 1940 and 1970 the cereal crop area was reduced by 20%, the area under vegetables by 38% and the flax area by 44% in the central part of the R.S.F.S.R.

The programme is largely based on the industrial approach to agriculture and on land reclamation. Cereal production is to be increased through improvement in yields and extension of the crop area. Potato and vegetable crops will be increased, especially near big cities and industrial centres, and specialized farms are to be created. Flax production will also be expanded and largely mechanized. Sugar beet cultivation will be encouraged in several provinces, and be concentrated on farms close to sugar factories. There will be a large increase in livestock products, especially by large-scale enterprises. Big complexes, already in progress, are to be created not only for cattle, pigs and poultry but also for sheep.

Heavy investments will be made: in the period 1976-80, 35 000 million rubles are to be invested in agriculture, and 120 million tons of mineral fertilizers, 380 000 tractors, 94 000 grain combines and 230 000 trucks are to be delivered. Land reclamation is to be given particular importance: from 1975 to 1990, drainage will be extended to 9-10 million hectares, irrigation works will cover 2-2.5 million hectares and liming of acid soils will be carried out on 23 million hectares.

About 25 000 kilometres of roads are to be constructed, and food industries are also to be developed. In addition, the plan provides for various social facilities in state and collective farm settlements, to which the populations of small villages are encouraged to transfer.

In the U.S.S.R. the number of collective farms (kolkhozes) diminished during 1973, some 600 of them disappearing as a result of being merged with

other kolkhozes or being transformed into state farms.

It was decided as far back as 1967 to introduce a system of cost accounting on state farms, whereby income from production would fully cover the expenditures, leaving a margin for profit. The sovkhoz, being a state enterprise, was previously able to ignore the profit-making aspect. By 1973 some 8 000 sovkhozes, about half of the total of 16 000, were already operating under the new system. In 1974 another 5 000 sovkhozes were using cost accounting, and all state farms are expected to do so by 1975; however, the State is taking over the financing of important works like reclamation and the construction of complexes and buildings for social services, such as schools, hospitals and houses.

Some data on the development of both state and collective farms in the period 1965-73 are given in Table 2-1.

Kolkhozes and sovkhozes are to continue for a number of years, but they are to be strengthened through increased technical inputs and the development of various forms of associations.

Such associations of cooperative and state farms and the establishment of highly industrialized farm enterprises are, at present, key elements of U.S.S.R. agricultural policy. Agro-industrial integration, as it is officially termed, is assuming different forms of organization, which can be summarized as follows:

1. Associations between agricultural and industrial (sometimes even trading) enterprises, each being autonomous or merged into a farm-factory with a central management; both types have already been organized for vegetables, fruit, grapes, sugar beet, wine and sugar.

2. Highly industrialized large holdings which cover all the various phases of production, such as animal and poultry complexes (poultry factories), as well as some fruit growing and manufacturing enterprises.

3. The organization of factories inside already existing kolkhozes and sovkhozes or the creation of such factories on a joint farm basis. These changes are just being initiated and therefore are more developed in some regions than in others. It would be incautious to say as yet what the new systems have achieved, as similar attempts dating as far back as 1929 had to be abandoned; however, in the U.S.S.R. and in other eastern European countries, this pattern is considered to be the basis of future development. Official U.S.S.R. policy holds that joint farm activities and industrialization of agriculture constitute the future pattern for collective and state farms.

TABLE 2-1. — EVOLUTION OF KOLKHOZES AND SOVKHOZES, 1965-73

| | Kolkhozes (Collectives) | | Sovkhozes (State farms) | |
|---|---|---|---|---|
| | 1965 | 1973 | 1965 | 1973 |
| Number[1] (thousand) | 36.3 | 31.0 | 11.7 | [2]16.1 |
| Families associated (million) | 15.4 | 13.9 | ... | ... |
| Average number of workers (million) | 18.6 | 16.0 | 8.2 | 9.4 |
| Sown area (million hectares): | 105.1 | 98.6 | 89.1 | 99.6 |
| area under cereals (million hectares) | 62.6 | 57.0 | 59.7 | 63.0 |
| Cattle (million head) | 38.3 | 44.9 | 24.5 | 32.5 |
| Pigs (million head) | 24.6 | 32.1 | 12.6 | 19.3 |
| Sheep and goats (million head) | 54.6 | 53.4 | 46.4 | 60.2 |
| Number of tractors (thousand units) | 772 | 1 049 | 681 | 894 |

[1] Excluding fishing kolkhozes. — [2] Excluding 1 246 fattening sovkhozes.

## North America

### Agricultural prices and farm incomes

World shortages of most major farm products and continuing high levels of domestic and export demand dramatically increased farm prices for North American agricultural commodities in 1973. The United States index of prices received by farmers was 37% above 1972, and the comparable Canadian index was 39% higher. In both countries the increase in prices for crop products exceeded that for livestock products. Increased supplies caused farm prices for livestock products (particularly meat animals) to average lower during the fourth quarter of 1973, but they rose once more during the first quarter of 1974. Prices paid by farmers for production inputs were also higher in 1973; however, the rates of increase were significantly lower than those for prices received by farmers, the indices of prices paid by farmers for production inputs averaging about 16% above 1972 in Canada and 20% in the United States. Prices of farm inputs have risen further during 1974 as a result of continuing general inflationary conditions and sharply higher prices for fertilizers, fuels and feeds.

TABLE 2-2. — NORTH AMERICA: ESTIMATED FARM INCOME

| | Canada | | | United States | | |
|---|---|---|---|---|---|---|
| | 1971 | 1972 | 1973[1] | 1971 | 1972 | 1973[1] |
| | *Thousand million Can. dollars* | | | *Thousand million U.S. dollars* | | |
| Cash receipts from farm marketings | 4.5 | 5.4 | 6.9 | 52.9 | 61.0 | 88.6 |
| Government payments | | | | 3.1 | 4.0 | 2.6 |
| Income in kind | 0.5 | 0.6 | 0.6 | 4.6 | 5.0 | 5.8 |
| Net change in farm inventories | +0.2 | —0.3 | +0.4 | +1.4 | +0.9 | +4.0 |
| GROSS FARM INCOME | 5.2 | 5.7 | 7.9 | 62.0 | 70.8 | 101.0 |
| Production expenses | 3.6 | 3.8 | 4.5 | 47.6 | 52.4 | 64.7 |
| NET FARM INCOME | 1.7 | 1.9 | 3.4 | 14.4 | 18.4 | 36.2 |
| REALIZED NET FARM INCOME | 1.5 | 2.2 | 3.0 | 13.0 | 17.5 | 32.2 |

[1] Preliminary.

Gross farm income in North America, which reached a record level in 1973, is estimated to have been 42% above 1972 (Table 2-2); the rate of increase was somewhat larger in the United States (43%) than in Canada (39%). Production expenses also increased in 1973 by about 23%. Higher prices for production inputs appear to have accounted for most of the 18% increase in production expenses in Canada and the 23% increase in the United States. Net farm income rose by 95%: in Canada by 79% and in the United States by 97%. Farm inventories rose in both countries, however, and the increase in realized net income was consequently only 79%: in Canada 36% and in the United States 84%. Government payments in the United States dropped in 1973 to their lowest level since 1965, and a further sharp reduction was expected in 1974. Realized net farm income in the United States averaged $11 332 per farm in 1973, or 82% above 1972.

## Problems, policies and programmes

Even though 1973 production attained record levels, it became increasingly evident during the year that the balance between domestic and export demand and available supplies in North America would not be restored for most major farm products and that prices for these would remain at unusually high levels with consequent inflationary effects. During the latter part of 1973, it also became very clear that fertilizers and fuels would be in short supply for the 1974 crop season and, perhaps even more important, that their prices would be sharply higher. These developments pose fundamental questions: is this a short-term shift away from the long-term tendency of surplus agricultural production in North America, or is it a danger signal indicating that demand pressures on supply are to be a continuing feature of world markets for most major farm products perhaps for the remainder of the 1970s or even longer? With no immediate answer in sight, the Governments of Canada and the United States seem inclined to keep their options open. They have sought increased production in 1974 and seem likely to do so again in 1975; but with previous experiences of market surpluses in mind they are maintaining, on a stand-by basis, the complex of programmes which they have gradually evolved for restraining farm production if the current high pressures of demand on supply prove to be of only limited duration.

### WHEAT PRODUCTION AND STOCKS

Continued very high export demand during the 1973/74 season brought a further sharp reduction in North American wheat stocks, especially in the United States where end-of-season stocks dropped to the lowest level since 1951 (Table 2-3). In order to avoid disruption of normal domestic distribution, the United States permitted imports from Canada toward the end of the season. Because of the sharp reduction in stocks that had taken place during the previous season, total supplies available in North America during the 1973/74 season were approximately 11 million tons less than during 1972/73, despite the record 1973 harvest, which was 12% larger than 1972. As domestic and export buyers competed fiercely for supplies, wheat prices at the farm level soared in the United States from a mid-July 1973 low of $2.47 per bushel to an all-time peak of $5.52 per bushel in mid-February 1974. Both the United States and Canadian Governments sought increased production in 1974 to meet prospective strong export demand and, hopefully, to enable some replenishment of stocks. However, because of unfavourable weather, the 1974 harvest was about the

TABLE 2-3. — NORTH AMERICA: SUPPLY AND UTILIZATION OF WHEAT [1]

| | Canada | | | United States | | |
|---|---|---|---|---|---|---|
| | 1972/73 | 1973/74[2] | 1974/75[3] | 1972/73 | 1973/74[2] | 1974/75[3] |
| | ..... *Million metric tons* ..... | | | | | |
| Beginning stocks | 15.9 | 9.9 | 10.3 | 23.5 | 11.9 | 6.7 |
| Production | 14.5 | 16.5 | 14.2 | 42.0 | 46.6 | 48.5 |
| Domestic use | 4.8 | 4.7 | 4.8 | 21.4 | 20.6 | 18.9 |
| Exports[4] | 15.7 | 11.4 | 13.3-14.6 | 32.2 | 31.2 | 30.0-31.0 |
| Ending stocks | 9.9 | 10.3 | 5.1-6.4 | 11.9 | 6.7 | 5.3-6.3 |

[1] August-July season for Canada; July-June season for the United States. — [2] Preliminary. — [3] Indicated. — [4] Includes wheat equivalent of wheat flour exports.

TABLE 2-4. — NORTH AMERICA: SUPPLY AND UTILIZATION OF FEEDGRAINS [1]

| | Canada [2] | | | United States [3] | | |
|---|---|---|---|---|---|---|
| | 1972/73 | 1973/74 [4] | 1974/75 [5] | 1972/73 | 1973/74 [4] | 1974/75 [5] |
| | ..... *Million metric tons* ..... | | | | | |
| Beginning stocks | 6.2 | 5.7 | 5.9 | 45.1 | 30.2 | 20.5 |
| Production . . . | 20.9 | 20.4 | 17.2 | 182.0 | 186.6 | 149.9 |
| Imports . . . . | 0.8 | 1.1 | 1.0 | 0.3 | 0.2 | 0.3 |
| Domestic use . . | 18.3 | 18.7 | 16.3 | 157.9 | 156.1 | 131.0-131.9 |
| Exports . . . . | 3.9 | 2.6 | 2.7 | 39.3 | 40.4 | 27.9- 28.4 |
| Ending stocks . . | 5.7 | 5.9 | 5.1 | 30.2 | 20.5 | 10.4- 11.8 |

[1] Rye, barley, oats, maize, mixed grains, sorghum and millet. — [2] August-July seasons. — [3] July-June seasons, except for maize and sorghum, which are October-September. — [4] Preliminary. — [5] Indicated.

same as 1973, and total supplies available for the 1974/75 season are consequently below those of a year earlier. Thus the extent to which stocks can be restored will depend largely on the world food situation and the demand for North American wheat to cover food shortages, particularly in developing countries.

The 1973 Canadian wheat harvest, 14% larger than 1972, was slightly higher than the total of domestic use and exports during the season, and consequently stocks showed a corresponding small increase (Table 2-4). The area planted to wheat in 1973 had been 1.3 million hectares, or 12% less than that indicated by the Government as desirable, apparently mainly because of competition from other crops for available land. The wheat programme announced for the 1974 crop was the same as in 1973: the Government again indicated that total plantings of 11.3 million hectares would be desirable, and the Canadian Wheat Board pledged to accept delivery of a minimum of 15.1 million tons with an initial payment of Can. $2.25 per bushel. The initial payment for 1973 was however retroactively adjusted upward in February 1974 to $3.75 per bushel, the final payment to be made after 1 January 1975 so as to fall within the next tax year. The 15 March 1974 survey indicated that Canadian growers intended to plant 10.8 million hectares to wheat, but the spring was late and wet in the Prairie Provinces, and actual plantings totalled only 9.7 million hectares, 4% below 1973, but 11% above the 1968-72 average. Early frost damaged the harvest in September, so the total supplies available for the 1974/75 season are smaller than a year earlier. In September 1973 the Canadian Government established a two-price system for wheat which for the next seven years fixes the price to be paid by millers for wheat used for domestic human consumption at $3.25 per bushel. In seasons when the export price exceeds this guaranteed level, the Government will pay a "consumer subsidy" to cover the difference, up to a maximum of $1.75 per bushel.

The United States wheat programme for 1974 contained no restrictions on production, as area "set-aside requirements" (the device provided by the Agriculture and Consumer Protection Act of 1973 for restraining production) were not applied. The area planted to wheat amounted to 28 million hectares, 18% more than in 1973 and the largest since 1963. Yields averaged below the projected levels, however, because of unfavourable weather in some areas. Production was nevertheless an all-time record 48.5 million tons, 4% above 1973. Because of the critically depleted level of stocks at the beginning of the season, the total supply available for the 1974/75 season is about 3 million tons less than in 1973/74. Farm prices for wheat were expected to average above the target level of $2.05 per bushel during the period July-November 1974, and consequently deficiency payments were not expected to be required. Similarly, market prices were expected to remain above the loan level of $1.37 per bushel, and the Commodity Credit Corporation (CCC) is not likely to acquire appreciable stocks of wheat from the 1974 harvest. The wheat programme for 1975, announced in April 1974, is almost identical to the 1974 programme: there are no restrictions on production (set-aside requirements), the target price is $2.05, and the national acreage allotment is 21.7 million hectares (2.7 million hectares less than in 1974).

### FEEDGRAIN SUPPLIES AND PROGRAMMES

With continued strong domestic and export demand, North American feedgrain supplies remained tight during the 1973/74 season and prices averaged sharply higher. Although total production was about 2% above 1972/73, total supplies available were about 4% smaller because of the sharp reduction in stocks which had taken place; thus stocks were further depleted during 1973/74, particularly in the United States, where end-of-season maize stocks were the smallest since 1948. The Governments of both Canada and the United States encouraged increased production in 1974; however, because of drought, particularly in the United States, the 1974 harvest is estimated to have fallen 19% below 1973. With the further reduction of stocks during the 1973/1974 season, total available supplies for the current season are almost 50 million tons (20%) less than a year earlier. The situation is especially tight in the United States, where the Government has requested major importing countries to restrain their 1974/75 purchases.

As in 1973, market expectations indicated that in-

creased production of feedgrains would again be desirable in Canada in 1974. The Canadian Wheat Board guaranteed acceptance of a minimum delivery of 5.7 million tons of barley with an initial payment of Can. $1.65 per bushel, $0.15 higher than the initial payment originally announced for 1973, but $0.60 less than the 1973 initial payment as adjusted retroactively in February 1974. However, increased plantings were desired also for wheat and oilseeds, and the total area actually planted to feedgrains is estimated to have been slightly smaller and Canada's 1974 feedgrain harvest to have fallen 16% below 1973.

The United States feedgrain programme for 1974, the first under the Agriculture and Consumer Protection Act of 1973, contained no provision for area set-asides and consequently no restrictions on production. The area planted to feedgrains totalled 50.2 million hectares, 1% more than in 1973 and the largest since 1960. The area planted to maize (31.4 million hectares) was 9% larger than in 1973 and the largest since 1955. The area planted to other feedgrains (18.8 million hectares) was however 9% less than in 1973. The barley area (3.8 million hectares) was 16% below 1973, and the smallest since 1953, because of the large increase in spring wheat plantings. Grain sorghum plantings (6.3 million hectares) were down by 2% as a result of larger plantings of wheat and cotton in the southwestern states. The further small decline in the area planted to oats continued the long-term trend. Because of severe drought, the total feedgrain harvest in 1974 is estimated at 150 million tons, 20% below 1973. The maize harvest is estimated as smaller by 26 million tons (18%), grain sorghum by 8 million tons (35%), barley by 2 million tons (23%) and oats by 2%. The total feedgrain supply available during the 1974/1975 season in therefore estimated as 170 million tons — that is, smaller by 46 million tons, or 21%, than during 1973/74. Farm prices are expected to average above the target prices set for maize ($1.38 per bushel), barley ($1.13 per bushel) and grain sorghum ($1.31 per bushel), so deficiency payments will not be required for the 1974 crops. Similarly, market prices are expected to remain above the loan levels established for maize ($1.10 per bushel), barley ($0.90 per bushel), oats ($0.54 per bushel) and grain sorghum ($1.05 per bushel), and therefore it seems unlikely that the CCC will have acquired appreciable stocks of feedgrains from the 1974 harvests.

### Other commodity programmes

*Rice.* The United States national acreage allotment for the 1974 rice crop was reduced to 850 000 hectares (compared with 900 000 hectares in 1973). Marketing quotas are not however in effect for the 1974 crop, and for the first time since 1954 farmers may plant in excess of their acreage allotments without incurring marketing quota penalties. Compliance with the 1974 farm acreage allotments serves only as a condition of eligibility for CCC loans on 1974 rice. The reduction in the acreage allotment and the simultaneous lifting of marketing quotas are in accordance with legislation remaining in effect from the 1930s and 1940s; rice programmes were not covered by the Agriculture and Consumer Protection Act of 1973.

*Groundnuts.* The main features of the United States groundnuts programme remain unchanged for 1974: marketing quotas, a national acreage allotment of 650 000 hectares (the minimum permitted under existing legislation) and CCC price support loans at 75% of parity as of 1 August 1974 (also the minimum permitted under existing legislation). Some administrative changes have been introduced however in an effort to reduce the cost of the programme. The 1973 programme, under which the Government acquired the production from more than a third of the national acreage allotment for disposal, cost about $70 million. The 1974 crop is the last of the three annual crops for which marketing quotas were approved by the December 1971 referendum of growers. A government proposal for groundnut programmes similar to the wheat, feedgrains and cotton programmes contained in the Agriculture and Consumer Protection Act of 1973 has failed to gain legislative approval.

*Sugar.* Proposed legislation to extend and possibly to modify the United States sugar programmes scheduled to expire at the end of 1974 had failed to gain Congressional approval as of 1 December 1974.

*Dairy.* The 1973 Agriculture and Consumer Protection Act extended United States dairy programmes with minor modifications. The minimum support level for manufacturing milk was increased to 80% of parity, which raised the support price from $5.29 to $5.61 per 100 pounds for the remainder of the 1973/74 dairy season; for the marketing year beginning 1 April 1974, it was set at $6.57 per 100 pounds. The support purchase price for butter remained 62 cents per pound, while for Cheddar cheese it was raised from 65 cents per pound to 70.75 cents per pound and for nonfat dry milk from 41.4 cents per pound to 56.6 cents per pound. Support purchases during 1973 (2.2 billion pounds milk equivalent) were only 41% of the 1972 level and the lowest since 1966. Dairy imports in 1973 were more than double the 1972 level, as temporary increases in import quotas permitted larger imports of butter, butter oil, cheese and nonfat dry milk. Temporary increases in import quotas were granted also during the first half of 1974 for Cheddar cheese and nonfat dry milk.

## United States Agriculture and Consumer Protection Act of 1973

The Agriculture and Consumer Protection Act, enacted in August 1973, extended legislative authority for major United States agricultural commodity programmes, Public Law 480 operations and food stamp activities for another four years. In general, this Act maintained United States agricultural policies followed since the early 1960s: greater freedom for farmers to make their production decisions on the basis of market prices and production costs; less rigid government restraints on production and direct intervention in the pricing and marketing of farm products; increased dependence on receipts from market sales (rather than from government payments) for income from farm operations; domestic market prices more closely aligned to export market prices; etc. The Act did introduce however some important changes in the wheat, feedgrains and upland cotton programmes. For the 1974 harvests these programmes were not applied to restrict the areas planted, and market prices for these commodities were expected to remain above the levels at which the price provisions of the 1973 Act would become operative. The 1973 legislation also extended for four years the price support programmes for dairy products, wool and mohair with only minor changes. This legislation does not concern the programmes for groundnuts, sugar beets and sugarcane, tobacco, etc.

For the wheat, feedgrains and cotton programmes the traditional parity-based price objectives, price support measures and related acreage diversion payments were replaced by guaranteed "target prices." The target prices established in the legislation for the 1974 and 1975 crops were $2.05 per bushel for wheat, $1.38 per bushel for maize, and $0.38 per pound for cotton; for the 1976 and 1977 crops these target prices are to be adjusted upward in accordance with changes in the index of prices paid by farmers modified for changes in yield per acre. Target prices for grain sorghum and barley are to be established by the Secretary of Agriculture at "fair and reasonable" levels in relation to those set for maize; for the 1974 crops these have been set at $1.31 per bushel for grain sorghum and $1.13 for barley.

Farmers who choose to participate in these commodity programmes will receive deficiency payments from the Government in years when the national average price received by farmers for any of the commodities during the first five months of the marketing season is below the established target levels. These deficiency payments are subject to two limitations: they are to be based only on production from the participating farmer's acreage allotments as computed on the basis of the projected yields of the respective crops established for his farm; the total payments received by a farmer for participation in the wheat, feedgrains and cotton programmes are not to exceed $20 000.

The legislation also provides for government payments to farmers when drought, flood or other natural disaster or condition beyond their control prevents them from planting any portion of the farm acreage allotment or reduces their total harvest of wheat, feedgrains or cotton to a quantity equalling less than two thirds of the farm acreage allotment times the yield established for the farm. This provision came into operation with the severe drought conditions in 1974.

The new legislation continues acreage allotment and area "set-aside" provisions similar to those contained in previous wheat, feedgrains and cotton programmes. The national acreage allotments are determined annually by the Secretary of Agriculture on the basis of anticipated supply requirements for domestic use and export, with provision for adjustments to assure an adequate, but not excessive, level of carryover stocks. The law specifies that the national acreage allotment for cotton is not to be less than 4.5 million hectares, but no such statutory limitation is specified for either wheat or feedgrains. The national acreage allotments under this legislation are not a direct means of restricting production, but provide, rather, a way of limiting the total production of those commodities for which target prices are guaranteed — that is, for which deficiency payments may be made. For 1974 the following average allotments were established: wheat 22.3 million hectares, feedgrains 36.0 million hectares and cotton 4.5 million hectares.

Under the 1973 legislation a set-aside of cropland is the principal means of restricting areas planted and agricultural production. The Act authorizes the Secretary of Agriculture to provide for a set-aside of cropland if he decides that the total supply of agricultural commodities will otherwise most likely be excessive, taking into account the need for an adequate carryover to maintain reasonable and stable supplies and prices and to meet a national emergency. To be eligible for deficiency payments and CCC loans when a set-aside of cropland is in effect, a farmer must set aside a specified percentage of his farm acreage allotment under the respective commodity programmes plus the acreage of cropland on his farm devoted to soil conservation uses in preceding years. The law further specifies that the total area set aside shall not exceed 5.4 million hectares under the wheat programme and 28% of the farm acreage allotment under the cotton programme. Area set-asides were not included in any of the 1974 commodity programmes.

The programme of CCC non-recourse loans also continued to be in effect, but it is not considered

likely that the CCC will acquire appreciable stocks from the 1974 harvests as market prices are expected to remain significantly above the loan levels (wheat $1.37 per bushel, maize $1.10 per bushel, barley $0.90 per bushel, oats $0.54 per bushel, grain sorghum $1.05 per bushel and cotton $0.25 per pound). Although the CCC may continue to acquire stocks as part of its loan operations, it appears that only token amounts are intended. Only in the cotton programme does the legislation specify a minimum level for carryover stocks in the United States of "not less than 50% of the average offtake for the three preceding years." It is provided, however, that the Government shall establish and maintain a separate inventory of up to 75 million bushels of wheat, feedgrains and soybeans for the alleviation of distress arising from natural disasters.

### Food prices and consumption in the United States

In the United States the consumer price index for food in 1973 averaged 14.5% above 1972, the largest year-to-year increase in a quarter of a century; in comparison the index for all items averaged 6.2% higher, or less than half that for food. Stocks of food commodities were low at the beginning of the year. The needed expansion of production to fulfil the strong domestic and export demand was choked off by a combination of adverse weather, food price controls and higher feed prices. Costs of processing, transportation and distribution of food products also rose, particularly during the latter part of the year, but the major factor affecting food prices was higher prices for the farm-produced raw materials used by the food industry. The farmers' share of the consumers' food dollar rose from 40% in 1972 to 46% in 1973. The index of prices paid to farmers for food products averaged 33% higher in 1973, and the index of wholesale prices all food rose 21%. Retail prices of food products for home use rose 16%, double the rate of increase for prices of food consumed outside the home.

During the first quarter of 1973 prices for meat and poultry led the increase in food prices. Ceilings imposed on prices for red meats at the wholesale-retail levels in March limited advances for this item during the spring and early summer. Ceilings on prices after the point of first sale were extended to other food products in June, so average retail food prices increased relatively little from June to July. However, the combination of ceiling prices and rapidly increasing costs of production disrupted supplies and curtailed total output of meat and poultry products. After price ceilings were lifted in July on all foods except beef, retail food prices rose sharply, the August average increasing some 7% over July. In September the index declined slightly, but then resumed its upward trend, the index for December 1973 reaching 20% above that of the previous year.

Stocks of food commodities at the beginning of 1974 were even smaller than the year before, and retail food prices continued to rise, with the June 1974 index 15% above the previous year. The rapid acceleration in food prices during the winter was essentially an extension of the abnormal supply/demand conditions of 1973, as the effects of tighter supplies, higher farm prices and increasing costs of processing, transportation and distribution of food products made their impact at the retail level. The pattern of generally rising retail food prices was expected to continue through 1974. Farm commodity markets and, in turn, retail food prices remained extremely sensitive to developments affecting domestic production, the state of the national economy and the world food supply and demand situation.

Although total consumer expenditures for food continued to rise in the United States, the increase fell short of the amount that would have been required to offset higher retail prices for food. Real food expenditures (adjusted for price changes to reflect quantity changes) in 1973 were 2.5% below 1972, the largest year-to-year decline since 1933. During the first quarter of 1974 real food expenditures declined for the seventh consecutive quarter and were 5.3% below the level of a year earlier. The decline in real food expenditures has involved both a decline in per caput consumption (see below) and a shift to less costly foods. Since mid-1973 food has accounted for an increasing percentage of total personal consumption expenditures in the United States, reaching 17.7% in the first quarter of 1974 as compared with 17.1% a year earlier.

The United States Government's index of per caput food consumption showed a decline of 1.6% in 1973, the first such year-to-year decline since 1965 and the largest drop since 1957; however, in terms of conventional nutritional standards (calories, proteins, fats, carbohydrates) 1973 per caput consumption was about the same as in 1972. Per caput consumption of livestock-related foods fell by 4% in 1973; meat by 7% (13 pounds carcass weight), the lowest consumption figure since 1966; poultry by 4%; and eggs by 5%. Per caput consumption of dairy products (including butter) showed no change, while that of vegetables rose by 3%, the largest such year-to-year increase since 1945, mainly accounted for by processed items. Per caput consumption of fats and oils and of sugar and sweeteners was slightly larger, thus continuing the general trends of recent years.

Expenditures for subsidizing domestic food consumption under United States Department of Agriculture programmes continued to rise during 1973, the total value of these programmes accounting for

3.6% of personal consumption expenditures for food during the first quarter of 1974, as compared with 3.1% a year earlier. Although the total value of these programmes in 1973 ($3 800 million) was only 7.5% higher than in 1972, their value during the first quarter of 1974 was 31% above the corresponding quarter of 1973. Under new legislation the value of coupon allotments under the food stamp programme was adjusted upward in July 1973 and again in January 1974 to reflect changes in the cost of living. During the first quarter of 1974 food stamps were issued at an annual rate of $5 200 million, as compared with $4 000 million a year earlier. A monthly average of 12.4 million persons participated in the food stamp programme in 1973, about 6% more than in 1972, but this increase was almost equalled by a corresponding drop in the number of participants in the commodity distribution programme. Whereas the school lunch programme continued to encompass about 25 million children, its cost to the Federal Government rose by 17.5% to $897 million in 1973.

## Oceania

### Agricultural prices and farm incomes

With continuing high world market prices for most of the region's agricultural commodities, farm income in the region rose sharply in 1973/74 for the second consecutive season; however, on the basis of tentative estimates, Australia accounted for all of the increase. In New Zealand, drought once more restricted output, while production costs continued to rise, more than offsetting the effect of high market prices for farm commodities, and farm income appears to have shown a small decline. Export returns were adversely affected in both countries by the rise in ocean freight rates which followed the oil crisis in October 1973.

Australian farm income in 1972/73 was A$1 888 million, a record 65% above 1971/72, and a further increase of about 50% has been estimated for 1973/1974. The combination of high world market prices for most agricultural commodities and generally favourable weather has created a period of exceptional prosperity for the Australian rural sector as a whole. The situation in 1974 contrasts markedly with the relatively depressed rural conditions in 1970/71. The improvement has been the result mainly of external factors which had been offset to some extent by unfavourable weather in 1971/72 and 1972/1973, but which were strengthened by better than average rainfall in the principal producing areas in 1973/74.

The gross value of rural production in 1972/73 reached A$5 000 million, 25% above 1971/72, while farm costs at A$2 906 million were higher by only 4%. An increase of 43% in the gross value of livestock production, mostly accounted for by wool and cattle for slaughter, was slightly offset by a reduction of 7% in the gross value of crop production. Prices for most major field crops were higher, but did not fully compensate for the reduced volume of production resulting from drought. For 1973/74 both the gross value of rural production and farm costs are estimated to have increased further, by 26% and 15% respectively. With the end of the drought the value of 1973/74 crop production was about 63% above 1972/73, wheat and barley contributing most of the increase. The rise in the value of livestock production was, however, only about 8%, beef and veal accounting for most of the increase.

Farm income in New Zealand, which reached a record level of NZ$515 million in 1972/73, is estimated to have fallen to about NZ$500 million in 1973/74, and a further drop to $465 million has been projected for 1974/75. The gross value of farm production in 1972/73 was NZ$1 534 million, 36% above 1971/72. Although the total volume of production was slightly lower, prices averaged sharply higher for wool, beef, mutton and lamb. The index of prices received for farm commodities during the April-June quarter of 1973 was 42% above that of a year earlier. Although production costs also increased, the April-June farming-costs price index was only 16% above the corresponding quarter of 1972. The reduction in New Zealand farm income for 1973/74 reflects the diminished production of wool, mutton and lamb, and dairy products largely caused by drought conditions in 1972 and 1973. Also, the index of prices received for farm commodities levelled off during the second half of 1973 and began to turn downward early in 1974. An additional factor was the increase in farming costs of about 13% for 1973/74. During 1973, New Zealand sheep farmers deposited NZ$95 million under the Farm Incomes Stabilization Scheme, almost $10 million more than the announced target.

### Problems, policies and programmes

Strong export demand for most of their major agricultural commodities since 1972 has, at least

temporarily, altered significantly the nature of the problems confronting Australia's and New Zealand's agricultural sectors. The marked improvement in farm incomes has, however, made available important additional means for dealing with these problems. The many commodity stabilization schemes and marketing board arrangements that have been established in both countries to absorb the more severe shocks from sharp falls in export prices for the commodities concerned are being continued.[1] Moreover, good export market prospects have allowed a relaxation of restraints on wheat, sugar and rice production in Australia.

Because of the region's heavy dependence on export markets as outlets for its major farm commodities, its agricultural sectors are highly vulnerable to fluctuations in world market prices. Recent experience has reemphasized that prosperity for the Australian and New Zealand agricultural sectors, on anything like their present scale, depends primarily on external conditions: world demand/supply balances for their commodities and for competing products; and the manner in which the Governments act individually or jointly to deal with problems created by these balances, especially with regard to specific arrangements for international trade in food and agricultural commodities. Thus both Governments are keenly interested in proposals regarding world food security stocks, food aid and other items on the agenda of the United Nations World Food Conference, the present round of multilateral trade negotiations sponsored by GATT, and FAO proposals concerning a strategy for international agricultural adjustment, as well as related policies and measures adopted by individual major importing countries.

Both Australia and New Zealand have obviously benefited enormously from the strong export demand for their commodities in recent years. The notably marked increase in farm income provides an excellent opportunity for farmers to make further innovations in their farming operations. The improved liquidity of many farmers has facilitated larger investments in new inputs and improved technology, enabling them to increase productivity and reduce costs so as to make their farms more secure against periodic low commodity prices associated with normal market fluctuations; their liquidity also helps them to remain competitive in world markets and to adjust production to changing patterns of demand. If investments are directed toward increased productivity and lower costs in traditional patterns of production, however, rather than toward new systems better suited to meet new and changing demand patterns, much of their present advantage could be lost. To take full advantage of this opportunity, farmers in both Australia and New Zealand need clear signals as to which adjustments and investments they must make now in order to be in a good position to meet market conditions in the late 1970s.

[1] For details, see *The state of food and agriculture 1973*.

### Wheat production and stocks

Strong export demand and the very small carryover from the previous marketing season led the Australian Government to encourage virtually unlimited wheat production in 1973. Delivery quotas were increased to 14 million tons, only slightly less than the record harvest of 1968, and guaranteed advance payment for deliveries from the 1973 harvest was raised by A$0.10 per bushel to A$1.20. The wheat area was increased by 18% to 9.0 million hectares. The crop was adversely affected by unusually wet weather and suffered from rust and other disease problems in the eastern wheat area, while Western Australia had a favourable season. The 1973 production is estimated at 12 million tons, almost double the drought-stricken level of 1972; there was however an unusually large proportion of off-grade wheat due to rust damage. Wheat exports were double those of the previous season, but again limited by the availability of supplies. End-of-season stocks were still at a minimum level (Table 2-5).

Prospects for the 1974 harvest were good. Plantings were estimated to be about 15% larger than in 1973, with moisture conditions at least adequate for normal yields. In view of present export prospects, however, a harvest of 10 to 12 million tons is likely to leave end-of-season stocks at a minimum level for the third consecutive season.

Table 2-5. — Australia: supply and utilization of wheat

| | 1972/73 | 1973/74 [1] | 1974/75 [2] |
|---|---|---|---|
| | ..... *Million metric tons* ..... | | |
| Beginning stocks [3] | 1.4 | 0.5 | 0.5 |
| Production | 6.4 | 12.0 | 10.0–12.0 |
| Domestic use | 3.2 | 3.4 | 3.7 |
| Exports [4] | 4.1 | 8.6 | 6.3–8.3 |
| Ending stocks [3] | 0.5 | 0.5 | |

[1] Preliminary. — [2] Indicated. — [3] December-November year. — [4] Includes wheat equivalent of wheat flour.

### Wool production and prices

Australia's wool production in 1972/73 dropped to 737 000 tons, 16% below the previous season. This drop reflected an acceleration in the rate of decline in the number of sheep and a reduced clip per head.

Between 31 March 1972 and 31 March 1973 the number of sheep fell 14% to 140 million (the lowest level since 1956), because of the continued high slaughtering rate of both sheep and lambs, a particularly low lambing rate and a larger than usual number of deaths on farms caused by drought. The below-average clip per head and the poor lambing rate were also indicative of the poor weather. Wool prices showed considerable variation during the season, with the greasy auction price averaging 183.77 Australian cents per kilogram, a 144% increase over the previous season. The Australian Wool Corporation (AWC) reduced its stocks of wool to a minimal level during the season. For the 1973/74 season Australian wool production was estimated at 701 000 tons, 5% below the 1972/73 production. A substantially lower slaughter rate halted the decline in sheep numbers, and improved weather increased the average clip per head and brought, as well, a more average lambing rate. Wool prices again showed considerable variation during the season, with a general downward trend, but the season average was close to that of 1972/73.

In New Zealand both wool production and sheep numbers declined in 1972/73, each by 4%, to 309 000 tons and 56.7 million head respectively. As in Australia, drought encouraged more severe culling of ewes and reduced the average clip per head shorn. Auction prices for greasy wool averaged 143.96 NZ cents per kilogram, 117% above 1971/72. The New Zealand Wool Marketing Corporation completed disposal of its stock carried over from the previous season and made no purchases from the 1972/73 clip. New Zealand's 1973/74 wool production was estimated at 300 000 tons, 3% below 1972/73 and the third consecutive annual decline. Drought conditions, which continued during the early part of 1973, lowered the lambing rate. Auction prices fluctuated during the season, showing a generally downward trend.

## Latin America

### Development plans and policies

Recent experience in Latin America has made increasingly evident the importance of periodic evaluation and revision to effective planning. Both Paraguay and Peru modified their medium-term plans in 1973 after comparing actual performance with the originals. In Argentina, control and evaluation of the plan, including periodic revision of its programmes and projects, are now routine practice in implementation. Despite the progress in planning made in many countries, however, communication between central planning agencies and sector planning offices is virtually nonexistent or scarcely used. Furthermore, the budget of the Ministry of Finance and the annual operational plans of the various executing bodies, including ministries, show only a partial conformity, although for good planning it is essential that the annual programming efforts of the budgetary authority and the executing agencies be closely aligned. If the quality ad delivery rate of agricultural plans, programmes and projects are to be improved, the programming office of the ministries of agriculture need strengthening in both their organizational and technical capacities.

New development plans were put into effect in Argentina, Barbados, Costa Rica, Ecuador, El Salvador, Honduras and Uruguay in 1973 and the first months of 1974. Plans were also being drafted or revised in Brazil, Jamaica, Nicaragua and Venezuela.[2] All the plans emphasize increased output but high priority is also given to a more equitable distribution of earning capacity and income, to a reduction in regional differences in production and income and, lately, to the development and conservation of natural resources. Resource conservation has received attention in the plans of Argentina, Brazil, Colombia and Honduras, while in some of the new plans, such as those of Argentina and Costa Rica, there is support for political and economic integration on the subcontinent.

Argentina's three-year plan for reconstruction and national liberation (Plan Trienal para la Reconstrucción y la Liberación Nacional) for the period 1974-77 has established a system of concerted planning, which implies active and effective participation of all sectors of society and the economy in preparing and executing development plans and programmes. This framework has been set up, in particular, for the elaboration and implementation of agricultural and rural development programmes. A special committee in the Ministry of Economy, composed of representatives of producers and their cooperatives, agricultural labour, agro-allied industries, consumers and the public sector, will be the principal body to elaborate them. Central objectives of the present plan are the achievement of social justice, which implies a more equal distribution

[2] The main features of current development plans in Latin America are given in Annex table 12.

of means of production and income; the regaining of economic independence; the strengthening of the public sector; and economic and political integration with the rest of Latin America. For agriculture the plan has set the following basic goals: an expansion of output; a more equal distribution of agricultural income; a more appropriate regional distribution of output and income in the sector; the provision of agricultural inputs and services for all producers, including marketing activities in the public sector; and an increase in the participation of the rural population in the process of political, economic and social development. The plan calls for a special tax on land in holdings, a forestry law, a programme of rural housing, price policies, a nutrition programme and a comprehensive national food supply plan.

Bolivia's long-term strategy for the years 1971-91 aims to reduce the economy's dependence on the foreign sector and to involve the rural population more closely in social, economic and political developments. The 1973-77 national development plan, as part of this perspective framework, stresses the need for an accelerated and continued expansion in the directly productive sectors, a more intensive utilization of existing infrastructure, an increase in exports and a selective substitution of imports. To strengthen the planning system, major responsibility was shifted in September 1973 to the Secretariat of the National Economic and Planning Council, located in the President's Office.

The new Government of Brazil, soon after its installation on 15 March 1974, identified its major problems as inflation, income distribution, illiteracy and the quality of the public health services. At present, the Ministry of Planning is preparing a new development plan in close collaboration with sectoral programming units such as the Under-Ministry for Planning of the Ministry of Agriculture (SUPLAN), the National Institute for Colonization and Agrarian Reform (INCRA), the Superintendency for Fishery Development (SUDEPE), as well as with regional planning bodies. A special secretariat for environment, created in the Ministry of the Interior in October 1973, is in charge of preparing and coordinating programmes for developing regional and natural resources.

The change in Chile's Government in September 1973 caused radical reorientation in economic policy and development strategy. In place of the planning effort which was previously compulsory for the public and social property sectors and indicated for the private sector, present policy-making is geared to the context of a liberalized market economy. Although some national planning activities have been envisaged in the government programme, the role of central planning, with the State predominating, will become much less important. The new system of planning is to become largely decentralized, with the regions having their own responsibilities in formulating, preparing and executing their development objectives and plans. The overall goal of the present development programme is a 6% annual growth of the gross domestic product (GDP), with special priority given to increases in agricultural and industrial output. While structural change through agrarian reform, for instance, has been discontinued, agricultural policy is basically designed to increase output for domestic consumption and export. Government programmes aim to improve relative prices for farmers and expand technical assistance for production and marketing, agricultural credit and improvement in farming methods. The ECA (Empresa de Comercio Agrícola) will continue to be the Government's purchasing agency for domestic and imported agricultural commodities, although the private sector may undertake such activities. Agricultural programming is now carried out by a work group consisting of representatives of the Ministry of Agriculture, its Agricultural Planning Office (ODEPA), the National Development Corporation (CORFO), the Agricultural Development Institute (INDAP), the Agrarian Reform Corporation (CORA) and the central bank.

The 1971-75 development plan of Paraguay has been modified in a revised plan for 1972-77. Major objectives for agricultural development are a more intensive utilization of natural resources and of the capital invested in the sector, in order to expand exports of both traditional and nontraditional commodities. Public investment in agriculture will increase by 26% and would thus account for 16% of total public investment expenditures in 1977. A credit programme to assist small and medium farmers has been set up to expand output, mainly of such export crops as cotton, soybeans and tobacco.

The biennial plan (1973/74) of Peru, prepared within the framework of the national development plan (1971-75), shows modifications and adjustments necessitated by the changes which occurred in the economy during 1971 and 1972. The biennial plan indicates the determination of responsible authorities to consider planning as a continuous process, with periodic evaluations of progress. The general objectives of the plan are a substantial increase in employment opportunities (a net increase of 300 000 in the labour force); greater self-sufficiency; strengthening of economic and administrative decentralization with a view to stimulating development outside the Lima-Callao area; greater participation of the whole population in political, social and economic processes, e.g., through expansion of the "social property" sector; and generally more State influence on the economy. Emphasis is placed on expanding the supply of consumer goods for poorer people and increasing the coverage of the social services. Invest-

ment expenditures should increase by 47% over 1971/72. Agricultural development programmes feature the expansion of output and rural employment within a newly established agrarian structure. The agrarian reform process will continue along the following lines: creation and expansion of new systems of ownership of the means of production; just distribution of and increase in rural incomes; establishment of cooperatives to facilitate the development of efficient production units; improvement of the marketing system; and greater participation of the rural population in the decision-making process. Integral development programmes (PID) and integral projects for rural settlement (PIAR) aim at maximizing rural employment in the new land-tenure and production systems. Recently the Government has elaborated a well-designed package programme of crop development in selected areas involving seed, fertilizers, credit and technical assistance; it also intends to introduce a centralized planning system for the planting of crops.

Uruguay's national development plan (1973-77) is primarily indicative, like many other Latin American plans. It gives attention to the expansion of output of the traditional export products: meat, wheat and wool. The public sector will play a greater role in the relocation of small farmers on underutilized lands expropriated by the State. The area cultivated should expand slightly from 1.29 to 1.32 million hectares during 1974-77. In addition, the Government will take measures to improve and expand storage and transport facilities. Increases in the volume of exports are also to be encouraged by fiscal measures, consumption restrictions (meat) and maintenance of large-scale production units (*latifundio*) in agriculture.

The principal targets in Colombia's agricultural development strategy are increased output, expansion of employment and agricultural earnings, more equal distribution of means of production and income, improved use and conservation of natural resources and higher standards of living for the rural population. Among the means of achieving these goals are technical assistance and credit programmes, marketing and price programmes and policies, agrarian reform and policies aimed at better utilization of natural resources (under the Institute for Development of Natural Resources [INDERENA]).

The main medium-term objectives of Ecuador's comprehensive plan of transformation and development, 1973-77, are agrarian reform, strengthening of the public sector, including tax reform and improvement in the administrative structure, and reform of the financial, banking and credit systems. The following priority areas have been selected to strengthen public planning organization: (1) widening of the tasks of planning and coordinating bodies, including regionalization of the planning effort; (2) creation of strong sector programming and evaluation offices (during the preparation of the present plan the relations between the central planning body and the ministerial planning units, including that of the Ministry of Agriculture, were very limited); (3) strengthening of the National Development Bank and the Ecuadorian Institute for Agrarian Reform and Colonization (IERAC); and (4) application of modern systems of budget planning and control procedures. Heavy investments in agrarian reform, colonization and the irrigation infrastructure are a major feature of Ecuador's agricultural development programme.

Although Mexico has no overall economic planning process, there are various programming efforts in conjunction with short-term planning, budget preparation and economic and financial policies. In principle these activities, including elaboration of annual public sector plans and sectoral programmes, are performed by the Ministry of the Presidency, the Ministry of Finance and the Ministry of National Development (Secretaría del Patrimonio Nacional). Hitherto, because of the lack of effective channels of communication between the public and private sectors, it has been rather difficult however to relate the two types of programming. Despite the limitations of formal methods, a medium-term planning effort for the period 1970-80 was carried out late in 1973. According to its projections, agricultural gross domestic product should grow annually by 3.7 to 4.8%, industrial production by 8.9 to 9.2%, construction by 8.3 to 8.6% and commerce and service 6.9 to 7.9%; the overall growth rate would amount to 7 to 8% a year. In the longer run, major emphasis is put on the creation of new jobs and a more equitable income distribution. Specific goals for agriculture are sustained increases in output, expansion of employment opportunities, increases in small farmers' incomes and improved nutritional levels.

Government policies in 1974 aim at further organization of small farms; more infrastructure programmes, including irrigation works (rehabilitation programmes and small-scale irrigation under the Benito Juarez Plan); expansion of agricultural credit; wider coverage under the crop insurance system; higher support prices, especially for the basic food crops; and considerable expansion in the capacity of the fertilizer industry.

High priority has been given to expansion of agricultural production and rural development because of unsatisfactory recent performances. The National Programme for Food Production deserves special mention. Its central objective is a 5% average annual increase in basic food production over a period of ten to fifteen years. Short-term targets are incorporation of 200 000 hectares of unused arable land, expansion of credit and technical assistance, especially

for maize, wheat, beans and oilseed crops. This programme will be administered by newly created State councils (*juntas*), in which regional bodies of the public sector, *ejidatarios*, *comuneros*, small individual farmers, credit institutions, and other interested groups will take part. The Government intends to bring more industrialization to rural areas, using the National Fund for Development of the Ejidos (Fondo Nacional de Fomento Ejidal) for this purpose, and it aims to create more new jobs in backward rural areas through the Public Investment Programme for Rural Development.

The 1974-78 national development plan of Costa Rica has the following objectives: purposeful employment policy; improved income distribution; increased diversification of production and exports; greater efficiency in the public sector; and higher rates of saving and investment. It emphasizes that the standards of living of the entire population can rise only through economic growth and changes in production and sociopolitical structures. There is to be strengthening of the public sector. Expansion of employment is also given priority, especially in the more productive sectors. In agriculture, human productivity should increase through better utilization of arable land with irrigation and drainage schemes. During the period covered by the plan the number of jobs needed for new entrants in the labour force is estimated at 127 000; in addition, a sharp reduction in the present unemployment and underemployment rates is strongly required. The agricultural sector should absorb some 18% of the growth in the economically active population in the period 1973-78, whereas its share of the active labour force should decline from 37.0 to 34.5%. The plan proposes the establishment of a National Interministerial Committee for Labour and Employment to monitor and coordinate efforts toward creating employment. Targets in the agricultural strategy, in which Central American integration is specifically mentioned, are an increase, or at least a maintenance, of the growth rates of agricultural exports; agricultural growth and development, to contribute more effectively to reducing income disparities; and more formal regionalization of agricultural activities as a way of widening the resource base. The plan has four main fields of action: the coordinated planning and execution of the agricultural agencies; the decentralization of planning and plan implementation; the participation of farmers and *campesinos* in the decision-making process; and the concentration of public resources in selected priority programmes and projects.

The new national development plan of Honduras (1974-78) contemplates fundamental changes in the economic and social structure. Its main objectives are the insurance of sufficient income to the whole population, satisfying basic needs in nutrition, housing, education, health and employment; the achievement of a more equal distribution of income and means of production; the transformation of the production structure; and the rational exploitation of natural resources. The strategy for agricultural development relies heavily on agrarian reform and forestry development. It stresses the importance of land, the creation of employment and the transformation of the *latifundio-minifundio* structure into a modernized agriculture with viable production units. There are programmes for integrated agrarian reform, in which some 100 000 families will be settled on 600 000 hectares. All forest resources are to be nationalized, and a forestry development corporation is to be established. Farm communities and cooperatives will be enabled to share in the development of these resources. The forestry programme includes timber conservation, development of a wood processing industry, better quality timber supplies and increased exports.

In the Dominican Republic the comprehensive plan for agricultural development (Plan Integrado de Desarrollo Agropecuario [PIDAGRO]) of 1970-74 aimed at increasing the output of small farmers and strengthening the public sector; it had a strong regional approach to agricultural development. Regions were subdivided into communities where small farmers were encouraged to participate actively in planning and executing agricultural programmes. The first phase of the plan included sub-programmes in research, technical assistance, training, animal health, livestock production, credit, cadastral activities and soil-capability studies, as well as institutional improvements. The second phase places emphasis on marketing, agrarian reform, irrigation and drainage, reforestation and community development.

The new four-year development plan (1974-77) of Barbados notably strives for a decrease in the unemployment rate, which presently stands at 11%, and an expansion of the productive capacity of the whole economy. The plan requires more investment in the sugarcane and banana subsectors as well as some diversification of agricultural production for import substitution.

Jamaica's general priorities are the development of human resources and the revitalization of agriculture through land settlement programmes and expansion of social services such as housing and education. The Green Paper containing the Government's proposals for agricultural development indicates the following main lines of action: more equitable distribution of agricultural land; more efficient utilization of natural resources, especially of land through land reform, land settlement and infrastructural works; setting up of training, education and extension services to farmers; reorganization and ex-

pansion of research activities, as well as the introduction and wider application of new technologies; creation of cooperation schemes for farmers; and improved agricultural credit and marketing.

In St. Kitts-Nevis, the Agricultural Development Act of 1973 aims at higher incomes, increased employment opportunities and a better standard of living. The Act provides for the establishment of a land development authority and stresses the importance of creating economically viable farms. There is to be a central agricultural marketing corporation.

## Integrated rural development

An integrated approach to rural development is not new; commonly known as the package deal, or programme, it originated in India late in the 1950s and early in the 1960s. There are always problems associated with it, including where and when it should be used, its content and who should receive its benefits.

As funds for rural development are extremely limited in all developing countries, the choice of areas to receive a package deal has to be approached with great care. Recent experience in Latin America has shown that a conflict between welfare and more purely economic considerations can arise in making such a choice. The "community development" approach is based essentially on improving basic services to poor rural areas, regardless of their economic potential; clearly, this is the welfare choice. A second approach gives priority only to those rural areas which have distinct possibilities of development, despite their present depressed conditions. It appears that a gradual shift toward the second approach is now taking place in Latin America. Chile adopted the selective approach as far back as 1964 and applied it more vigorously after 1970, but the recent political and social instability has eroded its progress. Since 1969 Peru has chosen the more rigorous approach applying it only to areas with development potential, and Ecuador has followed suit since 1972. Bolivia is at present applying its rural development programme over large areas, thus precluding concentrated efforts. In Colombia, welfare aspects seem to have priority in rural projects currently under preparation, although there is a less pronounced bias toward areas with economic potential.

Progress with package programmes varies greatly in Central America. Only Honduras and, to a limited extent, Panama have been actively interested, while El Salvador and Guatemala are limiting their support to community development.

The recent experience of Ecuador and Peru with integrated rural development in areas with economic potential is briefly examined below.

### Ecuador [3]

Rural development in Ecuador has been handicapped by the relatively large number of public and private agencies involved. This problem is not limited to Ecuador, of course, or to rural development; but it has led to much duplication of effort, waste of all kinds and relatively few positive results.

Recently, there have been serious attempts to overcome this handicap and to organize a new multi-agency programme of clearly defined and located projects. This programme is based on the active participation of the farm population and relates to a wide range of activities, including land redistribution, water supply, credit, technical assistance, marketing, training and education.

First efforts have been concentrated mainly in the Andean and inter-Andean area with twenty-five heavily populated rural areas in the Sierra having been identified as possible choices. Final choice of an area depends on certain criteria. First, information is needed about such basic items as population density, land tenure and availability of water. Then, consideration must be given to the ethnic and social structure of the population, the existence of projects for natural resource development and the general level of knowledge about the areas concerned. Finally, account must be taken of the interest and capacity of the population to participate actively and responsibly in projects, together with the existence of public and private development institutions in the project area, or capable of operating in it, and ecological characteristics (soil, water, climate) favourable to the success of the project.

Applying these basic criteria, it was decided to begin rural projects in four areas: Ayora-Olmedo-La Esperanza, Chota, Quero and Columbe.

A general outline of the Ayora-Olmedo-La Esperanza project is given to illustrate the nature of these four projects. The area covers approximately 161 square kilometres. It is divided into two sectors separated by a belt of farms not included in the project and encompasses part of the parishes of La Esperanza and Angochagua (in Imbabura Province) and Olmedo and part of Ayora (in Pichincha Province). About 6 700 people, all Indian, live in the project area, mostly on farm settlements. A survey conducted in 1971 in El Abra, a farm settlement of 210 people, yielded the following data: school attendance (6-15 years of age), 54%; illiteracy (population above ten years of age), 70% (male, 59%; female, 83%); school instruction for population above ten years of age, 5%.

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[3] Based on *Informe de Identificación de Prioridades de Inversión en el Sector Agropecuario de Ecuador*, August 1973.

The inhabitants are almost exclusively farmers. Some estates have already benefited from agrarian reform projects now in progress. Holdings awarded for individual or collective farming average 6 to 8 hectares per family. On two of the three projects in progress in the area, plans call for collective cultivation of most of the arable area. The principal crops are barley, wheat, lima beans, potatoes and, to a lesser extent, beans, peas and maize. Cattle, particularly dairy herds, are important, but sheep and pigs have a significant complementary role in the economy. The principal products sold are barley, wheat, potatoes and milk.

In the area of the Cayambe project the annual income of the ex-sharecroppers (an average of 4 hectares cultivated) is estimated at 5 000 sucres (US $200) and that of the "apegados" (less than 2 hectares cultivated) at 3 500 sucres (US$140).

The breakup of estates has given rise to well-knit, active peasant cooperatives, the oldest and most significant of which are in the Pesillo project, where the leaders exert remarkable influence. The human potential of the area is on a level with the natural development potential. Several institutions operate in the area.

The poor living conditions there are gradually being improved by programmes for the transfer of lands and the exploitation of natural resources already begun in several sectors.

The zone in which the project area is situated has been defined as humid mountain forest (ph-MB), having an average annual rainfall of about 1 000 millimetres, with peak precipitation in April and November; there are on the average 149 rainy days a year, and the annual average humidity is 78%. Temperature records show an average monthly peak of 13.5°C in May. The low-lying zone is a broad, almost flat valley with a few streams. The substratum is hardened "cangahua," a deposit of ancient volcanic ash, over which more recent accumulated ash has given rise to the present soils; these are of irregular depth and in very extensive patches have been entirely removed by erosion, leaving the cangahua exposed, particularly on slopes. A detailed study of the soils at Pesillo, with a map on the scale of 1:5 000, found that a layer of hardened cangahua appears on the surface or at depths of as much as 1 metre. There are eight soil series, ranging from deep and very deep well-drained loams with black volcanic ash, to very poorly drained peaty soils. The Cayambe regional land-transfer project includes a description of the arable areas on the eight estates covered by the project. Two land-use maps on a scale of 1:5 000 have been drawn on the basis of the existing soil map of the Pesillo Estate. One of them shows the land-use potential in detail; depth of the soil, slope of the ground and drainage were the three main factors considered in determining fifteen land-use categories, indicating the conditions of the soil (apparent fertility, depth and permeability), measures required for improvement and, generally, the importance of conservation measures.

These studies provide a good basis and model for action in the rest of the Ayora, Olmedo and La Esperanza area since prevailing conditions and characteristics are highly similar to those of the Pesillo Estate.

The soils are now being used mainly for wheat, barley, potatoes and pasture and, on a lesser scale, maize, peas, lima beans, quinoa, vegetables, fodder oats, sorghum and crops to cover local needs. Another major crop in the higher zones is pyrethrum, for which much manpower is needed. Livestock products include mutton, wool and pigs, and particularly milk. The sheep and pigs are native breeds, kept in common folds and sties without special facilities. As regards water resources needed for irrigation, good information is available relating to the existing hydrological study of the area, the sources of water supply, the flow rates of rivers and the present irrigation network on the estates. The sources of water supply for the area are varied — in particular, La Chimba river. The upper reach of this river is easy to tap for irrigation purposes because the stream course is not very deep. Tapping the middle and lower courses would be very difficult, if not impossible, because the stream course gradually deepens, with the bottom sinking to below irrigation elevations. The entire basin of this river must be maintained and conserved to prevent the flow from diminishing in volume from year to year. Part of the irrigation system would function by gravity.

Although there is no specific study for forest development, the Forestry Service of the Ministry of Agriculture takes the view that there are some areas, not completely defined, available for forest planting and extraction operations. An important project is about to begin in the Angla and Topo highlands with the following recommended species: *Eucalyptus globulus* (blue gum, or eucalypt), for timber stands; *Prunus serotina* (capulí, or black cherry); *Cupressus lusitanica* (Portuguese cypress); and *Pinus radiata* (Monterey pine), which should be used together with blue gum for shelterbelts.

On the basis of all these surveys it has been recommended that operations for the integrated development of the area be concentrated on some 15 600 hectares between the villages of Ayora and La Esperanza, with projects that will encourage active participation by the peasants in order to generate changes of attitude, opportunities and income levels. The guidelines for action were developed with the help of the information obtained from the Cayambe regional project, the Pesillo resettlement project, the

El Abra resettlement project and other sources, including the provincial-level documents prepared by the Andean Mission.

*Peru* [4]

In Peru integrated rural projects are associated with areas undergoing agrarian reform. Criteria used in selecting project areas have been the area's significance in agrarian reform at both regional and national levels; the likely social and economic returns from investment in each area, particularly in terms of food production, redistribution of income and increases in per caput income; the possibilities of an immediate improvement in the irrigation systems through application of the new water-use code; the normal requirements of financing agencies relating to technical, economic and financial feasibility of investment projects; and the availability of basic information, including engineering, soil, water and marketing studies and appraisal of local administrative capabilities to cope with new projects.

The projects are largely based on production possibilities within a five-year period and take into account, as realistically as possible, likely changes in farm management practices during this period.

An objective of the first projects approved was a rapid improvement in earnings and living conditions of some 24 000 peasant families who had already been awarded lands under the agrarian reform. A cooperative system was introduced in farm management, with farmer training and technical assistance. Facilities for improving the marketing and processing of local produce were also given priority. Special importance was at first given to the identification of areas in the coastal strip, where agrarian reform was being strongly pushed, and then the Ferreñaje and Virú area projects were started. The studies were later broadened to include the Andean zone, which resulted in the Anta and Lampa-Capachica projects. The projects are based on a specific provision in Article 92 of Decree-Law 17716.[5]

Area projects in Peru encompass six main programmes which relate to the following:

(1) land tenure (expropriations, awards, organization of enterprises);

(2) production (crops, forest plantations, livestock, crafts, poultry raising);

(3) training and technical assistance programme (regional centres, technical assistance, area training centres);

(4) infrastructure (roads, electrification, construction, irrigation and drainage);

(5) marketing and agro-industry programme (physical plant, market organization);

(6) credit.

The land tenure programme provides the basic framework for the other five programmes. The Government adopts a procedure in each agrarian reform area for awarding expropriated lands, which may vary from one area to another; it determines the area to be awarded, the number of peasants to benefit and the method of organization to be used for improving conditions.

There is careful programming of crops, livestock and other activities to make the best use of available resources. A production schedule is prepared for each area, including several alternative cropping patterns which take full account of local conditions.

National targets and the broad framework for agricultural development are decided at the national level in the Ministry of Agriculture and transmitted to planning offices in the different agrarian reform zones. These offices work closely with zonal councils, in which farmers' cooperative organizations are fully represented, and help in the preparation of guidelines for production cooperatives in the areas concerned. It is understood that farm planning must not be overcentralized and that farmers must have ample opportunity to take part in the process themselves.

To improve managerial skills and knowledge, a vital part of the project, the Government of Peru has set up an agency called the National Agrarian Reform Training and Research Centre (CENCIRA), which is amply financed and receives technical and financial support from the United Nations Development Programme (UNDP) and FAO.

Since infrastructure is generally poor in the agrarian reform zones, each area plan contains proposals for improvements. Major emphasis is given to structures and roads at the farm level. Area plans do not provide for large-scale irrigation works, networks of primary roads or electric power stations. At first they are limited to complementary or secondary works, either independent or part of more broadly based and costly national programmes.

The marketing of agricultural and livestock products is one of the weakest links in Peruvian agriculture. Marketing channels are well established for export products, such as cotton and sugar produced by the large landed estates (*latifundios*), but very deficient for other commodities sold mainly by peasant farmers. Improvements in marketing are thus

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[4] Based mainly on the *Plan for the development of agriculture and marketing in agrarian reform areas of Peru, General report*, May 1971.

[5] It reads: "Once an Agrarian Reform District has been defined, the General Directorate for Agrarian Reform and Rural Settlement, in coordination with the Sectoral Office of Agrarian Planning (OPSA), shall draw up the plan for the development of said district, covering problems of research, extension, development, credit, protection, marketing and others that will necessarily complement the operations to change the land-tenure structure."

being directed to the needs of the peasant farmer, notably the provision of a suitable network of public storage facilities. A radical change in farm credit facilities has also been accepted as essential.

**Regional economic integration**

Economic integration in Latin America continues to follow the pattern of recent years. The Caribbean Common Market and the Andean Group represent the more imaginative and active schemes, whereas the Latin American Free Trade Association and the Central American Common Market have not so far achieved positive results. The Caribbean countries which in 1968 founded the Caribbean Free Trade Association (CARIFTA) on 4 July 1973 signed the treaty creating the Caribbean Community and the Caribbean Common Market (CARICOM) in Chaguaramas. The main objectives of this new integration scheme are a common trade tariff agreement, common trade regulations, harmonization of taxation systems and of economic legislation, rationalization of agriculture, a common rate of exchange, coordination of economic policies, a common advisory service on development planning, a joint action programme for industrial development and joint promotion of tourism.

The CARICOM Treaty provides for special treatment of the less developed countries of the Caribbean Commonwealth, including concessions in custom rights, fiscal incentives, phasing of the external trade tariff agreement, special treatment for exports from the less developed countries in the region to the others and assistance in the promotion of exports. The Treaty of Chaguaramas also refers to direct cooperation of associated institutions with ministerial committees; among these institutions are the Caribbean Development Bank and the Caribbean Investment Corporation.

The Caribbean Community Secretariat is studying centralized bulk purchasing of some essential imported commodities for the CARIFTA/CARICOM area, to combat rapidly increasing import prices and transportation costs and to reduce the cost of living. At a meeting of the CARIFTA/CARICOM Council of Ministers held at the beginning of 1974, the Secretariat suggested the establishment of a regional trade board which would consist of representatives of governments and of the private sector.

The most interesting event relating to agriculture under the Cartagena Agreement was the First Meeting of the Ministers of Agriculture at the end of January 1974. Agreement was reached on the following important items: to intensify the movement toward regional integration in conjunction with current efforts at national agricultural development; to establish the operational procedures for achieving integration of the agricultural sector in the shortest time possible; to coordinate national agricultural development policies which afford possibilities of agricultural complementarity among the countries of the sub-region, taking into consideration not only the comparative advantage, but also the impact in depressed areas and in those with high population density; to give high priority to the supply of agricultural products; to harmonize the action of member countries in agriculture in international forums and in other sectoral meetings; to intensify the programmes of scientific and technical cooperation among member countries with the aim of reducing technological dependence on other countries, and to accelerate the process of spreading the technology developed or adapted by the countries of the sub-region; to adopt norms and establish a system for coordinated implementation of sanitary programmes for plants and animals in order to facilitate the trade of agricultural products; to coordinate and direct forestry policies toward rational use and conservation of national resources; to request the Cartagena Agreement's governing bodies to modify the institutional framework of the board so as to strengthen the technical resources required in the agricultural integration process; and, lastly, to coordinate joint actions in order to create a stronger bargaining power in the importing of food and agricultural inputs.

Ministers of agriculture of the Andean Pact attending this meeting also recommended the establishment of an agricultural council to the Commission of the Cartagena Agreement board, which would periodically analyse the progress of integration, create the necessary working groups and strengthen the units dealing with agricultural integration in the ministries of agriculture of the member countries. They also requested that the board submit proposals for joint programmes to encourage production of cereals, oilseeds and livestock, and that it carry out a feasibility study in cooperation with the Andean Development Corporation for the creation of a subregional agricultural system.

Economic integration of Central America continues to be held back by a lack of policy decisions, despite the 15% rise in intraregional trade in 1973.

FAO has published a perspective study of development and integration of the agricultural sector in Central America up to 1990.[6] It elaborates two main growth paths: in the first the present pattern of income distribution and present use of production factors would continue in the sub-region, while in the second there would be changes in income distribution and the structure of landholding, as well as more

[6] *Perspectivas para el Desarrollo y la Integración de la Agricultura en Centroamerica*, prepared by the UNDP/FAO Advisory Team on Central American Economic Integration (GAFICA), Guatemala, 1974.

efficient use of production factors to maximize employment opportunities. The second hypothesis also implies that, as part of the integration strategy, disparities in the GDP growth rates of member countries will gradually be reduced. The FAO study presents a general strategy with two main features: to increase and diversify production in accordance with the growth of domestic demand, derived from higher incomes and more equitable income distribution; and to make better use of productive resources, both economically and socially, thereby ensuring the rural population a greater share in the benefits of growth.

In the Latin American Free Trade Association (LAFTA) a series of negotiations took place in 1974, with the scope of bringing integration closer through new political, institutional and operational rules. The Andean countries have proposed a number of measures that LAFTA should adopt to give more favourable treatment to the less developed countries and to those with limited markets. Mexico has also presented ideas regarding the renewal of LAFTA with reference to improvement of the Montevideo Treaty, complementary agreements, industrial policy and the role of transnational enterprises, support to less developed countries and administrative reorganization.

## Far East

### Development plans and policies

All recent plans in the region show a common preoccupation with the broader socioeconomic goals of development, such as elimination of poverty, increased and improved distribution of food, income and employment, in addition to growth.[7] While most new plans have accepted these goals as part of their philosophy, few have been able to modify their planning methodology accordingly or translate such goals into concrete policies and programmes. Thus, neither their consequences in terms of changes in the patterns and levels of consumption, of savings and investment rates and of effects on input mix, technology and product mix nor even their structural implications for production, trade, institutions or technology have always been followed through. These are the next awaited methodological and technical developments in Asian planning efforts.

Unfortunately, the intention to pursue these social and distributive goals has come at a time when the rate of growth (especially per caput growth) has faltered in many countries, especially in south Asia. Nor have these objectives been made easier to achieve by recent world economic developments. Mounting inflationary pressures and the prevailing uncertainty in the short-term commodity markets have made more difficult not only actual performance and its assessment but also investment allocation and target setting for the future.[8] International economic developments have overtaken many targets and strategies of new plans. India, for instance, has already begun revision of its plan, which was launched in 1974. Since 1971, planning in Pakistan has been on an annual basis, although a new five-year plan, now being formulated, is to take effect from July 1975.

For the Indochinese countries — the Khmer Republic, Laos and both Viet-Nams — unsettled political and military conditions have continued to hamper development. In the Khmer Republic, although the second five-year plan (1968-72) accorded high priority to agriculture, the war brought a sharp fall in investment and implementation, turning the country from a substantial rice exporter into a net importer. In Laos, too, the development plan of 1969-72, which assigned high priority to agricultural production, could not be implemented for the same reason. However, the signing of the cease-fire in 1973 enabled the renewal of plan formulation in 1974, and the 1974-79 plan is now in preparation. Its two main objectives are understood to be national economic integration and self-sufficiency, the latter being interpreted as greater reliance than before on Laos' own resources. Priorities are (*a*) the resettlement of refugees, (*b*) the rebuilding of the country's infrastructure and (*c*) the establishment of integrated development zones.

Bangladesh hurriedly prepared its first five-year plan (1973-78) on becoming independent in 1971. The plan's basic objectives, which reflect the country's political philosophy of democratic socialism, are as follows: to reduce poverty; to regain the prewar levels of the economy by 1974; to achieve a GDP growth rate of 5.5% per annum (with a per caput income growth rate of about 2.5%); to lower prices and expand the output of essential consumption goods for the masses; to reduce dependence on foreign aid; and to ensure a wider and more equitable

[7] The main features of current development plans in the Far East are given in Annex table 12.

[8] While the rise in export prices does lead to a "real" increase in income, imported inflation depresses this increase. But since this affects mainly imported goods, the usual deflators for reducing growth estimates from current to constant prices are likely to give misleading results. Nor can a terms-of-trade index deflator solve the problem, because a third component, internal inflation, has to be accounted for. Since the proportions of these three components are elusive, it is difficult to assess the real increase in GNP and real progress toward the achievement of plan targets.

diffusion of income and employment opportunities.

The plan provides for a total financial development outlay of 44 550 million takas (about US$5 570 million), with about 90% of the total financial outlay in the public sector. The overall strategy of the plan is aimed at achieving the objectives of generating employment and increasing output. An additional 4.1 million jobs are expected to be created during the plan period, estimated to be enough to absorb all new entrants in the labour market and make inroads into existing unemployment and underemployment.

The agricultural sector receives top priority. The main objectives of the sectoral programmes in agriculture are to attain self-sufficiency in foodgrains by 1978, to expand employment opportunities and to increase production of export crops. Agriculture, planned to grow at an annual rate of 4.6%, is provided with 24% of the total financial development outlay. For crop production, the strategy lays heavy emphasis on a package of modern inputs — namely irrigation, high-yielding varieties of crops, fertilizers and plant protection measures, together with necessary incentives and institutional measures. Irrigation development mainly involves minor projects with shorter gestation periods and lower capital outlay. Major shifts in policy include a gradual move from input subsidies to price incentives and technological advances in jute production, selective mechanization in agriculture and improvements in organization.

A number of institutional reforms are suggested to support plan implementation as well as to achieve its distributive objectives. The organization of cooperatives, rural works programmes and the development of Thana Development and Training centres (based on the Comilla experience) are brought together under the new Integrated Rural Development Programme, which is to lead the movement for rural development. There is also a moderate land reform programme.

The second four-year plan of Burma has been formulated within the framework of the twenty-year plan (1974/75-1993/94), which was launched in April 1974. The main objectives of the latter (to be implemented in five stages of four years each) are to raise the standard of living of the people to a level twice as high as in 1973/74; to develop the economy from an agricultural to an agriculture-based economy; and to establish a socialist production pattern, under which people's ownership would increase to 48% and cooperative ownership to 26% by 1993/94.

The medium-term targets of the second four-year plan (1974-78) provide for a 4.5% average annual growth rate of GDP (with a per caput growth of 2.4%). Average annual exports are set at 1 540 million kyats (US$320 million) and average annual public sector investments at 1 000 million kyats, with a further investment of 1 920 million kyats from the private and cooperative sectors. State and cooperative business enterprises are to be reorganized on commercial principles, and labour productivity therein is planned to increase at an average annual rate of 2%.

A basic strategy of the plan is to expand production immediately in those sectors with the shortest gestation period, so as to create a quick momentum for growth. For this reason, top priority is given to agriculture, forestry and mining — the three main pillars of the Burmese economy. The average annual rates of growth planned for various sectors of the economy are as follows: agriculture 4%, livestock and fisheries 3.4%, mining 2.4%, transport and communications 5.2%, manufacturing industries 7.5% and electric power 9.1%. The 4.5% GDP growth rate may be difficult to achieve in the light of recent world economic developments and of past performance (approximately 2.5% per year). The annual export target of 1 540 million kyats (US$320 million), although more than double that of past years, is not however impossible to achieve at current prices.

The new constitution envisages some liberalization of the economy, while the plan provides for the encouragement of small-scale privately owned industries and emphasizes that public enterprises will be run on "private enterprise" principles, performance being measured by input-output ratios. The fact that aid and long-term credit are again being sought (with World Bank/ADB assistance in transport and anticipated foreign participation in offshore oil exploration) is indicative of a change in economic policy.

India's draft fifth five-year plan (1974/75-1978/79) has been drawn up within a twelve-year perspective (1974/75-1985/86). The main elements of the fifth plan's strategy for the realization of its twin objectives — elimination of poverty and attainment of economic self-reliance — as well as the rates of growth envisaged for the various sectors were reviewed in *The state of food and agriculture 1973* (p. 100). The disparate rate of growth foreseen for different sectors will involve a degree of structural change in the composition of GDP — the share for manufacturing, mining and construction increasing relative to that of agriculture, which is to decline slightly from 46 to 42% by 1978/79.

The financial resources for the fifth plan are estimated in 1972/73 prices at Rs534 110 million, of which 95.4% will be generated from domestic resources and about 89% will go into investment. Exports are projected to grow at the rate of 7.6% per annum, with large increases expected from engineering goods, iron ore, handicrafts, cotton textiles, steel, fish and leather. Import substitution is to be concentrated in four major fields: crude oil, metals, machinery and equipment, and fertilizers.

The main effort is directed toward the agricultural sector in order to raise the per caput consumption of the lowest 30% of the rural population (25 million of the poorest rural households). This will require changing agricultural development programmes so as to ensure that small farmers and agricultural labourers are able to benefit from these programmes, with special assistance to small farmers within area development programmes and the expansion of special programmes designed for the weaker sections and areas of the agricultural economy. Attainment of the 5.5% growth rate, as well as of the minimum-income programme for the poorer 30% of the population, will depend of course on a progressive decline in the rate of population growth (2% per annum for 1971-76 and 1.7% per annum for 1976-81), which appears rather unlikely in the light of present population trends.

Although the plan was officially launched in April 1974, the unexpected impact of the oil, food and inflationary crises has necessitated a revision of the plan in regard to both resources and targets; it is therefore unlikely to be released before October 1974.

Indonesia's second five-year development plan (1974-79), like many other current plans in the region, places a new emphasis on the achievement of broader social goals such as better food, clothing, housing, more employment and improved social welfare. The plan calls for a total expenditure of about Rp4 859 thousand million with a growth rate of 7.5% and a rise in per caput income of about 5.2% per year. Sectoral growth targets are 5% per year for agriculture, 13% for industry, 9% for mining and 10% for communications.

Dependence on foreign aid is to be reduced by half (from 35% of total development expenditure to only 17.7%) in the plan period, with provision for its distribution throughout the country's twenty-six provinces under a new provincial development aid programme. With its good credit standing and with the prices and production of its primary commodities (particularly oil, timber and rubber) rising rapidly, Indonesia should find little difficulty in generating adequate investment by the end of the decade. Since one of Indonesia's problems in the past has been the provision of adequate food supplies for its people, the Government has introduced a new policy to increase stocks and stabilize prices by both domestic rice procurement through rural development/ rural cooperative units and imports.

The Philippines four-year development plan (1974-1977) also stresses the more egalitarian aspects of development. The main objectives of the plan are to attain a more equitable distribution of income and wealth; to expand employment opportunities; to promote social development; to stabilize prices; to accelerate economic growth; to promote regional development and industrialization; and to improve the balance of payments. GNP is to grow by 7% per year in real terms, and per caput incomes are to increase by 5.5%, assuming a reduction in the population growth rate to 2.5% annually. Growth rates planned for the main sectors are 5% for agriculture, 18% for mining, 10% for manufacturing, 10% for construction and 4.9% for transport and utilities.

An increased rate of investment involving greater mobilization of domestic resources is the key to attaining these objectives. Investment is expected to grow at 15% annually, while tax revenues are to be increased from the present 13% to 16% of GNP by 1977. Between two thirds and three quarters of total investment is expected to come from domestic savings, with the remainder coming from foreign sources.

The major objectives set for the agricultural sector are accelerated land transfer, food self-sufficiency, conservation and development of forest resources, and expansion of exports and substitution of imports. Strategies for achieving these objectives include: speedy implementation of land reforms; promotion of private sector investment by credit and incentive policies; greater emphasis on programming at regional level with local government and community participation; vigorous promotion of private agribusiness; integrated planning and implementation of rural development programmes; and coordination of all government agencies from national to local levels necessary to implement these programmes. The land reform programme, which receives special emphasis, should be completed by 1977 for rice and maize land. A second important feature is the strong regional approach. The country is divided into eleven development regions, each with a Regional Development Council (extensions of the National Economic and Development Authority) that is charged with surveying regional resources, preparing regional plans, and coordinating and assisting all planning activities at regional and lower levels.

In Malaysia the new economic policy for the elimination of poverty and the restructuring of society has a twenty-year perspective, within which the second Malaysia plan (1971-75) covers the first five years. The mid-term review of the second plan attempts not only to measure progress but also to suggest ways and means of tackling new problems and adding substance to the original policies and programmes. According to this review, the average annual growth at current prices during the first three years of the plan was 11% at current prices (actually 20% in 1973), as against the target of 6.5% per year, largely because of the present boom in Malaysia's main commoditiy prices. Growth in real terms was estimated at 6.9% annually. On the contrary, less progress has been made toward the achievement of

the broader development goals, such as reducing unemployment and income disparities.

The average annual growth in the agricultural sector at 1970 prices has been 7.5% as against the plan target of 8.3%. At current prices the value of rubber, palm oil and sawn log production registered increases of over 14 to 20% in 1973, while paddy production continued to rise through increased yields and double cropping, despite adverse weather conditions in 1972. Despite this high rate of performance, the mid-term review does not expect agricultural output to rise above 7% in 1974 because of anticipated anti-inflationary effects in the industrial countries. However, the main source of growth is expected to be the smallholder sector, reflecting planning and development efforts over the past decade. By increasing the real earnings of the smallholders, this will to some extent meet the plan's objective of wider income distribution. The other socioeconomic changes contemplated, such as modernization of rural areas, education and training, and creation of a Malay commercial and industrial community, will take a longer time to accomplish because of their very nature.

Employment creation in the agricultural sector has not been very successful, only 58% of the plan target having been reached, mainly due to capital-intensive and labour-saving technologies introduced in rubber. Nevertheless, it is hoped that unemployment — 7.5% of the total labour force in 1970 — will be reduced to 7% in 1975, primarily through new land development and industrial programmes.

## Technological innovation and its policy implications

The adoption of improved technologies in rice and wheat, as well as in palm oil, rubber and tea, largely account for the recent acceleration in the rate of food and agricultural production in the Far East (discounting the bad years of 1971-72). Further development and adoption of new technology will continue to determine to a large extent the level of income and nutrition in this vast region.

A number of factors have tended to bias technological change in Asia, not all of them in the most desirable direction. Large-scale, capital-intensive technology, while increasing the productivity of labour, may not necessarily be the most economic in the use of scarce resources of the countries concerned. Often such indiscriminate adoption of technology has been due to the imitation of patterns of development or technology in developed countries, without reference to local conditions and needs or without sufficient realization of their true cost in socioeconomic terms. It is no coincidence that the only country which has developed technologies to suit her own particular needs, factor endowments and social objectives is Japan, which was not subject to colonial rule. The Republic of Korea, with similar conditions, copied the Japanese model with success, and Malaysia is now diversifying its production and modifying its technology to suit its own conditions. The adoption of inappropriate technologies has also resulted from such negative factors as the lack of any real technological alternative; whereas the science and research of developed countries are naturally directed toward developing technology to suit their own needs, the lack of any clear-cut policy on technological development on the part of developing countries has helped this unfortunate trend. Under these circumstances, technological choice was left to the individual firm, which naturally chose the technology (usually capital-intensive) that would maximize profits, seeking to internalize the gains and externalize the costs of new technologies — which in this case were borne by the society in terms of foreign exchange, employment, etc. The small farm, on the other hand, unable to bear the cost of such technology, has often been bypassed by the gains of scientific innovation, resulting in economic and social disparities which have now begun to be felt in many countries of the region, such as India, Pakistan and the Philippines.

The direction of technological innovation should ideally be determined by the given factor endowments and be aimed at "augmenting" the scarce factors of production. Likewise, the economic efficiency and social relevance of a given technology should be determined by the structural, institutional and value system into which it is introduced. The pattern of agricultural and technological development of Japan, which followed different development paths of resources use and productivity as compared with the United States since about 1880, with equally efficient results, is of considerable relevance to Asian countries. Whereas growth in Japan was achieved mainly through the use of biochemical technology, which provided greater returns from the scarce land resource by increasing productivity per hectare, in the United States it was achieved mainly by bringing more land under cultivation through capital-intensive mechanization and thereby increasing the productivity of labour, its scarce factor. Historically, other land-scarce countries, such as Germany and the Netherlands, also began their development process by increasing land productivity.

While any approach to development in the heavily populated developing countries of Asia must start with recognition of the scarcity of resources, any development approach based solely on a reallocation of these scarce resources would be completely inadequate. Needless to say, the past lopsided use of resources and technology in Asia with its failure to mobilize labour, the only abundantly available re-

source, to maximum advantage (except in China and Japan), has to be corrected. The next step is to ensure a direction of technological change that is in line with resource availability, so as to make the limited resources more productive. In the absence of additional capital and land, the productivity of Asian agriculture can be increased only by introducing from outside the agricultural sector inputs that incorporate new technology which will increase the productivity of existing factors of production and thus quicken the pace of agricultural development.[9]

The technology must also be geared to the socio-economic goals of the country if it is to be economically and socially relevant. These goals in most countries of the region are: to increase food production and improve nutrition; to increase agricultural incomes and foreign exchange earnings; to provide greater and more gainful employment; and to secure a wider and fairer distribution of such income and employment. While these aims indicate to some extent the type of technology required, the actual choice is by no means simple, as there may be "conflict and trade-offs" between objectives. Choice of technology is therefore a problem of Far Eastern agriculture and has to be decided by a deliberate choice of development paths which are determined, or modified, both by existing resource availabilities and institutions and by desired development goals.

The first major question concerns the type of technology. The biochemical technologies recently introduced have fortunately been applicable regardless of the scale of farming, thus offering a means of rapid increase in land, labour and capital productivity, ideally suited for Asian resource availabilities and structural conditions. During 1954-61 Japan thus recorded an annual rate of growth in land productivity of more than 2% and in labour productivity of 7%, while working capital increased by only 8% per annum.[10] In India, Malaysia, Sri Lanka and the Philippines even the small farm has been able to adopt these improved technologies with higher productivity per unit of land and capital than large farms, provided that effective supporting services were made available. However, the large-scale mechanical technologies of the developed countries, which are usually costly in terms of scarce capital and foreign exchange and displace labour, tend to favour large farms. Their real cost in social terms is often very high. Yet, improved implements, mechanical threshers, mechanized pump sets and two-wheeled tractors not only meet the needs and limitations of the small farms of Asia, but have gone a long way toward raising both their land and labour productivity. The really relevant distinction is therefore not between biological and mechanical technologies, but between types of each and, especially, the levels of technology which are suited to given factor endowments, skills and institutions.

A second and more relevant question thus relates to the level of technology. Three alternatives are theoretically possible: a continuing improvement of existing traditional technology — that is, a technology of "production by the masses" (if possible, through "mass innovation" as in the early Chinese model), rather than the developed countries' "technology of mass production"; an "intermediate" technology based on technological innovation and transformation at a graduated pace on a progressively wider base; or an advanced "modern" technology involving high capital and skills, but paying off in greatly increased labour productivity. Ideally, the level of technology has to be decided with the national development strategy in mind.

Whatever the strategy selected, it should not only provide for substantial increases in returns per unit of land, the logical take-off point for agricultural development in Asia, but also generate adequate increases in labour productivity and income to meet rising social expectations as well as food and employment needs. Some progress toward attaining these multiple goals has already been made in China, India, Japan, Malaysia, Pakistan and the Philippines through the higher labour requirements of the improved biological technologies. These goals can also be achieved with certain types and levels of mechanical technology which can increase land productivity with a minimum or even no displacement of labour — for example, the mechanical pumps, tubewells and threshers used with high-yielding varieties. Also in fisheries, outboard motors fitted to log rafts and canoes have doubled the fishing range, while small mechanized fishing boats (passing progressively to larger ones) actually doubled catches, as in Sri Lanka. The advantages of an intermediate technology were implicitly recognized in Chinese policy in 1968 with official acceptance of the need to promote a "widespread mass movement throughout the country to introduce tools and technological innovations so that semimechanized or fully mechanized operations could properly be combined with the necessary hand work." [11]

It was earlier suggested [12] and generally accepted

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[9] A recent study has shown that roughly 24% of the difference in labour productivity between certain developed countries and eleven developing countries studied could be attributed to technical inputs such as fertilizer and machinery (embodying technical change), which thus augmented the productivity of existing resources. Vernon W. Ruttan, *Induced technical and institutional change and the future of agriculture.* Theme Paper, Fifteenth International Conference of Agricultural Economists, August 1973.

[10] K. Okawa, *Phases of agricultural development and economic growth* (Japanese). See also *The state of food and agriculture 1973*, p. 102, footnote 27.

[11] Report of the Central Committee to the 8th National Congress of the Chinese Communist Party, 1968.

[12] E.g., *The state of food and agriculture 1970*, p. 84.

that growth on the broadest possible land base would be most likely to meet both the present productive and distributive goals of most countries of the Far East. As for production, a 30% increase on the 70% of the cultivated land held by small farmers would theoretically yield as much as a 90% increase on the 20% of the land in large farms. Such broad-based growth would also enable the widest distribution of the product, since under systems of private land ownership the production base usually tends to determine the pattern of consumption. Furthermore, such policy emphasis would readily identify priority areas and the direction for specific research and technological innovations. The "unimodal" strategy adopted in Chinese, Japanese and Korean agriculture with an intermediate technology is attractive. A strategy should however be flexible enough to exploit the advantages of existing farm systems, types of crops and markets. For example, Malaysia, with a flourishing plantation sector, has pragmatically adopted a bimodal agricultural strategy, which has however created a dualism between the plantation and smallholder sectors with a sharp income differential between the two.

Whatever technology is chosen, economic and social goals should determine the main thrust of development strategy and the technological means and policies to achieve them. For example, high-yielding rice varieties currently depend on controlled irrigation and thus are limited to the relatively small proportion of rice land in the region that has these facilities. This restriction has been an important factor behind the slowing down of the "green revolution" with all its dismal consequences. Clearly, better varieties are needed — and soon — for the high proportion of rice land solely dependent on rainfall. A large effort is also needed in irrigation, with emphasis on widely dispersed, quick-maturing, low-cost works, including tube-wells, pumps, drainage, etc.

Adoption of improved technology is required over the widest possible area of land, even if at a lower or "intermediate" level. For example, a much smaller yield improvement on the rain-fed rice lands of the Far East (which account for approximately 65% of the rice land of the developing countries in the region) can add a higher increment to total rice production than the substantial achievement of the "green revolution" so far. Likewise, low-risk varieties, less susceptible to pest and drought damage, would enable a wider range of adoption among small farmers in the initial phase and might provide higher national average yields per hectare despite their lower maximum yield potential. The same applies to varieties which show a greater response to lower levels of fertilizer application. The current scarcity and high prices of fertilizers have already caused a reversion to lower yielding varieties requiring less fertilizer in some countries. This, in turn, has stimulated new research interest in varieties that are more responsive to smaller chemical fertilizer application or to organic manures. Improvements in different types of grain, such as maize, millet and sorghum, would also help to stabilize production and increase productivity on the substantial areas under dry farming and rain-fed cultivation. Research and innovations need to be applied to broader areas, as well as crops, in order to yield the greatest possible increases in total food production, income and employment.

Expansion of technology should also be on the widest possible institutional basis, so that small farmers, who cultivate approximately 70% of the land in the region, would benefit directly. Therefore, a policy is needed which includes selection of technology, method of introduction and institutional changes to enable it to operate successfully on the widest front.

A number of factors determine the rate at which higher levels of technology can be introduced and adopted, including the level and type of the farmers' education, price and tenure incentives, the security vitally needed by small farmers against risk of crop failure and the extent to which they are provided with credit, fertilizers, other inputs, extension, etc.

A technology requiring high managerial and technical skills can have only a limited effect until the required education and skills for its use are widely available. Education in its broadest sense has been estimated to account for as much as 35% of the differences in agriculture labour productivity between the less developed countries and the more developed countries.[13] Changes are required not only in the content of general education and its orientation, both practical and technical, but also in the content, type and system of agricultural extension, to make it relevant to the region's small farmers.[14]

Institutional measures to support the new technology have been discussed elsewhere.[15] Since the 1960s a wide range of measures have been adopted in most Far Eastern countries to support the introduction of high-yielding varieties and to enable small farmers to share in the gains. But further institutional measures may be required to adapt both structure and institutions to the new technology — insofar as the latter cannot be changed to suit the farmer — so as to capture the potential productivity gains or enable the wider spread of benefits. New systems of common management may be necessary for water, crop rotation and pest control. Institutional changes may in themselves encourage a new technology, as land reforms did in Japan and the communes in China.

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[13] Vernon W. Ruttan, *op. cit.*
[14] See *The state of food and agriculture 1973*, p. 103.
[15] *Ibid.*

The search for the most efficient technological developments has implications not only for changes in institutions, but also for agricultural research and its structure. The pursuit of science for its own sake — irresponsive or irrelevant to social needs, with the separation of research from application and of education and production from the institutions responsible for them — is a luxury which the developing countries of the region cannot afford. Changes are needed in the structure of research, educational and production institutions to ensure that science and technology serve society better than in the past. The significance of the Chinese experiment lies in the extent to which science and technology have been made to help society rather than to follow narrower interests.

The pattern of development and technology chosen by the developed countries is not necessarily the most suitable or most economic for the less developed countries of the Far East. This needs restating: strategies must be chosen according to the needs, resources and objectives of the countries concerned. For example, although the developed countries have satisfied their protein needs through dairying and livestock production, in Asia — given the shortage of land, capital and time — this might be achieved more efficiently by improving the protein content of rice, the main source of calories; moreover, soybeans provide more than double the amount of protein per unit of land, capital and time gained from livestock.

Thus it is being increasingly recognized in the Far East that the adoption of capital-intensive, sophisticated technologies from developed countries, with their alien institutional and structural framework and policies, is unlikely to lead to nationally desired economic and social goals. International transfer of technology is acceptable only if it is in line with or can be adapted to the endowments, local institutions, values and objectives of the recipient nations. Choice of technology must be considered a part of the total development strategy. Induced technological change, an essential component of such a strategy, requires an economic policy that influences costs and product prices so as to encourage the type and level of technological change needed; the scarcity of resources must be reflected accurately in order to make optimum use of them. In the Far East, such strategies cannot be achieved by economic measures alone; they must always take account of more general aspects that are currently limiting agricultural development.

## Regional economic cooperation

The current world economic problems of rapid inflation, international monetary and energy crises, and food and fertilizer shortages have all given new urgency to the long-recognized need for regional cooperation in the Far East. The need for unified action was demonstrated at the Fifth Conference of the Confederation of Asian Chambers of Commerce and Industry, held in New Delhi in February 1974, which urged governments to progressively change their energy base, to promote intraregional trade and the transfer of investment and technology, to build up Asian buffer stocks of food and to promote action on the Asian Trade Expansion Programme, the proposed Asian Clearing Union and the Asian Reserve Bank.

The only group of countries continuing to cooperate for common purposes is the Association of South East Asian Nations (ASEAN), although still on a limited basis. It has now decided to move toward some kind of economic community along the lines of the EEC, and a central secretariat, in Djakarta, is to be established in 1975. Economic ministers will meet regularly to coordinate planning. Private industry will be encouraged to undertake multi-ASEAN projects, with special exemptions from internal tariffs, and government-supported industrial projects are to be shared out between the members, somewhat along the lines already established by the east European COMECON. Internal tariffs are to be progressively reduced. Thirteen major industrial projects are now under review, including a $220 million nitrogenous fertilizer complex. The rice experts of ASEAN have also agreed to discuss the possibility of establishing regional standards for rice. The ASEAN countries worked together during 1973 to oppose increased Japanese synthetic rubber production, which would compete with their products. Six countries — Bangladesh, India, the Khmer Republic, the Philippines, the Republic of Viet-Nam and Sri Lanka — have signed an agreement setting up the Asian Rice Trade Fund. Proposals are being made to secure the initial resources required for the operation of the fund on a continuing basis.

These countries have decided to seek closer ties with the EEC in an attempt to persuade its members to adopt an outward-looking, flexible and pragmatic policy toward Asia.

At the Thirteenth Session of ECAFE (held in Colombo, March-April 1974), it was decided to establish an ECAFE committee on agriculture to deal with food and agricultural development in the region, in close cooperation with FAO and other international organizations. Recommendations made at that conference and afterwards include proposals for a world fertilizer fund and for world and regional food security; together with similar international initiatives, these decisions could find effective expression at the regional level for building up fertilizer and food stocks within a wider international framework. In

regard to oil exploration, there has been preliminary agreement among seven east Asian countries, some developed countries and the UNDP to contribute about US$5 million for offshore oil exploration in regional waters over the next five years.

Groupings around special interests or commodities — such as the Asian Coconut Community and the Asian Pepper Community, and Asian participation in the Association of Rubber Producing Countries — continued to make some progress in 1973. Meanwhile, initiatives for the establishment of the proposed Asian Timber Community, Asian Rice Trade Fund, Asian Clearing Union and Asian Reserve Bank are continuing.

## CHINA

No major policy changes took place in Chinese agriculture in 1973. The main features of the current five-year plan (1971-75) are an increase in agricultural production — not only to make China's food supplies secure and "crisis-proof," but also to ensure a plentiful supply of industrial raw materials and thus allow for a brisk expansion of light industry — as well as the modernization of agriculture through greater use of fertilizers, insecticides and machinery, emphasis on "self-reliance and hard struggle" by the production teams (the most important units in China's agriculture), and firm resistance by both the central and provincial governments to any radical alteration in the organization of the communes or interference with peasants' rights. The need to make even fuller use of indigenous methods and intermediate technology continues to receive great emphasis in the people's communes.

The central government has encouraged the provincial authorities to give more attention to such cash crops as rape, cotton and other commodities in short supply on world markets and urgently required for the country's growing light industry sector. Problems arose in certain provinces such as Hunan and Fukien, regarding districts which had planted cotton on a large scale and found themselves short of grain. In theory, grain and industrial crops should have been expanded side by side; in practice, the clash between those who saw cotton as a profitable new rural enterprise and those who were determined to continue with grain when food supplies seemed in jeopardy because of the weather was not easily resolved. The central government had to prepare a set of directives dealing with the whole problem of how to reconcile the competing demands of grain production and the other, frequently more profitable, activities open to the peasants. These directives can be summed up as encouraging engagement in nongrain production, provided that it does not conflict with the national economic plan and with commune operations, is consistent with local conditions and needs, aids collective financial resources, and does not lead to black-marketeering.

The fundamental dilemma is the shortage of labour to perform all the tasks demanded in rural areas. Not a general shortage, it is to some extent being met by drafting to the communes thousands of young people at the completion of their schooling or even for periods during their university or college education. Adding to the extra effort required for normal routines in abnormal weather, the massive endeavours to build water-control works and reclaim land, to undertake multiple cropping and diversify farm output, the otherwise adequate supply of workers becomes stretched very thin. Water conservation is receiving much attention in all communes in response to Chairman Mao's dictum that it is the lifeblood of agriculture.

The answer, as China has long realized, lies in mechanization and electrification, which permit the release of agricultural labour from routine chores to more specialized and intensive cultivation, as well as for work on capital projects and in rural factories to meet rural needs. The provision of portable water pumps is a key item in this strategy. Mechanization during 1973 appeared to proceed more cautiously than in the previous year. By July 1973 the total number of mechanical rice transplanters was only 230 000, despite the high priority given this implement in the previous eighteen months.

The mass mobilization of rural manpower, and of manpower in general — one of the salient features of the Great Leap Forward — has since been maintained. It was reported in 1971 that the annual labour input into such schemes as reforestation, flood control and construction of rural roads since 1961 was never lower than 10 000 million man-days and mostly much higher. A recent incomplete account of mass labour projects for the 1973/74 winter season lists 1.6 million hectares newly brought under cultivation, 2.6 million hectares of hilly lands made level, 460 000 hectares of terracing and 800 000 hectares of former wasteland opened up for cultivation. In Honan province alone some 50 000 new power wells and 110 000 small and medium water conservation projects were completed in winter 1973/74 by commune labour.

Japan's food and agricultural policies and programmes continue to evolve within the general framework of the comprehensive objectives established in the Agricultural Basic Law of 1961. The primary aim remains that of assuring adequate supplies of food at reasonably stable prices to meet the population's expanding and changing patterns of demand. The sharp rise in world prices and the general instability of world market conditions for most of Japan's major agricultural imports since 1972 have led to review and further elaboration of the guidelines (adopted late in 1972) concerning desired adjustments in Japan's agricultural sector during the next decade.[16] In view of the current and prospective world food situation, the Government is seeking to develop sources of additional supplies, more stable with respect to both prices and assurance of deliveries than those previously available have proved to be since 1972. For this purpose, the Japanese Government is looking to both increased domestic production and development of alternative sources of imports.

*The state of Japan's agriculture 1973*, published by the Ministry of Agriculture and Forestry, analyses the present situation in the context of recent trends and prospective developments. It concludes, "in order to secure a stable and efficient supply of food, there will have to be established a comprehensive food supply system based principally on the maintenance and strengthening of the production and supply capacity of domestic agriculture." Particularly because of the instability of world markets for farm products and the need to stabilize Japan's long-term balance of payments, maintenance and improvement of the production capacity of the domestic agricultural sector are seen to be the foundation of such an overall system for supplying Japan's food requirements; in short, it is deemed necessary to increase Japan's self-sufficiency in food. Between 1960 and 1972, overall self-sufficiency in food (including fishery products) had declined from 93 to 78% — in wheat from 39 to 5%, in concentrated feeds from 67 to 36%, in soybeans from 28 to 4%, in fruit from 100 to 82% and in meat from 91 to 81%.

Increased self-sufficiency is to be attained by setting long-term goals for commodity production and adopting comprehensive measures to raise productivity. In 1974 the Government encouraged higher production of most crops and livestock products. Payments under the rice-land diversion programme for leaving rice land fallow were terminated to encourage use of such land for rice or for other crops. Incentive payments for increasing production of wheat, barley, soybeans and forage crops were introduced. Government subsidies on imported feedgrains were adjusted so as to avoid forcing producers to curtail output, particularly of pork, poultry and eggs. Higher prices for most domestically produced crops and livestock products, although largely reflecting higher production costs, also tended to encourage increased production.

The central role in Japan's future agricultural production is expected to be played by farm households with at least one male worker under sixty years of age employed full-time in farming.[17] It is estimated that about a third of Japan's total farm households are in this category, and that they account for about two thirds of the gross agricultural production. They tend to have larger areas of farmland than the households that depend entirely on the farm labour of women and old men, but to be relatively less dependent on rice production and more dependent on that of fruits and vegetables and on livestock and poultry products. Farm households in this category constitute the core of the group farming organizations which are a prominent feature of Japanese agriculture. The Government is looking to expansion of the scale of their farming operations as the principal means for attaining the desired increase in both production and productivity.

Given Japan's relatively limited land resources and the continuing diversion of farmland to other uses, there is little possibility of this core of farm households increasing its holdings of farmland. The price of farmland has continued to rise rapidly, reportedly by more than 100% between 1969 and 1972, encouraging current owners to hold it for further capital gains. Current owners tend also to be reluctant to rent their land, since tenants acquire certain rights to continued use, for which they are likely to have to be paid if the owner later decides to sell. Thus, to make additional land available for expanding the scale of farming operations by these core farm households, the Government has encouraged owners to contract with group farming organizations for the performance of farming operations on their land; the number of organizations performing such operations under contract is reported to be increasing.

Although the comprehensive food supply system is to be based principally on maintenance and improvement of the production capacity of the domestic agricultural sector, the Government recognizes that it would be practically impossible for Japan to fulfil

[16] See *The state of food and agriculture 1973*, p. 108.

[17] These households include those with other members employed off the farm as well as those with no members employed off the farm. Thus the category does not correspond with classifications of Japanese farm households as "full-time" or "part-time" on the basis of the sources of household income.

all its prospective increases in food demand from domestic production. The food supply system will therefore continue to rely also on imported supplies of those food commodities in which Japan cannot be fully self-sufficient, including wheat, feedgrains, soybeans, tropical fruits and oils and, to a lesser extent, meat and dairy products. The Government emphasizes the necessity for systematic stockpiling of imported food commodities by both itself and private trade.

To assure the stability of imported supplies, the Government recognizes that changes will be necessary in the structure of Japan's foreign trade in food commodities. These are to be brought about by exchanges of information with exporting countries, long-term bilateral import agreements and diversification of sources. To secure the food it needs, it is also considered necessary that Japan make an active effort to increase the agricultural production capacity of developing countries through long-term cooperation in development of their agricultural potential, thereby increasing their capacity to export commodities. For stabilization of international markets in farm commodities and steady expansion of trade, Japan continues to look to various international forums, including the present round of multilateral trade negotiations sponsored by GATT, negotiations concerning international commodity agreements and discussions of proposals for world food security reserves.

## Near East

### Development plans and policies

Planning of economic and social development is a general practice in most of the countries of the Near East. Recently, another country, the Yemen Arab Republic, adopted this practice and prepared its first development programme, covering the three-year period 1973/74-1975/76.[18] Moreover, there is a continuous improvement in the methodology and technique of development planning as applied by the countries of the region, mainly because of the availability of better statistics and the strengthening of national capacities in the fields of planning and programming. Long-term perspective development planning is being gradually adopted in the region, and several in-depth perspective studies of agricultural development by country have been carried out recently with FAO assistance.

Most of the development plans of the countries indicate nutritional objectives; employment also receives more attention than in the past; and special emphasis is put on the development of agricultural resources, especially water.

The current five-year development plan of Iraq ended in 1974, and preparation of the new development plan covering the period 1975/76-1979/80 is nearing completion. Available information on this new plan indicates that major attention will be devoted to land reclamation and drainage and to the livestock sector, in order to increase the agricultural output. Special emphasis will be placed on regional development planning and integrated rural development. Early indications suggest that a larger share of oil revenues will be earmarked for development of the agricultural sector.

Saudi Arabia is in the fourth year of implementation of its five-year development plan (1971-75). Scheduled development expenditures during the plan period will certainly be exceeded. The present intention is to diversify production and lessen as much as possible the economy's dependence on oil revenues.

Reports from Iran indicate that its fifth development plan, launched in 1973, will undergo substantial revision in the light of the recent oil agreements. Planned investments in the industrial sector are likely to be increased considerably, and recent information indicates that agriculture, which has already been given high priority in the plan, will receive yet further attention.

According to available information on Egypt's national ten-year development plan (1973-82) total investments planned for this period will amount to £E8 400 million — £E3 221 million in the first five years and £E5 179 million in the subsequent five-year period. The public sector is to contribute 90.1% of these investments as compared with 9.9% from the private sector. The agricultural sector is to receive £E985 million, most of which will be from the public sector. The ten-year plan contemplates two sets of programmes for the agricultural sector: one directed to increasing productivity on the existing agricultural land through better irrigation, drainage, fertilizer use and seed and pest control; the other to extending the limited agricultural resources through land reclamation and irrigation. Programmes relating to vertical expansion include continuation of present projects for the expansion of new high-yielding crops, the consolidation of crop rotation, an increase in horticultural production and plant protection, as

[18] The main features of current development plans in the Near East are given in Annex table 12.

well as programmes of soil improvement and protection that are to reach 2 million feddans by 1982. The agricultural plan also calls for programmes which aim to reorganize the cropping pattern by expanding crops of relatively higher value and by increasing the production of major crops, such as cotton, wheat, maize, vegetables and fruit. Programmes for vertical expansion of the livestock sector involve public and private participation. They are expected to yield an increase of productivity in this sector mainly through selective breeding, animal health schemes and provision of necessary services, including veterinary services and large-scale and better quality vaccination. Poultry production is expected to grow at a fast rate, the production target being 100 million birds in 1982 as compared with 12 million in 1972. Fish production is also planned to increase at a very high rate. The extension services will be strengthened and adequate services provided for the farmers, including training and credit facilities.

The programmes for horizontal expansion of agriculture include projects of land reclamation, settlement schemes and irrigation, aiming at full utilization of the additional water resources from the High Dam at Aswan. The land already reclaimed is to be provided with irrigation and drainage facilities so that it can be put under cultivation as quickly as possible. The necessary infrastructure for the settlement of farmers is expected to be completed in the reclaimed land area. The survey of groundwater resources is to continue. Efforts to speed up the development of land and its cultivation include division of land into viable production units and preparation of cropping plans for these units, mechanization adapted to local conditions, extension of horticultural production and new high-yielding crops, and better working conditions for the farmers. An integrated approach to rural development will be adopted on all newly reclaimed lands.

Agricultural production is expected to increase by 19.4% from 1972 to 1977 and by 39.4% during the ten-year period of the national development plan, corresponding to an annual growth rate of 3.9%. Agricultural income is expected to grow by 6.3% annually during the first five years of the plan and by 4.1% over the whole period of the plan, 1973-82.

The new three-year economic and social development plan (1973-75) of the Libyan Arab Republic aims at a restructuring and diversification of the economy through rapid growth of the agriculture and manufacturing sectors and controlled development of the oil sector in line with the general framework of the economic and social development of the country. Planned investment programmes are expected to ensure this rapid change in the pattern of economic development as well as a considerable increase in output. The total development budget for the three years amounts to £L1 965 million, of which £L416 million are earmarked for agriculture and £L393 million for industry, mineral resources and petroleum. Under the previous three-year plan the latter sector received £L2 965 million, while only £L165 million were allocated to agriculture. These figures illustrate the shift of emphasis which characterizes the present development plan. The expansion of the public sector's share in total investment is another feature of the 1973-75 plan. The private sector, including the oil-producing companies, is expected to contribute only 17% of the planned gross fixed investment, the remaining 83% to come from the public sector. Gross domestic income (GDI) is expected to grow by 10.5% a year (6% per caput). The target growth rates for non-oil activities and petroleum and natural gas mining are 17.5% and 5% respectively. Agricultural output is to increase annually by 16% against 26% for manufacturing activities. The share of the non-oil sector in GDI is planned to reach 50.5% as compared with 42.2% at present. Full or nearly full employment is aimed at for 1975.

The agriculture sector is given high priority in the plan, and efforts are being directed toward increasing production in order to reach self-sufficiency in major agricultural food products. Two thirds of the total funds for agriculture are earmarked for activities relating to integrated development, which aims to develop new areas estimated at about 367 000 hectares, of which 95 000 hectares are to be irrigated. The remaining one third is mainly to be spent on vertical expansion. The objectives and targets set for crop and livestock production must be considered steps toward self-sufficiency in the near future and are relatively high in comparison with recent performance. From 1972/73 to 1975 the output of cereal, vegetables and fruit is expected to increase by 86, 50 and 25% respectively, while the increase in meat, milk and egg production is projected in the same period at 36, 68 and 35%. The inputs for achieving these objectives and targets are specified, and programmes for the development of fodder crops and pastures have been planned.

The first three-year development programme (1973/1974-1975/76) of the Yemen Arab Republic is an important step toward systematic planning of economic and social development. Although this programme mainly concerns the allocation of public investments, it also analyses in some detail the existing situation and defines the general orientation of economic and social development, as well as general and sectoral objectives, and the strategy to be adopted to achieve them. All efforts will be devoted to the installation of the social and economic infrastructure needed for the implementation of further development programmes. GDP is to grow by

6% a year in real terms; the agricultural sector, which occupies 90% of the total active population and contributes about 70% of GDP, is to be reorganized so that the agricultural surplus can be used to finance development efforts. Among the main objectives are integration of the economy and training of nationals in administrative and technical fields, in order to meet the demand for qualified people and establish a modern public administration.

The investments required to achieve the projected GDP growth rate are estimated to amount to 1 610 million rials over the three-year period. Foreign assistance is expected to reach the sum of 860 million rials, leaving 750 million rials to be raised locally. The public sector's share in total investment will amount to 823 million rials, 17% of which will be spent on agriculture. Transport and communications will receive 25.5% of total public sector investments against 11% for industry. Private investments will continue to be encouraged. Total investments, private and public, are expected to make possible the creation of 268 000 jobs, which will help reduce existing underemployment in all sectors of the economy.

Actions planned in agriculture aim, above all, to remove the obstacles impeding the development of this sector. Agricultural production should grow, according to the programme, by at least 6% a year in order to fulfil its role in the overall development of the economy. This increase in production, in addition to producing a surplus to be used in financing development in other sectors, is intended to reduce the trade deficit and improve nutritional standards.

Long-term objectives toward which the Yemen Arab Republic's three-year development programme is directed include creation and consolidation of both technical and administrative institutions dealing with agriculture at national and regional levels, training of personnel, expansion of the irrigated area by 100 000 hectares and increases in crop and animal production. Priority will be given to the production of commodities with high nutritional value, such as pulses, oilseeds, vegetables, fruit and animal products.

A series of surveys and studies are planned for assessing the national agricultural, fishery and forestry resources and their potentials. This is needed to plan their conservation and utilization in the most efficient way and to meet the general objectives of economic and social development.

## Country Perspective Studies

FAO has recently launched a programme of Country Perspective Studies (CPS), to give more country emphasis to its activities. The programme should be of significant value to the participating countries as it places major emphasis on basic agricultural development policy issues and the options open to these countries in terms of the macroeconomic framework and alternative growth patterns. The programme should also be useful to both the countries involved and FAO in providing the vital link between policy and programming and between sector analysis and project identification. The output of the CPS programme consists of a series of working notes with a strong policy orientation, preceded by the Central Policy Paper (CPP), which embodies the core of the study findings and conclusions, but also stands as a comprehensive and concise report in its own right. The other working notes deal with particular aspects and subsectors, reflecting the interdisciplinary contributions to the study. A pilot programme, covering Egypt and the Sudan, was started in October 1972, and the two studies, completed in mid-1973, have been very well received by the authorities in both countries. The second round of the CPS programme in the region, covering Iran and Iraq, is expected to be completed early in 1975.

The CPP plays a pivotal role in the perspective study, providing a summary of the findings. It begins with a brief review of the present situation and the major issues of agricultural development in the country. This is followed by a presentation of the quantitative framework, covering the major parameters of change as reflected in the study. Domestic and foreign demand and national production targets are considered within the context of assumed growth alternatives for the economy as a whole. This particular section, dealing with the basic quantitative framework, is a standard element of all country studies. The second part of the CPP focuses on basic policy issues for agricultural development, which are naturally related to the conditions bearing on agricultural development in each country. Identification and analysis of these policy issues and options assume vital importance in the CPP. Supporting policy measures and instruments directly associated with these policy options conclude the policy paper.

The agricultural policies and options of the four countries that have so far been covered under the CPS programme are reviewed here. All four studies reflect different situations:

1. *Egypt.* The policy issues and the open options focus on the increasing difficulty of reconciling conflicting demands on the agricultural sector: earning foreign exchange versus meeting domestic food requirements.
2. *The Sudan.* The basic policy issue is whether to continue emphasizing large-scale irrigation schemes in the eastern region or to give greater attention to the less developed southern and

western regions. The options reflect a shift from a single objective emphasizing export expansion to multiple objectives of import substitution, export diversification and regional balance, in addition to a general increase in agricultural production.

3. *Iran.* The country's long-term food import programme is the main policy issue. One option is an import programme heavily weighted by red meat imports, which implies a significant drain on the country's foreign exchange resources. The other calls for major reliance on wheat imports and greater self-sufficiency in meat consumption; it would have favourable effects on foreign exchange, but would be less attractive in terms of certain socioeconomic considerations.
4. *Iraq.* The key policy issues concern land-use patterns, both with respect to lands covered by development projects and to irrigated lands not covered by such projects. In the first case the options relate to the relative weights assigned to fodder versus grain crops; in the second, they evaluate the feasibility of greater concentration on limited areas on the peripheries of projects vis-à-vis leaving the entire area at a lower average cropping intensity.

An important factor in the orientation of policy issues and open options in all four countries is the relative significance of foreign exchange earnings. For Egypt and the Sudan the earning of foreign exchange is a special demand pressing on the agricultural sector and also a major constraint on the entire development process, while the situation is very different in both Iran and Iraq, where oil provides this income.

## Egypt

Egypt's agriculture in the last twenty years has had to meet two main demands: earning foreign exchange and providing sufficient food for domestic consumption. A structural conflict in land use, chiefly owing to intercrop competition over the limited land resources, has made satisfaction of these demands very difficult.

Intercrop competition involves export crops, food crops and fodder crops. Any expansion in cotton reduces the area available for food and fodder crops, and any increase in fodder crops (berseem) unavoidably encroaches on winter cereals and pulses. There is also a conflict in food crops: more winter cereals may mean less winter pulses, or enlargement of the area under fruit trees may be at the expense of both winter and summer cereals. Great effort has been made to reduce this conflict, including both the intensive and extensive margins of agricultural production, but the need for foreign exchange and the sharp increase in food demand have been beyond the capacity of Egyptian agriculture. Consequently, Egypt has had to import large quantities of foodstuffs and its import bill has been steadily rising.

By 1990 the conflict between the two pressing demands would most probably assume intolerable proportions in view of the severe constraints of land and water. This could dictate a strategy of crop substitution, which would be manifested in a "buy or produce" situation with respect to cereals in general and wheat in particular. Should Egypt, in the long run, expand production of export crops, especially cotton, and use the additional export proceeds to buy its cereal requirements on the world market? This is the essence of the policy options as reflected by the Egypt CPS.

As an integral part of the study a simple analytical model was developed to assist decision-makers in evaluating this fundamental problem. The main aim of the analysis was to demonstrate the relative advantages of a cotton crop sequence (rotation) versus a cereals sequence under different price relationships and relative yields. The comparative advantages of the two crop sequences were examined from five different angles: (1) respective foreign exchange earnings; (2) inherent risks and uncertainties; (3) net returns to farmers; (4) effects on employment creation; and (5) water requirements.

The results of the analysis show that at the most probable cotton and cereal prices the foreign exchange returns to the economy would be considerably higher for the cotton sequence. The risks and uncertainties in the alternative crop sequences would be closely related to world price fluctuations. Obviously, a combination of low cotton prices with high cereal prices (wheat and maize) would lead to serious foreign exchange difficulties; however, according to the analysis the probability of such an event would be relatively small, and it would be possible to reduce the risks involved by building up strategic food reserves, the costs of which would need to be assessed carefully. On the other hand, the model indicates that the advantages of the cotton sequence would be much less perceptible with respect to farm income. The balance between the cotton and the cereal sequence would be precarious and require strong government support to maintain the cotton area. However, price adjustments required to bring farm income into line with the foreign exchange advantage of cotton would be relatively small, well within the bounds of political and economic feasibility. Finally, the advantages of the cotton sequence are also illustrated by its favourable effects on agricultural employment: the total man-days for the cotton sequence would be 49 per feddan as compared with 38 for the cereal

sequence. Furthermore, the cotton sequence showed considerably lower water consumption requirements than the cereal sequence.

### The Sudan

For many years agricultural development policy in the Sudan has been outward looking, with major emphasis on large irrigation schemes mainly producing cotton for the export market. A basic policy issue concerns the feasibility of continuing this pattern rather than undertaking a major effort to promote agricultural development in the poorer sectors of the country.

Whereas further concentration on the large irrigation schemes in the eastern region would evidently be less cumbersome and produce a higher return on invested capital, it would reinforce past trends and widen the existing gap in regional incomes. This would be in direct conflict with certain national objectives which are voiced strongly at present, e.g., self-sufficiency, diversification of production and exports, and greater income equality. Recognizing all these factors, the Sudan CPS explores production alternatives which blend multiple objectives. In essence these alternatives attempt to reduce the structural distortions associated with a dual agricultural economy, but do not fail to emphasize the vital role of both earning and saving foreign exchange.

The promotion of self-sufficiency and the expansion of exports are treated as the immediate objectives in the study, whereas the broader objectives of diversification and balanced regional development are viewed as overriding and major considerations in choosing among various production possibilities. The options relate not only to broad agricultural development objectives but also to choices within the scope of these objectives. Thus the criteria for selection of alternatives within the context of import substitution include the suitability of ecological conditions, the balancing of regional development, the magnitude of foreign exchange savings, the level of investment requirements and the impact on development of agricultural processing and intersectoral linkages.

The range of choices within the context of import substitution is largely dictated by the composition of agricultural commodity imports and by the levels of projected demand in 1985 under two growth alternatives. The latter imposes a ceiling on fulfilment of self-sufficiency ratios. Also, there are limitations on the range of choices relating to ecological factors and to economic considerations. In view of the other constraints pertaining to organization, manpower requirements, know-how, and infrastructure, a phasing of the production of import-substituting commodities has been recommended.

For export expansion the decision criteria place relatively greater weight on balancing regional development and monetization of the traditional subsectors of crop and livestock production. Other criteria relating to increased foreign exchange earnings, diversification of exports, capital productivity and proximity to the export outlet have also guided the selectivity of choices and the determination of the export mix. The range of choices is determined mainly by the export alternatives postulated in the macroeconomic framework and the growth rates assumed under these alternatives. The range of choices is also restricted by the Sudan's capacity to meet export demand in certain lines of production, limited infrastructure and weaknesses in organization, labour supply and mechanized power.

A major policy element in the above criteria relates to the location of both export-expanding and import-substituting projects. Consideration has been given not only to the suitability of ecological conditions and the desirability of a better regional distribution, but also to the achievement of a more rational production pattern by concentrating the production of agricultural exports (in areas easily accessible by the transportation system) and dispersing the production of import-substituting commodities.

The shift of a single-objective monoculture to multiple objectives would be manifested in certain intricate relationships, the most critical of which would be that between more balanced regional development and higher income to farmers. These objectives would be quite complementary for rice production. Rice production in the south, although of no value in export expansion or export diversification, would promote self-sufficiency and contribute to the other objectives of both higher and better distributed income. Wheat production in the Gezira scheme, on the other hand, has demonstrated the conflicting relationship between the objectives of higher farmer incomes and better regional income distribution; in fact, promotion of this crop, another import-substituting item, would accentuate the problem of inequalities in regional income distribution by benefiting a small group of the larger farmers.

### Iran

The type of food import strategy which Iran will need to adopt in the long run (because of the combined effect of large income and population increases in Iran) is the main policy issue considered. A sharp rise in domestic food demand is projected for 1990, and the strategic role to be played by food imports stems from certain physical and structural constraints on agricultural production. For example, crop production is limited throughout the country by water shortages which restrict the cropped area, the use of inputs, and the range of field crops. Also, most

mutton comes from the flocks of seminomadic tribes which utilize the larger part of existing rangeland.

Because of these circumstances Iran will probably remain below full self-sufficiency for all major agricultural commodities, with the exception of cotton, and will have to rely increasingly on imports to supplement domestic supplies. However, Iran does not face shortages of foreign exchange with which to purchase food imports, nor are such shortages likely to arise within the time horizon of the study. Nonetheless, recent developments on world markets and uncertainties about world supplies and prices of major agricultural commodities reinforce the importance of a long-term import policy and strategic considerations for basic staples. The orientation of primary policy issues in this direction is therefore well justified.

Aside from rice, Iran will most probably experience the largest deficit in supplies of red meat in view of both the sharp increase in domestic demand projected to 1990 and the structural constraints on expanding mutton production. This deficit suggests two policy choices:

1. A long-term import mix which would lessen Iran's dependence on foreign sources for meat. Under this option it would be necessary to maximize feedgrain and white meat production domestically, as well as red meat production within the prevailing system. Iran would need to import a relatively smaller volume of chilled or frozen mutton but a larger quantity of wheat as a result of import substitution through feedgrain production.

2. An import mix which would require larger red meat imports but less imported wheat. Under this option Iran would produce enough wheat to be nearly self-sufficient and would rely more on imported feedgrains to supplement domestic sources earmarked for a somewhat lower level of domestic meat production.

The strategy under the first option would be to shift consumption away from red meat to white meat, with some increase in mutton production based on extensive breeding flocks. Obviously, the availability of feedgrains and other feedstuffs would be the most important aspect of this strategy, since domestic production of feedgrains is limited to barley, a large part of which is cultivated under rain-fed conditions. The expansion of feedgrain production would need to be at the expense of wheat, which is at present more remunerative to farmers than barley. Even if large supplementary quantities of feedgrain are imported, it would probably be substantially less expensive to import feedgrains than red meat.

The basic risk in this strategy would be Iran's increased dependence on the world market for its staple food: wheat. Another disadvantage is that wheat and sheep are the major products of Iran's small farmers, who undoubtedly would not receive incentive prices; this would clearly have unfavourable effects on income distribution. Therefore, while the shifts in land-use and production patterns embodied in the first option are likely to optimize the use of land and water resources in terms of foreign exchange earnings or savings, their sociopolitical implications may be much less desirable.

### Iraq

A basic policy issue in the Iraq CPS is the implementation capacity for agricultural development — that is, the country's capacity to harness water resources and develop agricultural land to give satisfactory yield levels. The options depend on the relative weight to be given urban development versus rural and agricultural development. In agriculture there are also options related to the respective weights assigned to vertical and horizontal expansion. The analysis includes an evaluation of the organizational and human factors affecting implementation capacity. Similarly, the production analysis tests the implications of varying degrees of implementation capacity.

As regards irrigated areas covered by development projects, an important policy issue is the pattern of production. One option is a primarily self-sufficient pattern based on domestic food demand projections. Another would maximize farm income by concentrating on certain high-value crops. The regional Arab Common Market would favour a pattern which gives special importance to maximum wheat production for export to other Arab countries in the region. A third policy issue directly concerns the more than two million hectares of irrigated lands which are not included in the contemplated irrigation and drainage projects. In this connection there are several possible options. One is to concentrate on improving the irrigated lands close to the new projects, with the purpose of raising their cropping intensity from 50 to 100% and to convert the rest of these lands to permanent pasture. Another possibility is to leave these lands at the present cropping intensity and to relocate the inhabitants and change their way of life.

### Conclusions

Identification and analysis of agricultural development policy issues and options constitute an important part of the FAO country perspective studies. The

options bring into focus substantive policies and measures to promote agricultural development in long-term. perspective. The studies already undertaken in the region disclose significant variations in the orientation of basic policy options from country to country, as a result of structural differences which influence the demands pressing on the agricultural sector in each country.

It is hoped that this type of comparative analysis will gain momentum as the CPS programme proceeds. It should crystallize the relation between the socio-economic structures and the orientation of agricultural development policy options in various countries. A sharper focus on agricultural policies and technical assistance would then emerge, making possible a more effective integration in the development of relevant subsectors. Furthermore, such an analysis would put a regional strategy for agricultural development in a new perspective by highlighting the basic similarities and differences in the orientation of policy options; it may also result in reevaluation of certain options when considered in regional contexts.

## Africa

### Development plans and policies

A number of African countries — in particular, Ethiopia, Tanzania and the Sahelian zone countries — have been stricken by exceptionally prolonged and severe drought. For the Sahelian countries especially, the only way to secure food supplies may be through large-scale irrigation, which will require a massive internationally financed investment. In the immediate future the problem may be that of building up minimum reserve stocks, which will involve choice of commodities, quantities required, location and management of stocks, financing, etc. The seriousness of the food supply situation, both short- and long-term, in these countries calls for planning of a high order if the best use is to be made of the considerable supplies which are being enlisted from multinational and bilateral sources. It is reasonable to suppose that the greater awareness of the fundamental importance of agricultural development evidenced in some of the more recent national plans will be further strengthened by recent events. As a result of all these events, some current development plans in Africa have had to be substantially revised, while those being formulated are undergoing modifications in line with what may now be assumed to be the likely evolution of the world economy.[19] Unfortunately, few medium- or long-term predictions can be made with any degree of certainty.

The draft document of the second four-year plan (1974-77) of Algeria indicates the orientation, objectives and targets to be set for the economic and social development of the country in the period 1974-1980. GDP is expected to grow by 8% a year during this seven-year period. Total investment is projected to reach 40% of GDP and grow by 5% a year. Private consumption will grow at a higher rate than during the first four-year plan, the growth rate being set at 7%, which means a 3.5% increase per caput. The employment problem is to be given serious attention, and 200 000 jobs are expected to be created per year by 1980. Labour-intensive investments are given the highest priority whenever possible. The main objectives for the agricultural sector are fulfilment of the local demand for agricultural food products, increase and better distribution of income for the agricultural population and judicious use of the potentialities of the country. The forecasted demand for food corresponds to a per caput daily food ration providing an average of 2 400 calories, 50 grammes of vegetable proteins and 13 grammes of animal protein. Efforts to increase agricultural production are to concentrate on milk, meat and fish production. Cereals, pulses and vegetables should show increases of 50, 90 and 70% respectively. Tree crops are expected to grow at a higher rate, although the area of vineyards will decrease by 100 000 hectares during the period 1974-80. A vast reforestation programme is planned, involving the planting of 100 000 hectares per year by 1980. Despite all these efforts, Algeria is still expected to rely on imports to meet its internal demand for cereals, milk and milk products by 1980. One of the main features of the second four-year plan is closer participation of all citizens in the planning process and in the development efforts. Plans at the commune level are geared to meeting local needs, and the "Agrarian Revolution," which entered its second phase in mid-1973, is to serve as a basis for the economic, social and cultural development of the rural population. Income from agriculture is to be used mostly for the improvement of living conditions for the mass of peasants and the development of agriculture. Smallholders will receive help in organizing cooperatives so that they will have

[19] The main features of current development plans in Africa are given in Annex table 12.

access to modern techniques and be able to take fuller advantage of investment possibilities.

Morocco's new five-year economic and social development plan (1973-77) aims to mobilize all the productive capacities of the country in order to achieve a higher rate of economic growth and ensure an equitable distribution of income. Total investment under this plan amounts to more than double that of the previous five-year plan. Agriculture's share of these investments is projected at about 13% of the total. The public budget will finance 42.5% of total investment and 70% of the sums earmarked for the agricultural sector. The agricultural sector has been given priority, as in previous plans, with the objectives of meeting a greater share of the country's demand for agricultural products, taking maximum advantage of farm investments already made, promoting agro-industrial activities based on local primary products and improving farmers' incomes. GDP is expected to grow by an average of 7.5% a year during the plan period. The projected growth rate of primary activities (including crop production, animal products, forestry and fishery products) is 3.6%, while the growth rates of the industrial and tertiary sectors are set at 11.0 and 6.9% respectively. The value added by crop production will show an annual increase of 4% and by livestock products 3%; industrial crop production will grow by 8.3% annually, compared with 3.5% for cereals and pulses. Vegetable and fruit production is expected to increase by 3.7 and 3.6% respectively. Some 800 000 jobs will be created, in comparison with only 400 000 during the previous five-year plan. Land already irrigated is to be more intensively farmed, and the time lag between the building of dams, the installation of facilities and the cultivation of the newly irrigated land is to be reduced; there are programmes for a more rapid development of non-irrigated areas and one for livestock development.

In Tunisia the fourth economic and social development plan (1973-76), approved in the second half of 1973, corresponds to the first phase of the second ten-year programme. The economic growth rate planned for this decade is 7.6% (6.6% during the period 1973-76 and 8.6% for the remainder of the decade), which is almost double that achieved in the first development decade (1961-71). Total investments will be almost three times the amount allocated in the preceding ten years. The economic and social infrastructure built up in the past is expected to enable the economy to grow at a higher rate. The plan indicates a shift in investment to directly productive projects. Employment, a key problem for the Tunisian society in the coming years, is expected to be overcome through a rapid growth rate combined with a reduction in population growth in line with the economic development potential. About 350 000 jobs are to be created during the decade — some 120 000 during the fourth plan period. No jobs are to be created in the agricultural sector, but underemployment is to be eliminated. About 80% of the investments planned for the second development decade will be financed by local resources, against 60% in the first development decade. The public sectors' relative share in total investment is intended to decrease. The share of agriculture in total investment planned for the fourth economic and social development plan is 14.9% of which more than half will be devoted to directly productive projects, compared with only 24% in 1961-71. Agricultural production is excepted to increase by 27% during 1973-1976, above that achieved under the previous four-year plan. Projected annual growth rates for cereals, vegetables, tree crops and livestock are 6.4, 7.5, 5.7 and 6% respectively, while a growth rate of 11% has been set for industrial crops. The production of fish will increase considerably, largely owing to improvements in organization. The target for 1976 is 53 000 tons, against only 35 000 tons in 1972. Agricultural exports are expected to rise by an average of 7% a year. To achieve these various objectives, there are long-term measures, such as soil conservation and desert control, and programmes designed to give more immediate results.

Ghana is preparing a five-year development plan. No official guidelines have been issued, but indications are that the plan will give major priority to the creation of employment in both rural and urban areas. Also, fiscal measures are to be introduced to increase domestic savings for investment. Meanwhile, programmes are being evolved in the agricultural subsectors to increase production and help achieve the targets of the "Agricultural Years" programme under the "Operation Feed Yourself" campaign. Emphasis is being put on the restructuring of the Ministry of Agriculture to make it more responsive to the needs of small farmers. Existing commodity development boards are being made more effective, and new ones are contemplated. Action programmes and price policies will be needed to increase productivity and help stabilize prices of foodstuffs, at present one of the major causes of the strong inflationary pressures in the economy.

Guinea's five-year plan (1973-78) is interesting for its methodology, which is in essence an attempt to build the plan from the base up, starting with the plans of each small local authority. Great emphasis is placed on the need for each region to become self-sufficient in staple foods, particularly rice, which at present acounts for a considerable import bill. However, less than 10% of public investment is devoted to rural development, compared with 31% for public works and 16% for energy.

Comparisons with the targets (investments, foreign

exchange earnings, savings, etc.) of Nigeria's second development plan (1970-74) have little meaning in the present changed circumstances of the country as a result of developments in the prices of oil. To begin with, the expected revenue from oil has more than tripled; at the same time, agriculture has failed to realize the planned targets even halfway and the sectoral rate of growth has been less than that of population. The population movement to the cities and oil-producing areas from the farming areas continues, and the country's ability to feed itself and increase the export of primary commodities is in serious doubt. Short of a radical departure from present investment and pricing policies in agriculture, the situation could deteriorate even further in relation to the developments in other sectors, and the bulk of the population — the small farmers — might not share in the new wealth of the nation. The guidelines for the third plan of Nigeria recognize the problems of the sector and generally set the same objectives as the current second plan. The interesting fact is that even before the guidelines came off the press they were outdated with regard to critical variables, including the revenue the Government will have at its disposal during the period, and will therefore require revision. As the world's seventh largest producer of oil, Nigeria faces the problem of managing rather large sums of money as a result of the oil boom. However, since the duration of Nigerian oil reserves is estimated at twenty-five years, it is important, indeed vital, to pursue policies that will improve and develop the country's agriculture, not only to ensure the livelihood of the bulk of the population, but also to supply the numerous industries now developing.

Work is almost completed on the first national development plan (1974/75-1978/79) of Sierra Leone. As expected, the plan will give high priority to agriculture in an attempt to reduce the country's ever-increasing import bill for food and nearly total dependence on diamonds as earner of foreign exchange and source of government revenue. The plan, prepared with the aid of the United Nations, had to be revised in the final stage to reflect the present prices of oil. It is hoped that policies and programmes will be evolved to reduce drastically the imports of rice, now about 60 000 tons annually, and to increase the prices received by producers for export products like coffee and cocoa.

The first five-year plan for social and economic development of the Central African Republic, although dated 1971-75, was not presented until December 1972. Its main priorities are the development of agricultural and livestock production, the improvement of marketing structures, the training of personnel at all levels, the development of tourism, the growth of forestry production and associated industries and the intensification of mineral prospecting. The plan covers both public and private investment, with foreign sources expected to provide 35% of the total. Agriculture, forestry and fisheries are to receive approximately 24% of the total outlay. The plan aims to provide an average annual increase in GDP of 8.75% in constant prices.

Ethiopia's five-year plan was due to begin in July 1974, but it will no doubt be delayed because of famine in some provinces, uncertainties of the world economy and recent changes in the country's political system.

Kenya's new development plan (1974-78) illustrates very clearly the problems faced by planners in this period of rapidly changing conditions. Published early in 1974, and consequently conceived and largely formulated before the oil crisis broke in the autumn of 1973, some of the targets and forecasts in the plan are already unrealistic. In a sessional paper on the current economic situation which has since been issued the Kenya Government outlines the measures it intends to take in order to minimize the foreseeable dislocations. The Kenyan economy is among those which have performed most consistently over a period of years. Between 1964 and 1972 GDP increased by 6.8% annually. In this period, marketed agricultural production achieved an annual rate of increase of 6.5% and the subsistence sector 3.8%, giving an overall rate of about 5%. But this very satisfactory rate of growth, in agriculture and in the economy as a whole, has not solved Kenya's severe unemployment problem, which is among the Government's major preoccupations. The new plan, strongly influenced by the findings of the 1972 ILO Employment Mission, places emphasis on the growth of labour-intensive sectors and the stimulation of employment opportunities in rural areas. Other important and closely related goals are to improve nutrition and to secure a more even distribution of income.

**Regional economic integration**

Although there have been few new achievements recently, interest in various forms of political and economic integration has been maintained. Intensive contacts and consultations on a bilateral and sub-regional basis have been taking place, some of which may be expected to lead to formal agreements.

It is widely agreed that neither the immediate nor the long-term problems of the Sahel can be satisfactorily tackled with a piecemeal, country-by-country approach. A certain coordination of outside assistance has been achieved through the United Nations system, and the Sahelian countries themselves (Chad, Mauritania, Mali, Niger, Senegal, Upper Volta) have set up an interstate committee for combating drought

in the Sahel (CILSS), with headquarters at Ouagadougou. If this first, limited step toward integration is successful, the process will probably go further. There are also better prospects, particularly in east Africa, for the setting up of regional food reserves, a measure that has been advocated for some years by the Organization for African Unity.

The majority of African countries have been involved since late 1973 in negotiations with the European Economic Community regarding the renewal of the Yaoundé Convention. Now that the United Kingdom is a member of the EEC, the former British colonies in Africa are eligible for the preferential treatment already accorded to ex-French and Belgian territories under the Yaoundé Convention. What form this will take is subject to negotiation, but it is encouraging to note that all the African countries concerned have agreed on a common line, and their case is being argued by a single spokesman.

The activities of the East African Community have been hampered by continuing poor relations between Tanzania and Uganda, although there has been some easing of the situation after a meeting of presidents Amin, Kenyatta and Nyerere.

The railway line connecting Dar es Salaam with Zambia has been completed well ahead of schedule with Chinese technical assistance, and the first train crossed the Tanzania border into Zambia in April 1974. This rail link is immediately proving its value by enabling supplies of grain to be sent from Zambia for distribution in the areas of Tanzania suffering from food shortages.

With preparatory assistance by a joint United Nations mission, Liberia and Sierra Leone concluded the Mano River Union agreement for economic union between the two countries. A secretariat has since been established in Freetown, and detailed proposals and arrangements are being examined in an attempt to translate the fourteen-point agreement into implemented projects.

The Onchocerciasis Elimination Programme,[20] an example of regional cooperation within the framework of the United Nations system, involves seven countries: Upper Volta, Niger, Mali, Dahomey, Togo, Ghana and Ivory Coast. Operations to eliminate this disease will begin shortly, and the territory subsequently cleared will be available for settlement. FAO is collaborating with the executing agency, WHO, and will have responsibility for planning the agricultural development of these areas.

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[20] Infestation caused by the nematode worm *Onchocerca volvolus* found on the west coast of Africa. The parasite is transmitted to man by the buffalo gnat, *Simulium damnosum*. It can cause conjunctivitis, iritis, keratitis, choroiditis — and blindness. The common name for this disease is "river blindness."

# Chapter 3. - POPULATION, FOOD SUPPLY AND AGRICULTURAL DEVELOPMENT*

## Population and food supply

### Food production

In recent years the prevailing view of the world food situation and prospects has swung from pessimism in 1965-66 to optimism in the "green revolution" years, from 1967 to 1970 or so, and subsequently back again to pessimism. It is essential that the present widespread concern should be directed to the longer-term problems before it is again dissipated in a wave of optimism and lack of attention following a few years of good harvests.

Most of the following discussion of the longer-term evolution of the world food situation is devoted to trends in food production in the developing countries in relation to the growth of population and domestic demand and other measures of performance and to the obstacles faced in increasing food production faster in these countries. The developed countries, with only about 30% of the total population, accounted in 1971-73 for about 60% of the world's food production. They therefore clearly play a very major role in the provision of the world's food supplies — a role that may well be crucial in the medium term, especially in view of the urgent need to rebuild stocks as quickly as possible. The provision of adequate development assistance also depends to a large extent on these countries. As emerges from the analysis of future prospects later in this chapter, it is essential however that the developing countries accelerate the expansion of their own food production, partly for purposes of national security and partly to relieve malnutrition and poverty among their own farm people. This consideration is reinforced by the high level of rural underemployment in these countries and by the fact that their agricultural labour forces are bound to go on increasing in absolute numbers for a long time to come. In the longer run, the task of the developing countries will be eased by measures to reduce population growth.

Although the long-term average increase in world food production has been greater than the growth of population since the second world war, the margin was smaller in the 1960s than in the 1950s (Table 3-1). The increase in food production slowed down in the 1960s in every major region except Africa and North America, reflecting in part the large element of post-war recovery in the early 1950s. In the developed countries, population growth has declined, and the slower increase in production in the 1960s was due partly to deliberate government policies; on the contrary, in the developing countries a decline in food production occurred despite accelerated population growth and government policies of increasing production more rapidly.

Thus, although total food production has increased at about the same rate in the developed and the developing countries, the increase on a per caput basis has been much smaller in the latter (Figure 3-1). This has meant that the already large difference in the actual level of per caput production between these two groups of countries has widened still further. Food production per caput was roughly three times higher in developed than in developing countries in 1961-63 and three and a half times higher in 1971-73. That food production in the developing countries as a whole has for so long a period kept ahead of an unprecedented rate of population growth is a tremendous achievement. Furthermore, food production in these countries in 1972 was 20% greater than in 1966, the previous year of widespread bad weather, and so, even between the troughs of the longer-term trend, production has outpaced population growth; in many countries, however, developments have been much less favourable.

Annex table 3-A compares food production trends with growth of population and domestic demand in those countries for which relevant data are available. In thirty-four developing countries, or almost

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TABLE 3-1. — RATE OF GROWTH OF FOOD PRODUCTION IN RELATION TO POPULATION, WORLD AND MAIN REGIONS, 1952-62 AND 1962-72

| | 1952-62 | | | 1962-72 | | |
|---|---|---|---|---|---|---|
| | Population growth | Food production | | Population growth | Food production | |
| | | Total | Per caput | | Total | Per caput |
| | ..... *Percent per year*[1] ..... | | | | | |
| DEVELOPED MARKET ECONOMIES[2] | 1.2 | 2.5 | 1.3 | 1.0 | 2.4 | 1.4 |
| Western Europe | 0.8 | 2.9 | 2.1 | 0.8 | 2.2 | 1.4 |
| North America | 1.8 | 1.9 | 0.1 | 1.2 | 2.4 | 1.2 |
| Oceania . . . | 2.2 | 3.1 | 0.9 | 2.0 | 2.7 | 0.7 |
| EASTERN EUROPE AND U.S.S.R. | 1.5 | 4.5 | 3.0 | 1.0 | 3.5 | 2.5 |
| *Total developed countries* . . | 1.3 | 3.1 | 1.8 | 1.0 | 2.7 | 1.7 |
| DEVELOPING MARKET ECONOMIES[2] | 2.4 | 3.1 | 0.7 | 2.5 | 2.7 | 0.2 |
| Africa . . . . | 2.2 | 2.2 | — | 2.5 | 2.7 | 0.2 |
| Far East . . . | 2.3 | 3.1 | 0.8 | 2.5 | 2.7 | 0.2 |
| Latin America . | 2.8 | 3.2 | 0.4 | 2.9 | 3.1 | 0.2 |
| Near East . . | 2.6 | 3.4 | 0.8 | 2.8 | 3.0 | 0.2 |
| ASIAN CENTRALLY PLANNED ECONOMIES | 1.8 | 3.2 | 1.4 | 1.9 | 2.6 | 0.7 |
| *Total developing countries* . . | 2.4 | 3.1 | 0.7 | 2.4 | 2.7 | 0.3 |
| **World** . . . | 2.0 | 3.1 | 1.1 | 1.9 | 2.7 | 0.8 |

[1] Trend rate of growth annually compounded. — [2] Including countries in other regions not specified.

40% of the total, the increase in food production failed to keep up with population growth in 1952-1972. Population growth is estimated to account for about 70% of the medium-term increase in the total demand for food in the developing countries. If allowance is made for the effect of rising income as well as population growth, it appears that in 1952-1972 the increase in food production was less than that in the domestic demand for food in as many as fifty-three of the eighty-six developing countries, or almost two thirds of those for which relevant data are available in Annex table 3-A.

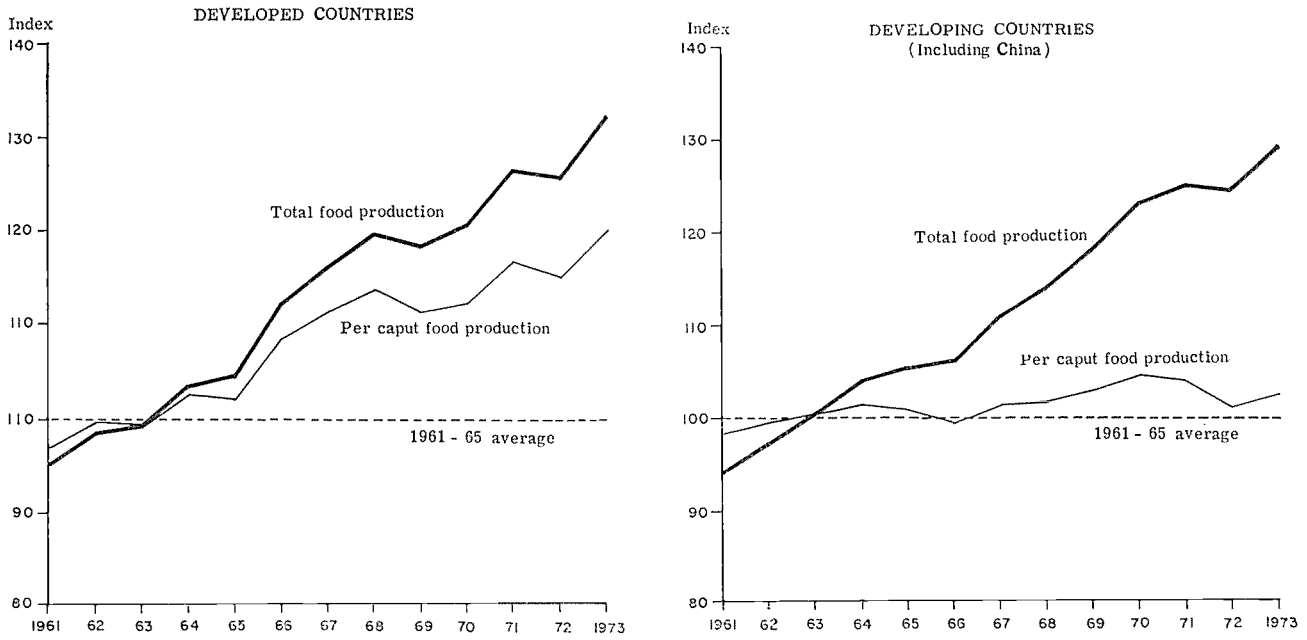
Regionally, the growth of food production has been most rapid in Latin America and the Near East and slowest in Africa, but in each continent striking contrasts can be noted between individual countries. For example, over the twenty-year period 1952 to 1972 food production expanded at an annual rate of 6.1% in Venezuela but only 0.8% in Uruguay, 5.4% in Togo but only 0.8% in Tunisia, 5% in Lebanon but only 1.8% in the Syrian Arab Republic, and 5.3% in Thailand but only 2% in Indonesia and 0.1% in Nepal.

Such comparisons of the growth of food production, population and demand in individual countries should of course be interpreted with caution. To measure the relative success of different countries in increasing food production in line with their broader development objectives would require very detailed analyses of the particular circumstances of each one of them. Nor do the comparisons in Annex tables 3-A and 3-B imply that self-sufficiency in food is a desirable or feasible aim in all countries. However, most developing countries are aiming at greater self-sufficiency in food, and even those whose export earnings enable them to import a large proportion of their food supply do not usually desire a reduction in self-sufficiency. The failure of food production to keep up with domestic demand in so many developing countries has led to very rapid and generally burdensome increases in their food imports.

Domestic agricultural production is the main determinant of the level of available food supplies in most developing countries, but it also has other important roles to play in their overall economic and social development, including the earning and saving of foreign exchange (part of which has to be used by many of them at present for the importation of food and fertilizers), and the provision of employment and of much of the capital needed for the development of the rest of the economy. This wider role of agricultural production is reflected in the targets of national development plans and in the Second United Nations Development Decade (DD2) target rate of increase of 4% for the developing countries as a whole. A comparison of the recent performance of agricultural production with targets in national development plans indicates that out of sixty-six plans for forty-seven countries these targets have been met in only seventeen countries, or a quarter of the total. The plan targets for agricultural production range from an annual increase of 1.5% for 1965-67 in Morocco to 8.5% for 1967-71 in Cyprus.

Similarly, the development target rate of 4% is based mainly on the widely varying objectives for individual countries in the periods 1961-63 to 1975 and 1985 proposed in FAO's Provisional Indicative World Plan for Agricultural Development (IWP) and related FAO studies. Table 3-2 shows the performance of agricultural production in the developing regions in relation to these objectives. They have not, so far, been met in any region. As regards individual countries, the rate of growth of agricultural production proposed in the IWP for the period 1961-63 to 1975 had by 1971 (i.e., before the generally bad harvests of 1972) been reached in only twenty-one of the sixty-four countries covered. It is noteworthy that the usual criticism of the IWP objectives is that

FIGURE 3-1. — TOTAL AND PER CAPUT FOOD PRODUCTION IN DEVELOPED AND DEVELOPING COUNTRIES, 1961-73




they are too low. In general, the performance of agricultural production in the developing countries in relation to both their own plan targets and the often lower IWP objectives is most disappointing.

TABLE 3-2. — AVERAGE ANNUAL RATE OF GROWTH OF AGRICULTURAL PRODUCTION IN DEVELOPING REGIONS IN COMPARISON WITH IWP OBJECTIVES

| | Actual growth rate of production | | | IWP objectives [2] | |
|---|---|---|---|---|---|
| | 1961-63 to 1967 | 1967 to 1973 | 1961-63 to 1973 | 1961-63 to 1975 | 1975 to 1985 |
| | ..... *Percent per year* ..... | | | | |
| Africa south of the Sahara | 2.4 | 2.6 | 2.6 | 3.2 | 3.3 |
| Far East . . . . . | 1.5 | 2.9 | 2.6 | 3.6 | 4.0 |
| Latin America . . . . | 3.8 | 2.4 | 2.9 | [3] | [3] |
| Near East and northwest Africa [1] . . . . | 3.5 | 2.6 | 3.2 | 3.4 | 3.5 |
| Average . . . . . | 2.5 | 2.7 | 2.6 | 3.4 | 3.7 |

[1] IWP objectives for northwest Africa based on 1965. — [2] These figures are derived from the four IWP regional studies; the final IWP objectives in the world study, based on faster growth rates for pig and poultry production, raised these rates of growth to 3.6 and 3.9% respectively (3.7% over the whole period). — [3] The original IWP objectives for Latin America were superseded by a study covering South America and giving for the decade 1970-80 two target growth rates: a high of 5.0% and a low of 3.6%.

NOTE: The regional groupings cover the 64 countries studied in the IWP: 24 in Africa south of the Sahara (84% of regional population), 8 in the Far East (80%), 17 in Latin America (90%) and 15 in the Near East and northwest Africa (96%). Thus, although they cover most of the population of the developing regions, the data in this table are not fully comparable with those in other tables.

Most individual commodities followed the general trend and thus lagged behind the proposed objectives, although the pattern of the expansion of production has differed so far in a number of respects from that proposed in the IWP.[1] The wheat production objectives have been exceeded in both Africa south of the Sahara and the Far East — in the latter by a wide margin. For rice the objectives have not been met in the Far East, the main producing area, although they were exceeded in the other regions. For the starchy roots, which are crops of low nutritional value, the objectives were exceeded in each of the regions where they play an important role in the diet. On the other hand, for pulses, a major source of protein, production lagged behind the objectives in every region — in some cases because of competition from more profitable crops, such as cereals. Among the main export crops the production objectives were exceeded for bananas, rubber, soybeans, sugar and total fruit, but there were shortfalls for cocoa, coffee, cotton, groundnuts, jute, tea, tobacco and total oilseeds.

The overall performance of livestock production has been much closer to the original objectives proposed in the IWP regional studies than has crop production, although far behind the higher objectives of the world study based on the more rapid expansion

[1] For a more detailed analysis covering the period up to 1971, see: Agricultural production in developing countries in relation to the targets of the Second United Nations Development Decade. *Monthly Bulletin of Agricultural Economics and Statistics (FAO)*, 22(4), April 1973.

of pig and poultry production. Beef and veal production increased more slowly than the objectives in every region except the Far East. The production of pigmeat and especially poultry increased faster than the original regional objectives in most regions, thus going some way toward meeting the higher objectives proposed in the world study. The increase in milk production was ahead of the objectives in every region except the Far East.

The discussion of food production has so far included only crop and livestock production, as fish production accounts for less than 1% of world food supplies in terms of dietary energy, 5% of total protein and 14% of animal protein, although it is of much greater importance in some individual countries. Thus the rapid rate of increase in fish production (about 6% a year during the 1950s and 1960s), much of which was for animal feeding, would make little difference, except for a few countries, to the trends under discussion. More recently this rapid rate of increase has tailed off, and world fish production actually dropped in 1969 and 1972, largely because of a sharp reduction in the catches of species used for animal feed. (Catches used directly for human consumption have continued to increase.) The fall in fishmeal production has put additional pressure on alternative sources of livestock feed.

## Production resources

In view of the major influence of short-term fluctuations in production as a cause of the present difficult world food situation, it is clearly necessary to ensure long-term rates of increase in food production that are sufficient for the inevitable "below trend" years, so as to avoid crises in the food supply situation. It appears that agricultural technology in both developed and developing countries may not be properly attuned to the weather and to climatic conditions; but it is equally apparent that the principal causes of the disappointing long-term trends in food production in the developing countries must be traced to sources other than the weather.

Increasing production basically depends on expanding inputs of the different factors of production: land and water, labour, materials, various types of capital and technological know-how. For farmers in developing countries, especially the numerous small farmers, the possibility of and incentive for using more inputs depend, in turn, largely on the infrastructure and services provided by governments. Many government development budgets have tended to neglect agriculture in favour of industry. More recently there has been a widespread tendency to increase the emphasis on agriculture, especially in the Far East, following the difficult food situation of 1965/66, although this is difficult to quantify. The proportion of development expenditure devoted to agriculture is heavily influenced by whether a large-scale project — say, for irrigation or settlement — is under way at the time in question. A United Nations analysis of forty-one recent development plans of twenty-six developing countries indicates that the planned investment in agriculture varies from 5 to 39% of the total outlay. Shortfalls in actual investment from the planned level appear to be particularly marked in the agricultural sector, while very little information is available on the current expenditures needed to support the capital investment. Both formulation and implementation of agricultural planning have been hampered in many countries by the multiplicity of agencies concerned with various aspects of agricultural and rural development.

For some of the physical means of production the IWP proposed quantitative objectives in relation to the production objectives discussed above. These can provide the only available framework for an approximate evaluation of the recent performance in this regard.

Consider first the input of new land where the extension of the arable area proposed in the IWP for the period 1961-63 to 1985 is only 0.7% a year, whereas, in fact, the arable area appears to have been extended a good deal faster than this. For cereals, which occupy the largest part of the arable land, the increase in harvested area from 1961-63 to 1973 was higher than was proposed for the period up to 1975 in each of the developing regions except Africa south of the Sahara. In the latter region the slow expansion of arable land contributed to the major shortfall in the important millet and sorghum crops. In the other regions most of the lags in reaching the proposed objectives for cereal production have occurred despite a faster increase in area than was proposed — in other words, the improvement in yield per hectare has been disappointing.

Inasmuch as the IWP foresaw production expanding at some 3.5% but the arable area at only 0.7%, clearly the major emphasis was placed on yield improvement to be achieved through more irrigation, multiple cropping, better seeds, greater use of fertilizers and pesticides and general progress in cultivation practices. Among eight countries where irrigation is particularly important in this regard, and for which the necessary data are available, the expansion of the irrigated area has been much less than the national plan target in India, Malaysia, Sri Lanka, the Syrian Arab Republic and Thailand, and exceeded it only in Algeria, Egypt and the Sudan. Since the IWP's proposed expansion in irrigated area of 1.7% a year up to 1985 in the developing countries as a whole was the main basis for an increase in the harvested irrigated area of as much as 2.9% a year

through multiple cropping, there has therefore probably been a substantial shortfall in relation to this major objective. Even where irrigation targets have been met, they have sometimes been partly offset by land that is decreasing in productivity or even going out of production through poor irrigation practices. Moreover, the long-standing limitations of the effectiveness of existing facilities have been accentuated recently by the shortage of power for pumping, because of reduced hydroelectric power caused by drought as well as the scarcity of diesel fuel.

In some of the principal food deficit countries of the Far East the high-yielding varieties (HYVs) of rice and especially wheat were major contributors to the more rapid expansion of food production late in the 1960s, which enabled a few of them to become temporarily self-sufficient in certain cereals. The production objectives proposed in the IWP involved a rise of 12% a year in the area under HYVs of cereals in the Far East from 1967/68 to 1985, by which time they would cover about 75 million hectares, or almost half the total cereal area of the region. The increases proposed in the other regions were generally much smaller. Comparison of performance with these targets is difficult because of problems of defining HYVs and because full data for the most recent years are not yet available. It is clear, however, that the HYVs of wheat have so far made more progress than those of rice, mainly because of the lack of controlled irrigation and drainage facilities which are required by the rice varieties. By 1972/73 the area under the HYVs of wheat in India and Pakistan had reached 52 and 56%, respectively, of the total wheat area. As for rice, in thirteen major countries of the Far East by 1972/73 the HYVs covered only 20% of their total rice area (ranging from 56% in the Philippines, 43% in Pakistan, 38% in Malaysia and 25% in India to only 4% in Burma and 2.5% in Sri Lanka).

Between 1961-63 and 1972/73 fertilizer consumption in the developing countries rose by 13.9% a year, only slightly less than the objective of 14.6% a year up to 1975 proposed in the IWP. While there were substantial shortfalls in the Far East during this period, the IWP objective was exceeded in this region late in the 1960s. More recently, however, the rate of increase has fallen off as a result of the current scarcity and high fertilizer prices.

World production of fertilizer rose by 39% between 1967/68 and 1972/73, and agricultural consumption

TABLE 3-3. — PRODUCTION AND CONSUMPTION OF CHEMICAL FERTILIZERS,[1] WORLD AND MAIN REGIONS, JULY/JUNE 1967/68, 1971/72 AND 1972/73

| | Production [2] | | | Rate of increase 1967/68 to 1972/73 | Consumption | | | Rate of increase 1967/68 to 1972/73 |
|---|---|---|---|---|---|---|---|---|
| | 1967/68 | 1971/72 | 1972/73 | | 1967/68 | 1971/72 | 1972/73 | |
| | ..... *Million tons* ..... | | | *Percent per year*[3] | ..... *Million tons* ..... | | | *Percent per year* |
| DEVELOPED MARKET ECONOMIES [4] | 40.4 | 46.5 | 48.5 | 3.7 | 33.8 | 38.7 | 40.5 | 3.7 |
| North America | 17.7 | 21.3 | 21.9 | 4.3 | 14.5 | 16.5 | 17.2 | 3.5 |
| Western Europe | 17.9 | 19.9 | 20.8 | 3.0 | 15.1 | 18.1 | 18.8 | 4.6 |
| Oceania | 1.3 | 1.3 | 1.4 | 2.0 | 1.5 | 1.4 | 1.6 | 2.2 |
| EASTERN EUROPE AND U.S.S.R. | 14.1 | 21.7 | 23.3 | 10.5 | 12.6 | 18.5 | 20.1 | 9.8 |
| *Total developed countries* | 54.5 | 68.2 | 71.8 | 5.7 | 46.4 | 57.2 | 60.6 | 5.5 |
| DEVELOPING MARKET ECONOMIES [4] | 2.5 | 5.2 | 6.1 | 19.6 | 5.8 | 9.9 | 11.5 | 14.7 |
| Africa | 0.3 | 0.8 | 0.9 | 24.9 | 0.4 | 0.8 | 0.9 | 17.6 |
| Far East | 1.1 | 2.3 | 2.6 | 18.8 | 2.3 | 4.7 | 5.3 | 18.2 |
| Latin America | 0.8 | 1.3 | 1.4 | 11.9 | 2.0 | 3.1 | 3.8 | 13.7 |
| Near East | 0.4 | 0.8 | 1.1 | 22.5 | 0.8 | 1.3 | 1.5 | 13.4 |
| ASIAN CENTRALLY PLANNED ECONOMIES | 1.9 | 3.5 | 4.0 | 16.1 | 2.7 | 4.9 | 5.3 | 14.5 |
| *Total developing countries* | 4.6 | 8.7 | 10.1 | 17.0 | 8.5 | 14.8 | 16.8 | 14.6 |
| **World** | 59.1 | 76.9 | 81.9 | 6.8 | 54.9 | 72.0 | 77.4 | 7.1 |

[1] N, P, K nutrient content. — [2] Fertilizer production statistics for some countries include the production of "technicals" not used in agriculture; some ammonia exported for further processing is double-counted by exporting and importing countries; no account is taken of losses in storage and transit, which are estimated as about 2% of total production. Making allowance for these factors, the available world supply of fertilizers is estimated to have been 73.7 million tons in 1971/72 and 78.3 million tons in 1972/73, or much closer to world consumption. — [3] Compounded annually. — [4] Including other countries in regions not specified.

by 41% (Table 3-3). Consumption has grown much more rapidly in the developing than in the developed countries, but in 1972/73 it was still only 15% of the world total. The developed countries as a whole have been substantial net exporters of fertilizers. While domestic production of fertilizers in the developing countries more than doubled in the five years from 1967/68 to 1972/73, they still depend on imports for more than a third of their total supply, and in the developing market economies imports represent almost half of the supply. Moreover, fertilizer production in many developing countries is mainly based on imported raw materials. Fertilizer plants in developing countries have generally operated at low levels of capacity utilization.

The IWP estimated an annual increase in pesticide requirements of 11.2% a year in the developing countries up to 1985. The general impression is that, while the use of herbicides for weed control has increased rapidly in many areas, the use of insecticides and fungicides has risen more slowly. There has also been some increase in the use of biological agents in place of chemicals. The slow rise in the use of chemical insecticides is partly due to the banning or restriction of DDT and other persistent organo-chlorine products. The present scarcity of pesticides (see p. 32) is expected to continue in the short term and to have a negative influence on the expansion of crop production.

One area in which the proposed IWP objective has been exceeded is farm mechanization: the increase in the number of tractors in 1965-73 was greater than that proposed for 1965-75 in each developing region. Since the objective took account of the need to create as much employment as possible without sacrificing production objectives, overfulfilment may in some cases have led to an unnecessary displacement of labour.

Whether or not the "green revolution" has begun to taper off depends on how one defines the term. Clearly, wider use of existing HYVs in regions to which they are suited is being held up by the rather slow expansion of irrigation. Certainly, there is a need for additional HYVs of wheat, maize and rice for use in other ecological environments, as well as for HYVs of barley, millet, sorghum and other crops. Surely, a continuation of the green revolution depends on a continually increasing use of fertilizers, which at present have become scarce and expensive. But, subject to these provisions, there are no technical reasons for supposing that the green revolution has no more to offer.

There are however other preconditions for its success, notably as regards farm management and economic and social incentives. While it is true that many small farmers have already benefited, the initial impact was mainly on the larger farmers. More recently, further progress has depended increasingly on the difficult task of drawing in more of the smaller farmers — hence the importance of rural institutions and services capable of meeting their needs.

**Rural institutions and services**

The general inadequacy of rural institutions and government services to farmers is widely recognized as a main cause of the slow growth of food production in developing countries. It is difficult however to assess their performance. The IWP was able to propose quantitative objectives only for the volume of institutional credit and for the trained manpower required to staff government services, but, even so, it has not been possible to measure performance against the objectives. Developments in this important field can therefore be assessed only in broad qualitative terms.

Moreover, the effectiveness of rural institutions and services should be judged not merely on the basis of their contribution to meeting production objectives, but also in relation to the achievement of social goals, including better distribution of the benefits from increased production. The overall institutional system not only has to fill various organizational or technical functions in providing links between producers and consumers of both agricultural products and inputs, but it also has a crucial role in the mobilization of human resources. It should provide a system of planning and decision-making that involves the producer as well as the policy-maker, and it should motivate the rural population through education, communication and incentives.

Whereas the need for agrarian reform in many countries and the complexity of the processes involved have been increasingly recognized in the last few years, actual progress in this area has generally been small. The scope of the few new agrarian reform programmes launched in recent years has often been limited. In some countries they have been implemented very slowly, and evasions of legislative provisions have been widespread. Even where implementation has been vigorous, poor administrative systems and lack of trained personnel for the essential supporting services have been obstacles to positive results.

There has been somewhat more success in improving institutions and services for the supply of inputs and credit; but, here too, progress has been uneven and inadequate, especially in relation to the requirements of small farmers. There is now much more widespread realization of the need to concentrate development programmes on the poorest pop-

ulation groups if social progress is to be achieved, and that in most developing countries these groups are principally the small farmers and other rural poor. However, not only input and credit services but also extension, training and marketing have so far generally failed in this regard; nor has there been much success in integrating the small farmer or the rural poor as a whole into the overall socioeconomic framework for rural development.

In agricultural education, training and extension little attention has been given to the original solutions required for the special problems of the developing countries. Even where good progress has been made in the development of the higher and intermediate teaching institutions so badly needed to train the staff of government services to farmers, the orientation of the training is often impractical and graduates are seldom used at the farm level, where they are most needed. A preoccupation with traditional, formal systems has hampered the innovations needed in informal, out-of-school education. In many countries, education and extension have been almost exclusively directed to the adult male, neglecting women and youth, who form a major part of the rural labour force. Extension work has stayed too close to the concept of an individual agent reaching a particular "clientele" in person, and too little attention has been paid to group work and to modern methods of mass communication. Insufficient efforts have been made to involve the farmers themselves, by means of various types of farmers' organization, in making better use of advisory information through self-help and in participating more fully in the development process.

Even in areas where communications are good and producers not physically isolated, it has generally been found difficult to integrate small farmers into the marketing system. Attempts to organize the collection and primary marketing of produce through farmers' cooperatives have succeeded in some cases, but there have been numerous failures. Some countries have established statutory boards or public buying agencies to deal directly with farmers, but they have often proved too costly and ill-adapted to collecting produce from widely scattered small farmers. Similar difficulties have been encountered in the distribution of fertilizers and other inputs — again, especially in the case of small farmers. In many countries the whole marketing chain from producer to consumer has become badly overstretched by the very rapid pace of urbanization. Facilities for storage, processing and wholesale marketing have not been adequately developed and still involve substantial avoidable losses of food.

Food price policies in the past have often tended to favour the urban consumer at the expense of the incentives needed to increase production fast enough at farm level. In recent years there has been some reversal of these policies, and higher farm prices were a major factor in increasing incentives in the many countries, especially in the Far East, where there was an acceleration in the expansion of production at the end of the 1960s. Most of the high support and procurement prices of that time appear to have been maintained or even increased, although in some cases their incentive effect has been eroded by inflation and by increases in input prices, sometimes with the removal of fertilizer subsidies. The effects of the most recent price developments for both agricultural products and inputs remain uncertain, but it is clear that the large changes that have occurred and are still occurring have enhanced the importance of careful adjustments to price policies in order to maintain production incentives.

One of the more encouraging trends of recent years has been an increasing tendency to view rural development as a whole, rather than in the limited context of increasing food and agricultural production. There is now widespread recognition of the need for more integrated policies of rural development that also embrace such elements as nonagricultural sources of rural income and employment, the development of decentralized rural towns, public works programmes, social services and amenities, and people's participation in development decision-making. It is increasingly realized that such policies can contribute not only to social progress but also to the possibilities of and incentives for increasing production. There is less awareness however of the problems involved in the implementation of integrated rural development policies.

It appears likely that the rural poor have become relatively poorer in recent years, although this is difficult to quantify. Rural-urban income disparities have widened in many countries, and there has been little if any redress in the rural-urban imbalance in public services and amenities. Regional differentials between rural areas have widened, since improved technology has usually been available only to those already favourably endowed with natural resources. Moreover, although the "green revolution" technology has been successfully taken up by many small farmers, the bias of rural institutions and services in favour of larger farmers has generally meant that their gains have been greater.

The overall level of agricultural underemployment has been reduced in some countries, but it is not certain whether the increased employment opportunities have actually gone to the poorest, most seriously underemployed groups. In general, the slow progress in increasing food production in the developing countries as a whole has meant that agricultural and rural employment and incomes have not increased as fast as they could have.

## Development assistance

Development assistance, which plays a significant role in agricultural as well as overall economic and social development, has remained well below DD2 and other targets.[2] Total official and private financial flows from the sixteen-country Development Assistance Committee (DAC) of the OECD rose from US$9 200 million in 1961 to $19 500 million in 1972. There was a sharp increase to $24 600 million in 1973, but much of this latest increase reflected changes in currency rates, and prices; in real terms the volume of aid increased by only 7% in 1973. The level of aid is also dwarfed by the recent increases in the oil import bills of both recipient and donor countries. Food aid (included in the above totals) has recently declined in value and even more in volume.

Development assistance has deteriorated in several other respects. The total aid flow declined from 0.95% of the GDP of the donor countries in 1961 to 0.78% in 1973, which is substantially below the target of 1% accepted by DAC. Official development assistance fell from over two thirds of the total contribution in 1961 to about one half in 1973, dropping from 0.52% to only 0.30% of GDP, less than half the DD2 target of 0.7%.

A more encouraging development is the rise in the grant element of official assistance after a decade during which the ratio of loans to grants had increased. Since 1 January 1973 a grant-element threshold of 25% has applied to all new DAC commitments. Payments by DAC countries to multilateral agencies grew from 10% of total development assistance in 1961 to 16% in 1970 and 24% in 1973. The latest rise mainly reflects increasing contributions to the World Bank's International Development Association (IDA); more recently, however, IDA has been experiencing refinancing difficulties.

The sixteen DAC countries are estimated to be responsible for about 95% of the total aid flow to developing countries. A precise evaluation of the total net flow from non-DAC countries is not possible, but it is tentatively estimated by DAC that it increased from about US$600 million in 1967 to $1 300 million in 1972 for the developing countries on the DAC list. In addition, non-DAC countries have provided substantial amounts to Cuba and other centrally planned economies, which according to the limited information available could have exceeded $1 000 million annually in recent years. A number of initiatives are now under way to increase substantially the amount of development assistance available from the Arab and other oil-exporting countries. Insufficient information is available to assess either the terms of aid from non-DAC countries or its relation to their national income.

The flow of aid has been very unevenly distributed among the recipient countries. Partly because of their low absorptive capacity and lack of a "pipeline" of projects, the least developed countries have received less than half the average amount on a per caput basis. The external public debt of the developing market economies increased from US$19 000 million in 1960 to $66 000 million in 1971, and annual debt service payments from $2 100 million to $6 100 million. In some countries, such as Iran and Iraq, until the recent changes in petroleum prices, about one third of total annual export earnings were preempted by repayment and servicing of debts.

Only approximate data are available on the amount of total development assistance to agriculture, although efforts are being made to improve the available information. It may be roughly estimated however that in 1970-72 the commitment of DAC and multilateral assistance to agriculture[3] was approximately $1 000 million a year. In 1973 these commitments rose sharply to about $1 500 million, almost entirely because of an increase in World Bank/IDA commitments from $436 million in 1971/72 to $938 million in 1972/73. The much lower level of international assistance for population programmes stood in 1969-72 at 1 to 2% of total development assistance.

## World trade in food

International trade plays a major role in the world food situation. Among the main food products, 19% of global wheat production, 30% of sugar and 33% of fats and oils entered world trade in 1973. For beverages and raw materials, which account for a large share of the export earnings of many food-importing developing countries, the proportions are even higher, ranging up to 77% for coffee, 82% for cocoa and 92% for natural rubber.

The longer-term lag of food production behind the growth of domestic demand in many developing countries has greatly increased their dependence on food imports, which had already doubled in volume between 1955 and 1966. More recently, the increase has somewhat slackened, to about 3.4% a year for the developing market economy countries, which is considerably above their rate of population growth and not far behind the average for the developed countries (Table 3-4).

A very large part of the food imports of the developing countries consists of cereals, the staple

[2] For complete coverage in this context some of the material discussed in Chapter 1 (p. 23) is repeated here.

[3] Excluding food aid and the agricultural technical-assistance component of DAC bilateral aid.

TABLE 3-4. — INDEX NUMBERS OF THE VOLUME OF GROSS FOOD IMPORTS AND THEIR RATES OF GROWTH, WORLD AND MAIN REGIONS, 1961-63 TO 1972

| | Volume of gross food imports | | | Annual rate of growth | |
|---|---|---|---|---|---|
| | 1961-63 | 1969-71 | 1972 | 1961-63 to 1969-71 | 1961-63 to 1972 |
| | *1961-65 average = 100* | | | *Percent per year* | |
| DEVELOPED MARKET ECONOMIES [1] | 96 | 128 | 140 | 3.6 | 3.8 |
| Western Europe | 96 | 125 | 133 | 3.4 | 3.7 |
| North America | 102 | 116 | 123 | 1.7 | 1.9 |
| Oceania | 97 | 114 | 123 | 2.0 | 2.4 |
| EASTERN EUROPE AND U.S.S.R. | 86 | 113 | 154 | 3.5 | 6.0 |
| *Total developed countries* | 95 | 126 | 142 | 3.6 | 4.1 |
| DEVELOPING MARKET ECONOMIES [1] | 96 | 127 | 138 | 3.4 | 3.5 |
| Africa | 100 | 123 | 135 | 2.6 | 3.1 |
| Far East | 93 | 120 | 125 | 3.2 | 3.0 |
| Latin America | 96 | 127 | 154 | 3.5 | 4.8 |
| Near East | 94 | 135 | 135 | 4.5 | 3.6 |
| ASIAN CENTRALLY PLANNED ECONOMIES | 96 | 106 | 120 | 1.2 | 2.2 |
| *Total developing countries* | 96 | 123 | 134 | 3.2 | 3.4 |
| **World** | 95 | 125 | 139 | 3.4 | 3.9 |

[1] Including countries in other regions not specified.

element of the diet in most of them. Between 1949-1951 and 1966-68 their gross imports of cereals rose from 12.4 to 34.4 million tons and by 1972 had reached 36 million tons.[4] In value they rose from US$996 million in 1955 to $3 000 million in 1967, then to about $4 000 million in 1972/73, and reached a tentatively estimated $9 000-10 000 million in 1973/1974.

Before the second world war the developing countries as a group were net exporters of cereals, but they have subsequently become substantial net importers. Table 3-5 shows the average annual flow of cereals in value for 1969-71, the latest period in which prices were relatively stable. The developing countries accounted for 19% of world cereal exports (Argentina, Burma, Mexico and Thailand being the only significant net exporters) and 37% of world imports. The developed market economy countries provided 69% (North America alone almost 50%) of world exports and took 47% of world cereal imports. Japan, the United Kingdom, Italy and the Federal Republic of Germany, with about 7% of the world's population, accounted for 36% of total cereal imports in 1969-71. India and China, the largest importers in the developing world, with 36% of the world's population, accounted for only 9% of cereal imports. A very large part of the developed countries' cereal supplies is used to feed livestock.

The burden on the developing countries of paying for increasing food imports has been greatly mitigated during the last twenty years by the availability of large amounts of food aid. Between 1954 and 1969 food aid shipments ranged between 30% and 45% of the total food imports of the developing countries. The main source of food aid has been the United States surplus stocks of grain, which were available on concessional terms but have now been depleted. Since 1963, multilateral food aid has been available through WFP, and since 1968 under the Food Aid Convention (FAC). Food aid shipments, which reached a peak of about 18 million tons in 1964/65, have subsequently declined to 9.8 million tons in 1972/73 and to less than 6 million tons in 1973/74, the lowest since 1957/58.

Most developing countries continue to depend heavily on agricultural exports for their foreign exchange earnings. This affects their food situation in a number of ways. Many developing countries have to use much of their exchange to import food and the fertilizers and other inputs needed to produce it, whereas agricultural exports are a major source of employment and income for the farmers of developing countries and can thus contribute to the alleviation of poverty, which is the key to the improvement of nutrition.

Trends in agricultural export earnings have nevertheless been generally unsatisfactory. While the volume of the agricultural exports of the developing countries rose by 2% a year between 1961-63 and 1970-72, the annual increase in their value over this whole period was only 3.3%. The agricultural export earnings of the developed market economy countries increased at more than twice that rate. The developing countries' share in world agricultural exports declined from 40% in 1961-63 to 30% in 1970-72.

In some cases where long-term demand conditions have been favourable (e.g., for meat, fruits and vegetables, timber and paper products), developing countries have missed export earning opportunities through a failure to increase production fast enough. Frequently, however, their access to markets in developed countries, especially for competing products, has been limited by various tariff and nontariff barriers which have discouraged the steady expansion of production for export. Such progress as has been made in the introduction of the Generalized System

[4] Excluding China, for which figures for the earliest period are not available.

TABLE 3-5. — STRUCTURE OF WORLD TRADE IN CEREALS, ANNUAL AVERAGE 1969-71

| Exports from \ Exports to | Developed market economies | | | | | Centrally planned economies | | | Developing market economies | | | | World total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EEC [1] | Other western Europe | North America | Others | Total | Eastern Europe | Asia | Total | Africa | Asia | Latin America and Caribbean | Total | |
| | *Million U.S. dollars f.o.b.* | | | | | | | | | | | | |
| DEVELOPED MARKET ECONOMIES | | | | | | | | | | | | | |
| EEC [1] | — | 177 | 1 | 5 | 183 | 57 | 10 | 67 | 84 | 45 | 2 | 131 | 381 |
| Other western Europe | 50 | 40 | — | 7 | 97 | 15 | — | 15 | 8 | 5 | 2 | 15 | 127 |
| North America | 527 | 343 | 155 | 616 | 1 641 | 129 | 140 | 269 | 128 | 674 | 255 | 1 057 | 2 967 |
| Others [2] | 33 | 104 | 4 | 131 | 272 | 10 | 80 | 90 | 71 | 273 | 30 | 374 | 736 |
| *Total* | 610 | 664 | 160 | 759 | 2 193 | 211 | 230 | 441 | 291 | 997 | 289 | 1 577 | 4 211 |
| CENTRALLY PLANNED ECONOMIES | | | | | | | | | | | | | |
| Eastern Europe | 41 | 60 | — | — | 101 | 393 | 17 | 410 | 16 | 14 | 46 | 76 | 587 |
| Asia | 1 | 1 | — | 5 | 7 | 12 | — | 12 | 11 | 84 | 19 | 114 | 133 |
| *Total* | 42 | 61 | — | 5 | 108 | 405 | 17 | 422 | 27 | 98 | 65 | 190 | 720 |
| DEVELOPING MARKET ECONOMIES | | | | | | | | | | | | | |
| Africa | 14 | 18 | — | 1 | 33 | 50 | — | 50 | 35 | 25 | 2 | 62 | 145 |
| Asia | 3 | 6 | — | 48 | 57 | 6 | 26 | 32 | 31 | 232 | 1 | 264 | 353 |
| Latin America and Caribbean [3] | 252 | 129 | 9 | 77 | 467 | 15 | 2 | 17 | 12 | 18 | 134 | 164 | 648 |
| *Total* | 269 | 153 | 9 | 126 | 557 | 71 | 28 | 99 | 78 | 275 | 137 | 490 | 1 146 |
| **World total** | 921 | 878 | 169 | 890 | 2 858 | 687 | 275 | 962 | 396 | 1 370 | 491 | 2 257 | 6 077 |

SOURCE: United Nations, *Monthly Bulletin of Statistics*, July 1973, April 1974.
[1] Original six members, excluding intra-trade. — [2] Chiefly Australia. — [3] Chiefly Argentina.

of Preferences and in GATT negotiations has had a limited effect on agricultural products. Most tariff systems still discriminate against agricultural imports in processed form.

The frequent short-term fluctuations in export prices have greatly added to the difficulties of coherent national planning in the developing countries. An UNCTAD analysis indicates that the average annual deviation from the trend in 1960-71 was 13% for the prices of rice and soybean oil and 44% for sugar. International commodity agreements, aimed partly at mitigating these fluctuations, have mostly been only partially effective. The recent sharp rises in commodity prices, comparable to those of the boom during the Korean conflict at the beginning of the 1950s, have brought substantial windfall gains in agricultural export earnings to many developing countries. However, these temporary benefits appear likely to have been partly counteracted by the adverse effects, especially the higher costs of manufactures and other imports and the atmosphere of uncertainty that makes rational development planning extremely difficult.

The unsatisfactory long-term evolution of world trade in agricultural products and the heavy dependence of the developing countries on this trade have led to increased recognition of the need for major measures of international agricultural adjustment aimed at a more rational system of agricultural production and trade. In such a system there could be provision for increasing the agricultural export earnings of the developing countries, which would also offer them expanded agricultural employment opportunities.

This account of the longer-term development of the food situation has concentrated on its less satisfactory features, since the main aim is to indicate obstacles and difficulties as regards what action is necessary. There are however some more encouraging aspects that should not be overlooked. There are many success stories of individual countries increasing production very rapidly in the face of fast population growth; for example, over the twenty years 1952-1972 eleven countries [5] achieved a food

[5] The eleven countries are Bolivia, Costa Rica, Cyprus, Ecuador, Lebanon, the Libyan Arab Republic, West Malaysia, Mexico, Thailand, Togo and Venezuela.

production increase averaging 5% or better. There are also individual examples of success in taking advantage of trade opportunities and in devising viable systems of rural institutions and services. The rapid increases in food production achieved in many Far Eastern countries in 1967-70 reflected not only favourable weather and the opportune availability of improved technology but also the political will to do more about agriculture. The proposed objectives in the IWP for production and input use, although rarely met so far, have been carefully worked out in terms of physical, economic and social possibilities and can still be met, although with some time lag. The urgency of doing so is emphasized by the following analysis of the dimensions and causes of hunger and malnutrition in the world.

## Dimensions and causes of hunger and malnutrition[6]

Nearly thirty years ago when the first of the new United Nations specialized agencies was being established, the word "food" was deliberately inserted in the name FAO to emphasize agriculture's contribution to freedom from want. Expansion of food supplies in the poor countries combined with nutritional programmes and, more generally, an attack on poverty through economic development were correctly chosen as the weapons with which to eliminate hunger.

What, in fact, has happened in the intervening years? Several countries, it is true, have succeeded in expanding their food production faster than their domestic demand for food, and some of these countries and certain others have organized effective nutritional programmes; but a much larger number have failed. About two thirds of the developing world's population live in countries where food output has been rising more slowly than effective demand for food, and in most of those countries the growth in effective demand has itself not been rapid enough to diminish the numbers of persons living in extreme poverty. In other words, the progress in food production in developing countries together with the progress in economic development, although significant, has been insufficient over the last twenty years to reduce appreciably the incidence of hunger and malnutrition. In many countries the *proportion* of the population suffering from undernourishment has declined, but in the third world as a whole the *actual number* of hungry persons has quite certainly increased; this is indeed the grim centre of the world's food problem.

### Assessment of undernutrition and malnutrition

It is not easy to present a precise picture of the extent of under- and malnutrition in the world. Certainly in its extreme form of near-starvation, undernourishment can be clearly identified; however, even when not outwardly obvious, dietary deficiencies may be severely affecting an individual's health, physical growth and working capacity.

Nevertheless, progress in definition and evaluation has been made. At national level and internationally in FAO/WHO expert committees, the concepts of nutritional requirements have been clarified.[7] The current position on these matters is spelled out in a technical note annexed to this, chapter (p. 147). Only the highlights of that statement are recapitulated here.

The most important characteristic of dietary deficiency is an inadequate intake of energy or protein or both over a period of time. An insufficient intake of the energy and/or protein needed to maintain the body functions for activity, for growth and for the reproductive cycle can be manifested in many different ways, depending on age, physiological state, existence of concomitant infections, association with specific mineral or vitamin deficiencies, etc. This spectrum of manifestations extends from the slight impairment of growth or thinness seen in mildly undernourished children to the gross alterations shown by persons suffering from kwashiorkor or marasmus. Other manifestations, for example, are apathy, emaciation, incapacity to perform the required physical work, weight loss, inadequate weight gain during pregnancy and low birth weight.

In the light of the most recent recommendations to cover protein needs, it seems improbable that a dietary intake sufficient to cover energy requirements will be insufficient to meet protein requirements. This means that protein deficiency in the absence of energy deficiency is unlikely to occur — a possible exception being in populations that subsist on cassava,

[6] This section is based on material prepared jointly by the World Health Organization (WHO) and FAO.

[7] For example, FAO and WHO have convened groups on energy or protein requirements in 1949, 1955, 1956, 1963 and 1971. In this section, use is made of the more recent recommendations available in *Energy and protein requirements*, report of a Joint FAO/WHO *Ad Hoc* Expert Committee, FAO, Rome, 1973.

plantains, yams or breadfruit, all of which are extremely low in protein content. In most of the developing countries where cereals and pulses are the staples the consumption of *more* food will simultaneously correct any insufficiency of energy and protein in adults and older children; but this does not hold true for infants and preschool children, whose ability to consume more food is limited, and hence foods with a higher concentration of protein are needed.

It must be further emphasized that even if a diet is adequate in its protein content, but the quantity of food eaten is not enough to satisfy energy needs, some of the protein will be used mainly as a source of energy and consequently not be fully utilized for its protein. In the present discussion the assessment of the number of people suffering from energy or protein deficiency or both takes into account this relationship between the metabolism of energy and protein as well as the new recommendations for protein intake recently made by the WHO/FAO Expert Committee referred to above.

To assess the magnitude of the nutrition problem, attention is paid first to the level of total food supplies at national and regional levels. The problem caused by inequitable distribution of available supplies is then illustrated with examples of energy intake by income and social group. The available evidence from vital statistics, clinical and anthropometric data and detailed food-intake surveys is summarized, and the conclusions from these sources, which are limited in coverage, are compared with those obtained by a crude estimate based on food balance sheet material. From these disparate sources a picture of the scope and nature of the problem emerges.[8]

TABLE 3-6. — AVERAGE ENERGY AND PROTEIN SUPPLY BY REGION [1]

| | Energy | | Protein | | Energy as percent of requirement | |
|---|---|---|---|---|---|---|
| | 1961 | 1969-71 average | 1961 | 1969-71 average | 1961 | 1969-71 average |
| | *Kilocalories per caput* | | *Grams per caput* | | *Percent* | |
| DEVELOPED MARKET ECONOMIES . . | 2 950 | 3 090 | 87.5 | 95.1 | 115 | 121 |
| Western Europe | 3 020 | 3 130 | 89.3 | 93.7 | 118 | 123 |
| North America | 3 110 | 3 320 | 92.3 | 105.2 | 118 | 126 |
| Oceania . . . | 3 210 | 3 260 | 92.7 | 108.1 | 121 | 123 |
| Other developed market economies . . . . | 2 420 | 2 550 | 73.3 | 79.1 | 102 | 108 |
| EASTERN EUROPE AND U.S.S.R. | 2 990 | 3 260 | 85.8 | 99.3 | 116 | 127 |
| *Total developed countries* . | 2 960 | 3 150 | 87.0 | 96.4 | 116 | 123 |
| DEVELOPING MARKET ECONOMIES . . | 2 130 | 2 210 | 55.0 | 56.0 | 93 | 97 |
| Africa . . . . | 2 120 | 2 190 | 55.7 | 58.4 | 91 | 94 |
| Far East . . . | 2 050 | 2 080 | 51.3 | 50.7 | 92 | 94 |
| Latin America . | 2 410 | 2 530 | 63.7 | 65.0 | 100 | 105 |
| Near East . . | 2 200 | 2 500 | 62.3 | 69.3 | 89 | 102 |
| ASIAN CENTRALLY PLANNED ECONOMIES . . | 2 020 | 2 170 | 54.7 | 60.4 | 86 | 92 |
| *Total developing countries* | 2 100 | 2 200 | 54.9 | 57.4 | 91 | 95 |
| World . . . | 2 380 | 2 480 | 65.2 | 69.0 | 100 | 104 |

[1] The figures relate to protein and energy content of food available at the retail level after allowance for storage and marketing losses and waste.

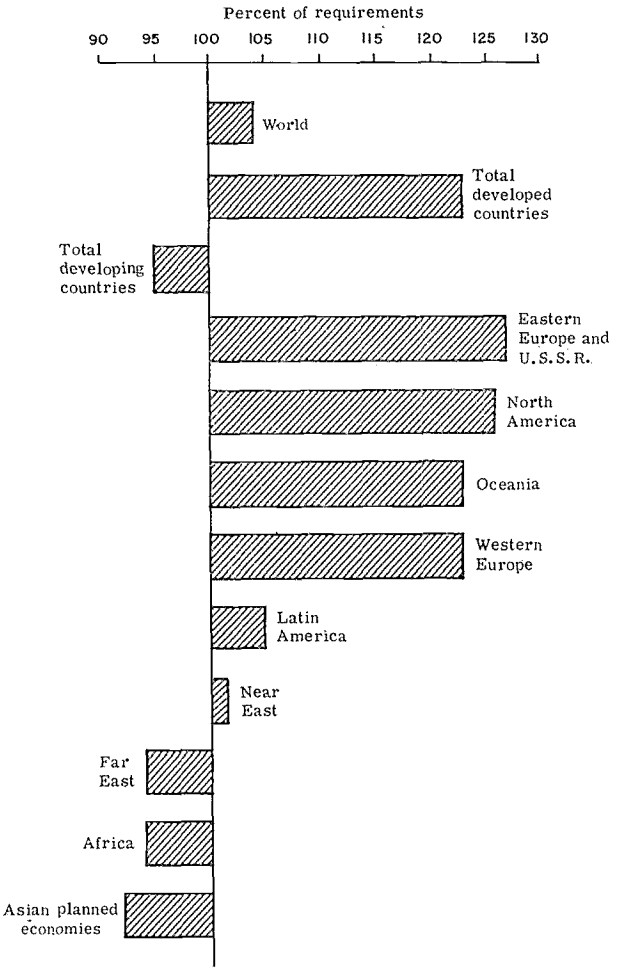
## Food availability

Table 3-6 shows by regions for 1961 and 1969-71 the per caput availability of energy and protein and of energy as a percentage of requirements. As the distribution of available supplies within a country is far from equitable in relation to need, it is clear that aggregate supplies should exceed requirements. For energy, it is considered that supplies in the developing regions should be at least 10% above aggregate requirements, thus allowing for maldistribution. The energy requirements for 1961 and 1969-71 are based on the average requirement of a moderately active reference man whose body weight is presumably the prevailing mean for the particular region. The requirements are slightly different for 1961 and 1969-71 owing to changes in age and sex structure of the population between these years.

Energy and protein supplies in the developed regions, which continued to rise in the 1960s, have been well in excess of requirement. In 1969-71, energy supply (Figure 3-2) was an estimated 23% above requirement and protein supplied 12% of the energy available. The developed regions averaged over 3 100 kilocalories per caput of energy availability per day, whereas the developing regions averaged only 2 200 kilocalories per caput per day. Similarly, the protein supply was over 96 grams per caput per day in the developed regions and less than 58 grams in the developing regions, much of which was being diverted in an attempt to meet energy deficits.

[8] It bas not been possible to update the information presented in this section due to the lack of recent data. It may be assumed however that the nutritional situation of the poorer groups of the population, particularly of children, has deteriorated in the last two years due to the rapid rise in food prices; however, this would only strengthen the major conclusions emerging from analysis of existing data.

FIGURE 3-2. — ENERGY SUPPLY AS PERCENT OF REQUIREMENT, WORLD AND REGIONS, 1969-71




In many developed countries most individuals are free from the threat of nutritional diseases caused by the combined effects of an insufficient diet, poor environmental sanitation and cultural deprivation; but more and more are falling prey to the nutritional diseases of abundance. The consumption of excess calories, especially in the form of "empty calories" such as visible fats and sugar, and a dietary pattern characterized by a high content of cholesterol and saturated fats, coupled with decreased physical activity, lead to a high prevalence of obesity and arteriosclerosis. These two conditions are commonly associated with diabetes, hypertension and ischemic heart disease — diseases that are responsible for the largest number of deaths and permanent disabilities in the industrialized nations.

Protein has not been shown as a percentage of requirement, as the result could be very misleading in view of the failure to utilize protein adequately if the energy intake is insufficient. In general, protein supplies in all regions are well in excess of national requirements; however, as energy supplies are not adequate in many regions, the surplus of protein availability is more apparent than real.

In none of the developing regions did energy supplies reach 110% of requirements, and in three failed to reach even 100% of requirements. In view of the certain inequitable distribution in supplies, it is clear that all developing regions faced a serious energy deficit problem in certain segments of the community. The position regarding energy supplies per caput improved in the 1960s. Nevertheless, the Far East, Africa and the Asian centrally planned economies still had an overall 6 to 8% deficit in 1969-71. These deficits represent averages for each region; because of inequalities in consumption between and within countries the most disadvantaged population groups will suffer from a much higher percentage incidence of food deficiencies.

Table 3-7 shows the number of countries with surpluses and deficits of energy supplies in 1961 and 1969-71 (see also Annex table 3-C). Only six developing countries had an energy surplus of more than 10% of the national requirement in 1961, but this figure rose to eighteen by the early 1970s. On the other hand, in 1961 seventy-four developing countries had energy supplies below the basic requirement, even

TABLE 3-7. — NUMBER OF COUNTRIES WITH SURPLUS AND DEFICIT ENERGY SUPPLIES BY REGION, 1961 AND 1969-71

| | 1961 | | | | 1969-71 average | | | |
|---|---|---|---|---|---|---|---|---|
| | Surplus | | Deficit | | Surplus | | Deficit | |
| | More than 10% | Less than 10% | More than 10% | Less than 10% | More than 10% | Less than 10% | More than 10% | Less than 10% |
| DEVELOPED REGIONS | | | | | | | | |
| Western Europe | 14 | 5 | — | — | 17 | 2 | — | — |
| North America | 2 | — | — | — | 2 | — | — | — |
| Oceania | 2 | — | — | — | 2 | — | — | — |
| Eastern Europe and U.S.S.R. | 4 | 3 | — | 1 | 7 | — | — | 1 |
| Other developed countries[1] | 1 | 2 | — | — | 2 | 1 | — | — |
| *Total* | 23 | 10 | — | 1 | 30 | 3 | — | 1 |
| DEVELOPING REGIONS | | | | | | | | |
| Latin America | 5 | 4 | 8 | 8 | 8 | 6 | 4 | 7 |
| Far East | — | 4 | 7 | 5 | 4 | 4 | 3 | 5 |
| Near East | 1 | 1 | 10 | 2 | 1 | 3 | 4 | 6 |
| Africa | — | 5 | 18 | 14 | 3 | 8 | 12 | 14 |
| Asian centrally planned economies | — | 2 | 2 | — | 1 | 1 | 1 | 1 |
| *Total* | 6 | 16 | 45 | 29 | 18 | 22 | 24 | 33 |
| World | 29 | 26 | 45 | 30 | 48 | 25 | 24 | 34 |

[1] Japan, Israel and South Africa.

assuming perfect distribution of food, and fifty-seven of these were in the same position in 1969-71. The major improvement occurred in the countries facing the bigger deficits: the number of countries where energy supplies failed to reach even 90% of requirement declined from forty-five in 1961 to twenty-four in 1969-71 (twelve of these in Africa).

**Distribution of food by income and social group**

Knowledge that food supplies at an overall national level are or are not adequate is not enough. If corrective measures to reduce or eliminate the incidence of nutritional deficiencies are to be undertaken, it is essential to know which particular groups of the population are malnourished, why they are malnourished and where they are located. Apart from the fact that available food in the world may be badly distributed among different geographical areas owing to ecological, technological or other factors, a basic feature of the present food situation is the extreme inequality in food distribution between different socioeconomic groups. According to the information available for a few countries, it is clear that the poorer groups of the population receive the smaller amounts of food and hence show the lower daily calorie/protein intakes. Annex table 3-D shows the effect of income and urban/rural residence on food consumption in a few countries for which the necessary recent data are available. Unfortunately, food intake data as well as other data reflecting the nutritional status of the population are available for very few developing countries.

It is obvious from these tables that an adequate income in cash or kind tends to ensure availability of a sufficient amount of food for the family and therefore reasonable energy and protein intakes. The income effect is most noticeable for the urban population. The urban poor, especially recent migrants from rural areas, are perhaps more vulnerable from a nutritional standpoint. Deprived of access to subsistence food, and without regular or adequate income to purchase sufficient food, the nutrition of such people may be reduced to a perilous state. The process of rapid urbanization that is taking place in developing nations is not only accentuating the unsatisfactory nutritional status of the population but also modifying the characteristics of this phenomenon, with severe malnutrition appearing at an early age.

It is impossible to draw precise conclusions from the tables as to the numbers risking undernutrition, for very little is known about the distribution of households within each income class. For example, even though the mean intake of the poorest urban households in southern Brazil is less than 1 500 kilocalories, an unknown proportion of the households even in this group may have satisfactory intakes. Nevertheless, some conclusions can be drawn from the simple averages, for it is clear that if the average intake is well below the average requirement, a very large proportion of the group must be seriously risking undernourishment.

The rural poor tend to fare slightly better than the urban poor from a nutritional standpoint, as shown in Annex table 3-D. Thus, in the northeast region of Brazil, 22% of urban households were in the lowest income groups and had per caput intakes of between 1 200 and 1 500 kilocalories per day. Whereas 32% of the rural households fell into the same low-income groups, the average per caput intakes ranged from 1 500-1 800 kilocalories per day. The same effect is seen in Pakistan and Bangladesh, where the poor urban households had intakes substantially lower than the equivalent rural households.

The most vulnerable among the rural population are the landless agricultural labourers, who have to live on their meagre income earned during the harvest and sowing seasons. Next come the small subsistence farmers, who operate such small holdings that they find it difficult to feed their families even in years of good harvests. In times of poor harvests or in the season prior to the harvest, when previous supplies have been exhausted, their nutritional status becomes extremely precarious.

If there is not enough food for the whole family, the working adults tend to take the largest share for themselves. This is particularly serious because children and pregnant and lactating women have additional nutritional needs. Even if the adults reduce their requirements by diminishing their activity, their calorie intakes must still reach a certain level if they are not to descend into an increasing state of undernutrition. This necessity of keeping in energy balance, including the needs for maintenance and essential activity, means that the adults may be forced to draw upon some of the energy supply that should have been available to the children, whose energy requirements comprise a relatively high proportion for activity and a proportion for growth. Faced with an insufficient family supply, the adults may thus unwittingly deprive children of an adequate food supply for activity and growth, since an inactive child does not jeopardize the family's survival as does an inactive adult; also, retardation of growth is not immediately apparent and, in any case, may not be associated by the parents with nutritional deprivation.

Comparative studies of children from poor and well-to-do households in places as diverse as Hyderabad and Lagos tend to confirm the above conclusions. These studies show that poor children received about one half the energy and protein consumed

by children from the better-off families. Table 3-8 shows the data for schoolchildren in Hyderabad.

Surveys carried out in Nigeria, Kenya and Guatemala found that children's intake of nutrients is not proportional to the nutrient supply available in the household. Children may lose their appetite, and the efficiency of their bodies to utilize nutrients is reduced by infections; or they may not be able to eat enough of the monotonous bulky staple food provided at the one or two major meals served during the day. Studies carried out in various countries show that this inability to eat enough of the local diet is a more important cause of nutritional deficiencies in children than the quality of the diet, poor though this may be. However, if there is a limit beyond which younger children cannot ingest the staple foods, clearly some diversification of the diet is required, and the provision of such a diet is associated with an improvement in the family's level of income.

There is evidence, particularly from India, that also the pregnant and lactating women fare poorly in comparison with the men. The extra requirement of the women is often only partially met, with resulting adverse effects on both the health of the mother and the physical condition of the offspring.

Consideration should be given to the fact that infections interact with nutrition by decreasing the resistance of the host, by lowering his normal food intake and by incrementing his nutrient loss. While it may not be possible to prevent excessive losses as long as the infection persists, higher protein and energy intake will be needed for convalescence and catch-up growth. This is of particular importance in infants and preschool children subsisting on inadequate or marginally adequate diets, as episodes of acute infection can trigger full-blown marasmus or kwashiorkor.

The inescapable conclusion is that the poorer segments of the population — and within these segments, the children in particular — will bear the brunt of an insufficient food supply. In fact, the small size and poor physical development of adults in many countries constitute, to a great extent, a living record of hunger suffered when they were young.

TABLE 3-8. — ENERGY AND PROTEIN INTAKE OF SCHOOLCHILDREN IN HYDERABAD

| Age group | Calories | | Protein | |
|---|---|---|---|---|
| | Low income | High income | Low income | High income |
| 7-9 | 1 429 | 2 186 | 37.0 | 67.8 |
| 9-11 | 1 411 | 2 343 | 36.5 | 62.1 |
| 11-13 | 1 292 | 2 833 | 34.5 | 72.2 |
| 13-14 | 1 374 | 2 585 | 35.5 | 75.5 |
| All age groups | 1 376 | 2 485 | 35.9 | 69.4 |

SOURCE: *Diet atlas of India*, National Institute of Nutrition, ICMR, Table xvi.

## Other indicators of the incidence of food deficiency

In assessing the prevalence of food deficiency in individuals, rather than on the basis of population groups or country averages, various indicators may be used, ranging from clinical studies through anthropometric measurements to food intakes. Accurate data from all these sources are extremely limited, but those available are summarized below.

Since vital statistics, particularly infant and child mortality rates, reflect the entire environmental background, the contribution of poor nutrition is difficult to isolate. However, recent studies by WHO and the Pan-American Health Organization have shown that more than one half of child deaths under the age of five years in Latin America are directly or indirectly caused by nutritional deficiencies.

Clinical examination of children and anthropometric data, consisting mainly of weights and heights, although usually available only for small and often unrepresentative samples, point to a cautious estimate that of the children less than five years of age in the developing countries 10 million are suffering from severe malnutrition, 80 million from moderate malnutrition and 120 million from less obvious and more difficult to define milder forms of malnutrition. Thus about 50% of all young children in the developing world may be inadequately nourished, which for many will lead inevitably to premature death.

Actual food intake as opposed to food availability has been measured in some food consumption surveys. There are however very few surveys which have been taken on a big enough scale and with a methodology that allows it to be said that the results represent the country as a whole. The interpretation of such data is fraught with difficulties. Nevertheless, various methods based on different assumptions are available and may be useful in estimating the overall level of nutritional deficiencies in the total population. Two methods [9] that purport to provide a conservative or minimum estimate of the probable level of undernutrition, if applied to the detailed food intake data available for a few developing countries, give estimates of the percentage of the population

[9] Both methods are based on a comparison of observed intakes with theoretical requirements, assuming moderate activity. One method compares the frequency distributions of intakes and requirements and matches as many requirements as possible with observed intakes that would meet the requirement, thus minimizing the estimate of the incidence of undernutrition. The second method recognizes that individual requirements vary around the average and thus considers as undernourished only those with intakes below a critical limit that allows for such normal individual variation.

likely to be undernourished that range from around 10% in Trinidad and Tobago to nearly 20% in Tunisia, Madagascar and Sri Lanka, and even higher in Burundi, for example. In the developed countries such as France and the United States food consumption surveys reveal that up to 6% of the population may be at the risk of some degree of malnourishment. Evidence from these few countries is scarcely sufficient to warrant any general conclusions about the extent of undernutrition in the world in terms of numbers of individuals rather than countries. So, although the present purpose is to comment on individual incidence rather than overall national averages, it is necessary to utilize such data as exist at the national level for most countries. Such analysis is based on per caput food availabilities as given in national food balance sheets and certain known or observed features of food intake distribution by individual or consumer unit. In making such an approximation it seems appropriate to use a more rigid yardstick than the average requirement of a moderately active reference man.

The critical limit used for assessing the incidence of food deficiency in this way is the maintenance cost of energy, set at 1.5 times the basal metabolic rate. This is normally lower than the average requirement used in compiling Table 3-9, which allows for moderate activity.[10] The maintenance cost of energy is used, rather than the requirement of a moderately active reference man (although it may be said that for a population as a whole the concept of moderate activity is reasonable), because the distribution of the individual variation in activity is unknown and assumptions that have been made regarding the distribution are controversial. People classed as undernourished using a mean requirement for moderate activity as a standard may in fact merely be following a sedentary life out of choice rather than because of limitations imposed by their energy intake. It is true that the maintenance cost of energy is also subject to individual variation, but since the activity variable has been removed, it may be more justifiable to say that such variation is truly a random residual. Such variation has been allowed for by setting a limit, which for Asia is of the order of 1 900 kilocalories per young adult male and rises to 2 000 kilocalories for countries in which the body weights are on average much higher.

Table 3-9 and Figure 3-3 show by regions the lower estimate of the number below the selected limit. An individual with an intake below this limit will be exposed to a high risk of an inevitable reduction in activity, and adverse effect on growth (in the case of a child), or a continuous loss of body weight.

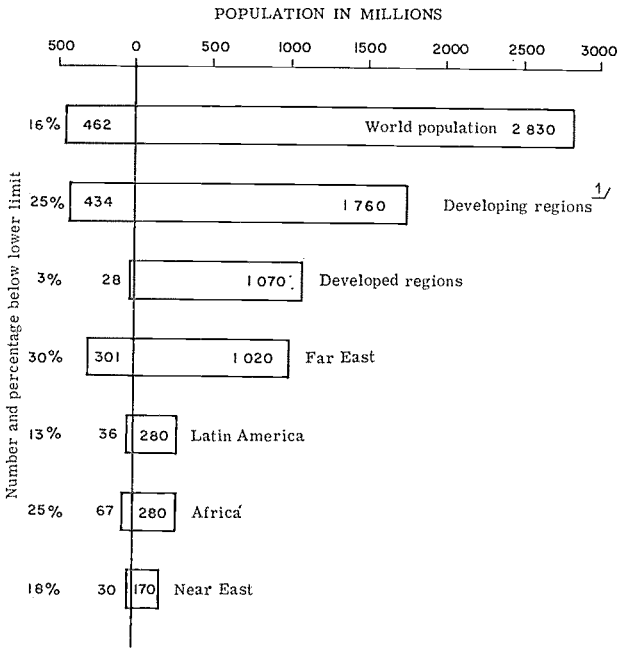
It may be said that within the limitations of this approach there is a very high probability that about 462 million individuals have available food in a quantity insufficient to meet their needs. The true figure may indeed be very much higher than this, as the criteria used aim to allow only a small chance of classifying a person as undernourished if in fact his intake is above a conservatively low limit. These figures exclude the Asian centrally planned economies, for which comparable data are lacking. It may be assumed that food is somewhat better dis-

TABLE 3-9. — ESTIMATED NUMBER AND PERCENTAGE OF PEOPLE WITH INSUFFICIENT PROTEIN/ENERGY SUPPLY BY REGIONS (1970)

| | Population | Percentage below lower limit | Number below lower limit |
|---|---|---|---|
| | *Thousand million* | *Percent* | *Millions* |
| DEVELOPED REGIONS . . . . | 1.07 | 3 | 28 |
| DEVELOPING REGIONS [1] . . . | 1.75 | 25 | 434 |
| Latin America . . . . . | 0.28 | 13 | 36 |
| Far East . . . . . | 1.02 | 30 | 301 |
| Near East . . . . . | 0.17 | 18 | 30 |
| Africa . . . . . | 0.28 | 25 | 67 |
| *Total* . . . . . | 2.83 | 16 | 462 |

[1] Excluding Asian centrally planned economies.

FIGURE 3-3. — ESTIMATED NUMBER OF PEOPLE WITH INSUFFICIENT PROTEIN/ENERGY SUPPLY, WORLD AND REGIONS, 1970




[10] See the technical note on p. 149 for details. The basal metabolic rate is a measure of the rate at which body substance is oxidized in order to support the continued maintenance of life. The maintenance cost is higher than this and refers to the energy needed to ensure constant body energy in nonfasting subjects at the minimum level of activity needed for dressing, washing, eating, etc.

tributed in these countries and the percentage of undernourished may be less than in the rest of Asia. Countries where the problem of malnutrition may well be particularly acute are Angola, Somalia, Tanzania and some of the Sahelian countries in Africa; Bangladesh, India, Indonesia and the Philippines in Asia; Afghanistan, Saudi Arabia and the two Yemens in the Near East; and Bolivia, El Salvador and Haiti in Latin America.

The figures in Table 3-9 reflect an average year, rather than the situation in times of drought or other calamities, as occurred recently in the Sahelian zone of Africa. Data on people in drought-affected areas are scarce, but some data for states in India affected by drought in the mid-1960s indicate that the daily intake of food may fall in the short term to levels that are well below those necessary to maintain life.

The above review of the indicators of the incidence of food deficiency reveals the difficulty in estimating the magnitude of the problem with any precision. Nevertheless, even if the picture is shifting and blurred, a pattern emerges. Each strand of evidence, such as the clinical or the derived estimates in Table 3-9, is far from incontrovertible, but together they point to a conclusion that the problem of food deficiency is extremely serious: one half of child deaths are in some way attributable to malnutrition; there are at least 200 million living child sufferers; and the percentage of the population in the developing world subject to food deficiencies ranges to 30%, or even higher in some areas, amounting to over 400 million people — probably many more. All these deductions are consistent and forbidding.

### The decline in breast-feeding

Breast-feeding has recently been declining in many developing countries. This trend has been recognized as a growing threat to the nutritional status and health of the infant by national governments and international agencies. Breast-feeding also has an important influence on the spacing of children and therefore on family size. The United Nations World Food Conference, held in November 1974, emphasized the importance of breast-feeding and recommended that governments take action to encourage women to breast-feed their children.

The milk of each mammalian species has evolved so as to reflect in its composition the nutrient demands of that species during the critical times when growth and development are proceeding at maximum rates. Likewise, human milk has been shown to be ideally suited, both in its composition and the equilibrium of its different components, to the needs of the infant during the first five or six months of life.

Early weaning under conditions that prevail in the developing countries can be singled out as the main cause of infant malnutrition. Furthermore, since severe infant malnutrition of the type associated with early weaning may lead to permanent physical and mental damage, the poorer countries may consequently have to bear the added economic burden of many permanently disabled persons.

The shift from breast-feeding up to one year of age to artificial feeding from birth that has occurred in the industrialized nations was a gradual phenomenon that probably started a century ago. In these nations this shift has been accompanied by a rise in the standards of living, of income and of literacy and general education, by control of infectious diseases, by the innovation of safe water supplies, by improvements in refuse and excreta disposal systems, environmental sanitation and availability of medical services, and other related developments. Furthermore, a revolution in the dairy industry in the last seventy-five years has provided bacteriologically safe and nutritionally acceptable products to replace breast-feeding.

The situation in the developing nations is quite different. For the economically privileged minorities there is little problem in adopting the westernized pattern of early weaning. But for the impoverished masses, who live in an environment that presents constant infectious hazards (flies, garbage, excreta, animals, dirty hands, crowded living, lack of clean water, absence of immunizations and medical services, etc.), breast-feeding can mean the difference between life and death for the child.

Although the basic physiological principles that govern milk secretion are fairly well understood, the cause of the decline of breast-feeding now being experienced in urban areas of developing countries is not clear. No doubt the factors responsible for the decline are complex and vary between countries, areas, cultures, income groups and even individuals. The effects of indiscriminate and often misleading commercial promotion which presents a picture of healthy babies raised on a proprietary formula should not be underestimated. Little does the mother know that the success of these preparations depends on a hygienic environment, an adequate income to purchase regularly such products in the needed amounts and a sufficient education to understand the technique of safe bottle-feeding.

Moreover, breast-feeding is now declining also in rural areas. For example, in Teheran and Santiago only about one third of the infants are exclusively breast-fed at three months of age. While in Iran (1969) this urban influence had not yet reached the rural areas, where 90% of the infants were being exclusively breast-fed at three months of age, in a Chilean rural area (1966) the percentage was 30%, or the same as in Santiago.

Certainly, much more research is needed to clarify what factors are responsible for the decline of breast-feeding and how they operate if programmes are going to be set up to try and reverse the present trend.

### Other nutritional deficiencies

Considerations of nutritional deficiencies, up to this point, have been mainly restricted to protein and energy malnutrition. There are however nutritional conditions caused by the lack of specific nutrients. Some of these malnutritions have become less important as a public health problem because of the reasonably precise available knowledge of their epidemiology and the specific measures which have been taken to eradicate them. This applies, for example, to pellagra, beri-beri and scurvy. Of the remaining ones, vitamin A deficiency, iron- and folate-deficiency anaemias and endemic goitre are still widely prevalent.

Vitamin A deficiency is a major cause of blindness in many countries, such as India, Indonesia, Bangladesh, the Philippines, northeast Brazil and El Salvador. Moreover, it is a major problem in view of its socioeconomic consequences. It is estimated that in the Far East alone more than 100 000 children go blind each year owing to vitamin A deficiency.

Iron- and folate-deficiency anaemias, widely prevalent in both developed and developing countries, cause ill health and result in a decreased ability to lead an active life. In Latin American countries between 5 and 15% of the men and between 10 and 35% of the women have been found to have significant anaemia, and in some communities more than one half of the children were also in this category. In most populations pregnant women and infants from 6 to 18 months of age appear to be the most vulnerable groups. Iron-deficiency anaemia is also linked with infections, principally hookworm and bilharzia, because the iron losses caused by these infections cannot be met by an adequate supply of this element in the food intake.

A comprehensive world review of endemic goitre carried out some fifteen years ago revealed that there were 200 million people suffering from this disease. The problem is compounded by the endemic cretinism that usually accompanies it. In recent years considerable progress has been made in the control of this disease in some countries, but in many areas cases of endemic goitre and associated cretinism are still found in substantial numbers.

### Causes of inadequate nutrition

The causes of inadequate nutrition are many and closely interrelated, including ecological, sanitary and cultural constraints, but the principal cause is poverty. This, in turn, results from socioeconomic development patterns which in most of the poorer countries have been characterized by a high degree of concentration of power, wealth and incomes in the hands of relatively small élites of national or foreign individuals or groups.

In the rural areas, land and water, capital, technical knowledge, credit and institutional assistance are most unevenly distributed. The majority of the rural population is either landless or has to make a living from the exploitation of meagre land and water resources. Despite the fact that annually millions of rural inhabitants migrate to the urban areas, unemployment and underemployment are usually very high and rural wages generally extremely low. In some instances the irregular employment profile gives rise to acute unemployment during the slack seasons. In other instances production patterns, geared to satisfying the demands of external markets or of the smaller middle- and high-income national groups, do not favour diversification and proper utilization of the available indigenous resources. Land tenure and production structures therefore constitute one of the basic reasons for rural poverty and malnutrition. In addition, there are all the inefficiencies that affect the agricultural producer, particularly the small farmer. Inadequate storage, handling and transportation facilities; the prevalence of monopsonistic practices, which leave small producers in the hands of relatively few wholesale buyers; the lack of adequate access to markets and market information — all are factors that tend to diminish the small farmers' real incomes and perpetuate their state of poverty.

In the urban areas few of the millions of migrants from the countryside can find remunerative, productive jobs, and the remainder join the already vast army of unemployed. Available evidence shows a close relationship between inadequate employment and energy deficiencies. The unemployed or underemployed are usually at the bottom of the socioeconomic ladder, having the lowest incomes, and hence eat least and show the lowest nutritional levels. Unfortunately, many of the technologies currently used in industrial development have been borrowed from the developed countries and do not generate as much employment as could the more intermediate technologies. Furthermore, the urban poor suffer from the shortcomings of the food distribution system: the superabundance of middlemen, themselves products of the lack of alternative employment opportunities; the unjustified high cost of basic foodstuffs; and the absence of socially oriented food-price policies.

The governments of many developing countries have in recent years initiated programmes for expanding the volume of productive employment. Many

also have specific nutritional programmes oriented toward the needs of vulnerable groups. External assistance has been given through food aid and other transfers. The need for intensification of these efforts will become more acute in the years ahead as population continues to expand rapidly and the cities grow ever larger. Action to mitigate the maldistribution of income would also help. However, it should be clearly understood that an increase in food availability cannot be expected to decrease the prevalence of severe protein/energy malnutrition unless there is a parallel improvement in the environment, particularly the sanitary conditions, in which the poor (especially the children) live.

Progressive elimination of poverty and improvement in the physical and cultural environment, with special efforts to educate mothers in correct weaning methods and child-feeding practices, promotion of breast-feeding and development of low-cost homemade formulas, would therefore constitute the major step toward elimination of protein/energy malnutrition deficiencies. To this end, it would be necessary to break the vicious circle of unemployment, low food production, low productivity, and low income which strangles such a large part of mankind. This, in turn, could entail very deep transformations in the present socioeconomic structures.

## The demand for food

Whereas the previous discussion has dealt mainly with the assessment of trends, levels and adequacy of food intakes from the nutritional point of view, here the main factors which determine the demand for food are to be considered. The importance of such an analysis derives from the need to anticipate changes in future patterns of food demand which may result from broader economic and social changes brought about through economic growth and other development policies.

### Patterns of food expenditure

It is widely accepted that patterns of food consumption are influenced not only by the income, size and composition of the family but also by the occupational status and level of education of the adults in the family, by the characteristics (such as rural versus urban, racial, religious) of population groups and many other social and psychological factors. Ecology is also an important determinant of levels and patterns of food consumption, particularly in subsistence economies where inadequate trade and marketing structures necessitate greater reliance on locally available foodstuffs.

Household consumption, expenditure or budget surveys are the main source of information. These surveys differ greatly in scope and coverage: some merely give estimates of family expenditure for food and other items within a given period, while others give information on the quantities of different items consumed; in some studies, information on the quantities of food grown by the family is given separately from the amounts purchased in the market. Furthermore, many studies are restricted to small geographical areas or to selected socioeconomic groups within individual countries. Thus, although the data on family expenditure are often classified by a wide range of socioeconomic variables — such as urban and rural income groups, family size, occupational, cultural and ethnic characteristics — the lack of uniformity in definition and treatment from one survey to another should be kept in mind, particularly in making intercountry comparisons. However, despite the limitations, from the evidence a broadly consistent picture can be drawn of differences in patterns of food consumption between population groups, both within and among countries.

### Food in family expenditure

The proportion of total family expenditure devoted to food generally decreases as family income and expenditure increase. One indication of this tendency, first propounded over a century ago in England, is shown in Table 3-10, which summarizes recent family expenditure surveys in selected developed and developing countries. Thus, for example, in Tanzania and India, where GNP per caput is about US$100 (at 1970 market prices), at least half of total per caput expenditure is on the average allocated to food, whereas in Sweden, with a GNP per caput of more than US$4 000, food accounts for only about a quarter of total per caput expenditure. This table also shows that typically the percentage expenditure on food is slightly lower in urban than in rural areas.

Also within these countries the outlays of individual families tend to account for a smaller proportion of their total expenditure as it increases. In In-

TABLE 3-10. — THE IMPORTANCE OF OUTLAYS FOR FOOD IN TOTAL PER CAPUT EXPENDITURE IN SELECTED COUNTRIES

| | GNP per caput (US$) | Year | Outlays for food as percentage of total expenditure | | |
|---|---|---|---|---|---|
| | | | Urban | Rural | Nation-wide |
| DEVELOPING COUNTRIES | | | | | |
| Indonesia | 80 | 1969 | | | 70.6 |
| Lesotho | 90 | 1968 | | 51.8 | |
| Tanzania | 100 | 1969 | 26.8 | 53.6 | 50.0 |
| India | 110 | 1964/65 | 60.7 | 70.5 | 66.1 |
| Kenya (Mombasa) | 150 | | 38.9 | | |
| Sierra Leone (W. Province) | 190 | 1967 | | 53.6 | |
| Korea, Rep. of | 250 | 1971 | 41.0 | 47.4 | |
| Ghana (eastern) | 310 | 1967/68 | | 53.5 | |
| Guatemala | 360 | 1966 | | 58.2 | |
| Iran | 380 | 1971 | | 45.7 | |
| Zambia | 400 | 1966/68 | 50.0 | | |
| Libyan Arab. Rep. | 1 770 | 1969 | 37.0 | | |
| DEVELOPED COUNTRIES | | | | | |
| Portugal | 660 | 1967/68 | | | 48.7 |
| Hungary | 1 660 | 1971 | | | [1] 45.9 |
| | | | | | [2] 39.2 |
| Japan | 1 920 | 1971 | | | 33.3 |
| Austria | 2 010 | 1964 | | | 34.0 |
| Netherlands | 2 430 | 1963/64 | | | [3] 18.2 |
| | | | | | [4] 19.9 |
| | | | | | [5] 27.5 |
| | | | | | [6] 28.3 |
| Switzerland | 3 320 | 1972 | | | 21.9 |
| Sweden | 4 040 | 1969 | | | 26.3 |

[1] Industrial and agrarian workers. — [2] White-collar workers and intellectuals. — [3] Self-employed. — [4] Nonmanual workers. — [5] Farmers. — [6] Manual and agricultural workers.

donesia the proportion is around three quarters for the lowest-income families and gradually declines to about two thirds on the average for the highest-income stratum indicated in the survey. Similarly, in Sweden, the percentage drops, from one third for the poorest families to just under one quarter for the richest.

Although increases in wealth generally lead through time to a decline in the proportion of total expenditure devoted to food, nevertheless absolute per caput expenditure for food increases. Higher-income families can satisfy basic desires for more food and their patterns of expenditure shift, in particular, toward more expensive, varied and protein-rich foods. Moreover, an increasing proportion of this expenditure is attributable to marketing and servicing costs associated with more highly processed foods.

An example of how expenditure patterns vary from one income group to another is shown in Tables 3-11(a) and 3-11(b), and other examples are given in Annex table 3-D. Close to 70% of

TABLE 3-1(a). — FOOD EXPENDITURE PATTERNS AND FAMILY INCOME IN THE UNITED KINGDOM, 1971

| Weekly income of head of household | Average | Under £14 | £14-21 | £21-45 | £45-63 | Over £63 |
|---|---|---|---|---|---|---|
| Number of households | 7 444 total | 1 620 | 2 636 | 2 371 | 596 | 221 |
| Average size of household | 3.04 | 1.81 | 3.33 | 3.45 | 3.43 | 3.26 |
| Average weekly income of head of household | £27.7 | £10 | £20.5 | £36 | £57 | £75 |
| | *.... Percent of total food expenditure ....* | | | | | |
| Cereals | 14.79 | 15.63 | 15.93 | 14.57 | 12.86 | 11.57 |
| Starches and starchy roots | 2.43 | 2.31 | 2.60 | 2.40 | 1.77 | 1.54 |
| Sugar | 2.59 | 2.06 | 2.79 | 2.47 | 2.25 | 1.99 |
| Vegetables | 6.83 | 5.90 | 6.71 | 6.98 | 7.23 | 7.18 |
| Fruit | 7.93 | 7.07 | 7.03 | 8.29 | 10.12 | 11.40 |
| Meat | 30.38 | 29.57 | 30.48 | 30.21 | 29.92 | 31.74 |
| Eggs | 3.83 | 4.14 | 3.79 | 3.71 | 3.74 | 3.77 |
| Fish | 4.20 | 4.60 | 4.05 | 4.02 | 4.16 | 4.41 |
| Milk and dairy products | 14.22 | 14.18 | 13.83 | 14.47 | 15.03 | 14.45 |
| Fats and oils | 5.64 | 6.22 | 5.71 | 5.66 | 5.42 | 4.94 |
| Others | 7.16 | 7.32 | 7.08 | 7.22 | 7.50 | 7.01 |
| TOTAL | 100 | 100 | 100 | 100 | 100 | 100 |

SOURCE: Ministry of Agriculture, Fisheries and Food, *Household food consumption and expenditure: 1970 and 1971*, Annual Report of the National Food Survey Committee, HMSO, London, 1973.

food outlays are for cereals, starchy roots, pulses and nuts among the Indonesian low-income families, as compared with 34% among the highest income groups. For the United Kingdom, on the other hand, these commodities constitute only about 21% of food expenditure in the lowest-income classes and 15% in the highest. The opposite is true for high-quality foods, such as livestock products. In Indonesia the proportion of food expenditure for these foods ranges from 5% among the poor to 25% in the high-income groups, while in the United Kingdom these high-quality foods absorb about 50% of the food expenditure of both low- and high-income families. Richer families and countries likewise spend a higher proportion of their food outlays on vegetables and fruits than do poorer families and countries.

For comparative purposes it is convenient to express the degree of responsiveness of consumer demand to changes in income or expenditure in terms of income or expenditure elasticities, defined as the ratio of the percentage change in food expenditure or consumption to the percentage change in income or expenditure.[11] In practical terms, as an elasticity

[11] Mathematically, income elasticity may be expressed as $\frac{dC}{dY} \times \frac{Y}{C}$ and expenditure elasticity as $\frac{dC}{dE} \times \frac{E}{C}$ where $C$ is consumption of or expenditure on an individual com-

TABLE 3-11(b). — FOOD EXPENDITURE PATTERNS IN RELATION TO TOTAL FAMILY EXPENDITURE IN INDONESIA, 1969

| Rps per caput per month / Average | Average | Under 300 | 301-500 | 501-750 | 751-1 000 | 1 001-1 250 | 1 251-1 500 | 1 501-2 000 | 2 001-2 500 | 2 501-3 000 | Over 3 000 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Average monthly expenditure | 1 416.23 | 241.77 | 425.64 | 633.61 | 875.64 | 1 127.70 | 1 388.23 | 1 740.71 | 2 235.21 | 2 735.16 | 4 486.14 |
| Percentage of households | 100 | 1.22 | 6.44 | 15.85 | 18.60 | 14.85 | 11.36 | 13.99 | 7.67 | 3.82 | 6.20 |
| | *Percent of total food expenditure* | | | | | | | | | | |
| Cereals | 43.83 | 45.06 | 54.43 | 56.64 | 53.97 | 52.03 | 47.09 | 43.85 | 39.27 | 36.12 | 28.05 |
| Starches and starchy roots | 4.68 | 20.43 | 12.90 | 9.33 | 6.81 | 4.84 | 4.38 | 3.92 | 3.28 | 2.89 | 2.54 |
| Pulses and nuts | 3.10 | 2.40 | 2.24 | 2.60 | 2.86 | 3.01 | 3.19 | 3.04 | 3.36 | 2.96 | 3.53 |
| Vegetables and fruit | 8.58 | 11.08 | 8.78 | 7.64 | 7.63 | 7.89 | 8.12 | 8.76 | 9.24 | 9.06 | 9.54 |
| Meat | 5.23 | 0.04 | 0.82 | 1.39 | 2.04 | 2.56 | 2.71 | 5.11 | 6.78 | 8.29 | 10.29 |
| Fish | 8.64 | 4.35 | 4.37 | 5.37 | 6.86 | 7.65 | 8.34 | 9.21 | 9.65 | 10.34 | 10.75 |
| Milk and dairy products | 1.76 | 0.11 | 0.32 | 0.40 | 0.66 | 2.02 | 1.35 | 1.67 | 2.25 | 2.51 | 3.65 |
| Others | 24.18 | 16.53 | 16.14 | 16.63 | 19.17 | 20.00 | 24.82 | 24.44 | 26.17 | 27.83 | 31.65 |
| TOTAL | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

SOURCE: National Bureau of Statistics, *National Social Economic Survey*, (October-December 1969), Djakarta, 1972.

value approaches zero, demand becomes less responsive to further increases in income.

Income and expenditure elasticities have been estimated for many countries and food commodities [12] and are generally found to decrease as income and consumption grow, although the magnitude and rate of decline vary from one food group to another. The expenditure elasticity of demand for food as a whole is generally between 0.5 and 1 for the poorer countries and declines to a relatively low value in the richer countries.

Turning to individual commodities and groups of commodities, the expenditure elasticity for cereals in developing countries is typically in the range of 0.3 to 0.5, whereas it is generally less than 0.2 in the richer countries. Again the general finding applies — namely that at low levels of income the elasticity values for cereals are relatively high, while at high levels of income they are low. Indeed, at very high levels of per caput income or total expenditure, the elasticity for cereals might even be negative, indicating that with further increases in income the demand for cereals for direct human consumption would decline. However, while demand for additional quantities of cereals may be relatively unresponsive to increases in income except at lower income levels, per caput expenditure on cereals may nevertheless continue to rise as consumers switch from less preferred cereals (e.g., millets) to rice and wheat and from relatively unprocessed cereals to more highly priced convenience foods based on cereals.

Generally, the expenditure elasticity for starchy roots and tubers is low compared with cereals even in developing countries, and there is a tendency for cereals to replace them in diets as incomes increase. Conversely, expenditure elasticities for quality foods (fats and oils, fruits and vegetables, dairy products, meat, etc.) are higher than those for cereals. For fats and oils the expenditure elasticity is somewhat lower than 0.5 in developed countries and a little higher in most developing countries. For livestock products the expenditure elasticities for developed countries typically range up to 0.50, or even higher in some cases, whereas for most developing countries the expenditure elasticity for this group is greater than unity.[13]

In summary, it is clear that with increases in income the demand for various foods increases at very different rates. The implication of this is that even in those countries where the aggregate expenditure elasticity for food does not fall substantially, except over a long period of time, there occur changes in the structure of demand which, in turn, imply that structural changes in patterns of production must be

modity or group of commodities, $Y$ is income and $E$ is total expenditure. Note that income elasticities are typically lower than expenditure elasticities and that an elasticity is generally lower when evaluated at the farm gate than at the retail level. For an individual commodity the elasticity is generally higher when $C$ is measured as expenditure than when $C$ is measured as quantity demand, since richer consumers tend to buy more highly priced forms of the commodity than do poor consumers.

[12] See FAO, *Income elasticities of demand for agricultural products*, Projections Research Working Paper No. 1, p. 194, Rome, 1972.

[13] Ibid, p. 93-194 for detailed comparison.

viewed as an integral component of economic development.

Moreover, since income groups have different expenditure elasticities for the various foodstuffs, a change in the pattern of income distribution also influences aggregate demand. For instance, domestic income redistribution in favour of poor people would be expected to result in an increase in demand for most foodstuffs as their income elasticity is usually higher than that of the rich. To illustrate this, a recent study of Latin American countries showed that a redistribution of income could increase calorie demand by nearly 10% and protein demand by 12%, although clearly the extent of structural changes in demand would depend on the form and intensity of any redistribution.[14]

### Other factors influencing long-term food demand

In addition to household income, size and composition of the family are important variables affecting food consumption behaviour, although in practice it is often difficult to determine from budget studies the separate influences of these factors. Moreover, even when this is possible the analysis becomes complex, since variations in family composition by age and sex require the conversion of household members into consumption units by using scales which differ from one commodity to another.[15]

The conclusion drawn from a number of budget surveys is that increases in family size are accompanied by less than proportionate increases in food demand. This may be due, in addition to the greater number of children in the larger families, to the effect of economies of scale. For example, in Japan it has been estimated that each 1% increase in size of household leads to an increase in the expenditure for food of only 0.4% and for rice of 0.9%. Similarly, in a study of working-class budgets in India, the elasticity of demand for cereals with respect to family size was 0.7, as compared with 0.9 for the middle class.[16]

Studies on food consumption also suggest that the expenditure elasticities for food of families in rural areas differ from those of urban households, and that consumption patterns differ from one occupational group to another. In urban areas, for example, elasticities tend to be lower for cereals and often a little higher for quality food in comparison with rural areas (Table 3-12).

TABLE 3-12. — EXPENDITURE ELASTICITY FOR CEREALS IN RURAL AND URBAN AREAS IN SELECTED COUNTRIES

| | Rural | Urban |
|---|---|---|
| Sudan (1967/68) | 0.91 | 0.63 |
| India (1963/64) | 0.50 | 0.18 |
| Hungary (1966) | 0.38 | 0.03 |
| Philippines (1965) | 0.44 | 0.37 |

SOURCE: FAO, *Income elasticity of demand for agricultural products*, Projections Research Working Paper No. 1, p. 99, Rome, 1972.

Such differentials occur partly because rural incomes are generally lower than urban incomes, but they may also be due in part to differences in environment, food habits and range of available foods between urban and rural areas. However, the practice of classifying the population into urban and rural groups for survey purposes is not entirely satisfactory for studying the influence of urbanization on food consumption, because when rapid urban growth is attributable to migration from the countryside, the migrants may retain their customary food habits for some time even if their incomes and occupations change as a consequence of migration.

However, with growing urbanization it is expected that the demand for meat, fish, fats and oils and several other processed products will increase at a much faster rate than the demand for foodgrains. This is of crucial importance in the formulation of planning policies for the agricultural sectors of many developing countries undergoing a rapid process of urbanization. Perspective studies of the long-term evolution of consumption patterns by sector are thus an important element in agricultural development planning.[17]

There is also some evidence that the pattern of food consumption is affected by size of town, as is illustrated in Table 3-13. For foodgrains, edible oils, and total food the elasticities are much the same for towns and cities of various sizes, but the elasticities for milk and milk products, meat, fish, eggs and sugar are higher in the larger towns and cities. It should be pointed out however that some of these differences may result from differences in price levels and relativities in smaller and bigger towns, although, again, such influences cannot pos-

[14] FAO, *Perspective study of agricultural development for South America* (provisional version), Vol. 1, p. 74-75, Rome, 1972; see also The impact on demand of changes in income distribution, *Monthly Bulletin of Agricultural Economics and Statistics (FAO)*, 21(3), 1972.

[15] S.J. Prais and H.S. Mouthakker, *The analysis of family budgets*, Cambridge University Press, 1971.

[16] F.G. Hay and R.P. Sinha, Analysis of food expenditure patterns of industrial workers and their families in developing countries, *Journal of Development Studies*, 8(4), 1972; R.P. Sinha, Some determinants of the demand for food, *Farm Economist*, Vol. 11, 1968.

[17] The impact of urbanization on food demand, *Monthly Bulletin of Agricultural Economics and Statistics (FAO)*, 22(9), 1973.

TABLE 3-13. — EXPENDITURE ELASTICITIES FOR FOOD ITEMS FOR URBAN AREAS OF INDIA

| | Towns with populations below 15 000 | Towns with populations between 15 000 and 50 000 | Towns with populations between 50 000 and 100 000 | Cities with populations over 100 000 | Calcutta, Bombay, Delhi and Madras |
|---|---|---|---|---|---|
| Foodgrains . . | 0.20 | 0.28 | 0.30 | 0.29 | 0.29 |
| Milk and milk products . . | 0.83 | 1.11 | 1.21 | 1.12 | 1.28 |
| Edible oil . . | 0.68 | 0.81 | 0.71 | 0.60 | 0.72 |
| Meat, fish and eggs . . . . | 0.78 | 1.03 | 0.94 | 1.00 | 1.15 |
| Sugar . . . . | 0.56 | 0.74 | 0.74 | 0.82 | 0.82 |
| Other foods . . | 0.85 | 0.90 | 0.75 | 0.83 | 0.81 |
| ALL FOOD . | 0.69 | 0.73 | 0.75 | 0.75 | 0.80 |

SOURCE: Estimates based on relevant statistics from the *National Social Survey*, 8th Round.

sibly be discerned in surveys that focus entirely on expenditure patterns.

Household consumption surveys often indicate that food consumption behaviour is influenced by occupation and professional status, even though the differences between different groups may be masked by income differentials.

In part, such variations in diets reflect differences in energy needs: a mineworker typically needs more energy than a white-collar worker, and his diet is therefore likely to include a greater proportion of cereals or other starchy foods. But at the same time, variations in level of education — associated in some cases with occupation — may through differences in knowledge of the need for better nutrition partly explain dietary patterns.

Within a given socioeconomic grouping, as well, differences in economic opportunities and consequently in food consumption behaviour may occur. Table 3-14 summarizes the results of a number of studies of the food-consumption behaviour of the low-income stratum in India.

TABLE 3-14. — ELASTICITIES OF EXPENDITURE ON FOOD FOR LOW-INCOME GROUPS IN INDIA [1]

| | Agricultural labourers | Rural working class in Community Development areas | Rural and urban low-income groups | Urban working class |
|---|---|---|---|---|
| Cereals . . | 1.09 | 0.61 | 0.61 | 0.24 |
| Pulses . . . | 1.18 | 0.78 | — | 0.52 |
| ALL FOOD | 1.10 | 0.76 | 0.85 | 0.66 |

SOURCE: Estimates based on relevant statistics from the *National Social Survey*, 11th Round, using the first four income groups from each round.

[1] F.G. Hay and R.P. Sinha, *op. cit.*

The estimated expenditure elasticities for cereals and pulses are substantially higher for agricultural labourers than for other groups, suggesting that for them both cereals and pulses are still luxuries. For the rest of the rural working class, comprising workers in Community Development Project areas, where there are relatively more regular opportunities for work, the expenditure elasticity is somewhat lower, but not as low as for the urban working class, which has a higher income as well as more regular employment.

Low-income groups consist of both rural and urban categories, not all of which have adequate employment opportunities, so their elasticity for all foods is higher than those of both the urban working class and the rural working class in Community Development Project areas, although lower than that of agricultural labourers. It therefore seems that expenditure elasticity is related to regularity of employment opportunities as well as to income levels.

To some extent, however, the observed contrasts in food expenditure patterns between various socioeconomic groups are also due to locational and marketing factors. For example, the availability of individual foodstuffs and their relative prices may differ in rural and urban areas due to imperfections in marketing and distribution systems arising from inadequate storage, processing and transportation facilities.

In the wider context, as well, prices usually play a key role in the allocation of family expenditure between food and nonfood items and between individual foodstuffs. In particular, a change in the price of one item not only affects demand by making it cheaper or more expensive relative to other commodities, but may also affect demand for all commodities through the impact of the price change on the overall purchasing power of family income.

The measurement (usually at the national level) of the responsiveness of demand to price changes necessitates consumption and price data which, in contrast with budget surveys, span a lengthy period of time, particularly if the data series are available only on an annual basis. Most of the empirical studies pertain to high-income countries.[18]

As a generalization, demand for commodities with low income elasticities, such as cereals, is unresponsive to changes in their prices compared with those commodities, such as meats, which typically have high income elasticities. However, the degree of demand responsiveness for an individual product or group of products also depends on whether other items are considered to be close substitutes by con-

[18] See FAO, *Income elasticities of demand for agricultural products*, Part II and selected bibliography, Rome, 1972.

sumers. For example, recent estimates for the United Kingdom [19] indicate that a 1% increase (decrease) in the price of all carcass meat would lead to a decrease (increase) in demand for this food group of only 0.7%, assuming that all other prices were to remain unchanged. In contrast, a 1% increase (decrease) only in the price of pork, for which there are closer substitutes in beef and veal, mutton and lamb and poultry meat, would lead to a rather greater decrease (increase) of 1.24% in demand, again assuming no change in other prices. Finally, although almost all of the empirical studies at the national level indicate that a change in the price of a commodity leads to a change in the opposite direction in the volume of its demand, such findings do not necessarily apply to all population groups. In particular, very low-income groups who are forced by poverty to spend a high proportion of their total income on food and whose diet is largely comprised of one or two staple foodstuffs may increase their demand for those staples if their prices rise and at the same time forego consumption of more expensive supplementary food even though the prices of these remain unchanged.

In conclusion, there is clearly evidence that a large number of factors besides real income contribute to an explanation of changes in long-term patterns of food demand. However, the evidence is limited to specific situations, and much still needs to be done to improve the coverage, the content and the uniformity of consumption and expenditure surveys and of price statistics. Until this is achieved a confident assessment cannot be made of the world-wide impact of many of these factors. Consequently, the analysis of future demand for food at the global level is inevitably confined to consideration of the possible impact of a rather limited selection of the more important factors.

## The food problem of the future

The following analysis concerns trends in food demand and production up to the middle or end of the 1980s. First, food demand is projected, and then some possible future production trends are examined. The major issues suggested by a comparison of levels and patterns of demand and supply in the next decade are also identified, with particular reference to developing countries. While the analysis is largely concerned with trends, the implications of alternative assumptions about underlying factors are examined as well. Thus the sensitivity of food demand to different growth rates of income and population is noted, as are the consequences of fluctuations from trends in food production. At the same time, a distinction is made between food *demand*, generated by population and income growth, and supplementary food *needs* for improving the nutritional status of that part of the world's population which, owing to chronic poverty and unemployment, would not share to any marked extent in the benefits of economic growth.

### Food demand projections

As will be explained in the methodological note (p. 127), the principal components of food demand projections are assumptions concerning population growth and growth of gross domestic product (GDP); the United Nations "medium" population growth variant and the "trend" growth in GDP have been used unless otherwise stated. On this basis, an annual growth rate of 1.5% in the food demand is projected for developed countries between 1970 and 1985; in other words, their volume of demand would be 26% higher in 1985 than in 1970 (see Table 3-15). The situation in the developing countries will be totally different. In this group the market economy countries' food demand is projected for an annual growth rate of 3.6%, which would mean over fifteen years an increase of some 70% in total food volume. (The growth rates for the Asian centrally planned economies would be lower because of their lower population expansion.) This contrast between the growth rates in food demand of developed and developing countries is the key to an understanding of the persisting food problem. The factor of population increase, it must be emphasized, accounts for 0.9% of the demand growth rate in the developed countries and 2.7% in the developing market economy countries, as is indicated in Table 3-15 by the "zero" income growth rate of consumption.

The effect on food demand of assuming a higher rate of income growth in the developing countries is also shown in Table 3-15. For the developing market economies this would on the average raise the annual growth of food demand from 3.6 to 4%; however, even with this alternative assumption, population growth remains the dominant factor in determining future food demand.

[19] Ministry of Agriculture, Fisheries and Food, *Household food consumption and expenditure: 1972*, Annual Report of the National Food Survey Committee, HMSO, London, 1974.

TABLE 3-15. — PROJECTIONS OF FOOD DEMAND, 1969-71 TO 1985, BASED ON MEDIUM POPULATION GROWTH VARIANT

| | Compound growth rates | | | Growth in total volume of demand | | |
|---|---|---|---|---|---|---|
| | Zero income | Trend income | High income | Zero income | Trend income | High income |
| | *Percent per annum* | | | *1969-71 = 100* | | |
| DEVELOPED MARKET ECONOMIES . . | 0.9 | 1.4 | — | 114 | 124 | — |
| EASTERN EUROPE AND U.S.S.R. . | 0.9 | 1.7 | — | 115 | 130 | — |
| *Total developed countries* . . | 0.9 | 1.5 | — | 115 | 126 | — |
| DEVELOPING MARKET ECONOMIES . . | 2.7 | 3.6 | 4.0 | 150 | 170 | 180 |
| Africa . . . . | 2.9 | 3.8 | 4.1 | 153 | 176 | 183 |
| Far East . . . | 2.6 | 3.4 | 4.0 | 148 | 166 | 180 |
| Latin America . | 2.8 | 3.6 | 3.8 | 151 | 170 | 175 |
| Near East . . . | 2.9 | 4.0 | 4.2 | 154 | 180 | 186 |
| ASIAN CENTRALLY PLANNED ECONOMIES . . | 1.6 | 3.1 | 3.5 | 127 | 158 | 168 |
| *Total developing countries* . . | 2.4 | 3.4 | 3.8 | 143 | 166 | 176 |
| **World** . . . | 2.0 | 2.4 | (2.7) | 134 | 144 | (148) |

SOURCE: FAO estimates.

Regional differences in the growth of total food demand also chiefly reflect differences in expected population growth. Thus, with population growing at 2.9% annually in Africa and the Near East, food demand would expand more rapidly than in the other regions (3.8% and 4% respectively). By contrast, the Far East, which expects the least rapid population growth of the four developing regions, is projected to experience only a 3.4% rate of increase in food demand. Latin America occupies an intermediate position. The Asian centrally planned economies are expected to combine a quite slow expansion of population with a rapid growth of per caput income, giving a moderate rate of increase in total food demand. In all regions the future volume of total food demand will be modified if population increases diverge from the "medium" projected rates on which these estimates are based. However, alternative "high" and "low" population variants until 1985 would not significantly change the picture. Nevertheless, looking beyond the horizon of 1985, it is apparent that continuing rapid increases in population in many parts of the world can jeopardize the attainment of significantly better nutritional standards unless recent trends in food production are substantially improved.

The distribution of increases in demand among individual commodities is shown for the world as a whole in Table 3-16. Relatively high annual rates of increase in demand for fish (3.4%), meat (3.1%) and cheese (2.8%) between 1970 and 1985 indicate a progressive shift in demand toward more varied protein-rich foods in preference to cereals (2.4% per annum) and starchy roots (1.4% per annum).

These tendencies are applicable to all groupings of countries, but the projected rates of growth of total world demand considerably understate the more rapid growth of demand projected for all commodities in developing countries, owing partly to their differentially high projected rates of population growth as well as to the impact of greater demand responsiveness at lower income levels. Thus, for the developing market economies the projected total demand between 1970 and 1985 would increase at annual rates of only 3.3% for cereal products and 2.4% for starchy roots, while the demand for the more preferred foods would increase by 4.7% for fish and 4.4% for meat (Table 3-17).

To satisfy the projected increase in world demand generated by "medium" population and "trend" income growth, world agriculture would have to provide by 1985, as compared with 1970, an additional annual output (in round numbers) of just under 230 million tons of cereals, nearly 40 million tons more of sugar, an additional 110 million tons of vegetables and 90 million tons of fruit per year, plus a further 60 million tons of meat and 140 million tons of milk — together with feedstuffs to sustain these increases. The total requirements of cereals in 1985 to meet food, feed and nonfood demands would be of the order of 520 million tons more than in 1970, an increase of 43% in fifteen years.

Of these global additions to the demand for cereals, the increase in developing market countries would be about 63%, from 386 million tons to 629 million tons, while that for developed countries is expected to be only 29%, from 617 million tons to 796 million tons. The increase in total demand in the developing market economies will be higher, to about 644 million tons, if per caput income rises in line with the "high" assumption. As for feed requirements, assuming no substantial changes in the production techniques and with continuing, but modest, improvements in the efficiency of feed conversion, it is assumed that the demand for cereals as livestock feed will increase from about 420 million tons in 1970 to 650 million tons in 1985, of which approximately 520 million tons would be required by developed countries and 80 million tons by developing market economies (Table 3-18).

TABLE 3-16. — WORLD DEMAND BY MAJOR COMMODITY GROUP [1]

| | Consumption | Projected demand | | | Total increase | | Compound growth rate | |
|---|---|---|---|---|---|---|---|---|
| | 1969-71 | 1980 | 1985 | 1990 | 1970-85 | 1970-90 | 1970-85 | 1970-90 |
| | *Million metric tons* | | | | *Percent* | | *Percent per annum* | |
| Cereals [2] | 1 207 | 1 538 | 1 725 | 1 910 | 42.9 | 58.3 | 2.4 | 2.3 |
| Wheat [2] | 332 | 404 | 447 | 490 | 43.8 | 47.6 | 2.0 | 2.0 |
| Rice, paddy [2] | 310 | 400 | 447 | 493 | 44.3 | 59.1 | 2.5 | 2.3 |
| Coarse grains [2] | 565 | 734 | 831 | 927 | 46.9 | 64.0 | 2.6 | 2.5 |
| Starchy roots | 279 | 321 | 342 | 361 | 22.3 | 29.2 | 1.4 | 1.3 |
| Sugar, centrifugal (raw basis) | 70 | 92 | 107 | 126 | 54.1 | 80.9 | 2.9 | 3.0 |
| Sugar, noncentrifugal | 12 | 15 | 17 | 19 | 42.1 | 54.0 | 2.4 | 2.2 |
| Pulses, nuts and oilseeds | 52 | 69 | 79 | 91 | 51.2 | 73.5 | 2.8 | 2.8 |
| Vegetables | 223 | 290 | 330 | 374 | 48.0 | 67.7 | 2.6 | 2.6 |
| Fruits | 158 | 214 | 250 | 290 | 58.2 | 83.5 | 3.1 | 3.1 |
| Meat [3] | 107 | 144 | 168 | 197 | 57.3 | 84.7 | 3.1 | 3.1 |
| Beef and veal | 39 | 51 | 60 | 70 | 54.7 | 80.1 | 3.0 | 3.0 |
| Mutton and lamb | 7 | 10 | 12 | 14 | 69.1 | 104.5 | 3.6 | 3.6 |
| Pigmeat | 36 | 46 | 53 | 61 | 48.3 | 71.4 | 2.7 | 2.7 |
| Poultry meat | 16 | 24 | 29 | 36 | 83.5 | 125.4 | 4.1 | 4.1 |
| Eggs | 19 | 25 | 29 | 34 | 50.8 | 75.1 | 2.8 | 2.8 |
| Fish | 41 | 57 | 68 | 81 | 64.6 | 96.3 | 3.4 | 3.4 |
| Whole milk, including butter [4] | 389 | 476 | 532 | 597 | 36.9 | 53.3 | 2.1 | 2.2 |
| (Skim milk) | (40) | (50) | (58) | (66) | (44.4) | (65.5) | (2.5) | (2.6) |
| Cheese | 9 | 12 | 14 | 16 | 51.7 | 74.4 | 2.8 | 2.8 |
| Fats and oils [5] | 33 | 43 | 49 | 57 | 47.9 | 70.8 | 2.6 | 2.7 |
| Butter (fat content) | 5 | 6 | 7 | 8 | 33.9 | 49.3 | 2.0 | 2.0 |
| Vegetable oils | 22 | 30 | 35 | 41 | 55.1 | 81.9 | 3.0 | 3.0 |

SOURCES: For 1969-71, OECD Food Consumption Statistics, and FAO Statistics Division, Supply Utilization Accounts; for 1980, 1985 and 1990, FAO estimates.

[1] All demand data are rounded. — [2] Including feed and nonfood demand in primary commodity equivalent. — [3] Including offals. — [4] Including milk products in liquid milk equivalent. — [5] Including animal fats.

Since these projections of feed demand for cereals are based upon the assumption of unchanging price relationships in the feed/livestock sector, the potential inaccuracies may be substantial. In the first place, the responsiveness of demand for livestock feeds to short-term changes in relative prices is much greater than that of consumers when faced with changes in food prices. Secondly, although the livestock economy is to a large extent characterized by cyclical production patterns, the regularity of these is upset by abrupt, unexpected price movements. Consequently, the projections of feed demand presented here are to be regarded as but one of many possible outcomes. In the 1960s the decline in the real price of cereals encouraged both widespread and rapid expansion in the use of cereals for feed and increases in meat consumption. A continuation of those trends into the 1980s could lead to much greater utilization of cereals as feed than has been estimated in these projections. Conversely, if the present tight supply situation with relatively high prices in cereal markets persists, the expansion of feed use of cereals will be diminished by the substitution of other feedstuffs; at the same time, less growth in the consumption of livestock products which are grain-intensive can be expected.

In all regions the use of cereals for livestock feed would grow more rapidly than demand for direct consumption and other uses. This is particularly true of the developing countries, which must meet relatively fast-expanding requirements of protein food, although by 1985 feed uses would still only account for 14% of their total cereal demand. By contrast, 66% of the overall cereal demand of developed countries would be utilized as feed in 1985, compared with 60% in 1970. On a per caput basis the total demand for cereals in developed countries, which was nearly three times that of developing market economies in 1970, would thus continue to grow more rapidly than in the developing countries.

The projected growth in per caput food demand is summarized in Table 3-19 in nutritional terms. Per caput demand (in terms of nutrients) in the developed countries would increase slowly, at 0.2% per year for calories and proteins, because of the general low responsiveness of food demand to increases in

TABLE 3-17. — TOTAL DEMAND OF DEVELOPING MARKET ECONOMIES BY MAJOR COMMODITY GROUPS [1]

| | Consumption | Projected demand | | | Total increase | | Compound growth rate | |
|---|---|---|---|---|---|---|---|---|
| | 1969-71 | 1980 | 1985 | 1990 | 1970-85 | 1970-90 | 1970-85 | 1970-90 |
| | *Million metric tons* | | | | *Percent* | | *Percent per annum* | |
| Cereals [2] | 385.70 | 534.3 | 628.5 | 737.6 | 63.0 | 91.2 | 3.3 | 3.3 |
| Wheat [2] | 87.0 | 119.3 | 140.2 | 164.0 | 61.1 | 88.5 | 3.2 | 3.2 |
| Rice, paddy [2] | 171.2 | 235.3 | 274.8 | 318.6 | 60.5 | 86.1 | 3.2 | 3.2 |
| Coarse grains [2] | 127.5 | 179.7 | 213.5 | 255.0 | 67.5 | 100.0 | 3.5 | 3.5 |
| Starchy roots | 107.9 | 136.5 | 153.4 | 171.6 | 42.2 | 59.0 | 2.4 | 2.3 |
| Sugar, centrifugal (raw basis) | 23.9 | 36.9 | 46.7 | 59.3 | 95.2 | 148.1 | 4.6 | 4.6 |
| Sugar, noncentrifugal | 10.8 | 13.5 | 15.3 | 17.4 | 42.1 | 62.0 | 2.4 | 2.4 |
| Pulses, nuts and oilseeds | 32.4 | 44.7 | 52.8 | 62.3 | 63.0 | 92.2 | 3.3 | 3.3 |
| Vegetables | 69.7 | 99.4 | 119.3 | 142.4 | 71.1 | 104.3 | 3.6 | 3.6 |
| Fruits | 73.4 | 107.5 | 130.4 | 157.3 | 77.5 | 114.2 | 3.9 | 3.9 |
| Meat [3] | 21.1 | 32.2 | 40.6 | 51.7 | 92.1 | 144.4 | 4.4 | 4.6 |
| Beef and veal | 9.6 | 14.0 | 17.3 | 21.5 | 80.1 | 123.8 | 4.0 | 4.1 |
| Mutton and lamb | 2.6 | 4.2 | 5.5 | 7.1 | 110.9 | 174.4 | 5.1 | 5.2 |
| Pigmeat | 3.5 | 5.3 | 6.6 | 8.3 | 88.0 | 135.5 | 4.3 | 4.4 |
| Poultry meat | 2.3 | 4.1 | 5.6 | 7.9 | 143.6 | 241.1 | 6.1 | 6.3 |
| Eggs | 2.8 | 4.5 | 5.9 | 7.7 | 112.4 | 179.7 | 5.2 | 5.3 |
| Fish | 12.3 | 19.0 | 24.3 | 31.4 | 98.7 | 155.9 | 4.7 | 4.8 |
| Whole milk, including butter [4] | 93.7 | 137.6 | 168.4 | 205.8 | 79.6 | 119.6 | 4.0 | 4.0 |
| (Skim milk) | (13.6) | (20.2) | (25.1) | (31.1) | (84.9) | (129.4) | (4.2) | (4.2) |
| Cheese | 2.6 | 3.7 | 4.5 | 5.5 | 75.0 | 112.6 | 3.8 | 3.8 |
| Fats and oils [5] | 9.9 | 14.8 | 18.5 | 23.0 | 84.9 | 129.4 | 4.2 | 4.2 |
| Butter (fat content) | 1.1 | 1.7 | 2.1 | 2.5 | 81.4 | 122.6 | 4.1 | 4.1 |
| Vegetable oils | 7.7 | 11.7 | 14.5 | 18.1 | 87.6 | 133.6 | 4.3 | 4.3 |

SOURCES: For 1969-71, OECD Food Consumption Statistics, and FAO Statistics Division, Supply Utilization Accounts; for 1980, 1985 and 1990, FAO estimates.

[1] All demand data rounded. — [2] Including feed and nonfood demand in primary commodity equivalent. — [3] Including offals. — [4] Including milk products in liquid milk equivalent. — [5] Including animal fats.

income at existing high consumption and income levels. However, there would be a more rapid increase demand for the relatively expensive foods, as reflected by an increase of 0.6% per year in the farm-gate value of total food demand per caput. The developing countries' average per caput demand for both calories and protein would increase at a rate of 0.6% per year, a faster increase than in the developed countries, but substantial differences in calory and protein levels per caput between the two country groupings would nevertheless persist throughout the projection period. If incomes in developing regions were to increase at the alternative "high" rate, per caput demand for calories and protein would increase at rates of 0.8% and 0.9% per year respectively, raising the average levels to 2 485 kilocalories and 65.6 grams of protein by 1985.

Average demand levels for heterogeneous aggregates of countries conceal wide disparities which would continue to exist between individual countries and regions. Particularly in the Far East and to a lesser extent in Africa the average per caput demand for calories would remain below the level required for moderate activity until well into the 1980s. The number of countries with average food demand below nutritional requirements in terms of calories would diminish during the period. However, by 1985 there would still be thirty-four countries with a combined population of nearly 800 million where average per caput energy demand would fall short of requirements, or if incomes grew at the "high" rate, twenty-six countries with a population of 600 million, in both cases making no allowance for uneven distribution of available food supplies among different socio-economic groups.

### Extrapolated food production trends

It is more difficult to establish an objective basis for assessing future rates of growth of production than it is to project food demand. For reasons given in the methodological note (p. 127) the base period chosen was 1961 to 1973, and all the extrapolations of production are exponential growth rates derived from this period. Calculations were made both by

TABLE 3-18. — CEREALS: ACTUAL CONSUMPTION AND PROJECTED TREND DEMAND BY MAIN TYPES OF UTILIZATION, 1970-90, BASED ON TREND GROWTH ASSUMPTION

| | Actual consumption 1970 | Projected demand | | | Total increase | | | Compound growth rate | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1980 | 1985 | 1990 | 1970/80 | 1970/85 | 1970/90 | 1970-80 | 1970-85 | 1970-90 |
| | *Million metric tons* | | | | *Percent* | | | *Percent per annum* | | |
| DEVELOPED COUNTRIES | | | | | | | | | | |
| Food | 160.9 | 163.1 | 164.1 | 164.6 | 1.3 | 2.0 | 2.0 | 0.1 | 0.1 | 0.1 |
| Feed | 371.5 | 467.9 | 522.7 | 565.7 | 25.9 | 40.7 | 52.3 | 2.3 | 2.3 | 2.1 |
| Other uses | 84.9 | 100.6 | 109.5 | 116.4 | 18.5 | 29.0 | 37.1 | 1.7 | 1.7 | 1.6 |
| *Total* | 617.3 | 731.6 | 796.3 | 846.7 | 18.5 | 29.0 | 37.2 | 1.7 | 1.7 | 1.6 |
| | *Kilograms* | | | | | | | | | |
| *Per caput* | *576* | *623* | *649* | *663* | 8.2 | 12.7 | 15.1 | 0.8 | 0.8 | 0.7 |
| | *Million metric tons* | | | | | | | | | |
| DEVELOPING MARKET ECONOMIES | | | | | | | | | | |
| Food | 303.7 | 409.3 | 474.5 | 547.2 | 34.8 | 56.3 | 80.2 | 3.0 | 3.0 | 3.0 |
| Feed | 35.6 | 60.9 | 78.6 | 101.9 | 71.1 | 120.8 | 186.2 | 5.5 | 5.4 | 5.4 |
| Other uses | 46.4 | 64.1 | 75.4 | 88.5 | 38.1 | 62.5 | 90.7 | 3.3 | 3.3 | 3.3 |
| *Total* | 385.7 | 534.3 | 628.5 | 737.6 | 38.5 | 63.0 | 91.2 | 3.3 | 3.3 | 3.3 |
| | *Kilograms* | | | | | | | | | |
| *Per caput* | *220* | *233* | *240* | *246* | 5.9 | 9.1 | 11.8 | 0.6 | 0.6 | 0.6 |
| | *Million metric tons* | | | | | | | | | |
| ASIAN CENTRALLY PLANNED ECONOMIES | | | | | | | | | | |
| Food | 164.1 | 200.5 | 215.2 | 225.3 | 22.2 | 31.1 | 37.3 | 2.0 | 1.8 | 1.6 |
| Feed | 15.3 | 38.7 | 48.7 | 61.4 | 152.9 | 218.3 | 301.3 | 9.7 | 8.0 | 7.2 |
| Other uses | 24.6 | 32.6 | 36.0 | 39.1 | 32.5 | 46.3 | 58.9 | 2.9 | 2.6 | 2.3 |
| *Total* | 204.0 | 271.8 | 299.9 | 325.8 | 33.2 | 47.0 | 59.7 | 2.9 | 2.6 | 2.4 |
| | *Kilograms* | | | | | | | | | |
| *Per caput* | *257* | *290* | *298* | *304* | 12.8 | 16.0 | 18.3 | 1.2 | 1.0 | 0.8 |
| | *Million metric tons* | | | | | | | | | |
| World | | | | | | | | | | |
| Food | 628.7 | 772.9 | 853.8 | 937.1 | 22.9 | 35.8 | 49.1 | 2.1 | 2.1 | 2.0 |
| Feed | 422.4 | 567.5 | 650.0 | 729.0 | 34.4 | 53.9 | 72.6 | 3.0 | 2.9 | 2.8 |
| Other uses | 155.9 | 197.3 | 220.9 | 244.0 | 26.6 | 41.7 | 56.5 | 2.4 | 2.4 | 2.3 |
| *Total* | 1 207.0 | 1 537.7 | 1 724.7 | 1 910.1 | 27.4 | 42.9 | 58.3 | 2.5 | 2.4 | 2.3 |
| | *Kilograms* | | | | | | | | | |
| *Per caput* | *333* | *349* | *355* | *357* | 4.8 | 6.6 | 7.2 | 0.5 | 0.4 | 0.3 |

SOURCE: FAO estimates.

country and by commodity. The summary results by region are shown in Table 3-20, where they are compared with projected rates of population growth.

Although the growth rate of production for developed market economy countries (2.4%) is lower than the rate calculated for developing market economy countries (2.6%), the former lies far above the corresponding population growth rate, while the latter is slightly lower (2.6% for production versus 2.7% for population growth), thus providing no margin to meet the projected increases in per caput demand. These extrapolated production growth rates vary from 2.4% in Africa to around 3% in the Near East and Latin America. A striking result is that food production in every developing region except the Near East (and the Asian centrally planned economies) would grow more slowly than population if past trends were allowed to continue. This would

TABLE 3-19. — PER CAPUT FOOD DEMAND IN CALORIES AND PROTEINS, 1970 [1] AND PROJECTIONS TO 1990, BASED ON TREND GROWTH ASSUMPTION

| | Calories | | | Proteins | | |
|---|---|---|---|---|---|---|
| | World | Developed countries | Developing countries | World | Developed countries | Developing countries |
| Levels per caput[2] | | | | | | |
| 1970 | 2 480 | 3 150 | 2 200 | 69.0 | 96.4 | 57.4 |
| 1980 | 2 560 | 3 190 | 2 330 | 71.1 | 98.4 | 61.2 |
| 1985 | 2 610 | 3 220 | 2 400 | 72.6 | 100.0 | 63.3 |
| 1990 | 2 670 | 3 260 | 2 480 | 74.3 | 101.9 | 65.6 |
| Percentage increase from 1970 to: | | | | | | |
| 1980 | 3.3 | 1.2 | 6.1 | 3.0 | 2.1 | 6.5 |
| 1985 | 5.3 | 2.3 | 9.3 | 5.3 | 3.8 | 10.2 |
| 1990 | 7.5 | 3.6 | 12.7 | 7.7 | 5.7 | 14.2 |
| Annual rate of growth from 1970 to: | | | | | | |
| 1980 | 0.3 | 0.1 | 0.6 | 0.3 | 0.2 | 0.6 |
| 1985 | 0.3 | 0.2 | 0.6 | 0.3 | 0.2 | 0.6 |
| 1990 | 0.4 | 0.2 | 0.6 | 0.4 | 0.3 | 0.7 |

SOURCE: FAO estimates.

[1] 1969-71 average. — [2] Kilocalories and grams of protein daily.

be a widespread phenomenon, not one reflecting low production rates in a few big countries, since (excluding the Near East) only about half the countries studied separately would have a margin of food production over projected population growth.

It must be reiterated that the data in Table 3-20

TABLE 3-20. — EXTRAPOLATED GROWTH RATES OF FOOD PRODUCTION AND PROJECTED POPULATION GROWTH, 1969-71 TO 1985

| | Food production | Population |
|---|---|---|
| | ... *Percent per annum* ... | |
| DEVELOPED MARKET ECONOMIES | 2.4 | 0.9 |
| EASTERN EUROPE AND U.S.S.R. | 3.5 | 0.9 |
| *Total developed countries* | 2.8 | 0.9 |
| DEVELOPING MARKET ECONOMIES | 2.6 | 2.7 |
| Africa | 2.5 | 2.9 |
| Far East | 2.4 | 2.6 |
| Latin America | 2.9 | 3.1 |
| Near East | 3.1 | 2.9 |
| ASIAN CENTRALLY PLANNED ECONOMIES | 2.6 | 1.6 |
| *Total developing countries* | 2.6 | 2.4 |
| **World** | 2.7 | 2.0 |

show nothing more than what would happen if recent production trends were to continue unchanged and assuming a stable climate. What actually happens between now and 1985 may be quite different, as the outcome will depend on a wide range of factors which have been deliberately excluded at the present stage, such as changes in the relative profitability of farm production and in the agricultural policies of governments, as well as possible changes in the climatic pattern or trend. Nevertheless, there clearly are two completely contrasting tendencies: production is growing much faster than population in developed countries, whereas the reverse is true in developing countries. The high rate of production growth (relative to population) extrapolated for the developed market economies and the still higher rate for the developed centrally planned economies (3.5%) will materialize, in fact, only if a demand for massive exports from these countries occurs.[20]

## The demand/production balance

The next step is to correlate the demand projections and the production extrapolations in order to see theoretical surpluses or deficits. The word "theoretical" is used because the two series were calculated independently of each other, with no allowance made for the influence of demand on production and vice versa or for consequential changes in prices. In practice, of course, it would be impossible for surpluses (or deficits) to continue to accumulate persistently over a period of several years. These projections, subject to this important reservation, are shown in Table 3-21.

Most arresting are the data for the developing market economy countries, in which food demand expands at 3.6% annually while the "trend" annual growth of food production is only 2.6%; the regional figures show the smallest difference between the two rates occurring in Latin America, the biggest in Africa. This implies the building up by 1985 of a very substantial imbalance between demand and production in all these regions, and especially in Africa. For instance, between 1969-71 and 1985 Africa's food demand would, on these assumptions, rise by 76% and her food production by only 45%.[21]

What the possible food import requirement for cereals alone might amount to if present trends con-

[20] It should also be noted that an exponential extrapolation of food production — which is the growth path that food production must take if it is to match population growth — does not imply a constant addition in terms of tonnage to world food output each year. It means, rather, that the quantity by which one harvest exceeds the previous harvest must grow year by year.

[21] In a number of individual developing countries total food demand would more than double between 1969-71 and 1985 — for instance, in Nigeria, Iran, Iraq, Saudi Arabia and Thailand.

TABLE 3-21. — PROJECTIONS OF FOOD DEMAND [1] AND EXTRAPOLATIONS OF FOOD PRODUCTION TO 1985

| | Volume growth rates | | Volume indices | |
|---|---|---|---|---|
| | Demand | Production | Demand | Production |
| | *Percent per annum* | | *1969-71 = 100* | |
| DEVELOPED MARKET ECONOMIES | 1.4 | 2.4 | 124 | 143 |
| EASTERN EUROPE AND U.S.S.R. | 1.7 | 3.5 | 130 | 168 |
| *Total developed countries* | 1.5 | 2.8 | 126 | 151 |
| DEVELOPING MARKET ECONOMIES | 3.6 | 2.6 | 170 | 146 |
| Africa | 3.8 | 2.5 | 176 | 145 |
| Far East | 3.4 | 2.4 | 166 | 143 |
| Latin America | 3.6 | 2.9 | 170 | 152 |
| Near East | 4.0 | 3.1 | 180 | 157 |
| ASIAN CENTRALLY PLANNED ECONOMIES | 3.1 | 2.6 | 158 | 146 |
| *Total developing countries* | 3.4 | 2.6 | 166 | 146 |
| World | 2.4 | 2.7 | 144 | 150 |

[1] The commodities covered include all of those shown in Table 3-17 on p. 119.

tinue can be seen in Table 3-22. In 1985 the developing market economy countries would have a net cereals deficit of almost 85 million tons, compared with an annual average deficit of only 16 million tons in 1969-71 and net exports in prior decades. Moreover, the net deficit embraces *all* developing market economy countries. If the cereal-exporting countries such as Argentina and Thailand are excluded, *the projected cereals deficit rises to around 100 million tons per year, three times their gross imports in 1969-71.* This assumes normal production conditions; in a good year the deficit could be less, but in a bad year it could rise to some 120 million tons or possibly even more by the mid-1980s. (The cereals deficit of the developing market economies in the bad 1973/74 season, again excluding exporting countries, is estimated at 52 million tons.) However, the developed countries' cereal production extrapolation suggests that these countries could be capable of generating export surpluses that would far outweigh the deficits of developing countries, given a continuation of established trends in countries with command over advanced technology and substantial productive resources. The largest deficits of the developing market economies would be in rice and coarse grains, reflecting the much greater role of these cereals in the production and consumption patterns of most developing countries.

In these calculations cereals for food and feed are combined; but, whereas the demand projections of cereals for human consumption are reasonably firm, those for feed could be modified upward or downward by a number of factors. For example, if the ratio between feedgrain and livestock prices shifts in favour of the latter, either because of a persistent abundance of grain or because of an intensified demand for livestock products, then the expansion of the livestock sector will accelerate through the increased use of feedgrains. Conversely, improvements in the efficiency of feed conversion would reduce the amount of grain required to produce each kilogram of meat. Likewise, some part of the demand for livestock products might be satisfied by the use of meat analogues or meat "extenders" based on the direct use of vegetable proteins, and to that extent the demand for feedgrains would be reduced. Again the availability and price of other foods such as oilcake, fish meal and cassava will affect the use of cereals.

While cereals dominate world food issues, attention must also be given to other products, particularly the protein-rich items for which demand grows rapidly. Table 3-23 summarizes the balances for cattle and sheep meat and for fish. No production estimates were made for pig and poultry meat because the rapidity with which production adjusts to demand conditions gives little validity to separate extrapolations of production trends. In general, exponential trends were selected for extrapolating the output of livestock products, modifications being made in a number of cases when the base period trend appeared unrepresentative (e.g., short-run slaughtering levels which cannot be sustained).

Beef and veal would be in moderately short supply at the world level, although if the deficit indicated for the Asian centrally planned countries (which are not large producers or consumers) did not materialize, world production and demand would approximately balance. The global situation is heavily influenced by the developed countries, which together produce two thirds of the world supply and for whom a small surplus is indicated, reflecting rising self-sufficiency in the EEC and growing export supplies from Oceania. Their production might grow somewhat faster still if grains and other feedstuffs were plentiful and cheap, but biological limitations would be a restraint on any large acceleration of past trends. While a turnabout from deficit to surplus is indicated for developed countries, a reverse shift from net export availability to deficit is shown for developing countries as a whole. However, the margins of surpluses or deficits are small in relation to overall production and demand. Worsening of the balance holds for all regions except Latin America and underlines the magnitude of the problems of doubling the supply of

TABLE 3-22. — DEMAND/PRODUCTION BALANCES FOR ALL CEREALS, 1969-71 AND 1985

| | All cereals | | Wheat | | Rice paddy | | Coarse grains | |
|---|---|---|---|---|---|---|---|---|
| | 1969-71 | 1985 | 1969-71 | 1985 | 1969-71 | 1985 | 1969-71 | 1985 |
| | *Million metric tons* | | | | | | | |
| TOTAL DEVELOPED COUNTRIES | | | | | | | | |
| Total demand | 617 | 796 | 204 | 239 | 22 | 25 | 391 | 532 |
| (Feed) | (372) | (523) | (61) | (88) | (2) | (2) | (309) | (433) |
| Production | 654 | ... | 231 | 398 | 24 | ... | 399 | ... |
| *Balance* | 37 | ... | 27 | 159 | 2 | ... | 8 | ... |
| DEVELOPING MARKET ECONOMIES | | | | | | | | |
| Total demand | 386 | 629 | 87 | 140 | 171 | 275 | 128 | 214 |
| (Feed) | (36) | (79) | (3) | (6) | (1) | (3) | (31) | (70) |
| Production | 370 | 544 | 67 | 121 | 168 | 236 | 135 | 187 |
| *Balance* | —16 | —85 | —20 | —19 | —3 | —39 | 7 | —27 |
| ASIAN CENTRALLY PLANNED ECONOMIES | | | | | | | | |
| Total demand | 204 | 300 | 40 | 68 | 117 | 147 | 47 | 85 |
| (Feed) | (15) | (49) | (5) | (14) | (2) | (6) | (8) | (29) |
| Production | 215 | 309 | 31 | 51 | 110 | 142 | 74 | 116 |
| *Balance* | 11 | 9 | —9 | —17 | —7 | — 5 | 27 | 31 |
| DEVELOPING COUNTRIES | | | | | | | | |
| Total demand | 590 | 929 | 127 | 208 | 288 | 422 | 175 | 299 |
| (Feed) | (51) | (128) | (8) | (...) | (3) | (...) | (39) | (...) |
| Production | 585 | 853 | 98 | 172 | 278 | 378 | 209 | 303 |
| *Balance* | —5 | —76 | —29 | —36 | —10 | —44 | 34 | 4 |
| WORLD | | | | | | | | |
| Total demand | 1 207 | 1 725 | 331 | 447 | 310 | 447 | 566 | 831 |
| (Feed) | (422) | (650) | (69) | (108) | (5) | (10) | (348) | (532) |
| Production | 1 239 | ... | 329 | 570 | 302 | — | 608 | — |
| *Balance* | 32 | ... | —2 | 123 | —8 | — | 42 | — |

a product like beef and veal over fifteen years to meet the projected rise in demand. The increase in implied import requirements is particularly large in the Near East.

A continuation of trends in developing countries would result in the relative shortage of mutton and lamb in the future becoming much greater than that of beef and veal, as production would be only three fifths of the more than doubled demand. The supply/demand gap arising from the extrapolations is particularly marked for the Near East and Africa.

Likely constraints on the expansion of fishery catches and the scope for fish farming were taken into account in extrapolating production. World production of fish for human food in 1985 would be approximately the same in tonnage as the combined total for beef, veal, mutton and lamb, but the share of developing countries in the production and consumption of fish is much higher than in cattle and sheep meat.[22] The extrapolations suggest that in all the developing regions except Asia demand would outstrip production. The nonfood use of fish (fish meal) in 1985 was assumed to be the same as in 1970, reflecting limits on supply rather than weakness of demand.

Thus the common pattern for all products in Tables 3-22 and 3-23 is roughly a balance at the world level, except for mutton and lamb, but a shortfall of production in developing countries.[23] This implies that either the developing countries' projected demand, though still inadequate from a nutritional

[22] The relatively small surplus indicated is within the margin of error of the calculations.

[23] While it was not possible to assemble enough data on pulses — a major source of protein in developing countries — to include this group of products in the analysis, the indications were of a very serious deficit in supplies.

TABLE 3-23. — MEAT AND FISH BALANCES FOR 1969-71 AND 1985

| | Beef and veal | | Mutton and lamb | | Fish | |
|---|---|---|---|---|---|---|
| | 1969-71 | 1985 | 1969-71 | 1985 | 1969-71 | 1985 |
| | ..... *Million metric tons* ..... | | | | | |
| TOTAL DEVELOPED COUNTRIES | | | | | | |
| Total demand | 27.0 | 38.4 | 3.7 | 5.2 | 34.5 | 43.2 |
| (Feed) . . . | (—) | (—) | (—) | (—) | (12.6) | (12.6) |
| Production | 26.6 | 39.0 | 3.9 | 4.9 | 34.5 | 45.5 |
| *Balance* . . . | —0.4 | 0.6 | 0.2 | —0.3 | — | 2.3 |
| DEVELOPING MARKET ECONOMIES | | | | | | |
| Total demand | 9.6 | 17.3 | 2.6 | 5.5 | 25.9 | 37.9 |
| (Feed) . . . | (—) | (—) | (—) | (—) | (13.6) | (13.6) |
| Production | 10.6 | 17.0 | 2.6 | 3.4 | 27.2 | 38.3 |
| *Balance* . . . | 1.0 | —0.3 | — | 2.1 | 1.3 | 0.4 |
| ASIAN CENTRALLY PLANNED ECONOMIES | | | | | | |
| Total demand | 2.0 | 4.1 | 0.6 | 1.1 | 7.3 | 13.3 |
| (Feed) . . . | (—) | (—) | (—) | (—) | (—) | (—) |
| Production . . | 2.1 | 2.9 | 0.7 | 0.8 | 8.0 | 12.8 |
| *Balance* . . . | 0.1 | —1.2 | 0.1 | —0.3 | 0.7 | —0.5 |
| TOTAL DEVELOPING COUNTRIES | | | | | | |
| Total demand | 11.7 | 21.4 | 3.2 | 6.6 | 33.2 | 51.3 |
| (Feed) . . . | (—) | (—) | (—) | (—) | (13.6) | (13.6) |
| Production . . | 12.7 | 20.0 | 3.2 | 4.1 | 35.2 | 51.1 |
| *Balance* . . . | 1.0 | —1.4 | — | 2.5 | 2.0 | —0.2 |
| **World** | | | | | | |
| Total demand | 38.7 | 59.8 | 7.0 | 11.8 | 67.7 | 94.4 |
| (Feed) . . . | (—) | (—) | (—) | (—) | (26.2) | (26.2) |
| Production . . | 39.3 | 58.8 | 7.1 | 9.1 | 69.7 | 96.6 |
| *Balance* . . . | 0.6 | —1.0 | 0.1 | —2.7 | 2.0 | 2.2 |

point of view, cannot be met or they will be faced with massive food import bills. What one part of these bills might amount to may be illustrated by cereals.

The cost of importing 85 million tons of cereals, for instance, would depend on prices prevailing in 1985. At the 1973/74 average of US$200 per ton for all cereals, it would reach $17 000 million per annum; even at 1969-72 prices, it would cost toward $8 000 million. In addition, the developing countries, according to the projections and extrapolations, would be importing substantial amounts of other foodstuffs. Clearly, the financing of international food trade on this scale would raise very grave problems. Under the present trading arrangements it is hardly conceivable that the majority of the food-deficit developing countries would export to the developed countries in sufficient quantities to pay these bills, even if there were a massive food aid programme to cover a part of the import needs. Whatever combination of remedies may prove feasible, it seems certain that the projected food imbalances for developing market economy countries in 1985 imply international trade problems of such magnitude that it becomes imperative for their governments to formulate policies which will alter the trends, especially by achieving a marked increase in production, so that no such unmanageable situation is allowed to materialize.

## Supplementary needs to meet nutritional standards

The balance of supply and demand has so far been examined in relation to effective or commercial demand. However, great inequalitites in levels of food consumption would persist within, as well as between, individual countries. Deficiencies in data do not permit an estimate of the additional quantities of food which would be required to assure nutritionally adequate diets to all, or virtually all, people. Nonetheless, some indications of the scale of the problem may be given.

As was noted above, it has been estimated that in 1970 at least 462 million people were suffering from malnutrition. For reasons already given, it is not possible to quantify exactly the extent to which their intakes should be increased. However, the provisions of even a small addition of, for example, 250 calories to per caput energy intakes per day would have required in 1970 nearly 12 million tons of cereals or cereal equivalent. Tentatively, by 1985 the number of people in this category would be approximately 750 million if the present pattern of food distribution within countries were to persist; hence the additional cereal equivalent requirements could total nearly 20 million tons annually, assuming unrealistically that all the additional quantity was channelled directly to those in need; in practice considerably larger amounts would be required.

A further dimension of the magnitude of supplementary food needs is given by projections of the size of vulnerable groups of the population. Estimates of the numbers of young children, of pregnant and lactating women and of the elderly suggest that the overall proportion of these groups in most regions will decline slightly by 1985 to approximately one quarter of total population, but that their absolute numbers will rise substantially (Table 3-24).

TABLE 3-24. — VULNERABLE POPULATION GROUPS, 1970 AND 1985 [1]

| | Children, from birth to age 4 | | Pregnant and lactating women [2] | | Elderly persons, from age 65 | | Totals | | Percentage of total population | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1970 | 1985 | 1970 | 1985 | 1970 | 1985 | 1970 | 1985 | 1970 | 1985 |
| | *Millions* | | | | | | | | | |
| TOTAL DEVELOPED COUNTRIES | 95 | 114 | 40 | 48 | 103 | 127 | 238 | 289 | 22.1 | 23.6 |
| DEVELOPING MARKET ECONOMIES | 305 | 423 | 154 | 201 | 54 | 89 | 513 | 714 | 29.2 | 27.2 |
| Africa | 50 | 79 | 26 | 39 | 8 | 12 | 84 | 130 | 30.0 | 30.3 |
| Far East | 178 | 233 | 90 | 111 | 30 | 51 | 299 | 394 | 29.3 | 26.2 |
| Latin America | 47 | 68 | 22 | 30 | 11 | 18 | 79 | 116 | 27.9 | 27.0 |
| Near East | 30 | 44 | 15 | 21 | 6 | 9 | 51 | 74 | 29.7 | 28.3 |
| ASIAN CENTRALLY PLANNED ECONOMIES | 107 | 114 | 52 | 52 | 32 | 49 | 191 | 215 | 24.0 | 21.4 |
| TOTAL DEVELOPING COUNTRIES | 412 | 537 | 206 | 253 | 86 | 138 | 703 | 929 | 27.6 | 25.6 |
| World | 506 | 652 | 246 | 301 | 189 | 266 | 941 | 1 218 | 26.0 | 25.1 |

[1] FAO estimates based on United Nations "medium" population projections. — [2] Estimated on the basis of crude birth rates (number of births times 2).

Again, it is possible to quantify only roughly the extent of their additional food needs. As an indication of possible needs, if one half of the 700 million vulnerable people in developing market economies in 1985 received a daily supplement of 300 grams [24] of whole milk or its equivalent, the additional milk requirements would amount to 40 million tons annually.

The redistribution of income in favour of the poor could have a major effect on food demand because of the higher income elasticity of demand at low income levels. However, the quantitative effects of redistribution depend, of course, on the form of related policies [25] and on the responsiveness of consumers in the various income strata to changes in their real incomes. Therefore, estimates of the impact of redistribution on total food demand can be no more than illustrative. A recent FAO study of eleven Latin American countries [26] estimated that a "drastic" redistribution of income (involving the channelling of all increases in income to the poorer groups) would add nearly 14% to food demand after ten years as compared with the volume of demand without a change in income distribution. Alternatively, with a more "moderate" redistribution (with part of the increase in income going to the higher income groups), nearly 10% would be added to demand after ten years. The impact on the consumption of individual commodities could also be substantial if measures for redistribution were either directed toward particular target groups or involved direct distribution of specific foodstuffs.

[24] Equivalent to about 200 calories and 10 grams of protein per day if provided as fluid whole milk from cows.

[25] For example, general fiscal measures, pensions and child allowances, school feeding programmes and food distribution schemes aimed at other specific groups may all be regarded as instruments for income redistribution.

[26] The impact on demand of changes in income distribution: a case study of eleven Latin American countries, in FAO *Monthly Bulletin of Agricultural Economics and Statistics*, 21(3), 1972.

### Production fluctuations

In the extrapolation of trends every year is assumed to be a normal year from the point of view of the factors governing the volume of production, including normality of weather. In reality, as has been recently demonstrated, the weather is capable of causing significant annual fluctuations in harvests: the 1972 world crop of cereals was 33 million tons less than that of 1971. As the volume of the world's normal production will have substantially increased by 1985, so also will the potential fluctuations — perhaps to some 50 million tons above or below the trend line.

Unless special preventive measures are taken, the burden of this risk will fall mainly on the developing countries for two reasons. First, they are major grain producers, accounting for almost half the world's production, and many of them are located in zones of unreliable weather (monsoon or semi-arid). Second, as they will be depending on imports for a notable proportion of their requirements, if the grain-exporting countries were to have bad harvests in the same year, their export availabilities would diminish and the importing countries would be left short.

For these reasons the risks of a simultaneous breakdown in production and imports can be expected to be greater in 1985 than in 1972. This underlines the urgency of intergovernmental consideration of FAO's food security proposals and the need for a continuous global monitoring of current crop conditions and concurrent on-going weather conditions.

**Outlook for rural poverty**

What happens to agricultural production in developing countries will decisively influence the standard of living of farmers and indirectly that of the rest of the rural population. As has been shown earlier, the greater part of world hunger and malnutrition is found in rural areas among people who produce too little food or who have insufficient employment or income to purchase enough food. A major step toward ameliorating this situation could come from a rapid expansion of food production, especially by the small-scale farmers, most of whom are among the poorest. But what is the outlook?

Population in the developing countries is expected to expand by 1985, and indeed up to the end of the century, more rapidly than in any previous period in history, and whatever the rate of migration of rural people to cities, rural population will also continue to expand. Probably some 200 million persons will be added to the rural labour force between 1970 and 1985, and a further 250 million between then and the year 2000. Meanwhile, in all developing regions except the Near East, total food production will, according to the extrapolations, be expanding more slowly than total population. Bearing in mind that a proportion of this production must feed the increasing urban population, it seems unlikely that the quantity of food *per rural inhabitant* and *available* for rural consumption will be greater in 1985 than it is today. Certainly, any modest improvements in the more favoured agricultural areas would not make a significant impact on the general problem of rural poverty and hunger. These considerations stress the role of agricultural production and its expansion. An acceleration of expansion is urgent, not only to avoid unmanageable deficits in the national food supplies of developing countries, but because it offers the chief hope of combating undernutrition among the agricultural poor and, more generally, of raising rural living standards.

From the foregoing analysis of the food problem of the future, a great many conclusions leading to policy suggestions in various fields could be drawn. Different individuals would probably single out different items. Some may focus on that aspect of the analysis which shows no 1985 imbalance in food supplies at the world level and may express satisfaction that world production appears to be capable of meeting effective commercial demand. Others will emphasize the alarming increase in the projected food deficits of the majority of developing countries, which in turn would create major international trade difficulties and offer little hope of improving the nutritional level of disadvantaged groups in those countries; they will note that a continuation of existing trends in developing countries would result in deficits not only in cereals but also in major sources of proteins.

There are three alternative approaches, not mutually exclusive, for meeting the developing countries' growing food deficit:

1. Exporting countries — mostly developed countries, but also including some developing exporters — would provide supplies to deficit countries on a commercial basis. For grains alone the quantities could reach 80-90 million tons, while imports of a wide range of other foods would also increase. Fundamental changes would be needed in the structure of payments and trade to finance such greatly enlarged food imports and the expected increases in imports of food production requisites.

2. Food imports would be provided in whole or in large part as continuing food aid. It is difficult however to visualize an expansion of food aid on the vast scale which would be necessary to cover all the needs.

3. Food-deficit developing countries would accelerate the growth of their food output to around the proposed target rates, thus diminishing their import needs. This would seem the only practicable alternative for solving the food problem, but developed countries as a group might later need to retard somewhat their rate of production expansion, particularly of cereals.

In the sphere of nutrition the conclusion may be drawn that in the absence of new initiatives the number of malnourished persons is likely to increase, because the projected growth rates of GDP, especially of food production, are not enough to eliminate poverty, particularly rural poverty, which is malnutrition's chief cause. Accordingly, governments may need to give higher priority than in the past to income redistribution and to programmes designed to improve the nutritional status of vulnerable groups, and by improvements in marketing and distribution keep retail food prices at reasonable levels. External assistance, especially food aid, could intervene on a larger scale to support such national programmes.

In many developing countries a major contribution toward rectifying the imbalance could be made through a campaign against waste of all kinds and in all places. Such a campaign, with concomitant improvements in storage facilities, could save in some instances as much as 20% of grain crops and possibly a much larger proportion of perishable fruits and vegetables. In countries where deficits in basic foods persist, attention might be given, through price policies and other means, to encouraging the use of feedstuffs other than grain in the livestock sector.

Furthermore, it has been seen that large fluctuations in demand on world markets occasioned by crop failures, particularly of cereals, must be expected. This implies that in addition to action designed to improve trends of production and demand and their long-term balance, new initiatives will be called for to build a system of food security to ensure, among other things, that stocks are adequate to meet unpredictable crop failures and large temporary surges in import demand.

Lastly, efforts toward reducing population growth to alleviate the longer-term situation would already begin to be felt by 1985 and thus considerably reduce the food deficit of the developing countries.

## Methodological note

### FOOD DEMAND ASSUMPTION

The projections of food demand utilize essentially the same methodology as that employed in FAO's *Agricultural commodity projections, 1970-1980*,[27] the principal component being population and income growth, with account being taken of the responsiveness of consumer demand to changes in private consumption expenditure and of information on food consumption levels in the period 1969-71.[28] Relative prices are also assumed to remain unchanged.

The assumptions on population growth have been updated to comprise the provisional projections made by the United Nations Population Division in 1974 on the basis of the results of recent national censuses. The greater part of the following analysis makes use of the "medium" variant, for which the data, shown in Table 3-25, indicate a world population expansion during the 1970s and 1980s of 2% per year, but with striking differences between regions. The developed countries' population is expected to grow at 0.9%, compared with 2.7% for the developing market economies, and the Asian centrally planned economies lie in between. This difference

TABLE 3-25. — WORLD POPULATION, 1970 AND PROJECTIONS [1] TO 1985 AND 1990

| | Actual | Projected | | Compound rate of growth | | |
|---|---|---|---|---|---|---|
| | 1970 | 1985 | 1990 | 1960-70 | 1970-85 | 1970-90 |
| | ..... *Million* ..... | | | *Percent per annum* | | |
| DEVELOPED MARKET ECONOMIES . . | 724 | 828 | 861 | 1.1 | 0.9 | 0.9 |
| North America | 226 | 262 | 271 | 1.3 | 1.0 | 1.0 |
| Western Europe | 354 | 386 | 396 | 0.8 | 0.6 | 0.6 |
| Oceania | 15 | 20 | 21 | 1.9 | 1.8 | 1.7 |
| Others . . . . | 129 | 160 | 169 | 1.4 | 1.4 | 1.4 |
| EASTERN EUROPE AND U.S.S.R. | 348 | 399 | 416 | 1.0 | 0.9 | 0.9 |
| *Total developed countries* . . | 1 072 | 1 227 | 1 277 | 1.1 | 0.9 | 0.9 |
| DEVELOPING MARKET ECONOMIES . | 1 755 | 2 623 | 2 997 | 2.6 | 2.7 | 2.7 |
| Africa . . . . | 279 | 427 | 498 | 2.5 | 2.9 | 2.9 |
| Latin America | 284 | 428 | 489 | 2.8 | 2.8 | 2.7 |
| Near East . . | 171 | 262 | 303 | 2.7 | 2.9 | 2.9 |
| Far East . . . | 1 021 | 1 506 | 1 707 | 2.5 | 2.6 | 2.6 |
| ASIAN CENTRALLY PLANNED ECONOMIES . | 794 | 1 008 | 1 072 | 1.8 | 1.6 | 1.5 |
| *Total developing countries* | 2 549 | 3 631 | 4 069 | 2.3 | 2.4 | 2.4 |
| **World** . . | 3 621 | 4 858 | 5 346 | 1.9 | 2.0 | 2.0 |

[1] United Nations "medium" variant assumption, provisional, 1974.

in growth rates will be seen to have an important bearing on the food problem of the future.

The alternative "low" and "high" population variants, which embody different assumptions regarding fertility rates, would at the world level provide annual growth rates of 1.8% and 2.1% respectively from 1970 to 1985. Over this fifteen-year span the differential impact of the various growth assumptions would therefore be rather marginal. For example, for the developing countries the "high" variant would indicate a total population of 3 695 million in 1985, that is, 1.8% greater than the 3 631 million implied by the "medium" variant. However, by 1990 the difference would have widened to 3.1%, and by the end of the century it would be 13%, according to the United Nations projections, giving considerably greater long-term importance to differences in population growth rates.

The assumptions relating to the growth of gross domestic product (GDP) take into account information on growth actually achieved late in the 1960s

[27] A full description of the methodology is given in Vol. II, Part I, of the cited publication (CCP 71/20, Rome, 1971).

[28] In the text and tables the year 1970 refers to the 1969-71 average.

TABLE 3-26. — GROSS DOMESTIC PRODUCT, 1970 AND ASSUMPTIONS FOR 1985 AND 1990

| | Actual GDP | Trend assumption | | | | | High assumption | |
|---|---|---|---|---|---|---|---|---|
| | | Projected GDP | | Compound rates of growth | | | Projected GDP | Compound rates of growth |
| | 1970 | 1985 | 1990 | 1960-70 | 1970-85 | 1970-90 | 1985 | 1970-85 |
| | *Thousand million U.S. dollars*[1] | | | .... *Percent per annum* .... | | | *Thousand million U.S. dollars*[1] | *Percent per annum* |
| DEVELOPED MARKET ECONOMIES | 2 112 | 4 058 | 5 100 | 5.0 | 4.5 | 4.5 | | |
| North America | 1 072 | 1 924 | 2 352 | 4.1 | 4.0 | 4.0 | | |
| Western Europe | 779 | 1 485 | 1 880 | 4.9 | 4.4 | 4.5 | | |
| Oceania | 41 | 87 | 116 | 5.1 | 5.2 | 5.3 | | |
| Others | 220 | 562 | 752 | 10.5 | 6.4 | 6.3 | | |
| EASTERN EUROPE AND U.S.S.R.[2] | 599 | 1 475 | 2 012 | 6.5 | 6.2 | 6.2 | | |
| *Total developed countries* | 2 711 | 5 533 | 7 112 | 5.3 | 4.9 | 4.9 | | |
| DEVELOPING MARKET ECONOMIES | 388 | 974 | 1 352 | 5.2 | 6.3 | 6.4 | 1 087 | 7.1 |
| (excluding oil exporters) | (318) | (721) | (970) | (5.1) | (5.6) | (5.7) | (816) | 6.5 |
| Africa | 44 | 104 | 142 | 4.0 | 5.9 | 6.0 | 114 | 6.6 |
| Latin America | 152 | 372 | 510 | 5.5 | 6.1 | 6.2 | 416 | 6.9 |
| Near East | 55 | 206 | 314 | 7.0 | 9.3 | 9.1 | 220 | 9.7 |
| Far East | 137 | 292 | 386 | 4.8 | 5.2 | 5.3 | 337 | 6.2 |
| ASIAN CENTRALLY PLANNED ECONOMIES[2] | 130 | 234 | 285 | 2.8 | 4.0 | 4.0 | 258 | 4.7 |
| *Total developing countries* | 518 | 1 208 | 1 637 | 4.6 | 5.8 | 5.9 | 1 345 | 6.6 |
| **World** | 3 229 | 6 741 | 8 749 | 5.2 | 5.0 | 5.1 | | |

SOURCES: For 1960 and 1970, see footnote 29 below; for 1985 and 1990, FAO estimates.
[1] At 1970 prices. — [2] For centrally planned economies, based on net material products; see *FAO Agricultural commodity projections, 1970-1980*, Vol. II, p. xxiv-xxv.

and, where possible, during the first three years of the 1970s.[29] Two new features are that medium-term economic growth in the majority of developed countries is expected to be depressed by the effects of present energy difficulties and that high rates of growth will be enjoyed by petroleum-exporting countries. For developed market economies, for example, it is assumed that the growth of GDP in real terms will average 4.1% per year between 1970 and 1975, and rise to 4.6% in the last half of the 1970s and 4.7% in the 1980s compared with an average of 5% during the 1960s.

Table 3-26 summarizes actual growth in GDP between 1960 and 1970 and projected growth to 1985 and 1990. It shows a marked contrast in the projected 4.5% per year growth rate for the developed market economies and the 6.3% per year for the developing market economies. However, these differences disappear when allowance is made for population growth — the per caput annual growth rates from 1970 to 1985 being 3.5% for both groups of countries. Only eastern Europe and the U.S.S.R. have a significantly higher per caput growth rate of 5.2%.

Although the following analysis uses the above "trend" assumptions as a main bench mark, the sensitivity of food demand is also examined with respect to alternative assumptions concerning economic growth; one extreme variant, the assumption of no growth at all in per caput real incomes and expenditures, implies demand would grow at the same rates as population. Also, in view of the greater responsiveness of demand to changes in income at low levels of income and consumption, alternative GDP growth rates have been calculated for the majority of developing countries. The selected "high" rate of growth of per caput GDP averages 4.1% for developing countries and 4.3% for developing market

[29] For the years from 1960 to the present a number of sources have been utilized, including: OECD, National Accounts of OECD Countries; United Nations, National Accounts Statistics and Economic Commission for Africa; IBRD, World Bank "Atlas"; and United Nations, *Monthly Bulletin of Statistics*. The 1985 and 1990 figures are FAO estimates.

economies, against "trend" rates of 3.3% and 3.5% respectively.[30] The differences in patterns of food demand implied by this alternative serve as an indicator of the sensitivity of demand to variations in income growth around the "trend" rate in these countries.

For working purposes it is assumed that domestic and international prices of food commodities remain unchanged in relative terms during the projection period. Consequently, since the requirements expressed in terms of commodities do not allow for potential changes in food consumption patterns caused by changes in relative prices, they are, in this sense, not to be regarded as forecasts of actual future consumption.[31] However, if the substitution of one commodity for another were to occur because of changes in price relationships, the impact on total food demand expressed in calories or protein would be less marked.

It should also be noted that the projections reflect the average situation in a country or a group of countries. The results therefore do not take into account inequalities in income distribution and hence in effective demand within countries. For this reason, supplementary estimates are made of the additional food requirements which, on the basis of specified assumptions, might be necessary to meet severe nutritional needs that would persist despite improvements in average standards of living.

### Food production trends

It is far more difficult to assess the rate of growth of food production than that of food demand. The range of potential outcomes is much wider, owing to the possible changes in agricultural technology, in farm structure, and in quantity and quality of inputs and services available to farmers, in price policies and guarantees and in international markets. Taking into account these and many other significant factors would involve introducing an unjustifiable amount of subjective judgement.

Consequently, some other approach must be sought, at least to form an initial picture. Probably the approach which involves the least subjectivity is to assume that in the coming fifteen years technological innovations in farming will continue at about the same rate as in the past and that there will be no major policy changes on the part of governments. What policy changes might be desirable was the main theme of the United Nations World Food Conference (see p. 43).

If this approach is adopted, a trend of growth must be extrapolated from some past period. The base period should be as representative as possible, although the choice inevitably includes an element of personal judgement, and a slight difference in base period can produce a significantly different projected trend rate of growth. A number of alternatives were carefully considered before settling on the base period 1961-73, which was selected for several reasons. As for the starting date, any earlier span of years would have given a period weighted too heavily by conditions of the past; a later initial date would not have given a long enough time span for calculating trends and might have been too heavily weighted by the very recent past. As for the choice of terminal year for the base period, both 1970 and 1973 were considered, but since in a purely statistical sense the 1971 and 1972 seasons were not untypically bad and fell, rather, within the to-be-expected limits of fluctuations, it seemed preferable to select 1973, which provided a longer base. Thus, unless otherwise stated, all production extrapolations are derived from the 1961-73 trends. It must be repeated that no base period is ever fully representative: the one used here contains four bad seasons (1965, 1966, 1971 and 1972) out of twelve and therefore the production trends may be somewhat conservative insofar as climatic influences are concerned.

For extrapolation of total food production, exponential growth rates have been used. These rates (constant yearly percentage growth) give results necessarily higher than those derived from linear trends (constant annual growth in volume).[32] For instance, the extrapolation of world food production (including feed) gives a 2.7% exponential growth rate as compared with 2.1% when based on linear trends. If the extrapolations were based on the trend over the period 1961 to 1970, rather than to 1973, the exponential growth of production would be two points higher: 3% in place of 2.8% for developed countries and 2.8% instead of 2.6% for developing countries.

Extrapolations were made of (*a*) the indices of total food and feed production for sixty-four countries that account for 85% of the world population and (*b*) the quantities of production of selected commodities or groups of commodities for countries which together account for the great bulk of world production; also, estimates were added for the aggregate production of countries not covered individually. The mathematical extrapolations for major

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[30] The high-income assumption for 1985 refers to the maximum growth rate that is compatible with the assumptions made for the Second United Nations Development Decade.

[31] Some substitution effects arising from shifts in consumer preferences (e.g., from butter to vegetable oils in developed countries) are introduced into the model through a trend factor. See *FAO Agricultural commodity projections, 1970-1980*, Vol. II, CCP 71/20, Rome, 1971.

[32] A weighted linear trend was so close to the unweighted linear trend that it has not been presented separately.

commodities were reviewed and adjusted in some instances, where the rates of growth appeared to be unusually high or low when considered in long-term perspective. While the trend rate of growth was derived from the period 1961-73, in order to have a common time base for projections of both demand and supply, the starting point for the production extrapolations is the 1969-71 average.

## Possibilities for increasing production

More food will need to be produced in the developing countries of the world if the combined goals of better nutrition and economic development are to be achieved. If the past trends of production in these countries were to continue, these goals would not be attained and many nations would face a critical situation. The aims of this section are to point out the potentialities for "closing the food gap" and to present some of the main directions of the needed programmes. It is equally important to ensure that increased food production also leads to improved consumption and nutrition of the vast numbers of undernourished people in developing countries. Emphasis on increased food production alone, without due consideration of its distribution among different socioeconomic groups, obviously does not tackle the serious problem of poverty and undernutrition. Both national production policies and food and nutrition policies need to include specific programmes for achieving nutritional objectives. Thus, an important aim of production policies and programmes could be that of encouraging and enabling small farmers, through appropriate institutions and incentives, to participate actively in the process of increasing food production so that with higher productivity and incomes their food consumption levels would improve. Furthermore, while the process of increasing food production may create additional employment opportunities for rural workers, special nutrition campaigns will still be necessary, particularly to reach the vulnerable groups in both urban and rural areas.

To date, the most detailed and comprchensive assessment of the developing world's food production potential has been presented in FAO's Indicative World Plan for Agricultural Development (IWP). The fact that the actual production performance in the developing countries is not meeting the IWP targets for 1975 and 1985 does not mean that the latter were unrealistic. From a critical reexamination of the IWP material it emerges that the targets are indeed attainable provided that the following conditions can be satisfied: (1) governments must succeed in mobilizing and allocating adequate financial and other resources; (2) governments must accelerate the institutional changes which are essential to support rapid agricultural development, particularly training programmes to overcome the shortage of technical and administrative personnel at all levels and programmes to reach larger numbers of small farmers and landless labourers; (3) political stability must be sufficient to permit orderly progress; and (4) a satisfactory volume of international assistance and support must be forthcoming. However, the enormous effort, commitment, and investment required can only be realized through crash programmes at enormous costs, which cannot be sustained indefinitely; it is therefore necessary to adopt simultaneously measures to reduce population growth.[33]

### Agricultural inputs

The major potential for future increases in production lies in increased yields per unit of land. In a number of large countries where population pressure has already brought nearly all usable land under production, this approach indeed offers the only potential for substantial production increases.

Whereas the achievement of higher crop yields depends on a combination of many factors, attention is focused here on four components of the package which will be needed to support the drive for higher yields — namely, improved seeds, fertilizers, plant protection and farm credit. In addition, in many areas farmers need more irrigation water — a requisite which is to be considered separately below. The use of improved seeds is the fundamental element of the technological package. Fertilizers and pesticides are at present in the forefront of discussion concerning the future direction of agricultural technology owing to the energy crisis. Agricultural credit especially directed to assisting small farmers is required if they are to be able to purchase sufficient quantities of the above and other inputs.

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[33] The coordination of population and socioeconomic development policies is directly related to FAO's work programme, particularly with regard to population aspects of research, training and advisory work on agricultural development and planning; orientatio:. of rural development programmes toward population objectives; inclusion of population education and communication in agricultural education, training, extension and related programmes; collection of population information through agricultural censuses and food consumption and related household surveys; and projections of agricultural population and labour force.

In recent years some of the success stories of high-yielding varieties (HYVs) of wheat, rice and maize have generated hopes which have been dampened by the realization that most of the new HYVs flourish in rather limited ecological areas and by the lack of breakthroughs in a number of other important crops. Many of the factors which were responsible for the less than full success of already developed high-yielding varieties have been identified, and the problems are on the way to being overcome. Moreover, for a number of important crops such as oilseeds, tubers and pulses, all of which have a crucial role in nutrition, as yet too little breeding work has been accomplished. Yet, the world-level organization of plant breeding, as it has evolved over the past two decades through international centres working in close cooperation with national research stations, has proved its worth. With more resources in men and money the existing centres, some very recently established, together with new ones that may be needed could help bring about dramatic yield improvements over much wider areas of the developing world. Varietal improvement also offers opportunities for increasing the quality of cereals, especially the quantity and composition of their protein content. Recent breakthroughs (e.g., maize with a high lysine content) indicate the scope for increasing protein availabilities for both human and animal consumption.

One of the main bottlenecks to the rapid and sustained spread of HYVs has been the lack of a commercial supply of the improved seeds. Most developing countries do not yet have a seed industry which could support a major drive for higher productivity, or they produce seed for a very small number of crops. This situation has to be urgently remedied by introducing seed-multiplication programmes.

In the short run, chemical fertilizers constitute the most important single weapon in the food production battle. The per hectare use of these nutrients in most developing countries is at present only one quarter, often less than one tenth, of what it is in most developed countries; it is especially low in Africa. Nevertheless, fertilizer consumption in developing countries has been doubling every five years and is expected to continue growing at 11% per year over the next decade. This rate of increase would accelerate if supplies were to become available at reasonable prices.

However, fertilizer prices have trebled and quadrupled between 1971 and 1974, and at the moment there is a worldwide physical shortage. Developing countries depend on imports from developed countries for at least half their requirements, and the difficulties of the current supply situation prompted governments to agree, at the FAO Council's July 1974 session, to the setting up of an International Fertilizer Supply Scheme, including a fertilizer pool and other arrangements to assist developing countries in covering their minimum requirements. In the longer run, massive expansion of fertilizer production capacity in developing countries is necessary, so that levels of fertilizer use will become high enough to take full advantage of HYVs and the planned extensions of irrigation.

Even so, because fertilizer prices in relation to other prices are likely to be higher than in the past, it may become important to examine how far fertilizer requirements per hectare can be reduced through improved methods of formulation and application, such as sulphur-coated urea and other slow-release mechanisms. The use of nitrogenase inhibitors is a further possibility; nor should nitrogen-fixing legumes and a more efficient use of organic manure supplies be overlooked.

Analogous considerations apply to the use of other agricultural chemicals in, for example, plant protection and weed control. While a much wider use of these products could contribute substantially to increasing per hectare yields, it is also true that they could be used with greater discrimination, thus effecting economies in the quantities required. For instance, certain pests might be combated by other means such as the sterile male techniques, and much weed control could be accomplished by hand, especially in the many areas where farm labour is underemployed. Yet, the major thrust must be toward familiarizing a larger proportion of the farmers of developing countries with plant protection practices and by this means significantly reducing the widespread losses of crops which occur every year because of pests, diseases and weeds.

The use of quality seed, of fertilizers and of plant protection materials on a sufficient scale is precluded in developing countries because most farmers do not have enough money to buy these inputs. In southern Asia the average small farmer spends only US$6 per hectare per year, when he should be spending $20 to $80 according to crop. If modern technology is to be applied, farmers, especially small farmers, must have credit — not the extremely expensive facilities provided by moneylenders, but institutional credit, delivered and supervised in many cases through farmers' own organizations. The availability of credit on reasonable terms will also enable farmers to level their land and thus make better use of irrigation water, as well as to purchase pumps and other mechanical equipment and tools. A limiting factor at present is the insufficiency of financial resources in developing countries. The World Bank and other bodies have already initiated programmes to support the credit institutions in developing countries, but such activity could be greatly expanded.

The scope for increasing yields through the various agricultural inputs is enormous. Of course, differences in performances depend not solely upon the use of material inputs but also upon levels of farm management and services supporting agriculture, as well as on climate and other factors; yet, closing the yield gap by only half would make a major contribution to the developing countries' food production.

### Water and land resources

Another important agricultural input is water. At present only 93 million hectares of the 740 million hectares of arable land in developing countries are under irrigation, and of this irrigated area a large proportion is in the Far East. Almost half of it requires renovation and improvement. Furthermore, much of the water available in irrigation schemes is underutilized for lack of attention to land levelling, field distribution, drainage systems and regulatory services. Improved drainage can check and largely eliminate the degradation of irrigated land through salinity. Because the water is being ineffectively used, crop yields are much less than they could be.

In the short run the most profitable returns can be obtained by devoting money to the improvement of existing schemes. Beyond this, in many countries new sources of water can be tapped most cheaply by utilizing groundwater supplies. The construction of large dams, which are generally expensive, requires thorough preliminary investigation of costs and benefits. In the long run the mobilization of new water resources should allow the irrigated land of developing countries to be increased by some 50%, but because this will be costly, a better knowledge of the resources must first be secured. Such knowledge combined with information on land capability and climate could be the core of a world survey of irrigation potentials.

As for the mobilization of additional land for food production, while in some developing countries the practical ceiling on land development may have been reached, in a large part of the developing world there remain land resources which are either unutilized or utilized in productive processes giving very low returns. The largest "land reserves" in the developing world are in Latin America, Africa and in parts of southeast Asia. All of these regions suffer from specific limitations, often associated with high rainfall and high temperatures, but since modern technology is increasingly able to cope with such problems, some very major development programmes for putting additional land under cultivation may be expected in these regions.

Many of the other tropical high-rainfall areas are difficult of access and expensive to exploit, which points to a need for selective and step-by-step development of their potential. Land capability surveys using remote sensing techniques would indicate where to begin. Opening-up programmes would have to include new soil management policies to cope with many of the still only partially solved problems of high leaching, high soil temperatures, high loss of organic matter and the like. Altogether it should be possible to increase the arable area of developing regions from the 737 million hectares of 1970 to nearly 900 million hectares by 1985.

The potential contributions of water and new lands to the expansion of food production are no doubt very great. The influence of better use and larger supplies of water on crop yields is hard to quantify because of the subsequent opportunities for wider adoption of HYVs and more intensive application of fertilizers; but it is an essential component of the major increase in per hectare yields which the developing countries should be able to achieve. The proposed 20% expansion of arable area should add more than 20% to agricultural output because the new areas should, on the average, be better farmed than the existing arable lands. The magnitude of the task can be understood by reference to the likely investment requirements. For the three tasks of renovating existing irrigated areas, developing new irrigation schemes and bringing new land under cultivation the combined cost is estimated at close to US$90 000 million, of which about one third might be the foreign exchange component. Not all of this could be spent by 1985, as the more ambitious land and water schemes will take time to prepare and execute, but the annual rate of investment (national and international combined) will certainly need to be stepped up to the range of $8 000-8 500 million if these potentials are to be exploited fast enough to meet the rising demand for food.

The development and preservation of the natural resources on which agricultural production is based are of increasing concern throughout the world today. More means will have to be allocated to soil and water conservation in the future, not only because of their role in preventing resource degradation, but also because of their contribution to increases in production, especially in marginal areas where the other weapons of modern agricultural technology are often not so relevant, as it is these areas, including the Sahelian zone, which contain the highest proportion of poverty-stricken people and the least developed economies.

### Livestock

The livestock sector merits particular attention in developing countries because the projections show

effective demand for livestock products rising by over 4.4% per annum into the 1980s. Without doubt, the potentialities in this sector are enormous, given the very low levels of efficiency which characterize animal husbandry in most of these countries, apart from a few outstanding exceptions.

Three overall considerations apply to all livestock production systems, whether they rely mainly on roughage or on grain. The first consideration is the need to improve health conditions through improved veterinary services, advice to farmers, and availability of required inputs. An increasing share of such sanitary measures will have to extend across national boundaries, as the benefits from continent-wide control of major epidemics are high.

The second general consideration is the genetic improvement of all animal stocks. Here, just as in crop production, the direction of policy is to provide animals with a high genetic capacity and then to generate the health conditions, managerial skills and feed base which will permit full use of the high capacity. In fact, the success of genetic improvement largely depends on the improvements in the feed base which can be achieved.

Thirdly, improvement in the feed base will have to relate to all three of its major components in developing countries. The first of these is natural grassland, which provides a large share of the sustenance of both bovine and sheep and goat populations. The grasslands of the developing world are perhaps, at once, the most *over*utilized and *under*utilized resources in agriculture. Overstocking causes further degradation of the pastures, while there exist far-reaching unused possibilities for raising the productivity of pastures through man-made changes in their composition — for instance, but not exclusively, in the semiarid areas. Also, a large part of the feed from these pastures goes to animals which are very poor converters and kept under traditional low-efficiency systems of husbandry.

Again, as with fertilizers, it is the developing countries which are and will continue to be facing the greatest difficulties in assuring supplies of concentrates, because most of them do not have enough domestic cereal production to spare much of it for livestock, and because most of the other components of concentrates have to be imported.

One major potential area for expansion of cattle production may be the high-rainfall belt of tropical Africa, where the tsetse fly and other causes of disease have kept large areas out of production. It is estimated that if trypanosomiasis were brought under control, the pasture of the savanna area infested by the tsetse fly would support a supplementary cattle population of about 120 million head, which could produce 1.5 million tons of meat, representing a value of at least US$750 million; a substantial part of this land would also become available for crop production. In order to reach this goal an important financial effort would have to be made by all interested organizations: a twenty-year campaign costing something of the order of US$2 000-2 500 million, but only about US$30 million a year in the first five years.

To sum up, priority needs to be given to improving the production capacity of livestock herds, with less emphasis on increasing the number of animals. Sociological customs and practices often entail the maintenance of large numbers of unproductive animals since, in such cases, numbers rather than quality are significant. In not a few instances where unproductive animals are pressing upon too meagre feed supplies, the first step should be to decrease numbers rather than increase them. Finally, much more of the world's unused land could be mobilized for raising cattle and sheep, and much of the world's livestock could become far more productive through breeding, nutrition and health programmes.

The second major feed component which supports livestock production and needs substantial improvement the roughage obtained from crop production. For the future it will be important that a growing share of these be cultivated fodders with the aim of providing animals with a much higher-quality roughage for high levels of productivity. The efforts toward increased fodder production will have to be linked with the development of lands under irrigation or under high-rainfall conditions, where they can be part of intensive systems of land use; also in lower-rainfall areas they can replace fallows in cereal rotations. Research, technical advice and availability of relevant inputs need to be the main components of such a fodder development programme, often requiring the transfer of technologies from distant parts of the world. Supplies can also be augmented by mobilizing the by-products of the food industries, many of which are wasted, such as molasses or wastes from the fruit-growing industry or from other industrial crops. Even ligneous products such as husks, straw and bagasse may become useful feeds after treatment by chemicals, heat or microbes.

The third important component of the feed base consists of grains and other concentrates, and it is in this area where the most dynamic changes are taking place. While the shortage of feedgrains and oilseed meal and cake may be temporary, that of concentrates such as fish meal may not. If this proves to be so, added stimulus will be given to the research for other nonagricultural sources of protein for incorporating into animal feeds. Examples are urea (a morganic nitrogenous product converted into protein through the action of the ruminal microbial flora), which is already in commercial production in

a number of countries, and single-cell protein derived from petroleum, for which commercial plants are under construction in at least two European countries.

## Fisheries

Measures aimed at increasing the contribution of fish to world food supplies cover a wide range of activities concerning management and development. The IWP estimated that the annual potential yield of conventional marine species of fish, crustaceans and molluscs was about 118 million tons, and subsequent assessments have confirmed this figure of well over 100 million tons. At the time the estimate was made (1965) the world catch of such species was some 43 million tons, or 36% of the potential yield, but by 1972 catches had increased to 50% of the potential. Although this implies that the world catch of these species can still be approximately doubled, this is not true for all species — an increasing number of which are becoming fully or excessively exploited, thus diminishing the potential. Moreover, recent years have seen the fairly dramatic collapse of a number of major fisheries, due at least in part to excessive fishing, and it is clear that management action is needed if many stocks are to continue to provide the basis for commercially viable fisheries.

Greater utilization of those areas and stocks of conventional species of fish which have not yet been heavily exploited requires action in the fields of marketing and distribution, as well as the introduction of modern fishing techniques to traditional fishing communities. Some stocks, such as those within the Indonesian archipelago, have remained lightly exploited, as they are too scattered and mixed to be of interest to large long-range vessels, but cannot as yet be harvested by the traditional local vessels. Other stocks, such as those in the northwest Indian Ocean or the southwest Atlantic, have so far not attracted much attention because of their distance from the main consuming centres, and because, for this reason or others (e.g., the burden of licence fees for fishing within exclusive fishery zones), the cost of harvesting has deterred the long-range fleets of noncoastal states. For whatever reason stocks have remained unexploited, they will in many cases also be unfamiliar to consumers and will thus require processing into familiar products. For example, squid and other cephalopods, highly prized and heavily fished in some areas, but little regarded and almost unexploited in others, could be caught in several times the present numbers if appropriate market outlets were found.

A possible means of increasing the supply of fish for direct human consumption lies in the diversion to the food-fish market of those species now used predominantly for fish meal. Although there is already evidence of this trend with such species as herring and Alaska pollack, care must be taken to ensure that steps in this direction do not have a disruptive effect on markets, as even now large quantities of certain species are being converted to meal in relation to the existing market for these species for direct human consumption.

Supplies could also be increased by reducing the very high wastage. Steps could be taken to retain for marketing much of the "trash" fish at present thrown back into the sea (e.g., the finfish taken by shrimp trawlers) and to prevent the heavy losses from bad handling, preservation and storage after landing. It is estimated that the quantities of fish lost in these various ways amount to several million tons annually.

In the longer run it may be possible to augment world food supplies by harvesting less familiar types of marine animals, such as krill in the Antarctic and lantern fish in the warmer oceanic waters. The harvesting and marketing of these animals on a commercial scale present formidable technical problems, but if these were overcome, the potential food supply from the world's oceans could be increased several times. Perhaps nearest to realization is the commercial exploitation of krill, the food of Antarctic whales, which has recently been marketed in the form of fish paste in the U.S.S.R., although it has so far remained unutilized elsewhere.

For the foreseeable future the bulk of world fishery, especially in developing countries, seems likely to remain based on the more conventional types of fish. Maximum utilization of these resources, however, implies management measures to maintain yields of the more heavily fished species. International agreement in these matters remains difficult to obtain. Furthermore, it seems unlikely that the Law of the Sea Conference, whatever its eventual outcome, will provide a solution to these problems, since fisheries under national jurisdiction have not been conspicuously better managed than international fisheries; nevertheless, such rational management is essential, especially since by 1985 most of the conventional types of fish will be exploited to the limit.

As the possibilities of increasing supplies from wild stocks of fish diminish, attention is being increasingly directed to the cultivation of fish. Present production from aquaculture of fish, crustaceans and molluscs amounts to some 6 million tons, or roughly 10% of world fish production. In the immediate future the best prospects for increased output lie in the tropical areas of Africa and Asia, particularly the latter, where aquacultural practice is well established and the species cultivated are consumed by the lower-income groups. Further increases in production can be expected in the long

run from the incorporation of the results from research into commercial practice and the widespread introduction of methods now on the threshold of commercial adoption, such as culture in cages in open waters. A most important requirement for the development of aquaculture (as well as the production of natural stocks in fresh water) is water of appropriate quality, and attention will have to be paid to the potentially harmful effects on fisheries of flood control, waste disposal and other conflicting uses of water, including irrigation. What level of output might be reached in ten or twenty years is difficult to forecast, but clearly, given the necessary economic incentives accompanied by appropriate investment decisions, the technical means exist to meet prospective levels of demand.

### Post-harvest losses

Food supplies could be augmented not only by reducing waste in fisheries (and likewise, to some degree, in livestock products) but also to an important extent by trying to minimize crop losses. A number of surveys have shown post-harvest losses of foodgrains of 20%, sometimes even reaching 40%, depending on crop and country. Losses occur all along the line through poor management in harvesting, insect, rodent, and fungus damage in storage, poor-quality sacks and other containers, inexperienced handling in transport, inefficient or poorly maintained milling equipment and faulty distribution of milled products. The use of extremely low extraction rates to meet the presumed tastes of urban consumers means less food for humans and more feed for animals, as well as a less nutritive end product. Avoidable losses also occur in the handling and processing of other crops, e.g., oilseeds, since in many small factories an unnecessarily high proportion of oil is left in the by-products or, alternatively, a part of the protein contained in the oilseed meal could be incorporated into foods suitable for human consumption. For perishable fruit and vegetables, wastage in distribution quite normally reaches 30 to 40%.

These examples, of which there are many more, sufficiently indicate the scope for increasing food supplies through reduction of losses; but they also suggest that no single programme would have a significant impact on the overall problem. Because the problems are various, their solution must be sought through improvements in several directions. Among the most important are investment in modern storage for grains and other crops both in villages and in larger centres, better packaging materials and transport facilities, modifications in the milling practices for cereals and oilseeds, and, more generally, efforts to modernize the organization of wholesale and retail distribution.

### Incentives and services

Production potentials can be more fully realized only if the producers are operating under conditions of adequate incentives and supporting services. For instance, the price policies for farm products need to be formulated and implemented in such a way as to fix prices at incentive levels and to ensure that such prices are actually received by farmers. Incentive level also implies that prices of farm products maintain a realistic relation to the prices of farm inputs. It is sometimes supposed that farm-gate prices cannot be maintained at adequate levels without excessively raising food prices to consumers, the majority of whom in the developing countries lack purchasing power. But this dilemma can be alleviated by investment in the modernization of storage, transport and distribution, thereby reducing the costs added to the farm-gate prices before the produce reaches the consumers' shopping baskets; food subsidies are also helpful in this connection.

In the areas of advisory services and education, there exist large potentials for improving communications between the experts and the producers — communications which today are almost everywhere inadequate and in some extreme cases nonexistent. A number of imaginative new techniques of communication are being tried, and some of them may merit widespread adoption. The major weakness and failure of most extension and other field services are their inability to reach in any meaningful way the vast numbers of small farmers and agricultural labourers who, together with their families, form the hard core of the present poverty and nutrition problems. It often happens, in fact, that the resources channelled into agricultural programmes end up in the hands of the larger-scale, wealthier farmers and landowners, whereas policies and programmes that directly benefit the smaller-scale poorer farmers and agricultural workers are needed.

Most of the possibilities sketched in the preceding paragraphs assume a continuation and, indeed, an intensification of agricultural research. For example, it was the many years of patient research by plant breeders and their colleagues in related disciplines which produced HYVs of wheat, rice and maize, and it is on them that the world relies for further HYVs of these crops adapted to a wider range of ecologies, for HYVs of other important crops and for possible "man-made" new crops, such as triticale. Research will need to be expanded to solve the problems of cultivating tropical soils, so as to improve the performance of ruminants in tropical cli-

mates and increase supplies of grass, roughage and other feeds. Possibly the fruits of conventional research will be sufficient to sustain the expansion of agricultural production until around 1985, but after that, as world population continues to increase, more fundamental innovations will be needed: new "genetic engineering" and propagation techniques, widespread use of single-cell protein as animal feed, improvement of the photosynthetic efficiency of plants and basic aspects of radiation technology. As has often been said, the sum total of today's known technology is probably less than one tenth of that which will be available in the year 2000.

### Mobilizing the rural population

In the agricultural sector, human potential is just as important as the natural resources potential, as farm producers are, in essence, the world's most precious resource. The first precondition for any programmes aimed at resolving the problems of food production is that they reach the farm producers themselves. Without the willing and active collaboration and more effective mobilization of farmers no progress can be made. There have been and still are many attempts, which have met with varying degrees of success, to involve rural people in the process of development. As yet, there is no clear-cut solution, nor is it likely that any single approach will be relevant to all developing countries because of the diversity of their social structures.

Nevertheless, certain features which will probably characterize the rural mobilization process in many countries can be distinguished. For example, action to democratize landholding structures, including agrarian reform, will in many cases constitute a necessary component, but such action may be counterproductive unless it is followed by efforts to organize small-scale farmers into viable institutions and to give them access to technical and financial inputs. The problems of the very small farmers, which constitute the nucleus of the developing countries' food production problem, cannot be resolved until they group themselves into larger units for at least some of their activities. An acceleration of the transfer of modern agricultural technology cannot come about simply by multiplying the number of burcaucrats in rural areas; instead, rural people need to be organized to do things for themselves — in improving their farms, in creating supplementary rural employment and in modernizing their villages — so that they voluntarily request advice rather than have it thrust upon them. Through these methods the rural communities are more likely to acquire both the desire and the capacity to accelerate the rate of growth of food production.

All in all, it can be concluded from the examples presented above that the insufficient growth rates of production, in developing market economy countries, extrapolated up to 1985, could be significantly accelerated by better exploitation of the existing physical and human resources. Some of the programmes to achieve this will have a long gestation period before they produce results; others could accomplish significant transformations well before 1985. Some will require large amounts of investment; others can be realized by setting up or improving appropriate institutions. The attack should begin simultaneously on many different fronts. What is certain is that man has the knowledge and the organizational ability to harness all these resources much more effectively than in the past.

## Major policy implications

The food crisis of the last three years has dramatically drawn attention to both the interdependence of production, trade, stocks and prices and the serious unpreparedness of the world as a whole to contend with the vagaries of the weather. From time to time adverse weather may strike large areas of the world in a single year, and when this occurs the governments of affected countries must turn abruptly to the world market with the hope of making up for their harvest shortfalls. But when many governments do this simultaneously, or when one government makes purchases on a very large scale, world stocks may quickly disappear. The current crisis has demonstrated that the reserves held by the nations of the world are no longer sufficient to meet such an eventuality. This actual and potential enlargement in the scope of world trade in foodgrains requires the evolution of a new system of exchange of data and information, more effective food reserve policies, flexible trading arrangements and harmonious adjustment policies.

The need for international action was voiced in 1973 by ECOSOC at its 54th Session and by the FAO Conference at its 17th Session. An International Undertaking for World Food Security, prepared by FAO and revised by an intergovernmental working

party in May 1974, was endorsed in principle by the FAO Council during its 63rd Session in July 1974. After final adoption by the FAO Council in November 1974, with the report of the FAO Committee on Commodity Problems and the views and recommendations of the United Nations World Food Conference having been taken into account, the final draft of the undertaking was formally submitted to individual governments, inviting their adherence. The central feature of this international undertaking is the adoption by individual countries of national stockpiling policies which will, in aggregate, maintain at least a minimum safe level of basic foodstocks — above all, cereals — for the world as a whole.

Sometimes, as has happened recently in the Sahelian zone and Ethiopia, adverse weather limited to particular countries or groups of countries causes food emergencies. In such circumstances the establishment in each country of national food reserves can help prevent acute shortages — especially since inadequate transport facilities for bringing needed supplies to affected areas often prove to be a major bottleneck. To deal with emergency needs which are too large to be covered by the national stocks of affected countries, some form of international emergency food reserve earmarked for such purposes appears to be required.

Another issue that needs to be examined concerns the future role of food aid and the ways of expanding it to meet part of the deficit of developing countries, a gap which commercially financed imports could not entirely fill. The usefulness of food aid has been demonstrated by its important contributions to development, nutrition and employment. But it could be undertaken in a much more meaningful way, provided it is accepted that food aid will continue to be, at least for some time to come, an essential element of world food security and international assistance for development. However, its effectiveness in yielding the desired results will be greatly enhanced if the concept of forward planning is agreed upon and if there is some assurance of continuity of food supplies at a minimum level, with the burden being shared between various countries on an equitable basis.

It is not only the possibility of severe fluctuations in food supplies and the dangers of periodic famines which necessitate action. In many developing countries, hunger and malnutrition are endemic among the lowest income groups, particularly in rural areas and, within these groups, especially among women and children. The longer-term solution of this problem lies in the elimination of poverty through higher and better-distributed incomes. However, this will take time, and not all governments may be able to adopt the measures required to achieve this objective within a reasonably short period. In the meantime there are many opportunities for direct short-term action to ameliorate the nutritional condition of children and other vulnerable groups. A reorientation of government programmes in this field and the inclusion of adequate food and nutritional objectives in national development plans would certainly help diminish hunger and malnutrition.

The most fundamental conclusion arising from the assessment is however the need for the developing countries to accelerate their food production sufficiently to meet the rising requirements of rapidly growing populations. In the preceding decade, despite successful efforts in several countries to increase agricultural productivity, the food deficits of developing countries as a whole have given rise to larger import requirements. The analysis has also shown that if recent trends of demand and supply were to continue, the food deficit of most developing countries would increase further. A staggeringly large volume of cereal and other food imports would be needed by 1985 to meet these deficits, and there is no likelihood of transfers on such a scale being financed by the international community. Thus the only viable solution in the long run will be increased food production within the developing countries themselves.

One of the most important elements in any programme to increase food production and to sustain the momentum of the "green revolution" is the adequate availability of crucial inputs, especially fertilizers. The present shortages and high prices of fertilizers have clouded the prospects of increasing food production at a sufficiently fast rate in many developing countries. An important policy issue which needs urgent consideration is how to deal with the short-term crisis in supplies.

Another conclusion which clearly emerges is that the developing countries do have the potential to produce much larger quantities of food. In many parts of the world there are large, untapped land and water resources that can be mobilized in order to expand the volume of food production and close the potential food gap in developing countries. To exploit these resources will however require massive investment, running into thousands of millions of dollars per annum for the developing countries as a whole, to create access to cultivable lands in remote areas, to harness rivers and underground water for irrigation, to finance research in plant breeding, soil management, plant protection, animal husbandry and many other technical problems of tropical and subtropical farming, to modernize marketing, to reduce waste and to build up the working capital and institutional capacity for a greatly expanded flow of credit, particularly to the small farmer.

But increased food production by itself may not lead to corresponding increases in consumption, par-

ticularly of the lowest income groups, unless investment programmes are complemented by programmes to provide farmers with new techniques and other inputs together with programmes for employment and integrated development of rural areas. Alongside the classical and often costly approaches of extension, new techniques will have to be more widely tried for mobilizing the energy and enterprise of the millions of small-scale food producers in socially meaningful institutions.

While these efforts to increase food production by increasing investment in agriculture and improving rural institutions and structures are being initiated, the problems of meeting a fluctuating demand for food imports from developed and developing countries will have to be tackled.

How can food-exporting countries, developing as well as developed, meet these demands on their agricultural resources? How can the transfer every year of a volume of food imports far exceeding the developing countries' capacity to pay be financed? These issues might have to be dealt with from several angles simultaneously: price stabilization schemes, removal of trade barriers, special preferences extended to agricultural products, more flexible commodity agreements and financial consortia for especially weak countries.

These interrelated aspects of production, trade, stocks and prices are of interest to all countries, developed and developing. Consumers in every country want some guarantee of supplies at reasonable prices, while producers need market outlets and prices which will cover their production costs and protect their incomes. Fluctuations in supplies and prices cannot be eliminated altogether, and attempts to totally prevent them through rigid international arrangements are not likely to succeed. At the same time the security of world food supplies cannot be left entirely to haphazard market forces. There is need, rather, for some broad parameters of objectives, policies and approaches within which market forces can operate, but which at the same time can effectively deal with situations of extreme fluctuations in prices and supplies through flexible arrangements.

The above represents only a few of the policy implications which emerge from the foregoing analysis of the world food crisis. They are sufficient to indicate two main points. First, it is entirely within man's capacity to solve the food problem in both its short- and its long-term aspects; the tools for the job are available, even if some of them need improving. Secondly, however, a prodigious effort for the mobilization of resources — physical, financial and human — is called for, based on the realization that human society is indeed confronting in food and population two of the most crucial problems that have been of fundamental importance throughout its history.

TABLE 3-A. — RATES OF GROWTH OF POPULATION, FOOD PRODUCTION AND DOMESTIC DEMAND, SHOWING PER CAPUT SUPPLIES OF ENERGY AND PROTEIN, FOR INDIVIDUAL COUNTRIES

| | Annual rates of growth | | | Per caput daily | | |
|---|---|---|---|---|---|---|
| | Population | Food production [1] | Domestic demand for food [2,3] | Dietary energy supply [3,4] | | Protein supply [3,4] |
| | ..... *Percent* [5] ..... | | | *Kilocalories* | *Percent of requirement* [6] | *Grams* |
| **DEVELOPED COUNTRIES** | | | | | | |
| Albania | 2.8 | 3.6 | 4.6 | 2 390 | 99 | 74 |
| Australia | 2.1 | 3.7 | 2.4 | 3 280 | 123 | 108 |
| Austria | 0.4 | 2.5 | 1.1 | 3 310 | 126 | 90 |
| Belgium-Luxembourg | 0.6 | 2.1 | 1.2 | 3 380 | 128 | 95 |
| Bulgaria | 0.8 | 4.3 | 2.8 | 3 290 | 132 | 100 |
| Canada | 2.2 | 2.2 | 2.5 | 3 180 | 129 | 101 |
| Czechoslovakia | 0.9 | 1.8 | 1.9 | 3 180 | 129 | 94 |
| Denmark | 0.7 | 1.6 | 1.3 | 3 240 | 120 | 93 |
| Finland | 0.8 | 2.4 | 1.1 | 3 050 | 113 | 93 |
| France | 1.0 | 3.0 | 2.0 | 3 210 | 127 | 105 |
| German Democratic Republic | —0.3 | 1.6 | 0.8 | 3 290 | 126 | 87 |
| Germany, Federal Republic of | 1.0 | 2.5 | 1.9 | 3 220 | 121 | 89 |
| Greece | 0.8 | 4.0 | 2.3 | 3 190 | 128 | 113 |
| Hungary | 0.5 | 3.0 | 1.9 | 3 280 | 125 | 100 |
| Ireland | 0.1 | 1.7 | 0.3 | 3 410 | 136 | 103 |
| Israel | 3.4 | 7.7 | 4.9 | 2 960 | 115 | 93 |
| Italy | 0.7 | 2.9 | 2.3 | 3 180 | 126 | 100 |
| Japan | 1.1 | 4.3 | 3.7 | 2 510 | 107 | 79 |
| Malta | 0.1 | 3.2 | 1.2 | 2 820 | 114 | 89 |
| Netherlands | 1.3 | 3.0 | 1.7 | 3 320 | 123 | 87 |
| New Zealand | 2.1 | 2.7 | 2.0 | 3 200 | 121 | 109 |
| Norway | 0.9 | 1.3 | 1.3 | 2 960 | 110 | 90 |
| Poland | 1.4 | 3.0 | 2.3 | 3 280 | 125 | 101 |
| Portugal | 0.6 | 1.7 | 2.3 | 2 900 | 118 | 85 |
| Romania | 1.1 | 3.2 | 2.7 | 3 140 | 118 | 90 |
| South Africa | 2.4 | 3.9 | 3.2 | 2 740 | 112 | 78 |
| Spain | 0.9 | 3.4 | 3.0 | 2 600 | 106 | 81 |
| Sweden | 0.7 | 0.9 | 1.0 | 2 810 | 104 | 86 |
| Switzerland | 1.5 | 1.7 | 1.9 | 3 190 | 119 | 91 |
| U.S.S.R. | 1.5 | 3.9 | 3.0 | 3 280 | 131 | 101 |
| United Kingdom | 0.5 | 2.8 | 0.7 | 3 190 | 126 | 92 |
| United States | 1.5 | 2.0 | 1.6 | 3 330 | 126 | 106 |
| Yugoslavia | 1.2 | 4.5 | 2.4 | 3 190 | 125 | 94 |
| **DEVELOPING COUNTRIES** | | | | | | |
| Afghanistan | 1.9 | 1.7 | 2.2 | 1 970 | 81 | 58 |
| Algeria | 2.4 | —0.8 | 3.4 | 1 730 | 72 | 46 |
| Angola | 1.8 | 2.7 | 3.0 | 2 000 | 85 | 42 |
| Argentina | 1.7 | 1.8 | 2.0 | 3 060 | 115 | 100 |
| Bangladesh | [7] 3.5 | [7] 1.6 | ... | 1 840 | 80 | 40 |
| Barbados | 0.6 | —0.1 | ... | ... | ... | ... |
| Bolivia | 2.3 | 5.0 | 2.7 | 1 900 | 79 | 46 |
| Botswana | 2.0 | 2.3 | ... | 2 040 | 87 | 65 |
| Brazil | 3.0 | 4.4 | 4.0 | 2 620 | 110 | 65 |
| Burma | 2.2 | 2.4 | 3.3 | 2 210 | 102 | 50 |
| Burundi | 2.0 | 2.4 | 2.4 | 2 040 | 88 | 62 |
| Cameroon | 1.8 | 3.3 | 2.5 | 2 410 | 104 | 64 |
| Central African Republic | 1.8 | 2.8 | 1.1 | 2 200 | 98 | 49 |
| Chad | 2.1 | 0.9 | 1.2 | 2 110 | 89 | 75 |
| Chile | 2.5 | 2.2 | 3.3 | 2 670 | 109 | 77 |
| China | 1.7 | 2.3 | ... | 2 170 | 91 | 60 |
| Colombia | 3.3 | 3.1 | 3.9 | 2 200 | 95 | 51 |
| Congo | 1.9 | 2.2 | 3.7 | 2 260 | 102 | 44 |
| Costa Rica | 3.8 | 5.4 | 4.8 | 2 610 | 116 | 66 |
| Cuba | 2.2 | 1.1 | 2.0 | 2 700 | 117 | 63 |
| Cyprus | 1.1 | 5.4 | 2.3 | 2 670 | 108 | 6 |
| Dahomey | 2.3 | 1.5 | 0.1 | 2 260 | 98 | 56 |
| Dominican Republic | 3.3 | 2.2 | 3.6 | 2 120 | 94 | 48 |
| Ecuador | 3.3 | 5.4 | 4.0 | 2 010 | 88 | 47 |
| Egypt | 2.6 | 3.4 | 3.8 | 2 500 | 100 | 69 |
| El Salvador | 3.0 | 3.6 | 4.1 | 1 930 | 84 | 52 |
| Ethiopia | 1.8 | 2.3 | 3.0 | 2 160 | 93 | 72 |
| Gabon | 0.6 | 3.6 | 2.4 | 2 220 | 95 | 57 |
| Gambia | 1.8 | 4.4 | ... | 2 490 | 104 | 64 |
| Ghana | 2.9 | 3.9 | 3.2 | 2 320 | 101 | 49 |
| Guatemala | 3.0 | 4.1 | 4.2 | 2 130 | 97 | 59 |
| Guinea | 2.0 | 2.0 | 3.4 | 2 020 | 88 | 45 |
| Guyana | 3.0 | 2.5 | 3.6 | 2 390 | 105 | 58 |
| Haiti | 2.3 | 1.0 | 2.2 | 1 730 | 77 | 39 |
| Honduras | 3.3 | 4.0 | 4.2 | 2 140 | 94 | 56 |
| India | 2.1 | 2.4 | 3.0 | 2 070 | 94 | 52 |
| Indonesia | 2.5 | 2.0 | 2.6 | 1 790 | 83 | 38 |
| Iran | 2.8 | 3.3 | 5.4 | 2 300 | 96 | 60 |
| Iraq | 3.3 | 2.8 | 5.2 | 2 160 | 90 | 60 |
| Ivory Coast | 2.2 | 4.9 | 2.6 | 2 430 | 105 | 56 |
| Jamaica | 1.9 | 1.9 | 3.3 | 2 360 | 105 | 63 |
| Jordan | 3.2 | 1.8 | 6.6 | 2 430 | 99 | 65 |
| Kenya | 3.0 | 2.6 | 4.7 | 2 360 | 102 | 67 |

TABLE 3-A. — RATES OF GROWTH OF POPULATION, FOOD PRODUCTION AND DOMESTIC DEMAND, SHOWING PER CAPUT SUPPLIES OF ENERGY AND PROTEIN, FOR INDIVIDUAL COUNTRIES (*concluded*)

| | Annual rates of growth | | | Per caput daily | | |
|---|---|---|---|---|---|---|
| | Population | Food production [1] | Domestic demand for food [2,3] | Dietary energy supply [3,4] | | Protein supply [3,4] |
| | ..... *Percent* [5] ..... | | | *Kilocalories* | *Percent of requirement* [6] | *Grams* |
| DEVERLOPING COUNTRIES | | | | | | |
| Khmer Republic | 2.8 | 3.5 | 4.3 | 2 430 | 109 | 55 |
| Korea, Dem. People's Rep. of | 2.7 | ... | ... | 2 240 | 89 | 73 |
| Korea, Republic of | 2.7 | 4.8 | 4.7 | 2 520 | 107 | 68 |
| Laos | 2.4 | 3.7 | 3.7 | 2 110 | 95 | 49 |
| Lebanon | 2.8 | 5.0 | 3.1 | 2 280 | 92 | 63 |
| Lesotho | 1.6 | 0.5 | ... | ... | ... | ... |
| Liberia | 1.5 | 1.1 | 1.8 | 2 170 | 94 | 39 |
| Libyan Arab Republic | 3.6 | 5.3 | ... | 2 570 | 109 | 62 |
| Madagascar | 2.4 | 2.8 | 2.1 | 2 530 | 111 | 58 |
| Malawi | 2.5 | 4.7 | 3.7 | 2 210 | 95 | 63 |
| Malaysia (West) | 3.0 | 5.2 | 4.3 | 2 460 | 110 | 54 |
| Mali | 2.1 | 1.6 | 4.3 | 2 060 | 88 | 64 |
| Mauritania | 2.0 | 2.4 | 3.0 | 1 970 | 85 | 68 |
| Mauritius | 2.6 | 1.3 | 3.0 | 2 360 | 104 | 48 |
| Mexico | 3.4 | 5.3 | 4.3 | 2 580 | 111 | 62 |
| Mongolia | 2.9 | ... | ... | 2 380 | 106 | 106 |
| Morocco | 3.0 | 2.8 | 3.3 | 2 220 | 92 | 62 |
| Mozambique | 1.7 | 2.7 | 3.2 | 2 050 | 88 | 41 |
| Nepal | 1.8 | 0.1 | 2.1 | 2 080 | 95 | 49 |
| Nicaragua | 3.0 | 4.9 | 3.9 | 2 450 | 109 | 71 |
| Niger | 2.8 | 4.1 | 2.2 | 2 080 | 89 | 74 |
| Nigeria | 2.4 | 2.0 | 3.1 | 2 270 | 96 | 63 |
| Pakistan | 3.0 | 3.0 | 4.2 | 2 160 | 93 | 56 |
| Panama | 3.2 | 4.3 | 4.8 | 2 580 | 112 | 61 |
| Paraguay | 3.1 | 2.6 | 3.4 | 2 740 | 119 | 73 |
| Peru | 2.9 | 2.9 | 3.9 | 2 320 | 99 | 60 |
| Philippines | 3.2 | 3.2 | 4.2 | 1 940 | 86 | 47 |
| Rhodesia | 3.4 | 3.9 | 4.1 | 2 660 | 111 | 76 |
| Rwanda | 2.6 | 1.8 | 1.9 | 1 960 | 84 | 58 |
| Saudi Arabia | 2.4 | 2.9 | 5.0 | 2 270 | 94 | 62 |
| Senegal | 2.2 | 3.3 | 1.2 | 2 370 | 100 | 65 |
| Sierra Leone | 2.0 | 2.4 | 3.9 | 2 280 | 99 | 51 |
| Somalia | 2.2 | 1.1 | 1.5 | 1 830 | 79 | 56 |
| Sri Lanka | 2.5 | 3.6 | 3.1 | 2 170 | 98 | 48 |
| Sudan | 2.9 | 4.3 | 3.9 | 2 160 | 92 | 63 |
| Surinam | 3.1 | ... | 4.0 | 2 450 | 109 | 59 |
| Syrian Arab Republic | 3.0 | 1.8 | 4.6 | 2 650 | 107 | 75 |
| Tanzania | 2.4 | 3.1 | 3.0 | 2 260 | 98 | 63 |
| Thailand | 3.1 | 5.3 | 4.6 | 2 560 | 115 | 56 |
| Togo | 2.3 | 5.4 | 2.4 | 2 330 | 101 | 56 |
| Trinidad and Tobago | 2.5 | 1.9 | 4.8 | 2 380 | 98 | 64 |
| Tunisia | 2.9 | 0.8 | 4.3 | 2 250 | 94 | 67 |
| Turkey | 2.7 | 3.0 | 3.8 | 3 250 | 129 | 91 |
| Uganda | 2.4 | 1.8 | 3.2 | 2 130 | 91 | 61 |
| Upper Volta | 1.8 | 4.7 | 1.2 | 1 710 | 72 | 59 |
| Uruguay | 1.3 | 0.8 | 1.2 | 2 880 | 108 | 100 |
| Venezuela | 3.5 | 6.1 | 4.0 | 2 430 | 98 | 63 |
| Viet-Nam, Democratic Republic of | 2.7 | ... | ... | 2 350 | 114 | 53 |
| Viet-Nam, Republic of | 2.5 | 4.3 | 3.2 | 2 320 | 107 | 53 |
| Yemen Arab Republic | 2.4 | —0.2 | 3.9 | 2 040 | 84 | 61 |
| Yemen, Democratic | 2.4 | 1.6 | —1.0 | 2 070 | 86 | 57 |
| Zaire | 2.0 | 0.2 | 2.3 | 2 060 | 93 | 33 |
| Zambia | 2.9 | 4.3 | 4.8 | 2 590 | 112 | 68 |

[1] Food component of crop and livestock production only (i.e., excluding fish production). — [2] Calculated on basis of growth of population and per caput income, and estimates of income elasticity of farm value of demand in *FAO Agricultural commodity projections, 1970-1980*, Rome, 1971. — [3] Total food, including fish. — [4] 1969-71 average. — [5] Exponential trend, 1952-72. — [6] Revised standards of average requirements (physiological requirements plus 10% for waste at household level). — [7] 1962-72.

TABLE 3-B. — GROWTH RATES AND DENSITY OF POPULATION, GROWTH RATES OF PRODUCTION AND DEMAND FOR FOOD AND CEREALS, AND INSTABILITY INDICES OF FOOD AND CEREAL PRODUCTION FOR INDIVIDUAL COUNTRIES

| | Population [1] | Density [2] | All food | | | Cereals | | |
|---|---|---|---|---|---|---|---|---|
| | | | Production [1] | Demand [3] | Instability index [4] | Production [1] | Demand [3] | Instability index [4] |
| DEVELOPED COUNTRIES | | | | | | | | |
| Albania | 2.8 | 3.8 | 3.6 | 4.6 | 10 | 5.1 | 2.7 | 23 |
| Australia | 2.1 | 0.3 | 3.7 | 2.4 | 11 | 4.7 | 1.8 | 43 |
| Austria | 0.4 | 4.4 | 2.5 | 1.1 | 6 | 4.1 | —0.9 | 13 |
| Belgium-Luxembourg | 0.6 | 11.0 | 2.1 | 1.2 | 4 | 2.8 | —0.5 | 11 |
| Bulgaria | 0.8 | 1.9 | 4.3 | 2.8 | 8 | 4.4 | —1.3 | 11 |
| Canada | 2.2 | 0.5 | 2.2 | 2.5 | 12 | 1.6 | 1.4 | 28 |
| Czechoslovakia | 0.9 | 2.8 | 1.8 | 1.9 | 6 | 2.9 | — | 9 |
| Denmark | 0.7 | 1.8 | 1.6 | 1.3 | 3 | 2.8 | —0.5 | 8 |
| Finland | 0.8 | 1.7 | 2.4 | 1.1 | 5 | 3.8 | —0.7 | 17 |
| France | 1.0 | 2.6 | 3.0 | 2.0 | 4 | 4.6 | —0.7 | 8 |
| German Democratic Republic | —0.3 | 3.6 | 1.6 | .8 | 6 | 2.3 | —1.0 | 12 |
| Germany, Federal Republic of | 1.0 | 7.3 | 2.5 | 1.9 | 4 | 2.7 | —0.1 | 11 |
| Greece | 0.8 | 2.5 | 4.0 | 2.3 | 7 | 2.6 | —0.6 | 15 |
| Hungary | 0.5 | 1.8 | 3.0 | 1.9 | 9 | 4.3 | —0.5 | 19 |
| Ireland | 0.1 | 2.6 | 1.7 | 0.3 | 4 | 0.8 | —0.9 | 10 |
| Israel | 3.4 | 7.0 | 7.7 | 4.9 | 6 | 3.1 | 2.0 | 56 |
| Italy | 0.7 | 3.6 | 2.9 | 2.3 | 5 | 1.1 | —0.3 | 10 |
| Japan | 1.1 | 18.5 | 4.3 | 3.7 | 6 | — | 0.4 | 10 |
| Malta | 0.1 | 20.0 | 3.2 | 1.2 | 9 | —3.5 | —0.6 | 15 |
| Netherlands | 1.3 | 15.0 | 3.0 | 1.7 | 4 | —0.2 | 0.1 | 12 |
| New Zealand | 2.1 | 3.7 | 2.7 | 2.0 | 2 | 8.2 | 1.6 | 19 |
| Norway | 0.9 | 4.8 | 1.3 | 1.3 | 4 | 3.8 | —0.1 | 21 |
| Poland | 1.4 | 2.1 | 3.0 | 2.3 | 4 | 2.6 | 0.3 | 10 |
| Portugal | 0.6 | 2.2 | 1.7 | 2.3 | 7 | — | — | 15 |
| Romania | 1.1 | 1.9 | 3.2 | 2.7 | 13 | 3.4 | —0.2 | 23 |
| South Africa | 2.4 | 1.7 | 3.9 | 3.2 | 10 | 5.0 | 2.2 | 29 |
| Spain | 0.9 | 1.6 | 3.4 | 3.0 | 6 | 2.4 | —0.4 | 17 |
| Sweden | 0.7 | 3.9 | 0.9 | 1.0 | 6 | 3.1 | —0.4 | 20 |
| Switzerland | 1.5 | 15.6 | 1.7 | 1.9 | 3 | 2.1 | —0.5 | 15 |
| U.S.S.R. | 1.5 | 1.7 | 3.9 | 3.0 | 7 | 3.3 | —0.2 | 20 |
| United Kingdom | 0.5 | 7.7 | 2.8 | 0.7 | 3 | 3.5 | 0.1 | 8 |
| United States | 1.5 | 1.2 | 2.0 | 1.6 | 3 | 2.6 | 1.0 | 9 |
| Yugoslavia | 1.2 | 2.5 | 4.5 | 2.4 | 20 | 5.4 | —0.4 | 34 |
| DEVELOPING COUNTRIES | | | | | | | | |
| Afghanistan | 1.9 | 1.9 | 1.7 | 2.2 | 4 | 1.4 | 2.1 | 10 |
| Algeria | 2.4 | 2.0 | —0.8 | 3.4 | 15 | —1.3 | 3.1 | 51 |
| Angola | 1.8 | 6.1 | 2.7 | 3.0 | 1 | 2.5 | 2.8 | 15 |
| Argentina | 1.7 | 0.9 | 1.8 | 2.0 | 9 | 2.4 | 1.5 | 22 |
| Barbados | 0.6 | 9.2 | —0.1 | . . . | 15 | — | . . . | — |
| Bolivia | 2.3 | 1.6 | 5.0 | 2.7 | 8 | 5.0 | 2.7 | 22 |
| Botswana | 2.0 | 1.2 | 2.3 | . . . | 18 | 5.2 | . . . | 155 |
| Brazil | 3.0 | 3.1 | 4.4 | 4.0 | 3 | 4.8 | 3.4 | 8 |
| Burma | 2.2 | 1.7 | 2.4 | 3.3 | 6 | 1.7 | 2.5 | 10 |
| Burundi | 2.0 | 3.0 | 2.4 | 2.4 | 8 | 4.3 | 2.4 | 15 |
| Cameroon | 1.8 | 0.8 | 3.3 | 2.5 | 6 | 2.2 | 2.5 | 14 |
| Central African Republic | 1.8 | 0.3 | 2.8 | 1.1 | 3 | 12.0 | 0.6 | 34 |
| Chad | 2.1 | 0.5 | 0.9 | 1.2 | 3 | —1.8 | 1.6 | 8 |
| Chile | 2.5 | 2.1 | 2.2 | 3.3 | 6 | 2.0 | 2.9 | 12 |
| China | 1.7 | 7.7 | 2.3 | 2.2 | . . . | 2.1 | 2.0 | 4 |
| Colombia | 3.3 | 4.0 | 3.1 | 3.9 | 3 | 2.9 | 3.9 | 8 |
| Congo | 1.9 | 1.5 | 2.2 | 3.7 | 7 | 1.4 | . . . | 25 |
| Costa Rica | 3.8 | 1.8 | 5.4 | 5.4 | 5 | 3.2 | 4.5 | 25 |
| Cuba | 2.2 | 2.4 | 1.1 | 2.0 | 18 | —1.4 | 2.0 | 31 |
| Cyprus | 1.1 | 1.5 | 5.4 | 2.3 | 12 | 1.2 | 0.8 | 48 |
| Dahomey | 2.3 | 1.8 | 1.5 | 0.1 | 12 | 2.6 | 0.5 | 22 |
| Dominican Republic | 3.3 | 4.1 | 2.2 | 3.6 | 7 | 3.6 | 3.7 | 7 |
| Ecuador | 3.3 | 1.6 | 5.4 | 4.0 | 3 | 2.7 | 3.9 | 14 |
| Egypt | 2.6 | 11.7 | 3.4 | 3.8 | 5 | 2.8 | 2.9 | 10 |
| El Salvador | 3.0 | 5.5 | 3.6 | 4.1 | 4 | 1.8 | 3.4 | 18 |
| Ethiopia | 1.8 | 2.0 | 2.3 | 3.0 | 2 | 3.3 | 2.7 | 3 |
| Gabon | 0.6 | 3.9 | 2.6 | 2.4 | 4 | 0.2 | 5.7 | 27 |
| Gambia | 1.8 | 2.9 | 4.4 | . . . | 12 | 3.8 | . . . | 15 |
| Ghana | 2.9 | 3.1 | 3.9 | 3.2 | 8 | 3.3 | 3.4 | 146 |

TABLE 3-B. — GROWTH RATES AND DENSITY OF POPULATION, GROWTH RATES OF PRODUCTION AND DEMAND FOR FOOD AND CEREALS, AND INSTABILITY INDICES OF FOOD AND CEREAL PRODUCTION FOR INDIVIDUAL COUNTRIES (*continued*)

| | Population [1] | Density [2] | All food | | | Cereals | | |
|---|---|---|---|---|---|---|---|---|
| | | | Production [1] | Demand [3] | Instability index [4] | Production [1] | Demand [3] | Instability index [4] |
| DEVELOPING COUNTRIES | | | | | | | | |
| Guatemala | 3.0 | 3.5 | 4.1 | 4.2 | 4 | 3.5 | 3.4 | 9 |
| Guinea | 2.0 | 2.6 | 2.0 | 3.4 | 4 | 4.5 | 3.2 | 19 |
| Guyana | 3.0 | 0.9 | 2.5 | 3.6 | 7 | 1.8 | 3.4 | 19 |
| Haiti | 2.3 | 13.2 | 1.0 | 2.2 | 2 | 1.3 | 2.2 | 3 |
| Honduras | 3.3 | 3.1 | 4.0 | 4.2 | 5 | 2.6 | 3.6 | 7 |
| India | 2.1 | 3.4 | 2.4 | 3.0 | 4 | 2.7 | 2.6 | 8 |
| Indonesia | 2.5 | 3.8 | 2.0 | 2.6 | 6 | 2.8 | 2.6 | 11 |
| Iran | 2.8 | 2.5 | 3.3 | 6.4 | 4 | 3.6 | 4.6 | 12 |
| Iraq | 3.3 | 1.3 | 2.8 | 5.2 | 15 | 1.8 | 4.4 | 44 |
| Ivory Coast | 2.2 | 0.6 | 4.9 | 2.6 | 10 | 5.7 | 2.7 | 29 |
| Jamaica | 1.9 | 8.3 | 1.9 | 3.3 | 7 | 9.0 | 3.0 | 30 |
| Jordan | 3.2 | 1.7 | 1.8 | 6.6 | 37 | 1.6 | 4.5 | 117 |
| Kenya | 3.0 | 6.5 | 2.6 | 4.7 | 4 | 3.3 | 4.2 | 12 |
| Khmer Republic | 2.8 | 2.4 | 3.5 | 4.3 | 14 | 2.7 | 3.6 | 20 |
| Korea, Democratic People's Republic of | 2.7 | 10.5 | ... | ... | ... | 3.4 | 4.3 | 13 |
| Korea, Republic of | 2.7 | 14.0 | 4.8 | 4.7 | 11 | 3.2 | 4.0 | 11 |
| Kuwait | ... | ... | 3.2 | ... | 8 | ... | ... | ... |
| Laos | 2.4 | 3.1 | 3.7 | 3.7 | 11 | 3.6 | 3.2 | 14 |
| Lebanon | 2.8 | 8.4 | 5.0 | 3.1 | 9 | —4.1 | 2.9 | 22 |
| Lesotho | 1.6 | 2.7 | 0.5 | ... | 4 | —0.7 | ... | 12 |
| Liberia | 1.5 | 0.3 | 1.1 | 1.8 | 4 | —0.5 | 1.6 | 14 |
| Libyan Arab Republic | 3.6 | 0.7 | 5.3 | ... | 17 | 3.0 | ... | 93 |
| Madagascar | 2.4 | 2.1 | 2.8 | 2.1 | 4 | 3.2 | 2.2 | 6 |
| Malawi | 2.5 | 1.5 | 4.7 | 3.7 | 8 | 6.3 | 3.5 | 12 |
| Malaysia (West) | 3.0 | 1.8 | 5.2 | 4.3 | 4 | 6.2 | 3.5 | 11 |
| Mali | 2.1 | 0.4 | 1.6 | 4.3 | 6 | 0.2 | 3.2 | 15 |
| Mauritania | 2.0 | 4.5 | 2.4 | 3.0 | 3 | 2.2 | 3.4 | 33 |
| Mauritius | 2.6 | 8.0 | 1.3 | 3.0 | 30 | ... | ... | ... |
| Mexico | 3.4 | 2.1 | 5.3 | 4.3 | 3 | 6.4 | 2.9 | 8 |
| Mongolia | 2.9 | ... | ... | ... | ... | 12.7 | 2.9 | 54 |
| Morocco | 3.0 | 2.8 | 2.8 | 3.3 | 19 | 2.7 | 3.1 | 49 |
| Mozambique | 1.7 | 2.8 | 2.7 | 3.2 | 5 | 2.0 | 2.8 | 7 |
| Nepal | 1.8 | 5.7 | 0.1 | 2.1 | 4 | —0.3 | 1.9 | 6 |
| Nicaragua | 3.0 | 2.3 | 4.9 | 3.0 | 5 | 3.8 | 3.5 | 13 |
| Niger | 2.8 | 0.3 | 4.1 | 2.2 | 8 | 1.6 | 2.5 | 20 |
| Nigeria | 2.4 | 3.1 | 2.0 | 3.1 | 4 | 0.7 | 4.0 | 17 |
| Pakistan (excluding Bangladesh) | 3.0 | 4.6 | 3.0 | 4.2 | 4 | 3.0 | 3.5 | 9 |
| Panama | 3.2 | 2.6 | 4.3 | 4.8 | 5 | 1.1 | 3.9 | 12 |
| Paraguay | 3.1 | 2.5 | 2.6 | 3.4 | 5 | 4.9 | 3.4 | 24 |
| Peru | 2.9 | 4.8 | 2.9 | 3.9 | 4 | 2.4 | 3.6 | 10 |
| Philippines | 3.2 | 4.5 | 3.2 | 4.2 | 3 | 3.4 | 3.5 | 6 |
| Rhodesia | 3.4 | 2.9 | 3.9 | 4.1 | 2 | 0.7 | 4.0 | 33 |
| Rwanda | 2.6 | 4.8 | 1.8 | 1.9 | 14 | 0.5 | 1.8 | 26 |
| Saudi Arabia | 2.4 | 6.5 | 2.9 | 5.0 | 2 | 4.3 | 4.7 | 6 |
| Senegal | 2.2 | 0.7 | 3.3 | 1.2 | 15 | 3.2 | 1.8 | 25 |
| Sierra Leone | 2.0 | 0.7 | 2.4 | 3.9 | 3 | 3.6 | 3.6 | 24 |
| Somalia | 2.2 | 2.9 | 1.1 | 1.5 | 4 | 1.1 | 1.6 | 111 |
| Sri Lanka | 2.5 | 6.3 | 3.6 | 3.1 | 7 | 5.0 | 3.1 | 17 |
| Sudan | 2.9 | 2.2 | 4.3 | 3.9 | 7 | 4.0 | 3.6 | 32 |
| Surinam | 3.1 | 10.3 | ... | 4.0 | ... | 4.7 | ... | 16 |
| Syrian Arab Republic | 3.0 | 1.0 | 1.8 | 4.6 | 22 | 0.2 | 3.5 | 72 |
| Tanzania | 2.4 | 0.8 | 3.1 | 3.0 | 6 | 5.0 | 2.8 | 32 |
| Thailand | 3.1 | 3.1 | 5.3 | 4.6 | 12 | 5.1 | 3.7 | 18 |
| Togo | 2.3 | 0.9 | 5.4 | 2.4 | 11 | 2.9 | 2.4 | 10 |
| Trinidad and Tobago | 2.5 | 7.6 | 1.9 | 4.8 | 7 | 1.7 | 3.8 | 15 |
| Tunisia | 2.9 | 1.1 | 0.8 | 4.3 | 21 | 1.0 | 3.7 | 38 |
| Turkey | 2.7 | 1.3 | 3.0 | 3.8 | 7 | 2.2 | 2.1 | 18 |
| Uganda | 2.4 | 1.7 | 1.8 | 3.2 | 3 | 3.6 | 2.8 | 11 |
| Upper Volta | 1.8 | 1.0 | 4.7 | 1.2 | 13 | 5.5 | 1.5 | 13 |
| Uruguay | 1.3 | 1.5 | 0.8 | 1.2 | 10 | —1.7 | 1.2 | 34 |
| Venezuela | 3.5 | 2.1 | 6.1 | 4.0 | 3 | 5.6 | 3.8 | 12 |
| Viet-Nam, Democratic Republic of | 2.7 | ... | ... | ... | ... | 3.4 | 4.3 | 13 |

TABLE 3-B. — GROWTH RATES AND DENSITY OF POPULATION, GROWTH RATES OF PRODUCTION AND DEMAND FOR FOOD AND CEREALS, AND INSTABILITY INDICES OF FOOD AND CEREAL PRODUCTION FOR INDIVIDUAL COUNTRIES (*concluded*)

| | Population [1] | Density [2] | All food | | | Cereals | | |
|---|---|---|---|---|---|---|---|---|
| | | | Production [1] | Demand [3] | Instability index [4] | Production [1] | Demand [3] | Instability index [4] |
| DEVELOPING COUNTRIES (*concluded*) | | | | | | | | |
| Viet-Nam, Republic of . . . | 2.5 | 5.9 | 4.3 | 3.2 | 9 | 4.2 | 3.8 | 12 |
| Yemen Arab Republic . . . | 2.4 | 4.8 | —0.2 | 3.9 | 3 | 0.6 | . . . | 21 |
| Yemen, Democratic . . . . | 2.4 | 5.1 | 1.6 | —1.0 | 5 | 4.9 | . . . | 32 |
| Zaire . . . . . | 2.0 | 2.4 | 0.2 | 2.3 | 5 | -0.7 | 2.3 | 14 |
| Zambia . . . . . | 2.9 | 0.9 | 4.3 | 4.8 | 12 | 3.0 | 3.8 | 12 |

[1] Exponential rates of growth, 1952-72. — [2] Persons per hectare of agricultural land (excluding permanent meadows and pastures) around 1970. — [3] Calculated on the basis of growth rates of population and per caput income and estimates of farm value elasticity of demand given in *FAO Agricultural commodity projections, 1970-1980*, Rome, 1971. — [4] Calculated on the basis of the Formula Inst Index $\frac{\Sigma (x_i - \bar{x})^2}{n-1}$ in which $x_i = \left(\frac{x_t + 1}{x_t}\right) - k, \left(\frac{x_t + 2}{x_t + 1}\right) - k, \ldots\ldots, \frac{x_{tn} - k}{x_{tn} - 1}$, where $k$ is the rate of growth of $x_t$, $x_t + 1, \ldots\ldots,$ $x_{tn}$: $x_t$ = 1952 production, $x_n$ = 1972 production.

TABLE 3-C. — AVERAGE PER CAPUT ENERGY AND PROTEIN SUPPLIES BY COUNTRY, 1961 AND 1970

| | Energy (kilocalories) | | Protein (grams) | | Energy as percent of requirement | | Protein/ energy ratio | |
|---|---|---|---|---|---|---|---|---|
| | 1961 | 1970 | 1961 | 1970 | 1961 | 1970 | 1961 | 1970 |
| DEVELOPED COUNTRIES | | | | | | | | |
| Albania | 2 370 | 2 370 | 71.3 | 71.3 | 98 | 98 | 12.0 | 12.0 |
| Australia | 3 140 | 3 050 | 89.1 | 101.1 | 118 | 115 | 11.3 | 13.1 |
| Austria | 3 150 | 3 340 | 86.7 | 89.1 | 120 | 127 | 11.0 | 10.6 |
| Belgium-Luxembourg | 3 160 | 3 390 | 91.3 | 94.0 | 120 | 128 | 11.5 | 11.0 |
| Bulgaria | 2 680 | 3 300 | 79.2 | 97.2 | 107 | 132 | 11.8 | 11.7 |
| Canada | 3 010 | 3 190 | 91.6 | 97.8 | 113 | 1 0 | 12.1 | 12.2 |
| Czechoslovakia | 2 980 | 3 190 | 81.8 | 89.7 | 121 | 129 | 10.9 | 11.2 |
| Denmark | 3 340 | 3 230 | 87.5 | 90.6 | 124 | 120 | 10.4 | 11.2 |
| Finland | 3 130 | 3 020 | 93.1 | 91.3 | 115 | 111 | 11.8 | 12.0 |
| France | 3 140 | 3 210 | 102.0 | 104.3 | 125 | 127 | 12.9 | 12.9 |
| German Democratic Republic | 2 730 | 3 400 | 67.0 | 83.6 | 104 | 130 | 9.8 | 9.8 |
| Germany, Federal Republic of | 3 120 | 3 230 | 84.0 | 88.4 | 117 | 121 | 10.7 | 10.9 |
| Greece | 3 000 | 2 900 | 98.7 | 98.9 | 120 | 116 | 13.1 | 13.6 |
| Hungary | 3 030 | 3 180 | 91.7 | 98.0 | 115 | 121 | 12.1 | 12.3 |
| Ireland | 3 240 | 3 420 | 100.4 | 102.5 | 142 | 136 | 11.7 | 11.9 |
| Israel | 2 790 | 2 970 | 83.8 | 91.5 | 109 | 116 | 12.0 | 12.3 |
| Italy | 2 770 | 3 170 | 87.5 | 100.2 | 110 | 126 | 12.6 | 12.6 |
| Japan | 2 340 | 2 470 | 71.9 | 76.2 | 100 | 106 | 12.2 | 12.3 |
| Malta | 2 680 | 2 680 | 86.0 | 86.0 | 108 | 108 | 12.8 | 12.8 |
| Netherlands | 3 250 | 3 290 | 86.3 | 83.8 | 121 | 122 | 10.6 | 10.1 |
| New Zealand | 3 510 | 3 330 | 108.4 | 107.3 | 133 | 126 | 12.3 | 12.8 |
| Norway | 2 910 | 2 920 | 86.8 | 87.1 | 109 | 109 | 11.9 | 11.9 |
| Poland | 3 350 | 3 270 | 92.9 | 98.6 | 128 | 125 | 11.0 | 12.0 |
| Portugal | 2 620 | 2 890 | 76.6 | 84.8 | 107 | 118 | 11.6 | 11.7 |
| Romania | 2 780 | 3 120 | 80.5 | 92.1 | 105 | 118 | 11.5 | 11.8 |
| South Africa | 2 820 | 2 730 | 80.2 | 77.0 | 115 | 111 | 11.3 | 11.2 |
| Spain | 2 630 | 2 620 | 78.9 | 80.6 | 107 | 107 | 12.0 | 12.3 |
| Sweden | 2 990 | 2 800 | 85.9 | 83.8 | 111 | 104 | 11.4 | 11.9 |
| Switzerland | 3 330 | 3 250 | 95.7 | 91.4 | 124 | 121 | 11.4 | 11.2 |
| U.S.S.R. | 3 000 | 3 280 | 87.0 | 101.0 | 117 | 128 | 11.6 | 12.3 |
| United Kingdom | 3 180 | 3 140 | 91.2 | 90.2 | 126 | 125 | 11.4 | 11.4 |
| United States | 3 120 | 3 270 | 92.4 | 97.3 | 118 | 124 | 11.8 | 11.9 |
| Yugoslavia | 2 930 | 3 140 | 90.9 | 92.2 | 115 | 124 | 12.4 | 11.7 |
| DEVELOPING COUNTRIES | | | | | | | | |
| Afghanistan | 2 110 | 1 950 | 62.6 | 57.9 | 86 | 80 | 11.8 | 11.8 |
| Algeria | 1 740 | 1 710 | 47.0 | 44.7 | 73 | 71 | 10.8 | 10.4 |
| Angola | 1 910 | 1 910 | 39.9 | 39.9 | 81 | 81 | 8.3 | 8.3 |
| Argentina | 3 060 | 3 150 | 97.7 | 98.6 | 115 | 119 | 12.7 | 12.5 |
| Bolivia | 1 640 | 1 840 | 43.2 | 45.8 | 69 | 77 | 10.5 | 9.9 |
| Botswana | 1 990 | 2 040 | 64.0 | 65.1 | 85 | 87 | 12.8 | 12.7 |
| Brazil | 2 430 | 2 600 | 60.7 | 63.8 | 102 | 109 | 9.9 | 9.8 |
| Burma | 1 910 | 2 230 | 43.0 | 49.2 | 88 | 103 | 9.0 | 8.8 |
| Burundi | 1 910 | 2 330 | 47.0 | 61.0 | 82 | 100 | 9.8 | 10.4 |
| Cameroon | 2 230 | 2 230 | 58.9 | 58.9 | 96 | 96 | 10.5 | 10.5 |
| Central African Republic | 2 170 | 2 170 | 47.5 | 47.5 | 96 | 96 | 8.7 | 8.7 |
| Chad | 2 230 | 2 060 | 76.6 | 72.8 | 94 | 86 | 13.7 | 14.1 |
| Chile | 2 350 | 2 460 | 66.8 | 70.9 | 96 | 101 | 11.3 | 11.5 |
| China | 2 010 | 2 370 | 54.3 | 63.2 | 85 | 100 | 10.8 | 10.6 |
| Colombia | 2 180 | 2 250 | 49.8 | 50.8 | 94 | 97 | 9.1 | 9.0 |
| Congo | 2 160 | 2 160 | 39.8 | 39.8 | 97 | 97 | 7.3 | 7.3 |
| Costa Rica | 2 200 | 2 470 | 54.9 | 63.0 | 98 | 110 | 9.9 | 10.2 |
| Cuba | 2 500 | 2 500 | 62.8 | 62.8 | 108 | 108 | 10.0 | 10.0 |
| Cyprus | 2 460 | 2 460 | 77.8 | 77.8 | 99 | 99 | 12.6 | 12.6 |
| Dahomey | 2 200 | 2 250 | 53.5 | 55.2 | 96 | 98 | 9.7 | 9.8 |
| Dominican Republic | 2 080 | 2 060 | 45.7 | 50.1 | 92 | 91 | 8.7 | 9.7 |
| Ecuador | 1 850 | 2 040 | 46.2 | 49.0 | 81 | 89 | 9.9 | 9.6 |
| Egypt | 2 220 | 2 360 | 66.0 | 66.1 | 88 | 94 | 11.8 | 11.2 |
| El Salvador | 1 870 | 1 890 | 53.1 | 51.3 | 82 | 82 | 11.3 | 10.8 |
| Ethiopia | 2 060 | 2 150 | 65.6 | 68.6 | 88 | 92 | 12.7 | 12.7 |
| Gabon | 2 180 | 2 210 | 51.0 | 55.7 | 93 | 94 | 9.3 | 10.0 |
| Gambia | 2 230 | 2 370 | 60.0 | 62.6 | 94 | 100 | 10.7 | 10.5 |
| Ghana | 2 050 | 2 200 | 45.1 | 46.3 | 89 | 96 | 8.8 | 8.4 |
| Guatemala | 1 890 | 2 120 | 53.4 | 58.7 | 86 | 97 | 11.3 | 11.0 |

TABLE 3-C. — AVERAGE PER CAPUT ENERGY AND PROTEIN SUPPLIES BY COUNTRY, 1961 AND 1970 (*concluded*)

| | Energy (kilocalories) | | Protein (grams) | | Energy as percent of requirement | | Protein/ energy ratio | |
|---|---|---|---|---|---|---|---|---|
| | 1961 | 1970 | 1961 | 1970 | 1961 | 1970 | 1961 | 1970 |
| DEVELOPING COUNTRIES | | | | | | | | |
| Guinea | 2 030 | 2 040 | 45.3 | 43.9 | 88 | 88 | 8.9 | 8.6 |
| Guyana | 2 290 | 2 080 | 35.1 | 47.4 | 101 | 92 | 6.1 | 9.1 |
| Haiti | 1 820 | 1 720 | 40.2 | 38.7 | 81 | 76 | 8.8 | 9.0 |
| Honduras | 1 900 | 2 180 | 52.5 | 57.7 | 84 | 96 | 11.0 | 10.5 |
| India | 2 100 | 2 060 | 55.2 | 52.6 | 95 | 93 | 10.5 | 10.2 |
| Indonesia | 1 930 | 1 920 | 42.5 | 42.8 | 89 | 89 | 8.8 | 8.9 |
| Iran | 1 990 | 2 080 | 51.9 | 52.6 | 82 | 86 | 10.4 | 10.1 |
| Iraq | 2 010 | 2 250 | 55.9 | 62.4 | 83 | 93 | 11.1 | 11.0 |
| Ivory Coast | 2 170 | 2 490 | 52.2 | 60.3 | 94 | 108 | 9.6 | 9.6 |
| Jamaica | 1 940 | 2 300 | 46.0 | 56.0 | 87 | 103 | 9.4 | 9.7 |
| Jordan | 2 210 | 2 310 | 57.1 | 60.0 | 90 | 94 | 10.3 | 10.3 |
| Kenya | 2 380 | 2 350 | 75.2 | 70.9 | 103 | 101 | 12.6 | 12.0 |
| Khmer Republic | 2 270 | 2 410 | 58.6 | 61.6 | 102 | 109 | 10.3 | 10.2 |
| Korea, Democratic People's Republic of | 2 190 | 2 240 | 82.8 | 73.2 | 87 | 89 | 15.1 | 13.0 |
| Korea, Republic of | 1 990 | 2 420 | 53.4 | 65.3 | 85 | 103 | 10.7 | 10.7 |
| Laos | 1 790 | 2 080 | 39.1 | 46.1 | 81 | 94 | 8.7 | 8.8 |
| Lebanon | 2 120 | 2 380 | 59.8 | 69.5 | 85 | 96 | 11.2 | 11.6 |
| Liberia | 1 990 | 2 040 | 35.2 | 36.1 | 86 | 88 | 7.0 | 7.0 |
| Libyan Arab Republic | 1 780 | 2 540 | 44.1 | 61.3 | 75 | 108 | 9.9 | 9.6 |
| Madagascar | 2 350 | 2 350 | 55.3 | 52.9 | 104 | 104 | 9.4 | 9.0 |
| Malawi | 2 000 | 2 150 | 50.4 | 54.4 | 86 | 93 | 10.0 | 10.1 |
| Malaysia (West) | 2 270 | 2 400 | 50.7 | 51.7 | 101 | 107 | 8.9 | 8.6 |
| Mali | 2 120 | 2 170 | 66.2 | 68.9 | 90 | 92 | 12.4 | 12.7 |
| Mauritania | 1 970 | 2 060 | 73.2 | 75.0 | 85 | 89 | 14.8 | 14.5 |
| Mauritius | 2 330 | 2 370 | 47.2 | 49.5 | 103 | 104 | 8.1 | 8.3 |
| Mexico | 2 500 | 2 560 | 65.0 | 65.1 | 107 | 110 | 10.4 | 10.1 |
| Mongolia | 2 280 | 2 520 | 118.8 | 108.7 | 102 | 113 | 20.8 | 17.2 |
| Morocco | 1 700 | 2 400 | 43.3 | 63.6 | 70 | 99 | 10.1 | 10.6 |
| Mozambique | 2 130 | 2 190 | 40.6 | 41.0 | 91 | 94 | 7.6 | 7.4 |
| Nepal | 2 020 | 2 050 | 51.0 | 51.7 | 92 | 93 | 10.0 | 10.0 |
| Nicaragua | 2 100 | 2 380 | 67.8 | 70.1 | 93 | 106 | 12.9 | 11.7 |
| Niger | 2 180 | 2 180 | 73.9 | 72.2 | 93 | 93 | 13.5 | 13.2 |
| Nigeria | 2 440 | 2 290 | 65.5 | 59.9 | 103 | 97 | 10.7 | 10.4 |
| Pakistan (excluding Bangladesh) | 1 940 | 2 280 | 54.8 | 59.4 | 84 | 99 | 11.2 | 10.4 |
| Panama | 2 560 | 2 520 | 59.1 | 60.5 | 111 | 109 | 9.2 | 9.6 |
| Paraguay | 2 580 | 2 800 | 76.1 | 73.5 | 112 | 121 | 11.7 | 10.5 |
| Peru | 2 290 | 2 310 | 61.0 | 61.5 | 97 | 98 | 10.6 | 10.6 |
| Philippines | 1 880 | 1 920 | 43.8 | 44.5 | 83 | 85 | 9.3 | 9.2 |
| Rhodesia | 2 350 | 2 550 | 73.2 | 73.2 | 107 | 107 | 12.4 | 11.4 |
| Rwanda | 2 030 | 2 160 | 55.0 | 61.5 | 88 | 93 | 10.8 | 11.3 |
| Saudi Arabia | 2 080 | 2 080 | 56.2 | 56.2 | 86 | 86 | 9.8 | 10.4 |
| Senegal | 2 300 | 2 300 | 64.0 | 64.0 | 97 | 97 | 11.1 | 11.1 |
| Sierra Leone | 2 040 | 2 240 | 46.1 | 49.0 | 89 | 97 | 9.0 | 8.7 |
| Somalia | 1 770 | 1 770 | 56.9 | 56.9 | 77 | 77 | 12.8 | 12.8 |
| Sri Lanka | 2 040 | 2 240 | 45.4 | 49.6 | 92 | 101 | 8.9 | 8.8 |
| Sudan | 1 900 | 2 130 | 53.5 | 63.2 | 81 | 91 | 11.2 | 11.8 |
| Surinam | 1 910 | 2 360 | 44.2 | 56.1 | 84 | 103 | 9.2 | 9.5 |
| Syrian Arab Republic | 2 530 | 2 530 | 73.5 | 70.2 | 102 | 102 | 11.6 | 11.0 |
| Tanzania | 1 600 | 1 700 | 42.3 | 42.5 | 69 | 73 | 10.5 | 10.0 |
| Thailand | 2 120 | 2 330 | 46.9 | 52.2 | 95 | 105 | 8.8 | 8.9 |
| Togo | 2 040 | 2 160 | 47.5 | 51.4 | 89 | 94 | 9.3 | 9.5 |
| Trinidad and Tobago | 2 360 | 2 360 | 63.9 | 63.9 | 98 | 97 | 10.8 | 10.8 |
| Tunisia | 2 050 | 2 060 | 53.7 | 53.6 | 86 | 86 | 10.4 | 10.4 |
| Turkey | 2 770 | 2 770 | 78.2 | 78.2 | 110 | 110 | 11.2 | 11.2 |
| Uganda | 2 170 | 2 230 | 55.9 | 55.3 | 93 | 96 | 10.3 | 9.9 |
| Upper Volta | 2 010 | 1 940 | 65.5 | 65.9 | 85 | 82 | 13.0 | 13.5 |
| Uruguay | 3 070 | 2 860 | 110.2 | 95.6 | 115 | 107 | 14.3 | 13.3 |
| Venezuela | 2 230 | 2 460 | 58.6 | 62.3 | 90 | 100 | 10.5 | 10.1 |
| Viet-Nam, Democratic Republic of | 2 170 | 2 070 | 47.6 | 46.9 | 105 | 100 | 8.7 | 9.0 |
| Viet-Nam, Republic of | 2 140 | 2 340 | 49.3 | 52.4 | 99 | 108 | 9.2 | 8.9 |
| Yemen Arab Republic | 1 990 | 1 970 | 64.8 | 62.0 | 82 | 81 | 13.0 | 12.5 |
| Yemen, Democratic | 2 020 | 2 020 | 56.3 | 56.3 | 84 | 84 | 11.1 | 11.1 |
| Zaire | 2 040 | 2 040 | 32.7 | 32.7 | 92 | 92 | 6.4 | 6.4 |
| Zambia | 2 000 | 2 040 | 62.9 | 63.6 | 87 | 88 | 12.5 | 12.4 |

TABLE 3-D. — DAILY ENERGY INTAKE PER CAPUT BY INCOME OR EXPENDITURE GROUPS FOR SELECTED COUNTRIES

| Income (cruzeiros per household per year) | Brazil (1960) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Northeast | | | | East | | | | South | | | |
| | Urban | | Rural | | Urban | | Rural | | Urban | | Rural | |
| | Percent of households | Kcals per caput/day | Percent of households | Kcals per caput/day | Percent of households | Kcals per caput/day | Percent of households | Kcals per caput/day | Percent of households | Kcals per caput/day | Percent of households | Kcals per caput/day |
| Less than 100 | 9 | 1 240 | 18 | 1 500 | 5 | 1 180 | 7 | 1 420 | 1 | 1 480 | 4 | 2 380 |
| 100- 149 | 13 | 1 500 | 14 | 1 810 | 5 | 1 530 | 10 | 2 100 | 3 | 1 740 | 4 | 2 900 |
| 150- 249 | 26 | 2 000 | 25 | 2 140 | 17 | 1 880 | 20 | 2 210 | 11 | 1 970 | 16 | 2 500 |
| 250- 349 | 17 | 2 320 | 13 | 1 820 | 14 | 2 090 | 15 | 2 720 | 13 | 2 050 | 15 | 1 860 |
| 350- 499 | 14 | 2 420 | 10 | 2 280 | 17 | 2 220 | 13 | 2 670 | 20 | 2 360 | 18 | 2 970 |
| 500- 799 | 11 | 2 860 | 11 | 2 370 | 20 | 2 630 | 13 | 2 920 | 22 | 2 470 | 21 | 3 000 |
| 800-1 199 | 5 | 3 310 | 5 | 3 380 | 11 | 2 820 | 8 | 3 060 | 14 | 2 780 | 9 | 3 780 |
| 1 200-2 499 | 4 | 4 040 | 3 | 2 870 | 9 | 3 270 | 11 | 3 040 | 12 | 3 080 | 10 | 4 160 |
| More than 2 500 | 1 | 4 290 | 1 | 2 900 | 2 | 3 750 | 3 | 4 100 | 4 | 3 170 | 3 | 4 770 |

SOURCE: *Food consumption in Brazil: family budget surveys in the early 1960s.* The Getulio Vargas Foundation, Brazil, 1970.

| Income (rupees per household per month) | Pakistan (1962-66) | | | | Bangladesh (1962-66) | | | |
|---|---|---|---|---|---|---|---|---|
| | Urban | | Rural | | Urban | | Rural | |
| | Percent of households | Kcals per caput/day | Percent of households | Kcals per caput/day | Percent of households | Kcals per caput/day | Percent of households | Kcals per caput/day |
| Less than 99 . . . . . | 25 | 1 700 | 46 | 2 000 | 19 | 1 550 | 44 | 2 050 |
| 100-199 . . . . . | 38 | 1 780 | 32 | 2 140 | 25 | 1 750 | 34 | 2 260 |
| 200-299 . . . . . | 15 | 1 750 | 11 | 2 200 | 19 | 1 720 | 14 | 2 400 |
| 300-399 . . . . . | 7 | 1 800 | 3 | 2 460 | 10 | 1 810 | 4 | 2 660 |
| 400-499 . . . . . | 4 | 2 090 | 1 | 2 110 | 8 | 1 800 | 2 | 2 640 |
| More than 500 . . . . . | 7 | 1 960 | 3 | 2 460 | 19 | 1 840 | 2 | 3 060 |

SOURCES: Pakistan: *Nutrition survey of West Pakistan, Feb. 1965-Nov. 1966.* Directorate of Nutrition and Research, Pakistan, 1970. — *East Pakistan nutrition survey, 1962-63* (Preliminary Report). Directorate of Nutrition and Research, Pakistan, 1965.

| India (Maharashtra, 1971) | | | Madagascar (Rural, 1962) | | | Tunisia (Rural, 1965-68) | | |
|---|---|---|---|---|---|---|---|---|
| Income (rupees per caput per month) | Percent of households | Kcals per caput/day | Income (FMG per household per year) | Percent of households | Kcals per caput/day | Total expenditure (dinars per caput per year) | Percent of households | Kcals per caput/day |
| Less than 15 | 1 | 940 | 1-20 | 55 | 2 150 | Less 20 | 8 | 1 780 |
| 15-25 | 23 | 1 540 | 20-40 | 28 | 2 290 | 20-27 | 8 | 2 120 |
| 25-35 | 26 | 1 950 | 40-80 | 11 | 2 250 | 27-32 | 8 | 2 190 |
| 35-45 | 18 | 2 240 | 80-130 | 4 | 2 360 | 32-45 | 20 | 2 430 |
| 45-55 | 15 | 2 590 | 130-190 | 2 | 2 350 | 45-53 | 11 | 2 620 |
| 55-65 | 8 | 3 150 | 190-390 | 1 | 2 340 | 53-64 | 12 | 2 750 |
| 65-75 | 5 | 3 110 | 390-590 | 0.3 | 2 360 | 64-102 | 9 | 3 180 |
| More than 75 | 4 | 2 990 | Other groups | 0.2 | . . . | 102-150 | 9 | 3 180 |
| | | | | | | 150-200 | 2 | 3 250 |
| | | | | | | More than 200 | 2 | 3 150 |

SOURCES: India: Unpublished source, Maharashtra, 1971. — Madagascar: *Budgets et alimentation des ménages ruraux en 1962.* Ministère des finances et du commerce, Madagascar. — Tunisia: *La consommation et les dépenses des ménages en Tunisie 1965-68.* Secrétariat d'état au plan et à l'économie nationale, Tunisia, 1968.

## Classification of countries by food zones

GROUP A *Animal foods:* Australia, Austria, Canada, Denmark, Finland, Iceland, Ireland, Netherlands, New Zealand, Norway, Panama, Paraguay, Puerto Rico, Sweden, United States, Uruguay.

GROUP B *Animal foods/wheat:* Albania, Argentina, Belgium-Luxembourg, Bolivia, Bulgaria, Chile, Costa Rica, Cuba, Czechoslovakia, France, German Democratic Republic, Federal Republic of Germany, Greece, Hungary, Israel, Italy, Jamaica, Malta, Peru, Poland, Portugal, Romania, Spain, Switzerland, Trinidad and Tobago, U.S.S.R., United Kingdom, Venezuela, Yugoslavia.

GROUP C *Animal foods/cereals other than wheat:* Colombia, Dominican Republic, El Salvador, Guyana, Hong Kong, Japan, Mongolia, Philippines, Singapore, Somalia, South Africa, Sudan, Surinam, Tanzania, People's Democratic Republic of Yemen.

GROUP D *Wheat:* Afghanistan, Algeria, Cyprus, Egypt, Iran, Iraq, Jordan, Lebanon, Libyan Arab Republic, Morocco, Pakistan, Syrian Arab Republic, Tunisia, Turkey.

GROUP E *Rice:* Bangladesh, Burma, Indonesia, Khmer Republic, Laos, Liberia, Madagascar, Malaysia (West), Sabah, Sarawak, Sierra Leone, Sri Lanka, Thailand, Democratic Republic of Viet-Nam, Republic of Viet-Nam.

GROUP F *Mixed cereals:* Burundi, China, Ethiopia, Guinea, India, Democratic People's Republic of Korea, Republic of Korea, Mauritius, Mozambique, Nepal, Saudi Arabia.

GROUP G *Millet:* Chad, Mali, Mauritania, Niger, Upper Volta, Yemen Arab Republic.

GROUP H *Maize:* Kenya, Malawi, Mexico, Rhodesia, Zambia.

GROUP I *Animal foods/ roots/cereals/pulses:* Angola, Brazil, Cameroon, Central African Republic, People's Republic of Congo, Dahomey, Ecuador, Gabon, Gambia, Ghana, Guatemala, Haiti, Honduras, Ivory Coast, Nicaragua, Nigeria, Rwanda, Senegal, Togo, Uganda, Zaire.

## Technical note on the application of energy and protein requirements to the assessment of malnutrition

The energy requirement is very simply defined as the energy intake that is considered adequate to meet the energy expenditure of a healthy person of a specified age and sex. Some individuals of the same age and sex will of course need more than the average requirement and others will need less. Apart from age and sex, physical activity and body size and composition are the most important variables affecting energy requirement. In childhood and adolescence there are additional energy needs for growth, and for women the needs also increase during pregnancy and lactation. The climate influences energy expenditure indirectly through its effect on the level of physical activity, although when hard physical exercise is performed in high temperatures, a direct increase in energy expenditure may occasionally occur.

Much of the energy utilized by the body is expended in basal metabolism, which is subject to relatively small individual variation. Hence, the factor that most affects the total daily energy expenditure is physical activity, and it is this that makes the concept of energy requirement more difficult than the requirement concepts of many nutrients.

To produce a scale of requirements for the population, use is made of the concept of a "reference man" and a "reference woman," defined with respect to weight and age. These references (in common with most standards) are arbitrarily selected as convenient starting points for extrapolation. They have no other significance and are not intended to suggest ideal standards. The reference man and woman are between 20 and 39 years old, and although their body weights may not be ideal, they consume an adequate, well-balanced diet and are neither gaining nor losing weight.

Body composition as well as body weight may affect energy expenditure. Since the resting metabolic rate is correlated with the fat-free mass, this rate when expressed in relation to gross body weight may be lower for an obese person than for a thin person. In general, the fat-free mass of individuals does not vary as much as their gross body weights, and therefore it cannot be assumed that a low body weight, of itself, signifies undernutrition. When expressing energy requirements in relation to the mean body weight of a population, the mean body weight used should be that of those members of the population who are healthy and adequately nourished and neither obese nor excessively slim. In practice the mean body weight may refer to the mean of a group that includes both obese and undernourished persons. Depending on the relative numbers of these categories, the mean may be higher or lower than the "ideal" mean.

TABLE 3-E. — PERCENTAGE CONTRIBUTION OF DIFFERENT FOODS TO TOTAL INTAKE OF ENERGY AND PROTEIN IN CLASSIFIED FOOD ZONES

| Percent of intake / Food zones | Cereals | | Starchy roots | | Sugar | | Pulses and nuts | | Fruits and vegetables | | Meat and fish | | Eggs and milk | | Fats and oils | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Calories | Proteins | Calories | Proteins | Calories | Proteins | Calories | Proteins | Calories | Proteins | Calories | Proteins | Calories | Proteins | Calories | Proteins |
| A . . . | 20 | 17 | 4 | 3 | 17 | — | 3 | 4 | 5 | 5 | 20 | 41 | 14 | 30 | 17 | — |
| B . . . | 39 | 39 | 7 | 5 | 13 | — | 3 | 4 | 4 | 4 | 11 | 26 | 10 | 22 | 13 | — |
| C . . . | 51 | 41 | 7 | 2 | 12 | — | 4 | 11 | 5 | 6 | 8 | 27 | 6 | 13 | 7 | — |
| D . . . | 64 | 67 | 1 | 1 | 10 | — | 4 | 7 | 5 | 5 | 3 | 8 | 5 | 12 | 8 | — |
| E . . . | 71 | 64 | 7 | 3 | 5 | — | 5 | 12 | 3 | 3 | 3 | 13 | 2 | 5 | 4 | — |
| F . . . | 68 | 60 | 8 | 4 | 5 | — | 7 | 18 | 2 | 4 | 4 | 9 | 2 | 5 | 4 | — |
| G . . . | 73 | 62 | 2 | — | 3 | — | 12 | 20 | 1 | 1 | 4 | 11 | 3 | 6 | 2 | — |
| H . . . | 56 | 54 | 3 | 1 | — | — | 8 | 18 | 4 | 1 | 6 | 17 | 4 | 9 | 5 | — |
| I . . . | 36 | 37 | 25 | 12 | 9 | — | 8 | 20 | 6 | 4 | 6 | 19 | 3 | 8 | 7 | — |

TABLE 3-F. — EFFECT OF BODY SIZE, AGE AND SEX ON PER CAPUT ENERGY REQUIREMENTS FOR A MODERATELY ACTIVE POPULATION

| Age group (years) | Country 1: Adult males 53 kg, Adult females 46 kg | | | Country 2: Adult males 65 kg, Adult females 55 kg | | |
|---|---|---|---|---|---|---|
| | Individual requirements | Distribution | Contribution to total requirements per 100 persons | Individual requirements | Distribution | Contribution to total requirements per 100 persons |
| | *Kilocalories* | *Percent* | *Kilocalories* | *Kilocalories* | *Percent* | *Kilocalories* |
| CHILDREN, BOTH SEXES | | | | | | |
| Up to 1 year | 1 090 | 2.5 | 2 725 | 1 090 | 2.0 | 2 180 |
| 1-3 | 1 360 | 11.4 | 15 504 | 1 360 | 5.8 | 7 888 |
| 4-6 | 1 830 | 10.5 | 19 215 | 1 830 | 5.8 | 10 614 |
| 7-9 | 2 190 | 8.7 | 19 053 | 2 190 | 5.9 | 12 921 |
| MALE ADOLESCENTS AND ADULTS | | | | | | |
| 10-12 | 2 600 | 3.9 | 10 140 | 2 600 | 3.2 | 8 320 |
| 13-15 | 2 370 | 3.4 | 8 058 | 2 900 | 3.0 | 8 700 |
| 16-19 | 2 490 | 3.8 | 9 462 | 3 070 | 3.5 | 10 745 |
| 20-39 | 2 440 | 13.6 | 33 184 | 3 000 | 15.6 | 46 800 |
| 40-49 | 2 318 | 3.8 | 8 808 | 2 850 | 4.3 | 12 255 |
| 50-59 | 2 196 | 2.6 | 5 710 | 2 700 | 4.6 | 12 420 |
| 60-69 | 1 952 | 1.5 | 2 928 | 2 400 | 3.2 | 7 680 |
| 70 and over | 1 708 | 0.7 | 1 196 | 2 100 | 1.6 | 3 360 |
| FEMALE ADOLESCENTS AND ADULTS | | | | | | |
| 10-12 | 2 350 | 3.9 | 9 165 | 2 350 | 3.1 | 7 285 |
| 13-15 | 2 080 | 3.4 | 7 072 | 2 480 | 2.9 | 7 192 |
| 16-19 | 1 932 | 3.7 | 7 148 | 2 310 | 3.3 | 7 623 |
| 20-39 | 1 840 | 13.5 | 24 840 | 2 200 | 15.7 | 34 540 |
| 40-49 | 1 748 | 3.8 | 6 642 | 2 090 | 5.3 | 11 077 |
| 50-59 | 1 656 | 2.7 | 4 471 | 1 980 | 5.1 | 10 098 |
| 60-69 | 1 472 | 1.6 | 2 355 | 1 760 | 3.7 | 6 512 |
| 70 and over | 1 288 | 0.9 | 1 159 | 1 540 | 2.3 | 3 542 |
| | | **Total** | 198 835 | | **Total** | 231 752 |
| | | **Per caput** | 1 990 (8.33 MJ) | | **Per caput** | 2 320 (9.71 MJ) |

SOURCE: *Energy and protein requirements*, Report of a Joint FAO/WHO Ad Hoc Expert Committee, FAO, Rome, 1973.

The energy requirements per unit of body weight are higher for men than for women of the same total weight who engage in the same level of activity. This is due to the fact that women at a given weight or height have a large proportion of fat in their bodies and tend to work at lower loads than men.

The energy requirement of a person is also linked with age. This is very marked for children and adolescents, who require less energy per kilogram of body weight as they get older (although total requirement rises, as body weight rises faster than the drop in the requirement per kilogram). The energy requirement of adults alters with age because of changes in body composition and in the basal metabolic rate. A decline in physical activity and the increasing prevalence of diseases and disabilities also cause energy requirements to diminish in later life. (See Table 3-F.)

In the case of children it is important to link the requirement to age rather than weight, because if a significant proportion of children are underweight due to previous nutritional deficiencies, it is necessary to provide for "catch-up" growth and weight gain. This only applies up to the age of puberty, as older children are unlikely to be able to make up for previous physical retardation and the consumption of food above the requirement for their present body weight will only lead to obesity.

During pregnancy, extra energy is needed to support the growing foetus and other tissues and to provide for increased energy expenditure.

When all the above factors affecting energy requirements have been taken into account, there is still a great difference in the energy requirement of individuals owing to the wide variation in their levels of activity. Even within a single occupation the activity level of individuals varies, not only in terms of work accomplished, but even more so because of the very different ways in which leisure time is utilized. Nevertheless, the main differences in levels of physical activity are due to the occupations of individuals, ranging from sedentary jobs to exceptionally physically demanding jobs, such as lumberjack or rickshaw puller. The energy required by a very active 65-kilogram man is more than 1 000 kilocalories greater than that required by a 65-kilogram man engaged in only light activity.

When comparing the energy supply of a population with the requirement, it is important to bear in mind the difficulty of defining the requirement when such factors as the mean body weight and composition of healthy individuals in the population and the mean level of physical activity of the population are not known with any precision. Where a population is of small stature for various reasons, including past dietary deficiency, and/or where a substantial proportion

is underemployed or unemployed, energy requirements will be low. However, the provision of diets which do no more than satisfy these requirements would merely maintain the present unsatisfactory condition of the population, would do nothing to improve the physical status of the next generation and would be inadequate if employment and leisure-time opportunities improved.

To obtain a total national requirement, the age/sex structure of the population is taken into account. Assuming that the population is on the average moderately active, the mean body weights of the reference man and woman have to be adopted, usually on the basis of group data (e.g., young army recruits). The requirement of children up to the age of puberty is not based on their actual weight, but is calculated with an allowance for "catch-up" growth of underweight children.

The estimated national requirement is therefore sufficient — given perfectly equitable distribution (which, of course, is never the case) — to enable all the population to lead a healthy, moderately active life and the young children to maintain or regain a growth curve regarded as usual for a well-nourished child.

### Maintenance cost as critical limit

In assessing the number of people risking energy deficiency the average requirement is not a suitable base, for much of the population will have true requirements ranging well below the average due to differences not only in body composition but, more important, in activity. The true variation in individual activity is not known; neither is the extent of the possible skewness in the requirement distribution curve.

The *Ad Hoc* Expert Committee on Energy and Protein Requirements convened by FAO and WHO reported that for practical purposes the energy cost of maintenance can be set at 1.5 times the basal metabolic rate (BMR). If the food available to the individual provides energy at a level less than 1.5 BMR, it may be said that such an individual is likely to be undernourished. However, even when individual variations due to activity have been removed, there still exists individual variation in BMR; it has been estimated that some people may have a BMR as low as 20% under the norm. Therefore, if one wishes to use this variable as an indicator of the number of undernourished without including some individuals who are in fact meeting their rather lower than average maintenance cost, it is necessary to fix the limit at 1.5 BMR minus 20%. By using this very conservative level the global estimate of over 400 million undernourished individuals referred to in the text was obtained.

It should be noted also that the figures for BMR are based on the measurement of 2 200 persons in one laboratory in Boston over a period of fifteen years. The applicability of these and the use of the factor 1.5 in assessing maintenance cost are still subject to debate. The method is used in the text as but one indicator in a series of independent indicators of nutritional problems.

### Protein requirements

Early estimates of protein needs were based on direct observation of actual intakes, mainly in developed countries. The Health Committee of the League of Nations in 1936 and the United States Food and Nutrition Board in 1945 recommended 1 gram of protein per kilogram of body weight, and it was assumed that a considerable proportion of this would come from animal sources. This distinction indicated awareness that the quality of protein for nutritional purposes varies according to the food source. The physiological approaches have led to much lower estimates of protein requirements. Various Expert Committees have made a distinction in their approach to protein requirements as opposed to energy requirements. It is recognized that an intake of excess energy above requirement is harmful, leading to obesity and other physiological disturbances. However, there is no evidence that consumption of excess protein leads to harmful results (at least within reasonable limits), and so it is thought appropriate to recommend, rather than a mean requirement, a "safe level" of protein intake — that is, an intake that allows for variations in individual requirements. This safe level is obtained by adding twice the coefficient of variation to the mean requirement.[1]

Even at this safe level the requirement is only 0.57 gram of protein per kilogram of body weight for an adult reference man, although it is much more for children who need high protein intakes to ensure satisfactory growth.

In assessing the protein intake of populations against requirements, corrections have to be made for the quality of the protein in the diet consumed. The quality of the protein is mainly determined by its amino acid composition, but other factors such as digestibility can also be important. Inadequate processing or storage can lead to significant loss in the protein quality of foods.

Infectious diseases affect protein requirements because of an increase in the breakdown of body protein (increased metabolism), a decrease in absorption when diarrhoea is part of the symptoms, or food refusal and a loss of appetite that does not permit a full coverage of energy needs. These losses cannot always be prevented while the infection persists, but they will later need to be replaced by a higher protein intake. The effects of infections on protein needs cannot be quantified as they vary with the frequency, severity and nature of the infection and the nutritional status of the individual.

The most important factor affecting the interpretation of protein requirement is its dependence on energy intake. Because of the interrelationship between energy intake and nitrogen balance, a reduction in energy intake below requirements will lead to a loss of body protein or a reduction in growth rate.

## Indicators of the incidence of undernutrition

In order to assess the incidence of undernutrition from data on food intake, in the absence of information on the actual requirement of any given individual, it is necessary to adopt as an indicator of the level of undernutrition the proportion of the population whose food consumption fails to meet some selected critical limit. Three such indicators have been used in this study. These are briefly described below.

Sukhatme [2] was the first to attempt to measure the incidence of undernutrition from a comparison of the energy intake distribution with an assumed distribution of requirements, which he states is required to define the bivariate frequency distribution $f(x,y)$ for intake $x$ and requirement $y$.

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[1] The mean requirement itself is 30% above the value given by a factorial method using estimates of obligatory nitrogen losses and the amount of nitrogen needed for the formation of new tissue, recognizing that even with an excellent protein source, such as milk or egg, larger amounts of nitrogen are needed to secure equilibrium or maintain growth than the amount as calculated using the factorial method.

[2] P.V. Sukhatme, The world's hunger and future needs in food supplies, *Journal of the Royal Statistics Society*, Series A (General), 124(4), 1961.

Given such a distribution with reference to a sufficiently long period, the number of undernourished can be expressed as

$$u = \iint_{x<y} f(x,y)\ dx\ dy$$

As data on the frequency distribution $f(x,y)$ are not available, Sukhatme estimated $u$ using the separate distribution of $x$ and $y$. He postulated that in a healthy, active population, in which no one is underfed, only a negligible proportion of the population would have an intake below $C-3\sigma y$ where $C$ = mean requirement and $\sigma y$ = standard deviation of requirement.

Consequently, Sukhatme argued, in any observed intake distribution the proportion of households below $C-3\sigma y$ could be taken as an estimate of the incidence of undernutrition. Sukhatme has expanded this approach in many subsequent papers without any major modification of the basic assumptions. He has however suggested [3] that in view of the likely truncation of the requirement distribution the proportion below $C-2\sigma y$ should be taken instead of $C-3\sigma y$. Those who consume more than $C-3\sigma y$, but nevertheless have a requirement above their intake are not included.

An alternative approach aims at providing an estimate of the minimum proportion of undernourished. This is achieved by imposing the conditions that for $x>y$, $x_i-y_i$ is a minimum and that for $x<y$, $y_i-x_i$ is a maximum.

This approach leads to a minimum estimate of the number of undernourished that is given by

$$u\ (min) = \int_{x<d} g(x)\ dx - \int_{y<d} f(y)\ dy$$

where $d$ is chosen so as to maximize the expression.

These two estimates will provide in normal circumstances a conservative approximation of the level of undernutrition in a population. To use them, however, the moments of $f(y)$ must be known, and it is doubtful that this can be claimed. Even the mean requirement depends on accurate knowledge of the characteristics of the population under study, including activity levels, and evidence for the standard deviation of individual requirements is very uncertain.

It may therefore be more appropriate to compare energy intakes against a limit, or limits, determined by physiological considerations rather than a limit based on an assumed distribution of average requirements. It is suggested that the energy cost of maintenance is 1.5 BMR, where BMR, defined as the amount of body heat produced under resting, fasting conditions, is a measure of the rate at which body substance is oxidized in order to support the continued maintenance of life. Basal metabolic rates are based on laboratory measurements of 2 200 persons over a period of fifteen years. The suggested coefficient of variation of BMR is 10%; hence, 0.8 × 1.5 BMR = 1.2 BMR may be used as a lower limit of the maintenance cost of energy. Such a limit makes no allowance for physical activity other than the minimum level of activity incurred by a resting subject in washing and performing other essential functions. An indicator of the likely level of undernutrition is even more difficult to establish for countries for which the distribution of food intakes is not available.

In the following discussion it is assumed that the intake distribution refers to the distribution of "consumer units" — that is, individuals standardized by age and sex to a reference man, whose energy requirement is based on the normal body weight, in a particular country, of a young male adult leading a moderately active life.

Food balance sheets have been calculated for most countries. From these balance sheets it is possible to calculate the mean supply of food per consumer unit. Although this mean may be in error because of inaccuracies in the balance sheet, it is most likely the best indicator of food supply at present available. It is now necessary to assume that the mean supply per consumer unit equals the mean intake per consumer unit. Whereas wastage down to the retail level has already been allowed for in the food balance sheet, domestic wastage has not been deducted from supply; however, in supply certain items, including "wild" sources of food, are probably underestimated. A comparison of the mean intake from food consumption surveys with the mean food supply from food balance sheets shows that, in general, the mean intake is within 100-300 calories of the mean supply. For example, in Sri Lanka and Madagascar the difference is just over 100 calories. Differences of this order seem reasonable since the various sources of error in both estimates pull to some extent in opposite directions (i.e., an underestimation of intake from food consumption surveys and an overestimation of intake from food supply at the retail level).

The range of individual energy intake is assumed to be limited in reality. A lower limit of 1 000 calories for a consumer unit seems practical, as even a man weighing 25 kilograms has a basal metabolic rate in excess of this. Similarly, 5 500 calories seem to be a realistic upper limit, as an 80-kilogram man engaged in an exceptionally active occupation, such as a lumberjack, has a requirement below 5 000 calories. Assuming this range, one estimate of the standard deviation of the intake distribution would be 750 calories — that is, one sixth of the range — an approximation that is reasonable for normal or moderately symmetrical distributions.[4]

The available evidence from food consumption surveys indicates clearly and almost without exception that the intake distribution is skewed. Normally it is positively skewed, but for special groups within the population the skewness may occasionally disappear or even become negative. To sum up, a moderately skewed distribution of Pearson Type 1, for which the mean is known and the range and standard deviation can reasonably be approximated, is therefore required.[5] Hence the appropriate distribution may be expressed as a beta distribution of the form

$$f(x) = \frac{\Gamma(p+q)}{b^{p+q-1}\,\Gamma(p)\cdot\Gamma(q)}\, x^{p-1}(b-x)^{q-1}\ 0<x<b$$

The parameter $p$ and $q$ may be estimated as follows [5]

$$p = \frac{\mu'_1\,(\mu'_1-\mu'_2/b)}{\mu'_2-\mu'^2_1}$$

$$q = \frac{(b-\mu'_1)\,(\mu'_2-\mu'_2/b)}{\mu'_2-\mu'^2_1}$$

where $\mu'_1$ and $\mu'_2$ are the first two moments about the origin.

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[3] P.V. Sukhatme, The calorie gap, *Journal of Nutrition and Dietetics*, 10(4), p. 118-207.

[4] U.G. Yule and M.G. Kendall, *An introduction to the theory of statistics*, London, Griffin, 1950, p. 134.

[5] R. Pearson, *Tables of the incomplete beta-function*, Cambridge University Press, 1968, p. xxvii.

This beta distribution has been fitted to each country, using the mean as given by the food balance sheet for 1970 and a range of 4 500 calories and for various values of the standard deviation (about the mean) between 600 and 1 000 calories. By using the beta distribution it is possible to obtain the percentage of consumer units below the critical limits (Pearson's Tables of the incomplete beta-function). However, this procedure will give grossly inaccurate results if the intake distribution departs radically from the premises outlined above; in particular, if the intake distribution is truncated at the lower end owing to, let us say, a social welfare policy which ensures that even the poorest receive a minimum ration of food, then the percentages given by the beta distribution will overestimate the extent of under-nutrition.

## Energy and protein intake of households: Sri Lanka case study

Evidence derived from food consumption data has been presented for several countries. The evidence is sufficient to warrant the conclusion that the problem of extensive malnutrition among the poor is common to most developing countries. It is instructive to give more detailed results from one major survey, not necessarily because the country in question is typical, but in order to examine more closely the levels and causes of malnutrition. The data on which the following presentation is based relate to Sri Lanka, having been collected in 1969/70[6] in a survey of nearly 10 000 households. The food consumption data, collected by a recall method, agree fairly well with the results from a small sample in which the food was weighed and a sample analysed. The tables below do not include all households, as some minor groups of no relevance to the present study and some other households in which the energy or protein intake seemed impossibly high or low have been excluded.

Table 3-G presents the average energy intake per consumer unit by income group and location.

TABLE 3-G. — ENERGY INTAKE PER CONSUMER UNIT BY INCOME GROUP AND LOCATION IN SRI LANKA

| Income in rupees | Location | Number of households | Mean intake in calories |
|---|---|---|---|
| Less than 200 | Colombo: Urban | 353 | 2 450 |
| | Rural | 185 | 2 850 |
| | Other: Urban | 471 | 2 600 |
| | Rural | 1 368 | 2 650 |
| | Estates | 824 | 2 900 |
| 200-399 | Colombo: Urban | 745 | 2 600 |
| | Rural | 264 | 2 750 |
| | Other: Urban | 643 | 2 650 |
| | Rural | 1 076 | 2 800 |
| | Estates | 571 | 2 850 |
| 400-599 | Urban | 682 | 2 750 |
| | Rural | 416 | 2 900 |
| 600 and more | Urban | 841 | 2 950 |
| | Rural | 196 | 2 950 |

[6] *Socio-economic survey of Sri Lanka, 1969/70.* All data in this and the following tables have been retabulated and made available to FAO by the Government of Sri Lanka.

The income and urban/rural effect on food consumption is clear, even from the mean intakes per consumer unit. Rural dwellers have higher mean intakes than urban dwellers. In general, within one income group the rural dwellers have intakes approximately 150 calories per consumer unit higher than the urban dwellers, although this difference seems to disappear in the top income groups. Residents of Colombo have slightly lower mean intakes than those living in other parts of Sri Lanka. Residents on estates and plantations in Sri Lanka have higher intakes than others with similar incomes, presumably because of the provision of rations to estate workers.

Table 3-H shows the percentage frequency distribution of energy intakes in Sri Lanka classified by urban, rural and estate households.

Slightly more than 20% of the households in the urban sector have an average intake per consumer unit below 2 100 calories. In the rural sector 18.5% of the households are in this category, whereas in the estate sector only 12% of the households have such low mean intakes. At the other

TABLE 3-H. — FREQUENCY DISTRIBUTION OF ENERGY INTAKES IN SRI LANKA

| Energy intake per consumer unit in calories | Percentage of households | | | |
|---|---|---|---|---|
| | Urban | Rural | Estates | Total |
| Less than 1 500 . | 2.6 | 2.7 | 2.7 | 2.7 |
| 1 500-1 699 . . . | 3.4 | 3.3 | 1.3 | 3.0 |
| 1 700-1 899 . . . | 6.3 | 5.6 | 3.7 | 5.6 |
| 1 900-2 099 . . . | 8.1 | 6.9 | 5.0 | 7.2 |
| 2 100-2 299 . . . | 10.3 | 9.1 | 7.0 | 9.2 |
| 2 300-2 499 . . . | 12.3 | 11.4 | 8.6 | 11.4 |
| 2 500-2 699 . . . | 10.7 | 11.2 | 10.9 | 10.9 |
| 2 700-2 899 . . . | 11.2 | 10.4 | 10.5 | 10.8 |
| 2 900-3 099 . . . | 9.3 | 9.2 | 10.8 | 9.4 |
| 3 100-3 299 . . . | 7.2 | 8.1 | 11.7 | 8.3 |
| 3 300-3 499 . . . | 5.0 | 5.7 | 9.1 | 5.9 |
| 3 500 and more . | 13.6 | 16.4 | 18.7 | 15.6 |
| **Total** . . . . . | 100.0 | 100.0 | 100.0 | 100.0 |

TABLE 3-I. — FREQUENCY DISTRIBUTION OF ENERGY INTAKES BY INCOME GROUP IN SRI LANKA

| Energy intake per consumer unit in calories | Percentage of households by income group | | | |
|---|---|---|---|---|
| | Less than 200 rupees | 200-399 rupees | 400-599 rupees | 600 rupees and more |
| Less than 1 500 . | 3.9 | 2.2 | 1.3 | 1.4 |
| 1 500-1 699 . . . | 4.9 | 2.4 | 1.5 | 1.0 |
| 1 700-1 899 . . . | 6.6 | 6.1 | 3.5 | 2.9 |
| 1 900-2 099 . . . | 8.1 | 6.8 | 7.4 | 4.8 |
| 2 100-2 299 . . . | 9.3 | 9.9 | 8.8 | 7.4 |
| 2 300-2 499 . . . | 10.4 | 12.4 | 12.2 | 10.3 |
| 2 500-2 699 . . . | 10.0 | 11.7 | 11.2 | 11.0 |
| 2 700-2 899 . . . | 9.4 | 10.8 | 13.2 | 12.7 |
| 2 900-3 099 . . . | 8.8 | 9.3 | 10.5 | 11.5 |
| 3 100-3 299 . . . | 7.6 | 8.9 | 8.2 | 8.6 |
| 3 300-3 499 . . . | 5.2 | 6.1 | 6.1 | 7.3 |
| 3 500 and more . | 15.8 | 13.4 | 16.1 | 21.1 |
| **Total** . . . . . | 100.0 | 100.0 | 100.0 | 100.0 |

TABLE 3-J. — PERCENTAGE OF HOUSEHOLDS IN SRI LANKA WITH A MEAN INTAKE BELOW 1.2 BMR BY LOCATION AND INCOME GROUP

| | |
|---|---|
| LOCATION | |
| Urban | 12.3 |
| Rural | 11.6 |
| Estates | 7.7 |
| INCOME | |
| Less than 200 rupees | 15.4 |
| 200-399 rupees | 10.7 |
| 400-599 rupees | 6.3 |
| 600 rupees and more | 5.3 |

TABLE 3-K. — DISTRIBUTION OF LOW-INTAKE AND HIGH-INTAKE POOR URBAN HOUSEHOLDS IN COLOMBO BY NUMBER OF CHILDREN

| Number of children \ Percentage of households | Energy intake | |
|---|---|---|
| | 1 800 calories | 2 800 calories |
| 0-1 | 18 | 85 |
| 2-3 | 28 | 14 |
| 4-5 | 46 | 1 |
| 6 or more | 8 | — |
| **Total** | 100 | 100 |

end of the intake scale, while just over 18% of urban households have mean intakes per consumer unit greater than 3 300 calories, this figure rises to 22% for rural households and nearly 28% for estate households.

Table 3-I shows the percentage frequency distribution of energy intake in Sri Lanka classified by income group.

In the lowest income group 23.5% of the households have a mean intake per consumer unit below 2 100 calories. This figure falls to 17.5% for the next income group, to 13.7% for the 400-599 rupee income group and finally to 10% for the top income group. Of the poorer households, 21% have mean intakes per consumer unit in excess of 3 300 calories, whereas over 28% of the richer households are in this category.

The approximate lower level of maintenance cost of energy of the Sri Lanka consumer unit is 1 900 calories. Using this minimum maintenance cost of energy as a critical limit, Table 3-J shows the percentage of households with mean intakes per consumer unit below this figure.

Even in the upper income groups between 5 and 6% of the households have intakes per consumer unit below the lower physiological limit, compared with 15% for the lowest income groups. Nevertheless, even though malnutrition has a functional relationship with poverty, not all the poor are malnourished. Which then of the poorer households may be said to run the greater risk of malnutrition?

Part of the answer to this question is revealed by an examination of malnourished and well-nourished households within the same income group and in the same locality. Since the mean requirement per consumer unit in Sri Lanka is approximately 2 500 calories, households with a mean intake below 1 800 calories are almost certainly malnourished. These households are therefore compared with those in which the average intake per consumer unit is above 2 800 calories and are thus termed "adequately nourished."

In the lowest income group of urban Colombo there were seventy-two households with a mean intake per consumer unit below 1 800 calories and ninety-two households with a mean intake per consumer unit above 2 800 calories. Table 3-K shows the percentage distribution of these households by the number of children in them.

Nearly all the better-nourished households had three children or less living in them; indeed, more than 50% of these households contained no children at all. More than 50% of the households with an average intake of 1 800 calories per consumer unit consisted of four children or more. The modal group contained five children.

The same major difference is revealed by groups other than the poorest urban dwellers. Table 3-L shows the distribution for other socioeconomic groups in the Colombo district.

TABLE 3-L. — DISTRIBUTION OF LOW-INTAKE AND HIGH-INTAKE HOUSEHOLDS IN THE COLOMBO DISTRICT BY NUMBER OF CHILDREN: SELECTED GROUPS

| Number of children | Rural | | | | Urban | | High income | |
|---|---|---|---|---|---|---|---|---|
| | Poor | | Medium income | | Medium income | | | |
| | 1 800 calories | 2 800 calories | 1 800 calories | 2 800 calories | 1 800 calories | 2 800 calories | 1 800 calories | 2 800 calories |
| 0-1 | 18 | 75 | 6 | 55 | 7 | 57 | 18 | 53 |
| 2-3 | 38 | 20 | 41 | 35 | 34 | 33 | 23 | 36 |
| 4-5 | 32 | 5 | 35 | 8 | 33 | 9 | 32 | 9 |
| 6 or more | 10 | — | 18 | 2 | 26 | 1 | 27 | 2 |

## Definitions of regions and subregions

NORTH AMERICA: Canada, United States of America.

WESTERN EUROPE: Andorra, Austria, Belgium, Denmark, Faeroe Islands, Finland, France, Federal Republic of Germany (including West Berlin), Gibraltar, Greece, Holy See, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Spain, Svalbard and Jan Mayen Islands, Sweden, Switzerland, United Kingdom, Yugoslavia.

OCEANIA: Australia, New Zealand.

U.S.S.R. AND EASTERN EUROPE: Albania, Bulgaria, Czechoslovakia, German Democratic Republic (including East Berlin), Hungary, Poland, Romania.

OTHER DEVELOPED MARKET ECONOMIES: Israel, Japan, South Africa.

LATIN AMERICA

*Central America:* Mexico, other Central American countries (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama) and others (British Honduras and Panama Canal Zone).

*Caribbean:* Cuba, Dominican Republic, Haiti, Jamaica, Puerto Rico, Trinidad and Tobago, and others (Antigua, Bahamas, Barbados, Cayman Islands, Dominica, Granada, Guadeloupe, Martinique, Montserrat, Netherlands Antilles, St. Kitts-Nevis-Anguilla, St. Lucia, St. Vincent, Turks and Caicos Islands, Virgin Islands (U.K.) and Virgin Islands (U.S.).

*South America:* Brazil, the River Plate countries (Argentina, Paraguay, Uruguay), other South American countries (Bolivia, Colombia, Ecuador, Guyana, Peru, Surinam, Venezuela) and others (British Antarctic Territory, Falkland Islands and French Guiana).

SOUTH ASIA: Bangladesh, India, Nepal, Pakistan, Sri Lanka, and others (Bhutan, Maldive Islands and Sikkim).

EAST AND SOUTHEAST ASIA: Burma, China, Hong Kong, Indonesia, Khmer Republic, Republic of Korea, Laos, Malaysia, Philippines, Singapore, Thailand, Republic of Viet-Nam, and others (Bonin Islands, Brunei, Macau, Portuguese Timor, Ryukyu Islands and West Irian).

NEAR EAST

*Near East in Africa:* Arab Republic of Egypt, Libyan Arab Republic, Democratic Republic of the Sudan.

*Near East in Asia:* Afghanistan, Cyprus, Iran, Iraq, Jordan, Lebanon, Saudi Arabia, Syrian Arab Republic, Turkey, Yemen Arab Republic, People's Democratic Republic of Yemen, and others (Bahrain, Gaza Strip, Kuwait, Oman, Qatar and United Arab Emirates).

AFRICA

*Northwestern Africa:* Algeria, Morocco, Tunisia, and others (Spanish Sahara, Spanish North Africa).

*Western Africa:* Dahomey, Gambia, Ghana, Guinea, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo, Upper Volta, and others (Cape Verde Islands, Portuguese Guinea and St. Helena).

*Central Africa:* Angola, Cameroon, Central African Republic, Chad, People's Republic of Congo, Gabon, Zaire, and others (Equatorial Guinea and São Tomé and Principe).

*Eastern Africa:* Burundi, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rhodesia, Rwanda, Somalia, Tanzania, Uganda, Zambia, and others (British Indian Ocean Territory, Comoro Islands, French Territory of Afars and Issas, Réunion and Seychelles).

*Southern Africa:* Botswana, French Southern and Antarctic Territories, Lesotho, Namibia, Swaziland.

# Bibliography to Chapter 3


BERGNER, L. & SUSSER, M.W. Low birth weight and prenatal nutrition. *Pediatrics*, 46: 946-966. 1970

BHATTACHARJEE, J.P. Underemployment among Indian farmers: an analysis of its nature and extent based on data for Bihar. *Artha Vijñana*, 3(3): 246-278. 1961

BOSERUP, E. *The conditions of agricultural growth*. London, Allen & Unwin. 1965

CATHOLIC INFORMATION OFFICE. *World population year*. Middlesex, England. 1974

CLARK, C. *Population growth and land use*. London, Macmillan. 1967

CRAMER, H.H. *Plant protection and world crop production*. Leverkusen, Farbenfabriken Bayer. 1967

DEN HARTOG, A. Unequal distribution of food within households. *Nutrition Newsletter* (FAO), 10(4): 8-17. 1972

FAO. Trade in agricultural commodities in the first United Nations Development Decade. *FAO Commodity Review, 1964*, Special supplement. Rome. 1964

FAO. *Provisional Indicative World Plan for Agricultural Development*. Rome. 1970

FAO. *Agricultural commodity projections, 1970-1980*. Rome. CCP 71/20. Rome. 1971a

FAO. *Review of world consumption surveys, 1970*. Rome. 1971b

FAO. *Income elasticities of demand for agricultural products*. Rome. 1972a

FAO. *Perspective study of agricultural development for South America (Provisional)*. Vol. 1. PSWAD/01. Rome. 1972b

FAO. *Annual fertilizer review 1972*. Rome. 1973

FAO. *FAO commodity review and outlook, 1972-1973*. Rome. 1973a

FAO. *Production yearbook 1972*. Rome. 1973b

FAO. *Trade yearbook 1972*. Rome. 1973c

FAO/WHO. *Energy and protein requirements. Report of a Joint FAO/WHO Ad Hoc Expert Committee*. Rome, FAO. 1973

GOMEZ, F. *et al.* Malnutrition in infancy and childhood with special reference to kwashiorkor. In *Advances in Pediatrics*, Vol. 7, p. 131. New York, Yearbook Publishers. 1955

HAY, F.G. & SINHA, R.P. Analysis of food expenditure patterns of industrial workers and their families in a developing country. *Journal of Development Studies*, 8(4): 425-446. 1972

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT. *Size distribution of income: compilation of data*. Washington, D.C. 1973

ITERNATIONAL LABOUR OFFICE. *Distribution of land ownership. ILO Mission to Kenya, 1972*. Geneva. 1972

KHANDKAR, R.H. Distribution of income and wealth in Pakistan. *Pakistan Economic and Social Review*, 11(1): 1-39. 1973

NATIONAL INSTITUTE OF NUTRITION. *Diet atlas of India*. Delhi, Indian Council of Medical Research.

NICOL, B.M. The calorie requirements of Nigerian peasant farmers. *British Journal of Nutrition*, 13: 293-306. 1959a

NICOL, B.M. The protein requirements of Nigerian peasant farmers. *British Journal of Nutrition*, 13: 307-320. 1959b

PRAIS, S.J. & HOUTHAKKER, H.S. *The analysis of family budget*. London, Cambridge University Press. 1971

SINHA, R.P. Some determinants of the demand for food. *Farm Economist*, 11: 281-293. 1968

SUKHATME, P.V. The world's hunger and future needs in food supplies. *Journal of the Royal Statistical Society*, Series A, 124(4): 463-508. 1961

TANNER, J.M. Earlier maturation in man. *Scientific American*, 218: 21-27. 1968

UNITED NATIONS. *World population project, 1965-1985, as assessed in 1968*. New York. Working Paper No. 30. 1969

UNITED NATIONS. *Yearbook of national accounts statistics, 1971*. New York. 1973

UNITED NATIONS/FAO/ILO. *Progress in land reform: fifth report*. New York, United Nations. (Also first to fourth reports) 1970

U.S. DEPARTMENT OF AGRICULTURE. *Austria: projected level of supply, demand, and trade of agricultural products in 1965 and 1975*. Washington, D.C. ERS, Foreign 62.

U.S. GOVERNMENT. *The world food problem. Report of the President's Science Advisory Committee*. Vol. 2. Washington, D.C. 1967

WALKER, A.R. & RICHARDSON, B.D. International and local growth standards. *American Journal of Clinical Nutrition*, 26: 897-900. 1973

WORLD HEALTH ORGANIZATION. *Childhood. Report of the Inter-American investigation of mortality in childhood*. Washington, D.C., WHO/Pan American Health Organization. Scientific Publication No. 262. 1973

# ANNEX TABLES

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

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Million metric tons* | | | | | | | | | | | | |
| **World** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat | 228.47 | 258.98 | 239.58 | 277.11 | 267.37 | 310.11 | 298.92 | 331.25 | 315.19 | 318.44 | 353.88 | 347.22 | 375.24 |
| Barley | 82.15 | 98.91 | 101.83 | 109.31 | 106.32 | 117.27 | 118.60 | 131.05 | 137.03 | 139.55 | 151.55 | 152.67 | 169.12 |
| Oats | 50.50 | 50.26 | 47.36 | 44.31 | 46.64 | 48.56 | 50.83 | 54.37 | 55.39 | 55.56 | 57.75 | 51.30 | 54.30 |
| Maize | 206.95 | 210.46 | 221.96 | 215.90 | 227.81 | 242.25 | 266.87 | 252.70 | 267.60 | 261.31 | 305.00 | 303.89 | 311.78 |
| Rice (milled equivalent) [1] | 157.67 | 159.42 | 165.94 | 172.63 | 166.80 | 165.64 | 180.37 | 185.07 | 190.77 | 200.70 | 199.10 | 190.26 | 208.48 |
| Sugar (centrifugal) | 53.72 | 51.28 | 53.03 | 62.80 | 63.76 | 64.15 | 66.14 | 66.19 | 67.08 | 74.18 | 74.92 | 73.98 | 78.92 |
| Apples | 15.36 | 19.88 | 18.69 | 19.63 | 19.54 | 19.20 | 22.18 | 20.51 | 23.13 | 21.41 | 21.15 | 19.40 | 21.79 |
| Citrus fruit | 23.86 | 24.48 | 24.53 | 25.41 | 27.59 | 30.81 | 33.66 | 33.11 | 36.74 | 37.53 | 39.45 | 41.63 | 43.95 |
| Bananas | 21.03 | 21.63 | 22.82 | 24.31 | 26.32 | 27.13 | 27.97 | 28.11 | 29.56 | 30.75 | 33.84 | 33.81 | 34.98 |
| Olive oil | 1.50 | 1.00 | 1.95 | 1.00 | 1.36 | 1.36 | 1.50 | 1.58 | 1.35 | 1.52 | 1.67 | 1.57 | 1.56 |
| Soybeans | 31.10 | 30.87 | 31.69 | 32.38 | 36.52 | 39.08 | 40.71 | 44.00 | 45.20 | 46.54 | 48.67 | 52.31 | 62.88 |
| Groundnuts | 14.69 | 15.53 | 16.17 | 17.09 | 16.22 | 16.35 | 17.64 | 15.95 | 16.96 | 18.21 | 19.04 | 16.34 | 17.33 |
| Cottonseed | 18.03 | 19.30 | 20.48 | 21.23 | 21.94 | 20.31 | 20.00 | 21.65 | 21.36 | 21.77 | 22.73 | 24.05 | 23.80 |
| Copra | 3.46 | 3.21 | 3.38 | 3.44 | 3.39 | 3.58 | 3.26 | 3.40 | 3.41 | 3.48 | 3.96 | 4.29 | 5.94 |
| Total vegetable oils and oilseeds (oil equivalent) | 25.39 | 25.89 | 28.75 | 29.00 | 30.40 | 30.88 | 32.10 | 32.91 | 33.29 | 35.54 | 36.67 | 36.05 | 36.66 |
| Coffee | 4.67 | 4.30 | 4.09 | 3.68 | 5.06 | 3.89 | 4.51 | 3.88 | 4.34 | 3.95 | 4.70 | 4.56 | 4.19 |
| Cocoa | 1.18 | 1.20 | 1.25 | 1.55 | 1.22 | 1.33 | 1.39 | 1.23 | 1.42 | 1.52 | 1.61 | 1.48 | 1.36 |
| Tea | 1.05 | 1.06 | 1.09 | 1.12 | 1.13 | 1.19 | 1.19 | 1.24 | 1.26 | 1.30 | 1.40 | 1.52 | 1.54 |
| Wine | 21.93 | 28.52 | 25.83 | 28.52 | 28.86 | 26.30 | 28.53 | 28.33 | 27.75 | 30.21 | 28.73 | 28.20 | 35.01 |
| Tobacco | 3.75 | 4.13 | 4.51 | 4.88 | 4.58 | 4.59 | 4.89 | 4.76 | 4.62 | 4.68 | 4.52 | 4.87 | 4.83 |
| Cotton (lint) | 9.67 | 10.52 | 11.07 | 11.47 | 11.91 | 10.92 | 10.61 | 11.56 | 11.44 | 11.73 | 12.18 | 13.05 | 12.92 |
| Jute [2] | 3.61 | 3.09 | 3.32 | 3.30 | 3.46 | 3.71 | 3.79 | 2.66 | 3.68 | 3.56 | 3.30 | 3.64 | 3.96 |
| Sisal, henequen and other agaves | 0.80 | 0.83 | 0.87 | 0.91 | 0.90 | 0.89 | 0.84 | 0.81 | 0.82 | 0.83 | 0.79 | 0.80 | 0.84 |
| Wool (greasy) | 2.55 | 2.58 | 2.58 | 2.60 | 2.66 | 2.64 | 2.72 | 2.72 | 2.78 | 2.81 | 2.76 | 2.71 | 2.63 |
| Rubber | 2.14 | 2.17 | 2.22 | 2.32 | 2.40 | 2.47 | 2.43 | 2.64 | 2.89 | 2.94 | 3.03 | 3.07 | 3.45 |
| Milk (total) | 345.70 | 349.13 | 346.63 | 354.73 | 370.03 | 378.45 | 387.37 | 391.67 | 393.43 | 395.42 | 398.98 | 410.93 | 418.42 |
| Meat [3] | 77.39 | 80.33 | 83.34 | 83.77 | 87.33 | 91.24 | 95.31 | 98.23 | 100.41 | 104.22 | 107.62 | 109.54 | 110.12 |
| Eggs | 15.63 | 16.02 | 16.40 | 16.95 | 17.42 | 17.96 | 19.22 | 19.74 | 20.55 | 21.45 | 22.14 | 22.56 | 22.68 |
| FISHERY PRODUCTS [4,5] | | | | | | | | | | | | | |
| Freshwater and diadromous fish | 6.96 | 6.09 | 6.57 | 7.58 | 8.55 | 9.18 | 8.96 | 9.27 | 9.80 | 11.11 | 11.68 | 11.95 | 12.01 |
| Marine fish | 32.19 | 34.04 | 34.92 | 39.54 | 39.64 | 42.99 | 45.95 | 48.66 | 47.22 | 52.49 | 52.04 | 46.63 | 46.80 |
| Crustacea, molluscs and other invertebrates | 3.52 | 3.77 | 4.15 | 3.90 | 4.17 | 4.30 | 4.54 | 4.97 | 4.76 | 4.94 | 4.89 | 5.19 | 5.10 |
| Seals and miscellaneous aquatic mammals | — | — | — | — | — | 0.01 | — | — | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 |
| Miscellaneous aquatic animals and residues | 0.20 | 0.24 | 0.22 | 0.27 | 0.24 | 0.14 | 0.15 | 0.13 | 0.10 | 0.13 | 0.12 | 0.13 | 0.13 |
| Aquatic plants | 0.69 | 0.79 | 0.69 | 0.58 | 0.65 | 0.68 | 0.83 | 0.82 | 0.77 | 0.87 | 0.92 | 0.89 | 0.90 |
| FOREST PRODUCTS [4] | | | | | | | | | | | | | |
| Fuelwood [6] | 1030 | 1035 | 1060 | 1080 | 1090 | 1097 | 1096 | 1108 | 1115 | 1120 | 1135 | 1129 | 1150 |
| Industrial roundwood [6] | 1019 | 1038 | 1056 | 1113 | 1133 | 1153 | 1179 | 1205 | 1234 | 1276 | 1292 | 1306 | 1350 |
| Sawn softwood [6] | 263.2 | 265.3 | 273.3 | 288.5 | 293.0 | 290.1 | 292.6 | 305.3 | 310.5 | 311.3 | 327.0 | 335.6 | 345.0 |
| Sawn hardwood [6] | 73.3 | 74.5 | 78.4 | 81.3 | 82.3 | 84.2 | 85.7 | 87.8 | 93.5 | 93.0 | 92.1 | 93.5 | 98.0 |
| Plywood [6] | 16.5 | 18.1 | 20.1 | 22.2 | 24.2 | 25.2 | 26.4 | 29.6 | 30.6 | 32.6 | 35.8 | 38.6 | 42.0 |
| Particle board [6] | 3.9 | 4.8 | 6.0 | 7.5 | 9.2 | 11.0 | 12.6 | 14.9 | 17.4 | 19.5 | 28.3 | 27.5 | 30.6 |
| Fibreboard | 4.6 | 4.9 | 5.5 | 6.1 | 6.4 | 6.3 | 6.5 | 7.1 | 7.6 | 7.8 | 8.4 | 9.0 | 10.0 |
| Mechanical wood pulp | 18.6 | 19.1 | 19.7 | 20.9 | 21.8 | 22.9 | 22.5 | 23.9 | 25.6 | 26.4 | 26.4 | 27.3 | 28.0 |
| Chemical wood pulp | 44.1 | 46.2 | 50.3 | 54.8 | 57.9 | 62.3 | 64.5 | 70.3 | 75.1 | 78.0 | 78.2 | 82.3 | 87.0 |
| Newsprint | 14.3 | 14.5 | 14.9 | 16.2 | 17.0 | 18.3 | 18.5 | 19.3 | 20.8 | 21.5 | 21.1 | 21.6 | 23.0 |
| Printing and writing paper | 15.6 | 16.3 | 17.4 | 18.7 | 19.7 | 21.9 | 22.5 | 24.4 | 26.5 | 27.6 | 27.9 | 30.4 | 34.0 |
| Other paper and paperboard | 47.5 | 50.0 | 53.2 | 57.2 | 61.0 | 64.5 | 65.9 | 71.4 | 76.8 | 79.0 | 80.8 | 86.2 | 91.0 |

See notes at end of table.

ANNEX TABLE 1. – VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Million metric tons* | | | | | | | | | | | | |
| **Western Europe** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat | 37.64 | 47.88 | 41.55 | 46.84 | 48.90 | 44.61 | 52.16 | 51.83 | 50.14 | 47.69 | 58.44 | 56.56 | 63.03 |
| Barley | 22.54 | 25.92 | 28.50 | 29.53 | 30.90 | 32.57 | 37.95 | 37.91 | 39.49 | 35.96 | 42.04 | 44.15 | 44.96 |
| Oats | 12.96 | 12.63 | 12.62 | 11.96 | 11.86 | 11.89 | 13.40 | 13.09 | 12.53 | 11.96 | 13.89 | 12.62 | 11.96 |
| Rye | 5.41 | 6.03 | 5.85 | 6.34 | 5.40 | 4.86 | 5.56 | 5.59 | 5.12 | 4.74 | 5.38 | 5.19 | 4.67 |
| Maize | 13.20 | 12.45 | 15.21 | 15.44 | 14.90 | 18.29 | 17.89 | 19.32 | 21.72 | 23.43 | 25.54 | 25.56 | 28.72 |
| Sugar (centrifugal) | 7.80 | 7.34 | 8.56 | 10.21 | 9.08 | 9.47 | 10.15 | 10.39 | 11.13 | 10.80 | 12.47 | 11.62 | 12.18 |
| Potatoes | 73.07 | 74.02 | 80.64 | 68.48 | 63.17 | 65.04 | 69.01 | 66.43 | 59.88 | 63.68 | 60.85 | 56.74 | 55.39 |
| Apples | 7.87 | 11.93 | 10.02 | 10.44 | 10.75 | 9.79 | 12.16 | 10.65 | 12.18 | 11.06 | 10.67 | 9.11 | 11.30 |
| Citrus fruit | 4.07 | 3.25 | 4.26 | 4.44 | 4.55 | 5.15 | 4.93 | 5.15 | 5.91 | 5.47 | 5.61 | 6.40 | 6.23 |
| Olive oil | 1.23 | 0.80 | 1.63 | 0.65 | 1.10 | 1.06 | 1.18 | 1.21 | 1.16 | 1.21 | 1.32 | 1.17 | 1.21 |
| Rapeseed | 0.38 | 0.53 | 0.41 | 0.65 | 0.77 | 0.61 | 0.94 | 1.02 | 0.98 | 1.06 | 1.29 | 1.47 | 1.44 |
| Total vegetable oils and oilseeds (oil equivalent) [7] | 1.55 | 1.20 | 2.18 | 1.25 | 1.69 | 1.61 | 1.84 | 1.82 | 1.80 | 1.82 | 2.19 | 2.11 | 2.36 |
| Wine | 14.22 | 19.93 | 16.69 | 19.74 | 19.44 | 18.34 | 18.83 | 18.62 | 17.67 | 20.44 | 17.63 | 17.54 | 23.37 |
| Tobacco | 0.21 | 0.26 | 0.34 | 0.38 | 0.37 | 0.33 | 0.37 | 0.32 | 0.29 | 0.31 | 0.30 | 0.33 | 0.34 |
| Cotton (lint) | 0.20 | 0.21 | 0.20 | 0.15 | 0.16 | 0.18 | 0.17 | 0.18 | 0.17 | 0.17 | 0.17 | 0.19 | 0.18 |
| Milk (total) | 106.92 | 108.24 | 107.64 | 110.33 | 114.03 | 116.64 | 119.27 | 119.00 | 118.52 | 117.12 | 116.84 | 122.50 | 124.60 |
| Meat [3] | 14.84 | 15.59 | 15.86 | 16.07 | 16.60 | 17.17 | 17.95 | 18.67 | 18.82 | 21.19 | 22.03 | 21.76 | 21.84 |
| Eggs | 3.44 | 3.55 | 3.70 | 3.91 | 3.82 | 3.96 | 4.06 | 4.20 | 4.42 | 4.61 | 4.64 | 4.75 | 4.82 |
| FISHERY PRODUCTS [5] | 7.96 | 8.24 | 8.50 | 9.17 | 10.25 | 10.91 | 11.30 | 11.01 | 10.41 | 11.00 | 11.08 | 11.23 | 11.36 |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Fuelwood [6] | 74.6 | 72.5 | 70.9 | 64.4 | 62.6 | 58.2 | 55.2 | 52.9 | 48.7 | 46.9 | 45.1 | 43.0 | 43.0 |
| Coniferous logs [6] | 71.0 | 70.5 | 66.9 | 75.1 | 76.0 | 74.5 | 75.1 | 74.9 | 80.0 | 85.2 | 86.7 | 86.8 | 89.5 |
| Broadleaved logs [6] | 20.3 | 20.5 | 21.2 | 22.5 | 23.0 | 23.7 | 23.6 | 23.2 | 24.2 | 25.6 | 23.4 | 23.0 | 22.6 |
| Other industrial roundwood [6] | 81.9 | 83.1 | 78.1 | 81.9 | 83.0 | 84.8 | 90.6 | 80.4 | 90.0 | 98.8 | 102.2 | 92.7 | 95.5 |
| Sawn softwood [6] | 40.4 | 39.8 | 39.1 | 42.1 | 42.0 | 41.3 | 41.9 | 43.3 | 46.0 | 47.5 | 49.0 | 48.9 | 52.5 |
| Sawn hardwood [6] | 9.3 | 9.1 | 9.4 | 10.2 | 10.6 | 10.8 | 10.9 | 11.1 | 11.5 | 11.7 | 12.1 | 12.0 | 13.1 |
| Plywood [6] | 2.1 | 2.2 | 2.5 | 2.6 | 2.6 | 2.6 | 2.7 | 2.8 | 3.1 | 3.1 | 3.2 | 3.6 | 3.9 |
| Particle board [6] | 2.4 | 2.8 | 3.5 | 4.3 | 5.1 | 5.8 | 6.6 | 7.8 | 9.3 | 10.7 | 17.3 | 14.6 | 16.5 |
| Fibreboard | 1.7 | 1.7 | 1.8 | 1.9 | 2.0 | 1.9 | 1.9 | 2.0 | 2.1 | 2.2 | 2.2 | 2.3 | 2.5 |
| Mechanical wood pulp | 5.6 | 5.6 | 5.8 | 6.2 | 6.4 | 6.7 | 6.5 | 7.1 | 7.6 | 8.0 | 7.6 | 7.9 | 9.0 |
| Chemical wood pulp | 10.6 | 10.8 | 11.8 | 13.1 | 13.8 | 13.9 | 14.6 | 15.1 | 16.3 | 17.0 | 16.5 | 17.3 | 18.8 |
| Newsprint | 4.1 | 4.1 | 4.1 | 4.4 | 4.7 | 4.9 | 4.9 | 5.0 | 5.3 | 5.6 | 5.2 | 5.3 | 5.1 |
| Printing and writing paper | 4.8 | 4.8 | 5.3 | 5.7 | 6.0 | 6.7 | 7.1 | 8.1 | 9.0 | 9.6 | 9.6 | 10.4 | 11.5 |
| Other paper and paperboard | 12.3 | 12.7 | 13.9 | 14.8 | 15.5 | 15.9 | 16.1 | 17.5 | 19.2 | 19.8 | 19.7 | 20.9 | 22.9 |
| **Eastern Europe and U.S.S.R.** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat | 80.04 | 84.70 | 63.15 | 88.83 | 78.25 | 118.59 | 98.08 | 114.43 | 100.57 | 118.99 | 123.44 | 111.82 | 135.74 |
| Rye | 28.06 | 26.73 | 21.92 | 23.78 | 27.64 | 23.65 | 23.65 | 25.58 | 21.66 | 20.58 | 23.26 | 20.58 | 21.66 |
| Barley | 19.28 | 25.96 | 25.95 | 34.73 | 27.18 | 34.89 | 32.39 | 36.92 | 41.53 | 46.77 | 45.00 | 47.89 | 67.01 |
| Oats | 14.30 | 10.82 | 8.79 | 9.48 | 10.37 | 13.70 | 16.61 | 16.47 | 18.25 | 19.04 | 19.92 | 19.19 | 22.45 |
| Millet and sorghum | 3.00 | 2.89 | 1.96 | 3.62 | 2.31 | 3.27 | 3.36 | 2.77 | 3.43 | 2.20 | 2.14 | 2.21 | 4.45 |
| Maize | 27.67 | 25.86 | 23.27 | 26.82 | 19.34 | 23.32 | 22.27 | 22.26 | 27.66 | 23.22 | 24.48 | 29.10 | 30.73 |
| Pulses | 4.98 | 8.51 | 8.99 | 12.05 | 7.86 | 8.27 | 7.65 | 7.93 | 8.72 | 8.51 | 7.82 | 7.79 | 9.17 |
| Cotton (lint) | 1.54 | 1.51 | 1.78 | 1.82 | 1.96 | 2.09 | 2.07 | 2.01 | 1.93 | 2.37 | 2.37 | 2.43 | 2.57 |
| Flax (fibre) | 0.49 | 0.54 | 0.48 | 0.44 | 0.58 | 0.56 | 0.61 | 0.51 | 0.59 | 0.55 | 0.59 | 0.56 | 0.55 |
| Sugar (centrifugal) | 10.26 | 9.73 | 9.63 | 14.39 | 12.55 | 12.85 | 14.45 | 13.78 | 12.20 | 12.93 | 11.96 | 12.67 | 13.61 |
| Total vegetable oils and oilseeds (oil equivalent) [7] | 2.99 | 3.10 | 3.18 | 3.90 | 3.86 | 4.35 | 4.64 | 4.65 | 4.24 | 4.45 | 4.40 | 4.07 | 5.18 |
| Sunflowerseed | 5.65 | 5.74 | 5.26 | 7.03 | 6.45 | 7.35 | 7.89 | 7.97 | 7.77 | 7.42 | 7.09 | 6.55 | 8.93 |
| Potatoes | 148.45 | 130.91 | 141.52 | 167.15 | 152.14 | 159.11 | 169.23 | 177.53 | 155.38 | 169.30 | 152.57 | 149.79 | 181.60 |
| Milk (total) [7] | 92.37 | 92.72 | 89.94 | 92.53 | 103.54 | 109.16 | 114.18 | 117.03 | 116.45 | 118.12 | 118.71 | 120.17 | 124.85 |
| Meat [3] | 13.70 | 14.46 | 15.03 | 13.42 | 15.48 | 16.42 | 17.50 | 17.95 | 18.06 | 18.60 | 19.88 | 20.88 | 21.09 |
| Wool (greasy) | 0.44 | 0.45 | 0.45 | 0.42 | 0.44 | 0.45 | 0.48 | 0.51 | 0.48 | 0.51 | 0.52 | 0.51 | 0.52 |
| Eggs | 2.62 | 2.62 | 2.51 | 2.49 | 2.69 | 2.85 | 3.03 | 3.13 | 3.26 | 3.54 | 3.86 | 4.03 | 4.23 |

See notes at end of table.

ANNEX TABLE 1. — VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Million metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS [5] | 3.63 | 4.02 | 4.47 | 5.05 | 5.73 | 6.01 | 6.54 | 6.94 | 7.40 | 8.24 | 8.41 | 8.88 | 9.82 |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Fuelwood [6] | 113.7 | 112.5 | 118.1 | 124.5 | 120.7 | 117.9 | 112.5 | 106.8 | 103.6 | 101.4 | 101.6 | 100.5 | 101.5 |
| Coniferous logs [6] | 171.5 | 171.3 | 173.0 | 178.1 | 145.5 | 144.4 | 154.7 | 156.2 | 157.9 | 166.6 | 166.5 | 167.5 | 174.0 |
| Broadleaved logs [6] | 32.5 | 34.1 | 34.4 | 35.5 | 30.4 | 30.6 | 32.5 | 33.1 | 33.7 | 34.5 | 35.6 | 35.7 | 38.5 |
| Other industrial roundwood [6] | 100.9 | 104.1 | 113.0 | 116.7 | 150.4 | 151.1 | 155.0 | 157.9 | 152.1 | 156.8 | 157.3 | 154.6 | 167.0 |
| Sawn softwood [6] | 104.1 | 104.3 | 105.1 | 111.4 | 111.7 | 108.5 | 110.2 | 111.3 | 113.1 | 116.5 | 119.1 | 119.3 | 120.0 |
| Sawn hardwood [6] | 20.2 | 20.6 | 21.1 | 19.1 | 19.0 | 18.8 | 19.3 | 19.5 | 19.8 | 20.4 | 20.8 | 20.8 | 20.6 |
| Plywood [6] | 2.0 | 2.2 | 2.2 | 2.4 | 2.4 | 2.5 | 2.6 | 2.6 | 2.8 | 2.9 | 2.7 | 2.7 | 2.9 |
| Particle board [6] | 0.7 | 0.9 | 1.2 | 1.5 | 1.8 | 3.0 | 2.7 | 3.1 | 3.4 | 3.8 | 4.4 | 4.8 | 4.9 |
| Fibreboard | 0.5 | 0.6 | 0.7 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.9 |
| Mechanical wood pulp | 1.6 | 1.6 | 1.7 | 1.7 | 1.8 | 2.0 | 2.0 | 2.1 | 2.1 | 2.1 | 2.2 | 2.4 | 2.5 |
| Chemical wood pulp | 3.8 | 4.2 | 4.3 | 4.3 | 4.6 | 5.1 | 5.6 | 6.0 | 6.3 | 6.9 | 7.3 | 7.2 | 7.6 |
| Newsprint | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.2 | 1.3 | 1.3 | 1.4 | 1.4 | 1.5 | 1.5 | 1.5 |
| Printing and writing paper | 1.3 | 1.4 | 1.4 | 1.5 | 1.5 | 1.6 | 1.8 | 1.9 | 1.9 | 1.9 | 2.0 | 2.1 | 2.2 |
| Other paper and paperboard | 4.0 | 4.2 | 4.4 | 4.7 | 5.2 | 5.7 | 6.0 | 6.4 | 6.7 | 7.3 | 7.7 | 8.1 | 8.2 |
| **North America** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat | 41.25 | 45.11 | 50.90 | 51.28 | 53.48 | 58.22 | 57.57 | 60.58 | 58.36 | 45.81 | 58.44 | 56.56 | 63.04 |
| Barley | 11.00 | 12.93 | 13.37 | 12.07 | 13.29 | 15.12 | 13.53 | 16.29 | 17.46 | 18.11 | 23.19 | 20.51 | 19.47 |
| Oats | 19.04 | 22.29 | 20.89 | 17.72 | 19.62 | 17.41 | 16.15 | 19.23 | 19.52 | 18.99 | 18.40 | 14.67 | 14.68 |
| Maize | 92.13 | 92.45 | 103.01 | 89.85 | 105.26 | 106.27 | 122.79 | 113.66 | 118.27 | 108.03 | 146.24 | 144.10 | 146.12 |
| Sorghum | 12.20 | 12.96 | 14.87 | 12.44 | 17.09 | 18.16 | 19.20 | 18.79 | 18.98 | 17.36 | 22.25 | 20.56 | 23.79 |
| Rice (milled equivalent) [1] | 1.60 | 1.95 | 2.01 | 2.16 | 2.25 | 2.51 | 2.64 | 3.07 | 2.68 | 2.47 | 2.53 | 2.52 | 2.74 |
| Sugar (centrifugal) | 4.08 | 4.28 | 5.04 | 5.25 | 4.87 | 4.94 | 4.93 | 5.51 | 5.20 | 5.21 | 5.58 | 5.90 | 5.50 |
| Potatoes | 15.32 | 14.15 | 14.40 | 13.10 | 15.30 | 16.42 | 15.99 | 15.75 | 16.51 | 17.29 | 16.72 | 15.36 | 15.63 |
| Apples | 2.92 | 2.99 | 3.08 | 3.28 | 3.17 | 2.99 | 2.89 | 2.88 | 3.51 | 3.24 | 3.16 | 3.06 | 3.13 |
| Citrus fruit | 6.93 | 7.89 | 5.95 | 5.67 | 6.95 | 7.96 | 10.37 | 7.56 | 10.18 | 10.31 | 10.83 | 11.04 | 12.62 |
| Soybeans | 18.65 | 18.39 | 19.16 | 19.27 | 23.23 | 25.52 | 26.78 | 30.27 | 30.86 | 30.96 | 32.29 | 34.96 | 43.03 |
| Cottonseed | 5.42 | 5.57 | 5.62 | 5.66 | 5.52 | 3.59 | 2.91 | 4.21 | 3.69 | 3.69 | 3.85 | 4.89 | 4.49 |
| Total vegetable oils and oilseeds (oil equivalent) [7] | 4.96 | 5.01 | 5.41 | 5.38 | 6.37 | 6.34 | 6.30 | 7.30 | 7.57 | 8.03 | 8.24 | 8.58 | 10.04 |
| Tobacco | 1.03 | 1.14 | 1.15 | 1.08 | 0.92 | 0.96 | 0.99 | 0.88 | 0.93 | 0.97 | 0.87 | 0.88 | 0.91 |
| Cotton (lint) | 3.12 | 3.24 | 3.34 | 3.31 | 3.26 | 2.09 | 1.62 | 2.38 | 2.18 | 2.22 | 2.28 | 2.98 | 2.82 |
| Milk (total) | 65.35 | 65.61 | 65.16 | 65.99 | 64.66 | 62.73 | 62.14 | 61.51 | 61.27 | 61.37 | 61.84 | 62.60 | 60.65 |
| Meat [3] | 18.71 | 18.77 | 19.74 | 21.01 | 20.88 | 21.89 | 22.94 | 23.34 | 23.63 | 24.67 | 25.56 | 25.48 | 24.90 |
| Eggs | 4.09 | 4.12 | 4.07 | 4.15 | 4.17 | 4.21 | 4.43 | 4.40 | 4.40 | 4.48 | 4.56 | 4.44 | 4.24 |
| FISHERY PRODUCTS [5] | 3.95 | 4.10 | 3.97 | 3.83 | 3.96 | 3.89 | 3.73 | 3.95 | 3.87 | 4.14 | 4.08 | 3.82 | 3.82 |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Fuelwood [6] | 48.3 | 39.4 | 36.5 | 37.6 | 36.8 | 34.8 | 26.8 | 26.0 | 24.9 | 19.4 | 18.0 | 17.2 | 17.2 |
| Coniferous logs [6] | 176.6 | 193.5 | 196.8 | 208.8 | 212.5 | 216.5 | 214.8 | 233.7 | 227.8 | 227.7 | 246.1 | 263.0 | 276.0 |
| Broadleaved logs [6] | 33.4 | 35.7 | 38.7 | 39.8 | 41.7 | 41.7 | 39.7 | 38.1 | 38.8 | 38.9 | 38.4 | 40.5 | 42.0 |
| Other industrial roundwood [6] | 125.0 | 124.3 | 119.7 | 127.9 | 135.2 | 145.1 | 142.5 | 145.2 | 161.1 | 163.3 | 151.5 | 154.7 | 160.0 |
| Sawn softwood [6] | 79.6 | 82.5 | 87.8 | 91.0 | 93.1 | 91.6 | 89.1 | 96.5 | 95.3 | 90.0 | 100.7 | 106.2 | 108.0 |
| Sawn hardwood [6] | 15.1 | 15.8 | 17.0 | 18.4 | 18.9 | 19.4 | 18.9 | 18.4 | 21.4 | 17.9 | 17.6 | 18.5 | 19.0 |
| Plywood [6] | 9.7 | 10.6 | 11.9 | 13.1 | 14.5 | 14.8 | 14.9 | 16.5 | 15.6 | 16.0 | 18.3 | 20.0 | 22.0 |
| Particle board [6] | 0.6 | 0.8 | 0.9 | 1.2 | 1.6 | 2.2 | 2.4 | 2.9 | 3.4 | 3.4 | 4.8 | 6.1 | 6.4 |
| Fibreboard | 1.9 | 2.0 | 2.2 | 2.4 | 2.4 | 2.3 | 2.4 | 2.7 | 3.0 | 2.9 | 3.2 | 3.6 | 3.9 |
| Mechanical wood pulp | 9.6 | 9.9 | 10.1 | 10.8 | 11.1 | 11.8 | 11.4 | 12.1 | 13.0 | 13.1 | 13.7 | 13.8 | 14.0 |
| Chemical wood pulp | 25.0 | 26.4 | 28.5 | 31.1 | 33.0 | 35.9 | 36.3 | 40.3 | 42.7 | 43.0 | 43.1 | 45.4 | 46.0 |
| Newsprint | 8.0 | 8.0 | 8.0 | 8.7 | 9.0 | 9.9 | 9.8 | 10.1 | 11.1 | 11.0 | 10.8 | 11.0 | 11.2 |
| Printing and writing paper | 6.9 | 7.3 | 7.6 | 8.1 | 8.8 | 9.8 | 9.7 | 10.3 | 10.9 | 10.8 | 11.1 | 12.1 | 12.6 |
| Other paper and paperboard | 23.9 | 25.1 | 26.2 | 28.0 | 29.9 | 31.6 | 31.4 | 34.1 | 36.0 | 35.5 | 36.5 | 39.2 | 40.8 |

See notes at end of table

ANNEX TABLE 1. – VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Million metric tons* | | | | | | | | | | | | |
| **Oceania** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat | 6.98 | 8.57 | 9.17 | 10.31 | 7.32 | 12.99 | 7.89 | 15.25 | 11.00 | 8.18 | 8.83 | 7.04 | 12.35 |
| Sugar (centrifugal) | 1.55 | 2.13 | 2.06 | 2.29 | 2.30 | 2.69 | 2.67 | 3.17 | 2.52 | 2.52 | 2.79 | 2.82 | 2.53 |
| Wool (greasy) | 1.00 | 1.05 | 1.04 | 1.09 | 1.12 | 1.07 | 1.13 | 1.13 | 1.21 | 1.26 | 1.22 | 1.20 | 1.06 |
| Milk (total) | 11.65 | 12.15 | 12.31 | 12.66 | 13.14 | 13.26 | 13.75 | 13.18 | 13.61 | 13.48 | 13.19 | 13.20 | 13.38 |
| Meat [3] | 2.32 | 2.51 | 2.58 | 2.65 | 2.58 | 2.53 | 2.71 | 2.86 | 3.07 | 3.11 | 3.25 | 3.55 | 3.65 |
| FISHERY PRODUCTS [5] | 0.11 | 0.11 | 0.11 | 0.12 | 0.13 | 0.14 | 0.15 | 0.16 | 0.14 | 0.16 | 0.18 | 0.18 | 0.19 |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Fuelwood [6] | 7.6 | 7.6 | 7.5 | 7.5 | 7.4 | 7.4 | 7.3 | 7.3 | 7.3 | 7.2 | 7.4 | 7.4 | 7.4 |
| Industrial roundwood [6] | 15.8 | 15.0 | 16.0 | 17.3 | 17.6 | 18.1 | 18.2 | 19.0 | 19.8 | 20.3 | 20.9 | 21.5 | 22.2 |
| Sawn softwood [6] | 2.2 | 2.1 | 2.2 | 2.5 | 2.5 | 2.5 | 2.3 | 2.4 | 2.5 | 2.6 | 2.4 | 2.6 | 2.4 |
| Sawn hardwood [6] | 2.6 | 2.4 | 2.5 | 2.6 | 2.8 | 2.7 | 2.6 | 2.8 | 2.6 | 2.7 | 2.8 | 2.8 | 2.8 |
| Particle board [6] | 0.01 | 0.02 | 0.04 | 0.06 | 0.10 | 0.15 | 0.18 | 0.23 | 0.27 | 0.32 | 0.34 | 0.33 | 0.41 |
| Mechanical wood pulp | 0.30 | 0.31 | 0.38 | 0.42 | 0.46 | 0.43 | 0.44 | 0.46 | 0.53 | 0.61 | 0.59 | 0.60 | 0.60 |
| Chemical wood pulp | 0.31 | 0.33 | 0.38 | 0.41 | 0.44 | 0.49 | 0.54 | 0.54 | 0.67 | 0.69 | 0.71 | 0.80 | 0.80 |
| Newsprint | 0.18 | 0.21 | 0.26 | 0.28 | 0.29 | 0.28 | 0.30 | 0.30 | 0.33 | 0.39 | 0.40 | 0.39 | 0.39 |
| Paper and paperboard other than newsprint | 0.45 | 0.49 | 0.55 | 0.59 | 0.69 | 0.71 | 0.77 | 0.78 | 0.89 | 0.97 | 0.99 | 1.10 | 1.0 |
| **Latin America** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat | 9.51 | 9.74 | 12.80 | 15.61 | 10.48 | 10.55 | 11.74 | 10.46 | 12.79 | 11.07 | 11.76 | 12.31 | 11.94 |
| Maize | 24.34 | 25.53 | 26.10 | 27.88 | 31.08 | 32.70 | 35.14 | 33.57 | 32.95 | 38.17 | 39.14 | 35.18 | 40.28 |
| Rice (milled equivalent) [1] | 5.26 | 5.51 | 5.54 | 6.04 | 7.03 | 5.87 | 6.68 | 6.76 | 6.68 | 7.69 | 7.08 | 7.76 | 7.67 |
| Sugar (centrifugal) | 18.04 | 15.92 | 15.56 | 16.77 | 19.94 | 17.83 | 19.98 | 18.73 | 18.71 | 25.54 | 21.86 | 21.51 | 23.84 |
| Citrus fruit | 5.59 | 5.87 | 6.22 | 6.29 | 6.66 | 7.31 | 7.53 | 8.05 | 8.65 | 8.87 | 9.57 | 9.36 | 10.24 |
| Bananas | 12.04 | 12.28 | 12.84 | 13.93 | 14.75 | 15.01 | 15.81 | 15.90 | 17.03 | 18.01 | 19.79 | 19.88 | 20.35 |
| Groundnuts | 1.04 | 1.29 | 1.11 | 1.02 | 1.37 | 1.51 | 1.29 | 1.22 | 1.17 | 1.38 | 1.51 | 1.37 | 1.21 |
| Cottonseed | 2.38 | 2.77 | 2.88 | 2.90 | 2.98 | 2.96 | 2.66 | 3.02 | 3.08 | 2.82 | 2.53 | 3.00 | 3.02 |
| Sunflowerseed | 0.68 | 0.97 | 0.59 | 0.57 | 0.84 | 0.94 | 1.23 | 1.03 | 0.97 | 1.23 | 0.90 | 0.91 | 0.97 |
| Copra | 0.27 | 0.28 | 0.24 | 0.25 | 0.25 | 0.24 | 0.25 | 0.25 | 0.25 | 0.22 | 0.21 | 0.24 | 0.23 |
| Palm kernels | 0.16 | 0.18 | 0.18 | 0.20 | 0.22 | 0.22 | 0.22 | 0.22 | 0.23 | 0.25 | 0.26 | 0.26 | 0.27 |
| Total vegetable oils and oilseeds (oil equivalent) [8] | 1.82 | 2.12 | 2.21 | 2.28 | 2.52 | 2.69 | 2.61 | 2.61 | 2.77 | 3.05 | 2.98 | 3.24 | 3.53 |
| Coffee | 3.68 | 3.08 | 2.77 | 1.87 | 3.62 | 2.54 | 2.87 | 2.42 | 2.61 | 2.28 | 3.00 | 2.86 | 2.52 |
| Cocoa | 0.33 | 0.32 | 0.31 | 0.32 | 0.32 | 0.33 | 0.37 | 0.35 | 0.38 | 0.38 | 0.41 | 0.41 | 0.38 |
| Tobacco | 0.44 | 0.48 | 0.52 | 0.50 | 0.54 | 0.50 | 0.54 | 0.55 | 0.55 | 0.57 | 0.54 | 0.58 | 0.51 |
| Cotton (lint) | 1.32 | 1.54 | 1.61 | 1.63 | 1.67 | 1.65 | 1.50 | 1.71 | 1.70 | 1.56 | 1.40 | 1.66 | 1.69 |
| Sisal | 0.20 | 0.21 | 0.21 | 0.22 | 0.24 | 0.23 | 0.22 | 0.21 | 0.21 | 0.27 | 0.28 | 0.30 | 0.33 |
| Wool (greasy) | 0.34 | 0.33 | 0.34 | 0.35 | 0.34 | 0.37 | 0.35 | 0.34 | 0.34 | 0.34 | 0.32 | 0.30 | 0.31 |
| Milk (total) | 18.42 | 18.73 | 19.34 | 20.51 | 21.20 | 22.10 | 22.11 | 23.09 | 23.81 | 23.96 | 25.74 | 26.71 | 27.63 |
| Meat [3] | 7.64 | 8.03 | 8.39 | 8.00 | 8.26 | 8.65 | 8.99 | 9.72 | 10.17 | 10.45 | 10.12 | 10.72 | 10.75 |
| Eggs | 0.97 | 0.98 | 1.02 | 1.06 | 1.15 | 1.25 | 1.31 | 1.36 | 1.46 | 1.53 | 1.63 | 1.71 | 1.78 |
| FISHERY PRODUCTS [5] | 6.78 | 8.75 | 8.90 | 11.67 | 9.64 | 11.64 | 12.82 | 13.66 | 11.96 | 15.52 | 13.98 | 7.63 | 5.20 |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Fuelwood [6] | 187.8 | 193.5 | 204.6 | 209.1 | 209.8 | 215.9 | 216.2 | 221.3 | 221.4 | 221.8 | 228.4 | 228.4 | 230.0 |
| Industrial roundwood [6] | 34.0 | 36.2 | 34.5 | 36.4 | 37.9 | 39.6 | 40.4 | 43.7 | 45.5 | 50.4 | 51.4 | 52.7 | 57.0 |
| Sawn softwood [6] | 5.1 | 5.3 | 5.0 | 5.5 | 5.7 | 6.2 | 6.2 | 6.6 | 7.0 | 7.3 | 7.4 | 7.5 | 7.7 |
| Sawn hardwood [6] | 6.3 | 6.6 | 6.4 | 6.8 | 6.7 | 7.1 | 7.2 | 7.4 | 7.8 | 8.6 | 8.9 | 8.5 | 9.2 |
| Plywood [6] | 0.33 | 0.37 | 0.37 | 0.38 | 0.39 | 0.40 | 0.44 | 0.49 | 0.53 | 0.67 | 0.77 | 0.77 | 0.80 |
| Particle board [6] | 0.05 | 0.07 | 0.10 | 0.14 | 0.16 | 0.19 | 0.21 | 0.30 | 0.38 | 0.59 | 0.63 | 0.68 | 0.68 |
| All wood pulp | 0.67 | 0.75 | 0.86 | 0.94 | 1.09 | 1.31 | 1.34 | 1.46 | 1.52 | 1.72 | 1.80 | 1.98 | 2.40 |
| All paper and paperboard | 1.77 | 1.90 | 2.01 | 2.30 | 2.60 | 2.80 | 2.90 | 3.10 | 3.40 | 3.80 | 4.00 | 4.40 | 4.70 |

See notes at end of table.

ANNEX TABLE 1. – VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Million metric tons* | | | | | | | | | | | | |
| **Far East** [9] | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat | 15.32 | 16.61 | 15.41 | 14.57 | 17.43 | 14.96 | 16.35 | 23.62 | 25.99 | 28.15 | 31.03 | 33.97 | 33.11 |
| Maize | 10.16 | 11.48 | 10.83 | 12.50 | 11.37 | 13.00 | 13.61 | 13.85 | 13.66 | 16.20 | 13.89 | 13.43 | 15.46 |
| Millet and sorghum | 16.65 | 18.58 | 17.99 | 19.21 | 15.04 | 17.84 | 19.99 | 17.99 | 19.84 | 21.35 | 18.01 | 14.58 | 18.12 |
| Rice (milled equivalent) [1] | 79.06 | 77.72 | 84.04 | 87.44 | 78.16 | 78.14 | 86.39 | 91.48 | 95.62 | 98.07 | 97.57 | 89.85 | 104.78 |
| Sugar (centrifugal) | 6.80 | 6.45 | 6.99 | 6.57 | 7.60 | 8.10 | 6.36 | 6.42 | 8.41 | 8.56 | 8.37 | 7.39 | 8.85 |
| Sugar (noncentrifugal) | 7.84 | 7.73 | 7.49 | 8.13 | 8.88 | 8.99 | 8.00 | 8.05 | 9.16 | 9.89 | 9.88 | 9.38 | 9.13 |
| Pulses [10] | 14.28 | 13.42 | 13.36 | 12.07 | 13.92 | 11.52 | 10.54 | 13.76 | 12.39 | 13.88 | 13.30 | 12.59 | 11.67 |
| Soybeans | 0.69 | 0.65 | 0.61 | 0.66 | 0.68 | 0.70 | 0.76 | 0.80 | 0.76 | 0.82 | 0.77 | 0.82 | 0.82 |
| Groundnuts | 6.09 | 6.23 | 6.32 | 7.13 | 5.34 | 5.61 | 6.99 | 5.97 | 6.51 | 7.48 | 7.56 | 5.16 | 7.10 |
| Copra | 2.73 | 2.46 | 2.65 | 2.70 | 2.69 | 2.85 | 2.53 | 2.65 | 2.63 | 2.84 | 3.27 | 3.64 | 3.30 |
| Total vegetable oils and oilseeds (oil equivalent) [11] | 5.59 | 5.64 | 6.79 | 6.79 | 6.41 | 6.38 | 7.04 | 6.98 | 7.22 | 7.91 | 8.38 | 7.64 | 8.41 |
| Tea | 0.69 | 0.69 | 0.70 | 0.72 | 0.73 | 0.73 | 0.74 | 0.76 | 0.75 | 0.74 | 0.77 | 0.81 | 0.82 |
| Tobacco | 0.69 | 0.76 | 0.76 | 0.79 | 0.80 | 0.80 | 0.88 | 0.95 | 0.93 | 0.89 | 0.82 | 0.94 | 0.89 |
| Cotton (lint) | 1.26 | 1.49 | 1.60 | 1.50 | 1.46 | 1.52 | 1.72 | 1.64 | 1.64 | 1.56 | 2.01 | 1.92 | 1.94 |
| Jute [2] | 3.17 | 2.65 | 2.79 | 2.72 | 2.87 | 3.09 | 3.14 | 2.00 | 2.99 | 2.88 | 2.51 | 2.84 | 3.09 |
| Rubber (natural) | 1.93 | 1.95 | 2.01 | 2.08 | 2.16 | 2.25 | 2.24 | 2.44 | 2.68 | 2.70 | 2.77 | 2.80 | 3.16 |
| Milk (total) | 26.27 | 26.37 | 26.48 | 26.52 | 26.41 | 26.17 | 26.85 | 27.46 | 28.56 | 29.60 | 30.59 | 31.64 | 32.81 |
| Meat [3] | 2.72 | 2.77 | 2.86 | 3.03 | 3.12 | 3.27 | 3.30 | 3.31 | 3.44 | 3.58 | 3.86 | 3.74 | 3.85 |
| Eggs | 0.53 | 0.55 | 0.58 | 0.62 | 0.66 | 0.68 | 0.70 | 0.76 | 0.85 | 0.87 | 0.92 | 1.02 | 1.06 |
| FISHERY PRODUCTS [5] | 4.56 | 4.74 | 5.20 | 5.87 | 6.11 | 6.59 | 6.95 | 7.70 | 8.16 | 8.43 | 9.01 | 9.39 | 10.01 |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Fuelwood [6] | 243.1 | 249.1 | 253.7 | 261.1 | 267.4 | 274.2 | 280.9 | 288.9 | 295.1 | 302.0 | 308.5 | 308.6 | 312.0 |
| Industrial roundwood [6] | 37.3 | 38.6 | 43.9 | 46.0 | 49.6 | 50.8 | 55.3 | 61.2 | 64.1 | 66.5 | 68.7 | 73.9 | 79.0 |
| Sawn softwood [6] | 0.6 | 0.9 | 1.1 | 1.3 | 1.4 | 1.2 | 1.3 | 1.4 | 1.4 | 1.4 | 1.6 | 1.7 | 1.7 |
| Sawn hardwood [6] | 8.4 | 8.5 | 9.4 | 9.8 | 10.1 | 10.5 | 11.7 | 11.2 | 12.3 | 12.7 | 12.0 | 13.1 | 14.0 |
| Plywood [6] | 0.3 | 0.4 | 0.5 | 0.5 | 0.7 | 0.8 | 1.0 | 1.4 | 1.5 | 1.6 | 1.8 | 2.2 | 2.3 |
| All wood pulp | 0.08 | 0.08 | 0.11 | 0.12 | 0.15 | 0.16 | 0.16 | 0.21 | 0.23 | 0.25 | 0.25 | 0.30 | 0.30 |
| All paper and paperboard | 0.80 | 0.87 | 0.96 | 1.05 | 1.16 | 1.23 | 1.28 | 1.44 | 1.63 | 1.79 | 1.89 | 2.17 | 2.34 |
| **China and other Asian centrally planned countries** | | | | | | | | | | | | | |
| FISHERY PRODUCTS [5] | ... | 4.93 | 5.44 | 6.24 | 6.82 | 7.16 | 6.75 | 7.03 | 7.20 | 7.97 | 8.63 | 8.67 | 8.70 |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat | 16.73 | 21.62 | 22.20 | 25.94 | 26.40 | 26.04 | 28.40 | 27.30 | 28.72 | 31.34 | 32.93 | 34.78 | 35.52 |
| Maize | 21.73 | 24.21 | 24.65 | 25.72 | 27.45 | 27.40 | 27.78 | 27.88 | 29.29 | 31.11 | 31.23 | 29.59 | 30.90 |
| Millet and sorghum | 15.51 | 16.91 | 17.61 | 18.21 | 19.40 | 19.40 | 19.69 | 19.70 | 20.62 | 22.42 | 23.44 | 22.45 | 23.53 |
| Rice (milled equivalent) [1] | 58.04 | 58.97 | 59.12 | 61.85 | 64.72 | 63.91 | 66.44 | 65.92 | 68.67 | 73.37 | 74.30 | 71.46 | 74.43 |
| Sugar (centrifugal) | 2.15 | 1.98 | 2.12 | 2.71 | 3.19 | 3.33 | 3.23 | 3.42 | 3.56 | 3.66 | 3.99 | 4.04 | 4.13 |
| Sugar (noncentrifugal) | 0.36 | 0.29 | 0.28 | 0.61 | 0.68 | 0.70 | 0.71 | 0.78 | 0.79 | 0.79 | 0.79 | 0.79 | 0.81 |
| Pulses [10] | 6.92 | 7.24 | 7.51 | 7.84 | 7.83 | 7.84 | 7.85 | 7.77 | 8.18 | 8.29 | 8.49 | 8.60 | 8.65 |
| Soybeans | 10.64 | 10.49 | 10.69 | 11.46 | 11.26 | 11.26 | 11.42 | 11.00 | 11.23 | 11.89 | 11.99 | 11.49 | 12.03 |
| Groundnuts | 1.84 | 1.77 | 2.03 | 2.45 | 2.47 | 2.52 | 2.48 | 2.30 | 2.50 | 2.62 | 2.72 | 2.54 | 2.74 |
| Total vegetable oils and oilseeds (oil equivalent) [12] | 3.34 | 3.33 | 3.65 | 4.11 | 4.15 | 4.23 | 4.28 | 4.07 | 4.08 | 4.29 | 4.34 | 4.14 | 4.35 |
| Tea | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 | 0.19 | 0.19 | 0.20 | 0.20 | 0.26 | 0.29 | 0.31 |
| Tobacco | 0.61 | 0.66 | 0.78 | 0.83 | 0.84 | 0.85 | 0.91 | 0.91 | 0.84 | 0.85 | 0.85 | 0.90 | 1.01 |
| Cotton (lint) | 0.92 | 0.89 | 1.02 | 1.39 | 1.54 | 1.68 | 1.81 | 1.68 | 1.61 | 1.70 | 1.65 | 1.41 | 1.55 |
| Jute [2] | 0.33 | 0.33 | 0.38 | 0.43 | 0.47 | 0.49 | 0.51 | 0.50 | 0.54 | 0.53 | 0.64 | 0.63 | 0.71 |
| Milk (total) | 4.50 | 4.55 | 4.63 | 4.70 | 4.76 | 4.80 | 4.85 | 4.90 | 4.96 | 5.19 | 5.25 | 5.37 | 5.41 |
| Meat [3] | 11.84 | 12.17 | 12.55 | 12.82 | 13.17 | 13.49 | 13.88 | 14.15 | 14.37 | 14.68 | 14.90 | 15.27 | 15.64 |
| Eggs | 2.49 | 2.59 | 2.87 | 2.88 | 3.01 | 298 | 3.34 | 3.39 | 3.44 | 3.47 | 3.52 | 3.57 | 3.62 |

See notes at end of table.

ANNEX TABLE 1. – VOLUME OF PRODUCTION OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*concluded*)

| Near East [13] | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 19 7 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AGRICULTURAL PRODUCTS | *Million metric tons* | | | | | | | | | | | | |
| Wheat | 15.78 | 18.13 | 18.15 | 17.34 | 18.60 | 19.52 | 20.87 | 20.80 | 21.31 | 20.28 | 23.10 | 26.03 | 21.29 |
| Barley | 5.73 | 6.98 | 7.37 | 6.00 | 6.62 | 6.62 | 7.08 | 6.85 | 7.27 | 6.01 | 6.41 | 7.32 | 5.11 |
| Maize | 3.40 | 3.58 | 3.65 | 3.74 | 3.88 | 4.17 | 4.08 | 4.16 | 4.26 | 4.19 | 4.25 | 4.33 | 4.53 |
| Rice (milled equivalent) [1] | 1.54 | 2.34 | 2.45 | 2.40 | 2.34 | 2.28 | 2.80 | 2.98 | 2.97 | 3.11 | 2.84 | 2.93 | 2.91 |
| Sugar (centrifugal) | 0.97 | 0.93 | 1.08 | 1.41 | 1.24 | 1.46 | 1.74 | 1.77 | 1.70 | 1.98 | 2.26 | 2.32 | 2.40 |
| Pulses [10] | 1.16 | 1.55 | 1.46 | 1.67 | 1.69 | 1.55 | 1.55 | 1.50 | 1.66 | 1.49 | 1.58 | 1.79 | 1.66 |
| Citrus fruit | 1.01 | 1.18 | 1.32 | 1.31 | 1.48 | 1.70 | 1.90 | 1.98 | 2.08 | 2.10 | 2.50 | 2.55 | 2.58 |
| Dates | 1.52 | 1.52 | 1.49 | 1.32 | 1.38 | 1.40 | 1.34 | 1.27 | 1.44 | 1.49 | 1.53 | 1.44 | 1.51 |
| Olive oil | 0.18 | 0.09 | 0.15 | 0.18 | 0.11 | 0.21 | 0.15 | 0.22 | 0.10 | 0.15 | 0.09 | 0.25 | 1.07 |
| Cottonseed | 1.71 | 2.16 | 2.17 | 2.24 | 2.43 | 2.22 | 2.23 | 2.40 | 2.62 | 2.60 | 2.81 | 2.97 | 2.77 |
| Total vegetable oils and oilseeds (oil equivalent) [7] | 0.75 | 0.72 | 0.95 | 1.01 | 0.96 | 1.04 | 1.01 | 1.06 | 1.09 | 1.21 | 1.19 | 1.55 | 1.33 |
| Tobacco | 0.15 | 0.13 | 0.16 | 0.25 | 0.19 | 0.22 | 0.24 | 0.21 | 0.20 | 0.19 | 0.23 | 0.24 | 0.19 |
| Cotton (lint) | 0.94 | 1.20 | 1.19 | 1.27 | 1.37 | 1.29 | 1.30 | 1.41 | 1.52 | 1.49 | 1.63 | 1.72 | 1.60 |
| Wool (greasy) | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.13 | 0.13 | 0.14 | 0.15 | 0.16 | 0.15 | 0.17 |
| Milk (total) | 9.83 | 10.09 | 10.17 | 10.44 | 10.72 | 11.16 | 11.36 | 11.92 | 11.91 | 11.89 | 12.10 | 12.38 | 12.84 |
| Meat [3] | 1.47 | 1.54 | 1.54 | 1.55 | 1.63 | 1.69 | 1.69 | 1.76 | 1.84 | 2.10 | 2.15 | 2.19 | 2.28 |
| FISHERY PRODUCTS [5] | 0.41 | 0.43 | 0.49 | 0.52 | 0.50 | 0.49 | 0.55 | 0.51 | 0.57 | 0.55 | 0.56 | 0.56 | 0.64 |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Fuelwood [6] | 28.9 | 31.0 | 33.2 | 35.0 | 37.6 | 37.7 | 38.0 | 38.7 | 40.3 | 39.1 | 39.1 | 38.5 | 39.0 |
| Industrial roundwood [6] | 8.8 | 9.1 | 9.9 | 10.7 | 11.1 | 11.2 | 11.5 | 12.1 | 12.8 | 13.1 | 13.1 | 14.1 | 14.5 |
| Sawn softwood [6] | 0.7 | 1.0 | 1.1 | 1.2 | 1.3 | 1.7 | 1.8 | 2.0 | 2.2 | 2.2 | 3.0 | 3.0 | 3.0 |
| Sawn hardwood [6] | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.7 | 0.8 | 0.8 | 0.8 |
| Plywood [6] | 0.04 | 0.05 | 0.06 | 0.06 | 0.07 | 0.09 | 0.10 | 0.10 | 0.11 | 0.11 | 0.12 | 0.12 | 0.13 |
| All wood pulp | 0.04 | 0.07 | 0.07 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.10 | 0.18 | 0.24 | 0.24 |
| All paper and paperboard | 0.12 | 0.18 | 0.20 | 0.22 | 0.22 | 0.23 | 0.26 | 0.28 | 0.29 | 0.34 | 0.42 | 0.48 | 0.52 |
| **Africa** [14] | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat | 2.47 | 4.20 | 4.57 | 3.93 | 4.42 | 2.99 | 3.97 | 5.86 | 4.48 | 4.93 | 5.35 | 6.16 | 4.66 |
| Barley | 2.12 | 3.66 | 4.06 | 3.18 | 3.38 | 2.24 | 3.17 | 5.65 | 4.27 | 4.22 | 4.64 | 4.96 | 3.44 |
| Maize | 8.47 | 8.75 | 9.12 | 9.22 | 9.35 | 11.11 | 10.77 | 10.76 | 11.64 | 10.55 | 11.28 | 12.60 | 10.50 |
| Millet and sorghum | 14.06 | 15.17 | 15.66 | 16.12 | 15.93 | 15.58 | 15.66 | 14.76 | 16.05 | 15.84 | 14.83 | 14.63 | 12.90 |
| Rice (milled equivalent) [1] | 2.17 | 2.42 | 2.47 | 2.58 | 2.49 | 2.66 | 2.94 | 2.91 | 3.07 | 3.11 | 3.30 | 3.09 | 3.11 |
| Sugar (centrifugal) | 1.45 | 1.46 | 1.78 | 1.63 | 1.91 | 1.93 | 2.04 | 2.13 | 2.32 | 2.52 | 2.74 | 2.82 | 3.11 |
| Pulses [10] | 3.13 | 3.12 | 3.45 | 3.31 | 3.44 | 3.52 | 3.47 | 3.85 | 4.10 | 4.40 | 4.43 | 4.54 | 4.48 |
| Citrus fruit | 1.38 | 1.38 | 1.44 | 1.66 | 1.53 | 1.65 | 1.72 | 1.94 | 2.02 | 2.12 | 2.22 | 2.29 | 2.34 |
| Bananas | 1.74 | 1.83 | 1.94 | 1.90 | 1.88 | 1.88 | 2.01 | 1.99 | 2.26 | 3.70 | 3.77 | 3.84 | 3.94 |
| Olive oil | 0.08 | 0.09 | 0.15 | 0.15 | 0.12 | 0.06 | 0.15 | 0.13 | 0.06 | 0.13 | 0.22 | 0.13 | 0.21 |
| Groundnuts | 3.99 | 4.42 | 4.45 | 4.26 | 5.03 | 4.92 | 4.51 | 4.49 | 4.47 | 4.41 | 4.88 | 4.53 | 3.58 |
| Total vegetable oils and oilseeds (oil equivalent) [8] | 3.00 | 3.11 | 3.81 | 3.81 | 3.91 | 3.72 | 3.78 | 3.91 | 3.91 | 4.08 | 4.30 | 4.06 | 3.82 |
| Coffee | 0.75 | 0.96 | 1.04 | 1.10 | 1.21 | 1.06 | 1.28 | 1.16 | 1.33 | 1.32 | 1.27 | 1.33 | 1.27 |
| Cocoa | 0.83 | 0.85 | 0.90 | 1.20 | 0.86 | 0.97 | 0.98 | 0.84 | 1.00 | 1.09 | 1.16 | 1.03 | 0.94 |
| Wine | 1.73 | 1.60 | 1.72 | 1.48 | 1.93 | 1.02 | 0.88 | 1.28 | 1.03 | 1.06 | 1.14 | 1.06 | 1.10 |
| Tobacco | 0.15 | 0.15 | 0.16 | 0.16 | 0.16 | 0.17 | 0.16 | 0.18 | 0.18 | 0.17 | 0.18 | 0.19 | 0.17 |
| Cotton | 0.24 | 0.30 | 0.32 | 0.35 | 0.35 | 0.41 | 0.41 | 0.45 | 0.54 | 0.57 | 0.59 | 0.62 | 0.57 |
| Sisal | 0.37 | 0.40 | 0.42 | 0.44 | 0.42 | 0.42 | 0.40 | 0.39 | 0.39 | 0.37 | 0.34 | 0.34 | 0.34 |
| Rubber (natural) | 0.15 | 0.15 | 0.16 | 0.16 | 0.16 | 0.17 | 0.16 | 0.18 | 0.18 | 0.20 | 0.22 | 0.23 | 0.25 |
| Wool (greasy) | 0.03 | 0.04 | 0.04 | 0.03 | 0.04 | 0.04 | 0.04 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 |
| Milk (total) | 5.35 | 5.31 | 5.36 | 5.49 | 5.60 | 5.97 | 6.16 | 6.23 | 6.45 | 6.53 | 6.49 | 7.98 | 7.82 |
| Meat [3] | 2.25 | 2.26 | 2.26 | 2.30 | 2.38 | 2.49 | 2.57 | 2.62 | 2.70 | 3.16 | 3.20 | 3.15 | 3.15 |
| Eggs | 0.28 | 0.29 | 0.29 | 0.31 | 0.32 | 0.33 | 0.35 | 0.36 | 0.38 | 0.39 | 0.40 | 0.40 | 0.41 |
| FISHERY PRODUCTS [5] | 1.38 | 1.47 | 1.50 | 1.80 | 1.81 | 2.03 | 2.08 | 2.08 | 2.33 | 2.41 | 2.43 | 2.77 | 2.84 |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Fuelwood [6] | 190.6 | 194.6 | 199.4 | 203.2 | 208.0 | 209.9 | 216.4 | 221.5 | 227.2 | 233.9 | 239.1 | 234.1 | 236.0 |
| Industrial roundwood [6] | 19.4 | 19.5 | 21.1 | 21.9 | 22.9 | 23.5 | 24.2 | 25.6 | 28.3 | 29.0 | 30.7 | 31.1 | 33.6 |
| Sawn softwood [6] | 0.23 | 0.25 | 0.23 | 0.25 | 0.27 | 0.27 | 0.32 | 0.32 | 0.34 | 0.42 | 0.46 | 0.46 | 0.47 |
| Sawn hardwood [6] | 1.8 | 1.7 | 1.7 | 1.8 | 2.0 | 2.0 | 2.0 | 2.2 | 2.5 | 2.6 | 2.7 | 2.8 | 3.6 |
| Plywood [6] | 0.11 | 0.14 | 0.17 | 0.18 | 0.20 | 0.16 | 0.18 | 0.19 | 0.23 | 0.25 | 0.27 | 0.30 | 0.32 |
| Total wood pulp | 0.03 | 0.04 | 0.12 | 0.15 | 0.15 | 0.15 | 0.15 | 0.16 | 0.18 | 0.19 | 0.20 | 0.22 | 0.22 |
| Total paper and paperboard | 0.10 | 0.08 | 0.09 | 0.10 | 0.10 | 0.10 | 0.13 | 0.14 | 0.16 | 0.17 | 0.19 | 0.20 | 0.22 |

[1] Paddy converted at 65%. — [2] Including allied fibres. — [3] Beef and veal, mutton and lamb, pork, poultry meat. — [4] Excluding China. — [5] Nominal catch (liveweight). — [6] Million cubic metres. — [7] Olive oil, soybeans, groundnuts, cottonseed, sesame seed, sunflowerseed, rapeseed, linseed, hempseed, castor beans. — [8] Olive oil, palm oil, soybeans, groundnuts, cottonseed, sesame seed, sunflowerseed, rapeseed, copra, palm kernels, linseed, hempseed, castor beans. — [9] Excluding China and other Asian centrally planned countries, and Japan. — [10] Dry beans, dry peas, broad beans, chick-peas, lentils. — [11] Palm oil, soybeans, groundnuts, cottonseed, sesame seed, rapeseed, copra, palm kernels, linseed, castor beans. — [12] Soybeans, groundnuts, coconuts, palm kernels, castor beans, sunflowerseed, rapeseed, tung nuts, sesame seed, cottonseed, linseed, palm oil. — [13] Excluding Israel. — [14] Excluding South Africa.

ANNEX TABLE 2. – INDICES OF FOOD AND AGRICULTURAL PRODUCTION, BY COUNTRIES

| | Total | | | | | | Per caput | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 |
| | ..... 1961-65 average = 100 ..... | | | | | Percent | ..... 1961-65 average = 100 ..... | | | | | Percent |
| WESTERN EUROPE | | | | | | | | | | | | |
| **Food production** | | | | | | | | | | | | |
| EUROPEAN ECONOMIC COMMUNITY | | | | | | | | | | | | |
| Belgium | 116 | 119 | 129 | 125 | 127 | +2 | 111 | 115 | 125 | 119 | 121 | +2 |
| Denmark | 99 | 95 | 99 | 97 | 97 | +1 | 94 | 91 | 94 | 91 | 91 | – |
| France | 114 | 117 | 123 | 126 | 133 | +3 | 107 | 110 | 113 | 116 | 118 | +2 |
| Germany, Fed. Rep. of | 115 | 116 | 121 | 115 | 116 | +1 | 109 | 108 | 114 | 108 | 109 | +1 |
| Ireland | 117 | 115 | 127 | 121 | 122 | – | 114 | 111 | 122 | 115 | 114 | —1 |
| Italy | 119 | 120 | 120 | 115 | 121 | +5 | 113 | 114 | 113 | 107 | 111 | +4 |
| Luxembourg | 105 | 98 | 100 | 100 | 102 | +2 | 101 | 93 | 94 | 94 | 95 | +1 |
| Netherlands | 117 | 128 | 138 | 134 | 142 | +6 | 109 | 118 | 125 | 120 | 126 | +5 |
| United Kingdom | 109 | 116 | 119 | 120 | 120 | – | 106 | 112 | 115 | 115 | 115 | – |
| OTHER WESTERN EUROPE | | | | | | | | | | | | |
| Austria | 115 | 110 | 112 | 109 | 113 | +4 | 112 | 107 | 108 | 104 | 107 | +3 |
| Finland | 111 | 111 | 119 | 119 | 113 | —5 | 107 | 107 | 115 | 116 | 111 | —5 |
| Greece | 128 | 146 | 138 | 144 | 142 | —1 | 123 | 140 | 130 | 136 | 133 | —2 |
| Iceland | 102 | 101 | 100 | 107 | 109 | +2 | 93 | 91 | 90 | 95 | 96 | +1 |
| Malta | 131 | 142 | 148 | 150 | 155 | +3 | 132 | 142 | 148 | 150 | 154 | +3 |
| Norway | 104 | 104 | 106 | 108 | 112 | +4 | 99 | 98 | 100 | 101 | 104 | +3 |
| Portugal | 105 | 110 | 103 | 107 | 109 | +2 | 99 | 104 | 96 | 99 | 100 | +2 |
| Spain | 121 | 125 | 129 | 132 | 141 | +6 | 114 | 117 | 119 | 121 | 127 | +5 |
| Sweden | 94 | 104 | 106 | 107 | 105 | —2 | 90 | 99 | 100 | 101 | 98 | —3 |
| Switzerland | 113 | 108 | 115 | 113 | 119 | +5 | 104 | 99 | 104 | 101 | 106 | +4 |
| Yugoslavia | 138 | 117 | 131 | 127 | 135 | +7 | 130 | 109 | 121 | 116 | 123 | +6 |
| REGIONAL | 115 | 117 | 121 | 121 | 124 | +3 | 109 | 111 | 114 | 113 | 115 | +2 |
| **Agricultural production** | | | | | | | | | | | | |
| EUROPEAN ECONOMIC COMMUNITY | | | | | | | | | | | | |
| Belgium | 114 | 117 | 128 | 123 | 125 | +2 | 110 | 113 | 123 | 117 | 119 | +1 |
| Denmark | 99 | 95 | 99 | 97 | 97 | +1 | 94 | 91 | 94 | 90 | 91 | – |
| France | 113 | 117 | 121 | 126 | 129 | +3 | 107 | 109 | 112 | 116 | 118 | +2 |
| Germany, Fed. Rep. of | 115 | 116 | 121 | 115 | 116 | +1 | 108 | 108 | 114 | 105 | 109 | +1 |
| Ireland | 116 | 114 | 127 | 121 | 121 | – | 113 | 110 | 112 | 114 | 113 | —1 |
| Italy | 119 | 120 | 120 | 115 | 120 | +5 | 113 | 114 | 113 | 107 | 111 | +4 |
| Luxembourg | 105 | 98 | 100 | 100 | 102 | +2 | 101 | 93 | 94 | 94 | 95 | +1 |
| Netherlands | 116 | 127 | 137 | 132 | 141 | +6 | 108 | 116 | 124 | 119 | 125 | +5 |
| United Kingdom | 109 | 115 | 119 | 120 | 120 | – | 105 | 111 | 114 | 114 | 114 | – |
| OTHER WESTERN EUROPE | | | | | | | | | | | | |
| Austria | 115 | 110 | 112 | 109 | 113 | +4 | 112 | 106 | 107 | 104 | 107 | +3 |
| Finland | 111 | 111 | 119 | 119 | 113 | —5 | 107 | 107 | 115 | 116 | 111 | —5 |
| Greece | 122 | 139 | 132 | 138 | 137 | —1 | 117 | 133 | 125 | 129 | 127 | —1 |
| Iceland | 102 | 97 | 97 | 103 | 105 | +2 | 93 | 88 | 87 | 92 | 93 | +1 |
| Malta | 131 | 142 | 148 | 150 | 155 | +3 | 132 | 142 | 148 | 150 | 154 | +3 |
| Norway | 104 | 103 | 106 | 108 | 112 | +4 | 99 | 98 | 99 | 100 | 104 | +3 |
| Portugal | 104 | 110 | 102 | 106 | 109 | +2 | 99 | 103 | 95 | 98 | 100 | +2 |
| Spain | 119 | 123 | 127 | 130 | 138 | +6 | 112 | 115 | 117 | 119 | 125 | +5 |
| Sweden | 94 | 104 | 106 | 107 | 105 | —2 | 90 | 98 | 99 | 101 | 98 | —3 |
| Switzerland | 113 | 108 | 115 | 113 | 119 | +5 | 104 | 99 | 104 | 101 | 106 | +4 |
| Yugoslavia | 136 | 116 | 129 | 126 | 134 | +7 | 128 | 108 | 119 | 115 | 122 | +6 |
| REGIONAL | 114 | 117 | 121 | 120 | 123 | +3 | 109 | 110 | 113 | 112 | 114 | +2 |

ANNEX TABLE 2. – INDICES OF FOOD AND AGRICULTURAL PRODUCTION, BY COUNTRIES (*continued*)

| | Total | | | | | | Per caput | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 |
| | ..... *1961-65 average = 100* ..... | | | | | *Percent* | ..... *1961-65 average = 100* ..... | | | | | *Percent* |
| EASTERN EUROPE AND THE U.S.S.R. | | | | | | | | | | | | |
| **Food production** | | | | | | | | | | | | |
| Eastern Europe | 120 | 117 | 122 | 132 | 135 | + 2 | 115 | 111 | 116 | 124 | 126 | + 2 |
| U.S.S.R. | 127 | 140 | 141 | 136 | 155 | +14 | 119 | 130 | 129 | 123 | 140 | +13 |
| REGIONAL | 125 | 132 | 134 | 134 | 148 | +10 | 117 | 123 | 124 | 123 | 135 | + 9 |
| **Agricultural production** | | | | | | | | | | | | |
| Eastern Europe | 119 | 116 | 122 | 131 | 134 | + 2 | 114 | 111 | 115 | 124 | 126 | + 2 |
| U.S.S.R. | 126 | 140 | 140 | 136 | 154 | +13 | 118 | 129 | 129 | 123 | 139 | +12 |
| REGIONAL | 124 | 131 | 134 | 134 | 147 | +10 | 117 | 123 | 124 | 123 | 134 | + 9 |
| NORTH AMERICA | | | | | | | | | | | | |
| **Food production** | | | | | | | | | | | | |
| Canada | 114 | 106 | 123 | 113 | 117 | + 3 | 103 | 94 | 108 | 99 | 100 | + 2 |
| United States | 115 | 114 | 124 | 123 | 125 | + 2 | 107 | 105 | 113 | 111 | 113 | + 1 |
| REGIONAL | 115 | 113 | 124 | 122 | 125 | + 2 | 107 | 104 | 113 | 110 | 111 | + 1 |
| **Agricultural production** | | | | | | | | | | | | |
| Canada | 115 | 106 | 123 | 113 | 118 | + 4 | 104 | 95 | 108 | 98 | 101 | + 3 |
| United States | 110 | 109 | 118 | 118 | 120 | + 2 | 103 | 101 | 108 | 107 | 108 | + 1 |
| REGIONAL | 110 | 109 | 119 | 118 | 120 | + 2 | 103 | 100 | 108 | 106 | 107 | + 1 |
| OCEANIA | | | | | | | | | | | | |
| **Food production** | | | | | | | | | | | | |
| Australia | 120 | 122 | 128 | 127 | 143 | +12 | 107 | 107 | 110 | 107 | 118 | +10 |
| New Zealand | 123 | 119 | 121 | 124 | 126 | + 1 | 112 | 107 | 107 | 109 | 109 | – |
| REGIONAL | 121 | 121 | 127 | 127 | 139 | +10 | 108 | 107 | 109 | 107 | 115 | + 8 |
| **Agricultural production** | | | | | | | | | | | | |
| Australia | 119 | 122 | 125 | 124 | 129 | + 4 | 106 | 107 | 107 | 104 | 106 | + 2 |
| New Zealand | 120 | 118 | 119 | 120 | 120 | + 1 | 110 | 106 | 106 | 106 | 103 | — 2 |
| REGIONAL | 119 | 121 | 123 | 123 | 127 | + 3 | 107 | 106 | 107 | 104 | 105 | + 1 |

ANNEX TABLE 2. – INDICES OF FOOD AND AGRICULTURAL PRODUCTION, BY COUNTRIES (*continued*)

| | Total | | | | | | Per caput | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 |
| | ..... *1961-65 average = 100* ..... | | | | | *Percent* | ..... *1961-65 average = 100* ..... | | | | | *Percent* |
| LATIN AMERICA | | | | | | | | | | | | |
| **Food production** | | | | | | | | | | | | |
| CENTRAL AMERICA | | | | | | | | | | | | |
| Costa Rica | 148 | 158 | 171 | 181 | 183 | + 1 | 118 | 122 | 126 | 129 | 126 | — 3 |
| El Salvador | 120 | 126 | 137 | 127 | 144 | +13 | 99 | 101 | 106 | 95 | 103 | + 9 |
| Guatemala | 124 | 130 | 138 | 139 | 147 | + 6 | 105 | 107 | 110 | 108 | 111 | + 3 |
| Honduras | 138 | 147 | 165 | 160 | 175 | +10 | 113 | 117 | 126 | 118 | 125 | + 6 |
| Mexico | 126 | 132 | 138 | 138 | 144 | + 5 | 103 | 104 | 105 | 101 | 102 | + 1 |
| Nicaragua | 131 | 134 | 144 | 146 | 148 | + 2 | 110 | 109 | 114 | 112 | 110 | — 2 |
| Panama | 149 | 141 | 152 | 152 | 156 | + 2 | 123 | 112 | 117 | 113 | 112 | — 1 |
| CARIBBEAN | | | | | | | | | | | | |
| Barbados | 88 | 97 | 88 | 78 | 82 | + 6 | 83 | 97 | 88 | 77 | 81 | + 5 |
| Cuba | 97 | 143 | 116 | 103 | 113 | + 9 | 86 | 123 | 97 | 84 | 90 | + 6 |
| Dominican Republic | 121 | 133 | 137 | 146 | 147 | + 1 | 99 | 105 | 104 | 107 | 105 | — 3 |
| Haiti | 107 | 110 | 113 | 114 | 116 | + 2 | 93 | 93 | 93 | 92 | 91 | — 1 |
| Jamaica | 101 | 104 | 112 | 107 | 105 | — 3 | 88 | 89 | 94 | 88 | 84 | — 4 |
| SOUTH AMERICA | | | | | | | | | | | | |
| Argentina | 118 | 114 | 108 | 109 | 112 | + 2 | 107 | 102 | 96 | 95 | 96 | + 1 |
| Bolivia | 125 | 130 | 135 | 142 | 148 | + 5 | 109 | 110 | 112 | 115 | 117 | + 2 |
| Brazil | 124 | 128 | 134 | 144 | 148 | + 3 | 105 | 105 | 107 | 112 | 111 | – |
| Chile | 113 | 121 | 123 | 122 | 108 | —11 | 98 | 103 | 102 | 99 | 86 | —13 |
| Colombia | 118 | 124 | 130 | 130 | 131 | + 1 | 97 | 98 | 99 | 96 | 94 | — 3 |
| Ecuador | 110 | 121 | 125 | 118 | 116 | — 2 | 90 | 96 | 95 | 87 | 83 | — 5 |
| Guyana | 126 | 120 | 132 | 125 | 134 | + 7 | 106 | 97 | 105 | 97 | 101 | + 4 |
| Paraguay | 114 | 124 | 128 | 127 | 133 | + 5 | 94 | 98 | 98 | 94 | 95 | + 1 |
| Peru | 119 | 129 | 130 | 130 | 135 | + 4 | 99 | 104 | 102 | 99 | 100 | + 1 |
| Uruguay | 112 | 116 | 96 | 96 | 95 | — 1 | 104 | 106 | 87 | 86 | 84 | — 2 |
| Venezuela | 142 | 147 | 148 | 151 | 158 | + 5 | 117 | 117 | 114 | 112 | 114 | + 1 |
| REGIONAL | 120 | 125 | 125 | 128 | 131 | + 3 | 101 | 102 | 100 | 99 | 99 | – |
| **Agricultural production** | | | | | | | | | | | | |
| CENTRAL AMERICA | | | | | | | | | | | | |
| Costa Rica | 148 | 157 | 169 | 179 | 182 | + 1 | 118 | 121 | 125 | 128 | 125 | — 3 |
| El Salvador | 108 | 113 | 125 | 122 | 135 | +11 | 89 | 90 | 96 | 91 | 97 | + 7 |
| Guatemala | 127 | 127 | 134 | 142 | 152 | + 7 | 107 | 104 | 107 | 110 | 115 | + 4 |
| Honduras | 138 | 144 | 161 | 158 | 173 | + 9 | 113 | 114 | 123 | 117 | 124 | + 6 |
| Mexico | 120 | 122 | 129 | 129 | 133 | + 3 | 98 | 96 | 98 | 95 | 95 | – |
| Nicaragua | 129 | 122 | 133 | 144 | 145 | + 1 | 109 | 100 | 106 | 111 | 108 | — 2 |
| Panama | 149 | 141 | 151 | 152 | 155 | + 2 | 123 | 112 | 117 | 113 | 112 | — 1 |
| CARIBBEAN | | | | | | | | | | | | |
| Barbados | 88 | 97 | 88 | 78 | 82 | + 6 | 83 | 97 | 88 | 77 | 81 | + 5 |
| Cuba | 96 | 141 | 114 | 103 | 111 | + 8 | 85 | 122 | 96 | 84 | 89 | + 5 |
| Dominican Republic | 118 | 130 | 134 | 143 | 146 | + 2 | 97 | 102 | 102 | 105 | 104 | — 2 |
| Haiti | 101 | 108 | 111 | 112 | 115 | + 2 | 92 | 91 | 92 | 90 | 90 | — 1 |
| Jamaica | 101 | 104 | 112 | 107 | 104 | — 2 | 88 | 89 | 94 | 88 | 84 | — 4 |
| SOUTH AMERICA | | | | | | | | | | | | |
| Argentina | 116 | 113 | 106 | 107 | 110 | + 3 | 106 | 101 | 94 | 94 | 95 | + 1 |
| Bolivia | 126 | 130 | 136 | 145 | 156 | + 8 | 109 | 110 | 113 | 117 | 123 | + 5 |
| Brazil | 125 | 128 | 132 | 143 | 146 | + 2 | 106 | 105 | 105 | 111 | 110 | — 1 |
| Chile | 113 | 121 | 121 | 119 | 106 | —11 | 98 | 102 | 100 | 96 | 84 | —13 |
| Colombia | 120 | 126 | 131 | 132 | 134 | + 2 | 99 | 100 | 100 | 98 | 96 | — 2 |
| Ecuador | 110 | 121 | 124 | 118 | 116 | — 2 | 90 | 96 | 95 | 87 | 83 | — 5 |
| Guyana | 126 | 120 | 132 | 121 | 134 | + 7 | 106 | 98 | 105 | 97 | 101 | + 4 |
| Paraguay | 116 | 123 | 125 | 127 | 138 | + 8 | 95 | 98 | 95 | 94 | 98 | + 4 |
| Peru | 112 | 121 | 121 | 119 | 125 | + 5 | 93 | 97 | 95 | 90 | 92 | + 2 |
| Uruguay | 109 | 111 | 96 | 89 | 89 | – | 101 | 102 | 87 | 80 | 78 | — 2 |
| Venezuela | 141 | 146 | 148 | 151 | 158 | + 5 | 116 | 116 | 114 | 112 | 114 | + 1 |
| REGIONAL | 119 | 122 | 122 | 125 | 128 | + 2 | 100 | 101 | 98 | 97 | 97 | — 1 |

ANNEX TABLE 2. – INDICES OF FOOD AND AGRICULTURAL PRODUCTION, BY COUNTRIES (*continued*)

| | Total | | | | | | Per caput | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 |
| | ..... *1961-65 average = 100* ..... | | | | | *Percent* | ..... *1961-65 average = 100* ..... | | | | | *Percent* |
| **FAR EAST** | | | | | | | | | | | | |
| **Food production** | | | | | | | | | | | | |
| SOUTH ASIA | | | | | | | | | | | | |
| Bangladesh | 123 | 117 | 107 | 106 | 122 | +15 | 101 | 92 | 81 | 78 | 86 | +11 |
| India | 116 | 123 | 123 | 117 | 127 | + 8 | 101 | 105 | 103 | 96 | 102 | + 6 |
| Nepal | 108 | 111 | 118 | 102 | 119 | +17 | 95 | 96 | 99 | 84 | 96 | +14 |
| Pakistan | 141 | 147 | 144 | 148 | 153 | + 4 | 118 | 120 | 113 | 113 | 114 | + 1 |
| Sri Lanka | 113 | 118 | 116 | 117 | 115 | — 2 | 98 | 99 | 96 | 94 | 90 | — 4 |
| EAST AND SOUTHEAST ASIA | | | | | | | | | | | | |
| Burma | 106 | 110 | 111 | 103 | 114 | +10 | 93 | 94 | 92 | 84 | 91 | + 8 |
| Indonesia | 113 | 123 | 126 | 125 | 134 | + 7 | 96 | 102 | 101 | 97 | 101 | + 4 |
| Khmer Republic | 107 | 147 | 114 | 96 | 64 | —34 | 91 | 121 | 91 | 75 | 48 | —36 |
| Korea, Rep. of | 131 | 129 | 130 | 131 | 137 | + 4 | 113 | 108 | 106 | 105 | 107 | + 2 |
| Laos | 149 | 152 | 144 | 145 | 154 | + 6 | 129 | 128 | 118 | 116 | 120 | + 3 |
| Malaysia | | | | | | | | | | | | |
| Sabah | 146 | 148 | 171 | 214 | 212 | — 1 | 117 | 115 | 129 | 155 | 148 | — 5 |
| Sarawak | 135 | 132 | 140 | 146 | 152 | + 4 | 112 | 105 | 108 | 108 | 108 | – |
| West Malaysia | 137 | 144 | 158 | 166 | 179 | + 8 | 116 | 120 | 128 | 131 | 137 | + 5 |
| Philippines | 121 | 127 | 128 | 130 | 144 | +10 | 100 | 101 | 99 | 97 | 103 | + 6 |
| Thailand | 127 | 129 | 136 | 121 | 148 | +23 | 105 | 104 | 105 | 90 | 107 | +19 |
| Viet-Nam, Rep. of | 105 | 114 | 122 | 124 | 127 | + 3 | 91 | 97 | 102 | 101 | 102 | + 1 |
| *Developing countries* | 118 | 124 | 124 | 120 | 130 | + 9 | 102 | 104 | 102 | 96 | 101 | + 6 |
| China | 116 | 122 | 126 | 124 | 129 | + 5 | 104 | 108 | 109 | 106 | 109 | + 3 |
| Japan | 122 | 120 | 114 | 122 | 122 | – | 114 | 111 | 105 | 111 | 109 | — 2 |
| **Agricultural production** | | | | | | | | | | | | |
| SOUTH ASIA | | | | | | | | | | | | |
| Bangladesh | 123 | 116 | 103 | 106 | 119 | +13 | 100 | 92 | 79 | 78 | 85 | + 9 |
| India | 115 | 121 | 123 | 117 | 126 | + 8 | 101 | 104 | 103 | 96 | 101 | + 6 |
| Nepal | 108 | 111 | 118 | 103 | 120 | +17 | 95 | 96 | 100 | 85 | 97 | +14 |
| Pakistan | 141 | 147 | 148 | 150 | 154 | + 2 | 119 | 120 | 117 | 115 | 114 | — 1 |
| Sri Lanka | 114 | 119 | 117 | 117 | 115 | — 2 | 99 | 101 | 96 | 94 | 90 | — 4 |
| EAST AND SOUTHEAST ASIA | | | | | | | | | | | | |
| Burma | 106 | 110 | 111 | 105 | 116 | +11 | 93 | 94 | 92 | 85 | 92 | + 8 |
| Indonesia | 113 | 122 | 124 | 124 | 133 | + 7 | 96 | 101 | 100 | 96 | 100 | + 4 |
| Khmer Republic | 108 | 140 | 107 | 93 | 63 | —32 | 92 | 115 | 86 | 72 | 47 | —34 |
| Korea, Rep. of | 133 | 131 | 132 | 137 | 143 | + 4 | 115 | 110 | 108 | 110 | 112 | + 2 |
| Laos | 149 | 152 | 145 | 146 | 154 | + 6 | 129 | 128 | 119 | 117 | 120 | + 3 |
| Malaysia | | | | | | | | | | | | |
| Sabah | 137 | 141 | 150 | 173 | 185 | + 7 | 111 | 110 | 113 | 125 | 129 | + 4 |
| Sarawak | 115 | 92 | 94 | 97 | 127 | +30 | 95 | 74 | 72 | 72 | 91 | +25 |
| West Malaysia | 147 | 152 | 162 | 166 | 187 | +13 | 124 | 126 | 131 | 131 | 143 | +10 |
| Philippines | 120 | 125 | 127 | 129 | 142 | +10 | 99 | 100 | 98 | 96 | 102 | + 6 |
| Thailand | 128 | 130 | 137 | 124 | 150 | +22 | 106 | 104 | 106 | 93 | 109 | +18 |
| Viet-Nam, Rep. of | 102 | 111 | 119 | 119 | 123 | + 3 | 88 | 94 | 100 | 98 | 99 | + 1 |
| *Developing countries* | 118 | 123 | 124 | 120 | 130 | + 8 | 102 | 104 | 102 | 96 | 101 | + 6 |
| China | 117 | 123 | 126 | 124 | 130 | + 5 | 105 | 108 | 110 | 106 | 109 | + 3 |
| Japan | 121 | 119 | 113 | 120 | 120 | – | 113 | 110 | 104 | 109 | 107 | — 1 |

ANNEX TABLE 2. – INDICES OF FOOD AND AGRICULTURAL PRODUCTION, BY COUNTRIES (*continued*)

| | Total | | | | | | Per caput | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 |
| | ..... *1961-65 average = 100* ..... | | | | | *Percent* | ..... *1961-65 average = 100* ..... | | | | | *Percent* |
| NEAR EAST | | | | | | | | | | | | |
| **Food production** | | | | | | | | | | | | |
| NEAR EAST IN AFRICA | | | | | | | | | | | | |
| Egypt | 124 | 125 | 129 | 133 | 134 | + 1 | 105 | 104 | 104 | 104 | 102 | — 2 |
| Libyan Arab Republic | 145 | 123 | 104 | 183 | 149 | —18 | 119 | 97 | 79 | 134 | 106 | —21 |
| Sudan | 141 | 147 | 153 | 157 | 154 | — 2 | 118 | 120 | 121 | 119 | 113 | — 5 |
| NEAR EAST IN ASIA | | | | | | | | | | | | |
| Afghanistan | 115 | 107 | 106 | 122 | 129 | + 5 | 101 | 92 | 88 | 99 | 102 | + 3 |
| Cyprus | 161 | 156 | 177 | 169 | 157 | — 7 | 153 | 148 | 165 | 157 | 144 | — 8 |
| Iran | 128 | 139 | 129 | 140 | 145 | + 3 | 109 | 114 | 103 | 108 | 108 | – |
| Iraq | 135 | 132 | 128 | 179 | 131 | —27 | 110 | 105 | 98 | 132 | 94 | —29 |
| Jordan | 72 | 46 | 65 | 75 | 48 | —35 | 60 | 37 | 51 | 56 | 35 | —38 |
| Lebanon | 116 | 122 | 136 | 138 | 135 | — 2 | 98 | 100 | 108 | 106 | 101 | — 5 |
| Saudi Arabia | 127 | 130 | 133 | 137 | 139 | + 1 | 108 | 108 | 108 | 107 | 106 | — 1 |
| Syrian Arab Republic | 111 | 81 | 85 | 140 | 107 | —24 | 93 | 66 | 66 | 106 | 78 | —27 |
| Turkey | 118 | 126 | 131 | 137 | 130 | — 5 | 101 | 105 | 106 | 108 | 100 | — 7 |
| Yemen Arab Republic | 100 | 90 | 111 | 119 | 118 | — 1 | 86 | 75 | 89 | 93 | 89 | — 4 |
| Yemen, People's Dem. Rep. of | 121 | 114 | 126 | 128 | 131 | + 2 | 103 | 95 | 102 | 101 | 100 | — 1 |
| *Developing countries* | 122 | 125 | 127 | 139 | 134 | — 4 | 104 | 103 | 102 | 108 | 101 | — 6 |
| Israel | 136 | 144 | 166 | 177 | 174 | — 2 | 115 | 119 | 133 | 139 | 133 | — 4 |
| **Agricultural production** | | | | | | | | | | | | |
| NEAR EAST IN AFRICA | | | | | | | | | | | | |
| Egypt | 123 | 123 | 127 | 130 | 132 | + 1 | 105 | 102 | 102 | 102 | 100 | — 2 |
| Libyan Arab Republic | 144 | 124 | 107 | 180 | 149 | —17 | 117 | 98 | 81 | 132 | 106 | —20 |
| Sudan | 143 | 150 | 155 | 157 | 152 | — 4 | 119 | 121 | 122 | 120 | 112 | — 7 |
| NEAR EAST IN ASIA | | | | | | | | | | | | |
| Afghanistan | 115 | 108 | 107 | 123 | 129 | + 5 | 101 | 92 | 89 | 99 | 102 | + 2 |
| Cyprus | 159 | 154 | 174 | 167 | 155 | — 7 | 152 | 145 | 163 | 154 | 142 | — 8 |
| Iran | 128 | 137 | 128 | 141 | 145 | + 2 | 108 | 112 | 102 | 109 | 108 | — 1 |
| Iraq | 134 | 133 | 130 | 176 | 133 | —25 | 110 | 105 | 99 | 130 | 95 | —27 |
| Jordan | 74 | 48 | 67 | 76 | 51 | —33 | 62 | 39 | 52 | 57 | 37 | —35 |
| Lebanon | 117 | 123 | 137 | 139 | 136 | — 2 | 99 | 101 | 109 | 107 | 102 | — 5 |
| Saudi Arabia | 127 | 130 | 133 | 137 | 139 | + 1 | 108 | 108 | 108 | 107 | 106 | — 1 |
| Syrian Arab Republic | 109 | 85 | 89 | 134 | 109 | —19 | 91 | 69 | 69 | 101 | 79 | —22 |
| Turkey | 119 | 126 | 134 | 139 | 131 | — 6 | 102 | 105 | 108 | 110 | 101 | — 8 |
| Yemen Arab Republic | 100 | 90 | 111 | 121 | 119 | — 1 | 85 | 74 | 90 | 95 | 91 | — 4 |
| Yemen, People's Dem. Rep. of | 117 | 111 | 124 | 125 | 127 | + 2 | 100 | 92 | 100 | 98 | 97 | — 1 |
| *Developing countries* | 122 | 124 | 128 | 139 | 133 | — 4 | 104 | 103 | 102 | 108 | 100 | — 7 |
| Israel | 140 | 146 | 167 | 179 | 176 | — 2 | 118 | 120 | 134 | 140 | 135 | — 4 |

ANNEX TABLE 2. – INDICES OF FOOD AND AGRICULTURAL PRODUCTION, BY COUNTRIES (*continued*)

| | Total | | | | | | Per caput | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 |
| | ..... *1961-65 average = 100* ..... | | | | | *Percent* | ..... *1961-65 average = 100* ..... | | | | | *Percent* |
| AFRICA | | | | | | | | | | | | |
| **Food production** | | | | | | | | | | | | |
| NORTHWEST AFRICA | | | | | | | | | | | | |
| Algeria | 103 | 108 | 103 | 123 | 103 | —16 | 87 | 88 | 81 | 94 | 76 | —19 |
| Morocco | 125 | 143 | 147 | 148 | 136 | — 8 | 105 | 117 | 117 | 115 | 103 | —10 |
| Tunisia | 94 | 117 | 138 | 126 | 143 | +13 | 79 | 95 | 109 | 97 | 106 | +10 |
| WEST AFRICA | | | | | | | | | | | | |
| Dahomey | 124 | 129 | 126 | 120 | 113 | — 6 | 107 | 108 | 104 | 95 | 88 | — 8 |
| Gambia | 119 | 107 | 116 | 108 | 110 | + 2 | 106 | 94 | 100 | 91 | 91 | – |
| Ghana | 112 | 126 | 137 | 133 | 119 | —10 | 94 | 103 | 108 | 102 | 88 | —13 |
| Guinea | 119 | 120 | 122 | 119 | 110 | — 8 | 105 | 103 | 102 | 98 | 88 | —10 |
| Ivory Coast | 134 | 129 | 143 | 145 | 142 | — 2 | 117 | 110 | 119 | 118 | 112 | — 5 |
| Liberia | 99 | 104 | 108 | 110 | 108 | — 2 | 90 | 92 | 94 | 94 | 90 | — 4 |
| Mali | 113 | 106 | 117 | 84 | 74 | —12 | 99 | 90 | 97 | 68 | 59 | —14 |
| Mauritania | 113 | 113 | 110 | 101 | 86 | —15 | 100 | 97 | 93 | 83 | 69 | —17 |
| Niger | 115 | 113 | 103 | 90 | 70 | —23 | 97 | 93 | 82 | 70 | 52 | —25 |
| Nigeria | 110 | 107 | 108 | 109 | 98 | —10 | 95 | 90 | 89 | 87 | 76 | —13 |
| Senegal | 104 | 82 | 109 | 66 | 78 | +19 | 91 | 70 | 91 | 53 | 62 | +16 |
| Sierra Leone | 124 | 124 | 129 | 128 | 128 | – | 110 | 107 | 108 | 105 | 103 | — 2 |
| Togo | 122 | 135 | 135 | 128 | 109 | —15 | 105 | 114 | 111 | 102 | 85 | —17 |
| Upper Volta | 116 | 116 | 111 | 108 | 99 | — 8 | 103 | 101 | 94 | 90 | 81 | —10 |
| CENTRAL AFRICA | | | | | | | | | | | | |
| Angola | 119 | 121 | 125 | 123 | 124 | + 1 | 106 | 105 | 107 | 103 | 102 | — 1 |
| Cameroon | 125 | 128 | 130 | 135 | 137 | + 1 | 112 | 111 | 111 | 113 | 112 | — 1 |
| Central African Republic | 106 | 108 | 113 | 113 | 115 | + 1 | 94 | 94 | 95 | 94 | 93 | — 1 |
| Chad | 99 | 97 | 97 | 72 | 70 | — 2 | 87 | 83 | 81 | 59 | 56 | — 5 |
| Congo | 88 | 84 | 83 | 77 | 77 | – | 78 | 73 | 70 | 63 | 62 | — 2 |
| Gabon | 121 | 124 | 128 | 131 | 133 | + 1 | 116 | 118 | 121 | 122 | 123 | – |
| Zaire | 134 | 138 | 131 | 140 | 139 | — 1 | 118 | 119 | 110 | 115 | 112 | — 3 |
| EAST AFRICA | | | | | | | | | | | | |
| Burundi | 122 | 150 | 169 | 221 | 245 | +10 | 107 | 129 | 142 | 181 | 195 | + 8 |
| Ethiopia | 116 | 119 | 122 | 127 | 125 | — 1 | 103 | 104 | 104 | 106 | 102 | — 3 |
| Kenya | 132 | 131 | 130 | 136 | 130 | — 5 | 110 | 106 | 102 | 104 | 96 | — 8 |
| Madagascar | 118 | 118 | 117 | 118 | 118 | – | 101 | 98 | 95 | 93 | 90 | — 3 |
| Malawi | 140 | 128 | 142 | 149 | 154 | + 3 | 121 | 108 | 117 | 120 | 120 | + 1 |
| Mauritius | 116 | 101 | 110 | 120 | 128 | + 7 | 101 | 85 | 90 | 95 | 100 | + 5 |
| Mozambique | 114 | 118 | 122 | 127 | 141 | +10 | 102 | 103 | 104 | 106 | 115 | + 8 |
| Rhodesia | 115 | 107 | 127 | 140 | 114 | —19 | 94 | 85 | 97 | 104 | 81 | —22 |
| Rwanda | 135 | 144 | 148 | 144 | 147 | + 2 | 114 | 118 | 118 | 111 | 111 | — 1 |
| Somalia | 117 | 119 | 120 | 125 | 119 | — 5 | 103 | 102 | 100 | 102 | 95 | — 7 |
| Tanzania | 122 | 132 | 134 | 135 | 134 | — 1 | 105 | 111 | 109 | 108 | 104 | — 4 |
| Uganda | 129 | 128 | 124 | 126 | 121 | — 4 | 111 | 108 | 101 | 100 | 94 | — 6 |
| Zambia | 127 | 121 | 123 | 129 | 121 | — 6 | 107 | 99 | 97 | 99 | 90 | — 9 |
| SOUTHERN AFRICA | | | | | | | | | | | | |
| Botswana | 110 | 110 | 124 | 125 | 139 | +11 | 97 | 94 | 104 | 103 | 112 | + 8 |
| Lesotho | 106 | 101 | 103 | 79 | 94 | +20 | 95 | 89 | 89 | 67 | 79 | +17 |
| Swaziland | 161 | 175 | 183 | 200 | 198 | — 1 | 137 | 144 | 146 | 155 | 149 | — 4 |
| *Developing countries* | 117 | 119 | 122 | 124 | 119 | — 4 | 102 | 101 | 101 | 99 | 93 | — 7 |
| South Africa | 123 | 128 | 148 | 154 | 132 | —15 | 107 | 109 | 122 | 125 | 103 | —17 |

ANNEX TABLE 2. – INDICES OF FOOD AND AGRICULTURAL PRODUCTION, BY COUNTRIES (*concluded*)

| Agricultural production | Total | | | | | | Per caput | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) | Change 1972 to 1973 |
| | ..... *1961-65 average = 100* ..... | | | | | *Percent* | ..... *1961-65 average = 100* ..... | | | | | *Percent* |
| NORTHWEST AFRICA | | | | | | | | | | | | |
| Algeria | 105 | 109 | 105 | 124 | 105 | —16 | 88 | 89 | 82 | 95 | 77 | —19 |
| Morocco | 125 | 142 | 147 | 148 | 136 | — 8 | 105 | 116 | 117 | 114 | 103 | —10 |
| Tunisia | 95 | 118 | 138 | 126 | 143 | +13 | 80 | 96 | 109 | 97 | 106 | + 9 |
| WEST AFRICA | | | | | | | | | | | | |
| Dahomey | 127 | 134 | 134 | 127 | 122 | — 5 | 110 | 113 | 109 | 102 | 94 | — 7 |
| Gambia | 119 | 107 | 116 | 108 | 110 | + 2 | 106 | 94 | 100 | 91 | 91 | – |
| Ghana | 112 | 127 | 137 | 133 | 119 | —10 | 94 | 103 | 108 | 102 | 88 | —13 |
| Guinea | 119 | 120 | 122 | 119 | 110 | — 8 | 104 | 103 | 102 | 98 | 88 | —10 |
| Ivory Coast | 136 | 131 | 146 | 149 | 145 | — 2 | 119 | 112 | 122 | 121 | 115 | — 5 |
| Liberia | 115 | 130 | 135 | 136 | 134 | — 1 | 105 | 116 | 117 | 116 | 112 | — 3 |
| Mali | 115 | 109 | 120 | 89 | 76 | —14 | 100 | 93 | 100 | 72 | 61 | —16 |
| Mauritania | 113 | 113 | 110 | 101 | 86 | —15 | 100 | 97 | 93 | 83 | 69 | —17 |
| Niger | 115 | 114 | 103 | 90 | 70 | —23 | 97 | 93 | 82 | 70 | 52 | —25 |
| Nigeria | 110 | 106 | 108 | 109 | 98 | —10 | 95 | 89 | 88 | 87 | 76 | —12 |
| Senegal | 105 | 83 | 111 | 67 | 80 | +18 | 91 | 70 | 92 | 54 | 63 | +15 |
| Sierra Leone | 124 | 124 | 128 | 128 | 128 | – | 109 | 106 | 108 | 105 | 102 | — 2 |
| Togo | 122 | 136 | 135 | 129 | 109 | —16 | 106 | 114 | 111 | 103 | 85 | —18 |
| Upper Volta | 119 | 119 | 113 | 111 | 104 | — 7 | 106 | 104 | 96 | 93 | 84 | — 9 |
| CENTRAL AFRICA | | | | | | | | | | | | |
| Angola | 120 | 122 | 127 | 125 | 126 | + 1 | 107 | 107 | 108 | 104 | 103 | — 1 |
| Cameroon | 127 | 127 | 130 | 136 | 136 | – | 114 | 111 | 111 | 113 | 111 | — 2 |
| Central African Republic | 110 | 112 | 115 | 116 | 117 | + 1 | 98 | 97 | 98 | 96 | 95 | — 1 |
| Chad | 102 | 99 | 100 | 76 | 72 | — 6 | 90 | 84 | 83 | 62 | 57 | — 8 |
| Congo | 89 | 85 | 84 | 77 | 77 | – | 78 | 73 | 70 | 63 | 62 | — 2 |
| Gabon | 121 | 124 | 128 | 131 | 133 | + 1 | 116 | 118 | 121 | 122 | 123 | – |
| Zaire | 133 | 137 | 130 | 139 | 138 | – | 117 | 118 | 109 | 114 | 111 | — 3 |
| EAST AFRICA | | | | | | | | | | | | |
| Burundi | 122 | 150 | 169 | 220 | 244 | +11 | 107 | 129 | 141 | 180 | 194 | + 8 |
| Ethiopia | 116 | 120 | 123 | 128 | 126 | — 1 | 103 | 104 | 105 | 106 | 103 | — 3 |
| Kenya | 129 | 128 | 127 | 133 | 128 | — 4 | 108 | 104 | 100 | 101 | 94 | — 7 |
| Madagascar | 114 | 118 | 118 | 119 | 119 | – | 102 | 98 | 95 | 94 | 91 | — 3 |
| Malawi | 134 | 129 | 144 | 153 | 152 | – | 116 | 109 | 119 | 122 | 119 | — 3 |
| Mauritius | 115 | 101 | 110 | 120 | 129 | + 7 | 101 | 85 | 90 | 95 | 100 | + 5 |
| Mozambique | 115 | 118 | 120 | 126 | 140 | +10 | 102 | 103 | 102 | 105 | 114 | + 8 |
| Rhodesia | 105 | 99 | 115 | 126 | 101 | —20 | 86 | 79 | 88 | 93 | 72 | - 22 |
| Rwanda | 135 | 144 | 148 | 144 | 147 | + 3 | 114 | 118 | 118 | 111 | 111 | — 1 |
| Somalia | 117 | 119 | 120 | 125 | 119 | — 5 | 103 | 102 | 100 | 102 | 95 | — 7 |
| Tanzania | 120 | 129 | 129 | 129 | 129 | – | 104 | 108 | 106 | 103 | 100 | — 3 |
| Uganda | 127 | 128 | 123 | 125 | 121 | — 4 | 110 | 107 | 100 | 99 | 93 | — 6 |
| Zambia | 124 | 118 | 121 | 127 | 120 | — 5 | 104 | 96 | 96 | 98 | 90 | — 8 |
| SOUTHERN AFRICA | | | | | | | | | | | | |
| Botswana | 110 | 108 | 123 | 125 | 138 | +11 | 97 | 94 | 104 | 103 | 111 | + 8 |
| Lesotho | 106 | 103 | 105 | 85 | 99 | +16 | 95 | 91 | 92 | 73 | 83 | +14 |
| Swaziland | 160 | 173 | 183 | 200 | 199 | — 1 | 136 | 143 | 146 | 155 | 149 | — 4 |
| *Developing countries* | 117 | 119 | 122 | 124 | 119 | — 4 | 102 | 101 | 100 | 99 | 93 | — 7 |
| South Africa | 122 | 124 | 141 | 146 | 126 | —14 | 106 | 105 | 116 | 118 | 99 | —16 |

ANNEX TABLE 3. – VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Million metric tons* | | | | | | | | | | | | |
| **World** [1] | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 46.13 | 44.87 | 49.67 | 59.19 | 56.37 | 62.73 | 52.87 | 53.27 | 48.60 | 57.13 | 58.48 | 64.83 | 81.14 |
| Barley | 7.20 | 6.64 | 5.70 | 7.99 | 8.06 | 6.41 | 7.21 | 6.39 | 7.11 | 10.36 | 11.12 | 14.02 | 12.19 |
| Maize | 14.00 | 19.91 | 21.10 | 22.30 | 25.03 | 25.80 | 27.52 | 28.83 | 27.39 | 29.42 | 30.82 | 37.28 | 49.68 |
| Oats | 1.26 | 1.44 | 1.24 | 1.34 | 1.73 | 1.37 | 1.20 | 1.03 | 0.99 | 1.51 | 1.62 | 2.13 | 1.63 |
| Rye | 1.85 | 2.12 | 1.53 | 0.67 | 0.46 | 0.76 | 0.80 | 0.57 | 0.55 | 0.62 | 1.03 | 0.68 | 1.92 |
| Millet and sorghums | 2.43 | 3.92 | 3.99 | 3.88 | 5.36 | 9.17 | 7.75 | 5.27 | 4.74 | 6.57 | 6.63 | 6.48 | 9.29 |
| Rice (milled equivalent) [2] | 6.62 | 6.44 | 7.42 | 7.86 | 8.11 | 7.84 | 7.47 | 7.94 | 8.45 | 8.82 | 9.31 | 9.45 | 9.24 |
| Sugar (raw equivalent) [3] | 20.54 | 18.77 | 17.68 | 17.13 | 19.94 | 19.28 | 21.00 | 21.24 | 20.29 | 21.79 | 21.35 | 22.19 | 23.76 |
| Potatoes | 2.79 | 3.37 | 2.94 | 3.63 | 3.78 | 3.56 | 3.37 | 3.41 | 3.59 | 3.80 | 3.04 | 5.13 | 3.92 |
| Pulses (dry) | 1.13 | 1.38 | 1.51 | 1.46 | 2.24 | 2.05 | 1.68 | 1.80 | 2.15 | 1.78 | 1.75 | 2.04 | 2.06 |
| Apples | 1.59 | 1.71 | 1.52 | 1.73 | 1.99 | 1.90 | 1.97 | 2.09 | 2.26 | 2.12 | 2.27 | 2.63 | 2.44 |
| Bananas | 3.88 | 3.95 | 4.22 | 4.26 | 4.70 | 5.12 | 5.14 | 5.59 | 5.60 | 5.93 | 6.46 | 6.71 | 6.64 |
| Citrus fruit [4] | 3.24 | 3.64 | 3.35 | 4.21 | 4.27 | 4.28 | 4.48 | 4.39 | 4.63 | 5.06 | 4.93 | 5.36 | 5.57 |
| Grapes (fresh) | 0.62 | 0.76 | 0.74 | 0.76 | 0.97 | 0.79 | 0.81 | 0.78 | 0.94 | 0.87 | 0.99 | 0.80 | 0.90 |
| Dates | 0.26 | 0.30 | 0.42 | 0.36 | 0.35 | 0.38 | 0.35 | 0.33 | 0.36 | 0.44 | 0.36 | 0.40 | 0.41 |
| Vegetable oils and oilseeds (oil equivalent) [5] | 5.99 | 6.49 | 6.60 | 6.99 | 7.05 | 7.51 | 7.60 | 8.13 | 8.30 | 9.02 | 9.40 | 10.41 | 10.30 |
| Oilseed cake and meal | 5.47 | 6.58 | 6.90 | 7.27 | 8.19 | 8.82 | 8.88 | 9.18 | 9.68 | 11.08 | 11.63 | 12.63 | 14.06 |
| Cattle [6] | 4.90 | 4.86 | 4.96 | 4.70 | 5.31 | 4.98 | 5.34 | 5.98 | 6.34 | 6.51 | 6.49 | 7.04 | 6.42 |
| Sheep, lambs and goats [6] | 7.35 | 7.68 | 8.06 | 7.88 | 8.70 | 9.22 | 8.23 | 9.67 | 9.79 | 9.81 | 10.35 | 10.53 | 10.64 |
| Pigs [6] | 2.61 | 2.67 | 2.37 | 2.96 | 3.80 | 3.40 | 3.19 | 3.40 | 3.92 | 4.42 | 5.31 | 5.82 | 5.71 |
| Meat [7] | 2.13 | 2.58 | 2.96 | 2.89 | 3.04 | 3.11 | 3.34 | 3.43 | 3.77 | 4.54 | 4.67 | 4.27 | 5.42 |
| Milk (condensed, evaporated and powdered) | 0.56 | 0.58 | 0.60 | 0.64 | 0.62 | 0.63 | 0.66 | 0.69 | 0.68 | 2.16 | 2.17 | 2.01 | 2.35 |
| Eggs (in the shell) | 0.54 | 0.48 | 0.41 | 0.36 | 0.35 | 0.32 | 0.33 | 0.34 | 0.37 | 0.41 | 0.45 | 0.46 | 0.46 |
| Coffee (green) | 2.70 | 2.85 | 3.07 | 2.83 | 2.74 | 3.08 | 3.15 | 3.36 | 3.41 | 3.27 | 3.30 | 3.51 | 3.65 |
| Cocoa beans | 1.02 | 1.03 | 1.04 | 1.04 | 1.30 | 1.12 | 1.08 | 1.05 | 1.00 | 1.13 | 1.19 | 1.25 | 1.16 |
| Tea | 0.58 | 0.60 | 0.61 | 0.62 | 0.65 | 0.62 | 0.68 | 0.72 | 0.67 | 0.75 | 0.75 | 0.75 | 0.77 |
| Wine | 2.80 | 2.95 | 2.39 | 2.67 | 2.53 | 2.85 | 2.36 | 2.56 | 3.27 | 3.68 | 3.53 | 4.12 | 4.41 |
| Pepper and pimento | 0.13 | 0.14 | 0.15 | 0.13 | 0.14 | 0.15 | 0.19 | 0.19 | 0.18 | 0.17 | 0.19 | 0.20 | 0.18 |
| Tobacco (unmanufactured) | 0.88 | 0.87 | 0.90 | 1.01 | 0.98 | 0.96 | 1.03 | 1.00 | 1.00 | 0.98 | 1.03 | 1.20 | 1.19 |
| Wool (actual weight) | 1.45 | 1.45 | 1.43 | 1.40 | 1.44 | 1.48 | 1.37 | 1.50 | 1.52 | 1.54 | 1.43 | 1.48 | 1.33 |
| Cotton (lint) | 3.75 | 3.40 | 3.76 | 3.92 | 3.76 | 4.00 | 3.84 | 3.84 | 3.70 | 3.94 | 4.02 | 4.05 | 4.61 |
| Jute and kenaf | 0.71 | 1.03 | 1.27 | 1.05 | 1.15 | 1.39 | 1.26 | 0.92 | 0.92 | 1.00 | 0.91 | 1.00 | 0.96 |
| Rubber (natural) [8] | 0.85 | 0.99 | 0.80 | 0.89 | 0.95 | 0.93 | 0.87 | 2.67 | 2.94 | 2.84 | 2.92 | 2.89 | 3.37 |
| FISHERY PRODUCTS [9] | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 1.15 | 1.34 | 1.48 | 1.71 | 1.72 | 1.80 | 1.79 | 1.82 | 1.80 | 2.02 | 2.04 | 2.17 | 2.45 |
| Dried, salted or smoked fish | 0.55 | 0.55 | 0.54 | 0.50 | 0.50 | 0.50 | 0.50 | 0.49 | 0.50 | 0.52 | 0.48 | 0.51 | 0.50 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 0.25 | 0.27 | 0.27 | 0.30 | 0.30 | 0.30 | 0.32 | 0.34 | 0.38 | 0.44 | 0.52 | 0.62 | 0.60 |
| Fish products and preparations, whether or not in airtight containers | 0.52 | 0.54 | 0.51 | 0.58 | 0.52 | 0.57 | 0.55 | 0.61 | 0.59 | 0.61 | 0.63 | 0.68 | 0.72 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 0.04 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 | 0.07 | 0.07 | 0.07 | 0.07 | 0.07 | 0.08 | 0.09 |
| Oils and fats, crude or refined, of aquatic animal origin | 0.62 | 0.67 | 0.74 | 0.63 | 0.72 | 0.68 | 0.81 | 0.83 | 0.70 | 0.64 | 0.71 | 0.75 | 0.56 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 1.36 | 1.72 | 1.78 | 2.44 | 2.47 | 2.48 | 3.02 | 3.55 | 3.03 | 3.00 | 3.00 | 2.97 | 1.57 |
| FOREST PRODUCTS [9] | | | | | | | | | | | | | |
| Pulpwood [10] | 12.9 | 12.2 | 11.6 | 13.2 | 13.8 | 14.2 | 14.7 | 14.1 | 15.9 | 18.6 | 16.3 | 14.9 | 16.4 |
| Coniferous logs [10] | 5.9 | 6.4 | 8.7 | 9.9 | 11.6 | 13.8 | 17.2 | 21.1 | 20.4 | 24.7 | 21.9 | 25.8 | 30.0 |
| Broadleaved logs [10] | 14.0 | 14.6 | 18.0 | 20.0 | 21.2 | 23.8 | 25.2 | 30.1 | 35.0 | 38.8 | 40.9 | 43.5 | 52.2 |
| Sawn softwood [10] | 36.3 | 38.2 | 41.4 | 44.6 | 44.0 | 42.6 | 42.8 | 47.5 | 47.3 | 49.5 | 51.7 | 59.4 | 64.0 |
| Sawn hardwood [10] | 4.3 | 4.3 | 4.6 | 5.4 | 5.6 | 5.8 | 5.7 | 6.3 | 6.9 | 7.2 | 7.1 | 8.4 | 9.5 |
| Plywood and veneers [10] | 1.9 | 2.1 | 2.4 | 3.0 | 3.1 | 3.5 | 3.8 | 4.7 | 5.0 | 5.3 | 6.0 | 7.2 | 7.8 |

See notes at end of table.

ANNEX TABLE 3. – VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Million metric tons* | | | | | | | | | | | | |
| FOREST PRODUCTS [9] (*concluded*) | | | | | | | | | | | | | |
| Fibreboard | 0.9 | 0.9 | 1.0 | 1.1 | 1.1 | 1.1 | 1.2 | 1.3 | 1.4 | 1.4 | 1.5 | 1.6 | 1.7 |
| Mechanical wood pulp | 1.3 | 1.2 | 1.3 | 1.4 | 1.4 | 1.4 | 1.2 | 1.3 | 1.3 | 1.3 | 1.0 | 1.2 | 1.3 |
| Chemical wood pulp | 8.5 | 9.0 | 10.1 | 11.1 | 11.1 | 12.0 | 12.4 | 13.7 | 14.9 | 15.6 | 14.0 | 15.2 | 17.1 |
| Newsprint | 7.7 | 7.5 | 7.8 | 8.5 | 9.0 | 9.7 | 9.4 | 9.7 | 10.6 | 10.6 | 10.3 | 10.8 | 11.1 |
| Other paper and paperboard | 5.1 | 5.3 | 5.9 | 6.9 | 7.5 | 8.4 | 8.8 | 10.2 | 11.9 | 12.8 | 13.2 | 14.5 | 16.7 |
| **Western Europe** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 3.19 | 3.69 | 5.07 | 5.29 | 6.99 | 6.45 | 6.16 | 8.42 | 10.91 | 9.39 | 7.13 | 10.14 | 12.71 |
| Barley | 2.51 | 1.69 | 2.29 | 3.16 | 2.63 | 3.37 | 4.08 | 4.20 | 4.32 | 4.39 | 3.78 | 5.31 | 5.42 |
| Maize | 1.09 | 0.34 | 0.94 | 1.27 | 1.89 | 2.11 | 2.77 | 2.54 | 3.23 | 3.88 | 5.30 | 4.60 | 5.63 |
| Rye | 0.31 | 0.18 | 0.16 | 0.05 | 0.05 | 0.06 | 0.05 | 0.09 | 0.14 | 0.20 | 0.39 | 0.39 | 0.54 |
| Sugar (raw equivalent) [3] | 1.47 | 1.26 | 1.59 | 1.45 | 1.54 | 1.27 | 1.15 | 1.66 | 1.45 | 1.97 | 2.02 | 2.82 | 2.80 |
| Potatoes | 1.75 | 1.83 | 1.64 | 1.70 | 2.26 | 1.98 | 1.86 | 1.86 | 2.41 | 2.22 | 1.90 | 2.76 | 2.47 |
| Pulses (dry) | 0.19 | 0.22 | 0.17 | 0.15 | 0.17 | 0.19 | 0.24 | 0.29 | 0.28 | 0.26 | 0.26 | 0.29 | 0.30 |
| Apples | 0.84 | 0.88 | 0.53 | 0.73 | 0.88 | 0.76 | 0.78 | 0.86 | 0.95 | 0.94 | 1.06 | 1.31 | 1.16 |
| Citrus fruit [4] | 1.45 | 1.73 | 1.22 | 2.00 | 1.91 | 1.97 | 1.94 | 1.79 | 1.92 | 2.29 | 1.98 | 2.26 | 2.18 |
| Grapes (fresh) | 0.31 | 0.34 | 0.29 | 0.38 | 0.41 | 0.41 | 0.42 | 0.41 | 0.41 | 0.44 | 0.48 | 0.41 | 0.46 |
| Vegetable oils and oilseeds (oil equivalent) [11] | 0.38 | 0.40 | 0.37 | 0.42 | 0.32 | 0.36 | 0.49 | 0.53 | 0.72 | 0.98 | 1.15 | 0.94 | 1.21 |
| Oilseed cake and meal | 0.91 | 0.92 | 0.89 | 1.03 | 1.07 | 1.13 | 1.28 | 1.19 | 1.34 | 1.56 | 1.79 | 2.14 | 2.72 |
| Cattle [6] | 1.80 | 1.37 | 1.85 | 1.88 | 1.74 | 1.46 | 2.00 | 2.34 | 2.48 | 2.60 | 2.74 | 3.10 | 2.57 |
| Sheep, lambs and goats [6] | 1.53 | 1.30 | 1.35 | 0.87 | 0.85 | 0.58 | 0.72 | 0.93 | 0.98 | 0.63 | 0.72 | 0.74 | 0.60 |
| Pigs [6] | 0.58 | 0.49 | 0.39 | 0.66 | 0.82 | 0.49 | 0.88 | 1.17 | 1.90 | 2.35 | 2.29 | 2.45 | 2.51 |
| Meat (fresh, chilled and frozen) [7] | 0.58 | 0.74 | 0.81 | 0.79 | 0.92 | 0.91 | 1.10 | 1.21 | 1.26 | 1.55 | 1.81 | 1.82 | 1.93 |
| Bacon, ham and salted pork | 0.36 | 0.37 | 0.35 | 0.35 | 0.36 | 0.36 | 0.35 | 0.35 | 0.34 | 0.35 | 0.35 | 0.34 | 0.32 |
| Milk (condensed, evaporated and powdered) | 0.64 | 0.69 | 0.72 | 0.75 | 0.90 | 1.01 | 1.17 | 1.38 | 1.34 | 1.44 | 1.51 | 1.41 | 1.79 |
| Butter | 0.26 | 0.23 | 0.24 | 0.23 | 0.27 | 0.27 | 0.31 | 0.35 | 0.33 | 0.49 | 0.45 | 0.36 | 0.78 |
| Cheese | 0.34 | 0.36 | 0.38 | 0.40 | 0.42 | 0.47 | 0.48 | 0.52 | 0.53 | 0.57 | 0.61 | 0.67 | 0.74 |
| Eggs (in the shell) | 0.29 | 0.28 | 0.23 | 0.19 | 0.15 | 0.14 | 0.13 | 0.15 | 0.19 | 0.23 | 0.26 | 0.27 | 0.28 |
| Wine | 1.01 | 1.01 | 1.14 | 1.12 | 1.19 | 1.30 | 1.31 | 1.32 | 1.45 | 1.78 | 2.36 | 2.86 | 2.92 |
| Wool (actual weight) | 0.11 | 0.12 | 0.13 | 0.10 | 0.11 | 0.11 | 0.10 | 0.11 | 0.11 | 0.10 | 0.10 | 0.12 | 0.11 |
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 684.5 | 771.7 | 849.9 | 877.0 | 907.7 | 876.5 | 861.2 | 905.8 | 971.7 | 1098.4 | 1035.0 | 1061.0 | 1094.0 |
| Dried, salted or smoked fish | 333.3 | 353.8 | 334.3 | 314.7 | 323.2 | 317.4 | 312.9 | 311.9 | 337.2 | 338.4 | 314.8 | 345.6 | 332.5 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 112.5 | 123.4 | 114.0 | 118.9 | 108.8 | 113.7 | 116.4 | 130.8 | 133.8 | 151.6 | 188.2 | 244.0 | 197.0 |
| Fish products and preparations, whether or not in airtight containers | 183.7 | 211.7 | 196.7 | 209.1 | 221.4 | 211.3 | 193.6 | 195.5 | 172.8 | 183.7 | 175.7 | 214.0 | 234.0 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 8.0 | 9.0 | 9.0 | 13.0 | 13.0 | 13.0 | 12.6 | 13.3 | 15.4 | 19.2 | 20.1 | 24.9 | 26.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 218.8 | 243.9 | 199.8 | 190.0 | 266.2 | 340.1 | 391.5 | 260.1 | 270.0 | 171.7 | 149.1 | 196.0 | 271.6 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 286.2 | 240.2 | 306.9 | 434.8 | 555.0 | 576.8 | 810.7 | 787.5 | 657.9 | 606.2 | 726.1 | 839.7 | 796.0 |
| | *Million metric tons* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Pulpwood [10] | 5.93 | 4.28 | 3.34 | 3.62 | 3.61 | 3.01 | 3.82 | 4.17 | 5.22 | 6.71 | 6.23 | 5.51 | 6.33 |
| Coniferous logs [10] | 1.30 | 1.14 | 1.05 | 1.06 | 1.03 | 1.35 | 1.55 | 1.37 | 1.23 | 1.46 | 1.35 | 1.39 | 2.25 |
| Broadleaved logs [10] | 0.98 | 0.93 | 0.91 | 0.97 | 1.02 | 1.10 | 1.17 | 1.20 | 1.23 | 1.35 | 1.47 | 1.55 | 1.57 |
| Pitprops [10] | 1.81 | 1.37 | 1.07 | 0.83 | 0.56 | 0.54 | 0.36 | 0.39 | 0.49 | 0.57 | 0.49 | 0.43 | 0.43 |
| Sawn softwood [10] | 14.24 | 13.86 | 13.86 | 14.62 | 13.57 | 12.72 | 12.85 | 15.05 | 16.24 | 16.21 | 16.55 | 18.09 | 20.20 |

See notes at end of table.

ANNEX TABLE 3. – VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Million metric tons* | | | | | | | | | | | | |
| FOREST PRODUCTS (*concluded*) | | | | | | | | | | | | | |
| Sawn hardwood [10] | 0.93 | 0.96 | 0.98 | 1.14 | 1.21 | 1.26 | 1.23 | 1.35 | 1.44 | 1.51 | 1.52 | 1.77 | 2.30 |
| Plywood and veneers [10] | 0.65 | 0.66 | 0.73 | 0.83 | 0.86 | 0.88 | 0.92 | 1.05 | 1.16 | 1.21 | 1.23 | 1.30 | 1.41 |
| Fibreboard | 0.76 | 0.79 | 0.84 | 0.88 | 0.82 | 0.75 | 0.82 | 0.87 | 0.90 | 0.88 | 0.87 | 0.90 | 0.96 |
| Particle board | 0.35 | 0.43 | 0.48 | 0.56 | 0.80 | 0.89 | 1.04 | 1.20 | 1.45 | 1.69 | 2.20 | 2.43 | 3.28 |
| Mechanical wood pulp | 1.06 | 0.97 | 1.05 | 1.15 | 1.12 | 1.13 | 1.00 | 1.06 | 1.04 | 1.04 | 0.77 | 0.86 | 1.00 |
| Chemical wood pulp | 4.54 | 4.83 | 5.35 | 5.85 | 5.78 | 6.27 | 6.20 | 6.54 | 6.76 | 6.74 | 5.63 | 6.34 | 7.60 |
| Newsprint | 1.62 | 1.63 | 1.71 | 1.88 | 1.97 | 2.07 | 2.10 | 2.31 | 2.43 | 2.56 | 2.49 | 2.69 | 2.80 |
| Other paper and paperboard | 3.57 | 3.77 | 4.24 | 4.75 | 5.13 | 5.55 | 5.67 | 6.49 | 7.74 | 8.17 | 8.36 | 9.34 | 11.80 |
| **Eastern Europe and U.S.S.R.** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 5.46 | 5.18 | 4.98 | 2.52 | 2.32 | 4.51 | 7.68 | 6.91 | 7.97 | 6.80 | 9.27 | 5.93 | 6.67 |
| Barley | 1.18 | 0.61 | 0.69 | 0.76 | 2.14 | 0.39 | 0.53 | 0.67 | 0.82 | 0.72 | 0.92 | 0.86 | 0.61 |
| Maize | 1.36 | 2.33 | 1.78 | 1.93 | 1.38 | 0.83 | 1.60 | 0.74 | 1.54 | 1.12 | 0.88 | 0.95 | 1.61 |
| Rye | 1.15 | 1.35 | 0.89 | 0.17 | 0.06 | 0.32 | 0.44 | 0.28 | 0.30 | 0.25 | 0.22 | 0.04 | 0.37 |
| Sugar (raw equivalent) [3] | 3.19 | 3.28 | 2.19 | 1.71 | 2.02 | 2.17 | 2.42 | 2.68 | 2.14 | 2.11 | 1.71 | 0.96 | 1.13 |
| Potatoes | 0.44 | 0.70 | 0.50 | 1.18 | 0.79 | 0.77 | 0.70 | 0.71 | 0.30 | 0.63 | 0.34 | 1.51 | 0.53 |
| Sunflowerseed | 0.17 | 0.22 | 0.15 | 0.27 | 0.22 | 0.35 | 0.49 | 0.47 | 0.56 | 0.33 | 0.23 | 0.21 | 0.14 |
| Oilseed cake and meal | 0.42 | 0.39 | 0.24 | 0.08 | 0.16 | 0.43 | 0.40 | 0.34 | 0.34 | 0.04 | 0.02 | — | — |
| Meat (fresh, chilled and frozen) [7] | 0.20 | 0.27 | 0.27 | 0.17 | 0.24 | 0.25 | 0.45 | 0.43 | 0.41 | 0.31 | 0.34 | 0.36 | 0.39 |
| Butter | 0.09 | 0.11 | 0.10 | 0.06 | 0.08 | 0.10 | 0.12 | 0.12 | 0.10 | 0.11 | 0.05 | 0.04 | 0.07 |
| Eggs (in the shell) | 0.13 | 0.11 | 0.08 | 0.08 | 0.11 | 0.09 | 0.11 | 0.10 | 0.08 | 0.09 | 0.11 | 0.11 | 0.10 |
| Cotton | 0.39 | 0.35 | 0.32 | 0.39 | 0.46 | 0.52 | 0.55 | 0.57 | 0.45 | 0.52 | 0.55 | 0.65 | 0.73 |
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 17.9 | 33.7 | 80.9 | 88.9 | 178.3 | 229.5 | 216.0 | 236.1 | 230.6 | 306.5 | 338.4 | 332.8 | 370.7 |
| Dried, salted or smoked fish | 31.7 | 40.5 | 44.4 | 35.3 | 39.9 | 28.6 | 36.0 | 25.4 | 23.1 | 21.6 | 16.7 | 16.0 | 14.6 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 0.2 | 0.3 | 0.6 | 1.1 | 1.2 | 1.3 | 1.3 | 0.6 | 0.9 | 1.7 | 1.4 | 1.6 | 2.0 |
| Fish products and preparations, whether or not in airtight containers | 25.3 | 24.3 | 19.3 | 18.9 | 19.6 | 22.7 | 24.2 | 27.1 | 28.8 | 29.4 | 28.1 | 28.5 | 30.7 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 3.7 | 3.0 | 5.0 | 5.6 | 4.9 | 5.0 | 5.0 | 4.7 | 3.4 | 3.8 | 3.5 | 3.4 | 2.1 |
| Oils and fats, crude or refined, of aquatic animal origin | 18.2 | 15.2 | 32.2 | 40.0 | 57.1 | 71.9 | 58.3 | 59.6 | 64.0 | 34.5 | 14.6 | 17.1 | 5.3 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 4.9 | 3.7 | 3.8 | 4.2 | 7.2 | 14.2 | 38.3 | 30.6 | 32.6 | 13.5 | 12.2 | 18.7 | 13.1 |
| | *Million metric tons* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Pulpwood [10] | 3.54 | 4.40 | 5.13 | 6.00 | 6.38 | 7.32 | 7.49 | 6.88 | 7.57 | 8.68 | 7.57 | 7.28 | 8.20 |
| Coniferous logs [10] | 1.99 | 2.62 | 2.89 | 3.43 | 4.72 | 5.04 | 5.01 | 6.12 | 6.38 | 7.57 | 7.38 | 8.00 | 10.50 |
| Pitprops [10] | 1.24 | 1.36 | 1.58 | 1.53 | 1.58 | 1.31 | 0.96 | 0.85 | 0.88 | 0.97 | 0.88 | 0.82 | 0.82 |
| Sawn softwood [10] | 7.23 | 8.47 | 9.49 | 10.96 | 11.17 | 11.44 | 10.88 | 10.93 | 10.74 | 11.01 | 10.76 | 11.07 | 11.07 |
| Plywood and veneers [10] | 0.21 | 0.25 | 0.28 | 0.29 | 0.38 | 0.38 | 0.40 | 0.45 | 0.45 | 0.47 | 0.43 | 0.44 | 0.47 |
| Wood pulp | 0.33 | 0.34 | 0.32 | 0.37 | 0.37 | 0.39 | 0.47 | 0.51 | 0.57 | 0.55 | 0.55 | 0.61 | 0.65 |
| **North America** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 30.82 | 25.97 | 31.89 | 38.26 | 32.38 | 40.23 | 29.11 | 27.84 | 21.10 | 30.59 | 31.15 | 37.07 | 51.34 |
| Barley | 2.40 | 2.59 | 1.62 | 2.48 | 2.11 | 2.04 | 2.02 | 1.03 | 0.80 | 4.15 | 5.16 | 5.75 | 5.17 |
| Maize | 7.35 | 10.81 | 11.12 | 12.14 | 15.21 | 15.60 | 12.97 | 14.96 | 13.96 | 14.41 | 12.89 | 22.41 | 33.22 |

See notes at end of table.

ANNEX TABLE 3. — VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AGRICULTURAL PRODUCTS (*concluded*) | | | | | | *Million metric tons* | | | | | | | |
| Millet and sorghums | 1.64 | 2.79 | 2.94 | 2.55 | 4.38 | 7.40 | 5.80 | 3.55 | 2.70 | 3.81 | 2.89 | 3.92 | 5.65 |
| Rye | 0.34 | 0.57 | 0.48 | 0.29 | 0.18 | 0.35 | 0.31 | 0.18 | 0.09 | 0.15 | 0.41 | 0.24 | 1.00 |
| Rice (milled equivalent) [2] | 0.80 | 1.05 | 1.20 | 1.33 | 1.36 | 1.16 | 1.51 | 1.37 | 1.23 | 1.75 | 1.48 | 2.04 | 1.63 |
| Citrus fruit [4] | 0.30 | 0.27 | 0.26 | 0.30 | 0.33 | 0.37 | 0.42 | 0.27 | 0.39 | 0.39 | 0.39 | 0.46 | 0.49 |
| Pulses (dry) | 0.16 | 0.26 | 0.34 | 0.28 | 0.30 | 0.32 | 0.30 | 0.27 | 0.35 | 0.40 | 0.33 | 0.31 | 0.42 |
| Vegetable oils and oilseeds (oil equivalent) [12] | 1.32 | 1.69 | 1.71 | 2.16 | 2.23 | 2.04 | 2.11 | 2.19 | 2.33 | 3.27 | 3.35 | 3.53 | 3.48 |
| Oilseed cake and meal | 0.79 | 1.37 | 1.69 | 1.95 | 2.47 | 2.60 | 2.75 | 3.00 | 3.28 | 3.97 | 4.43 | 4.01 | 4.95 |
| Milk (condensed, evaporated and powdered) | 0.44 | 0.48 | 0.61 | 0.69 | 0.50 | 0.29 | 0.27 | 0.29 | 0.31 | 0.36 | 0.32 | 0.23 | 0.18 |
| Tobacco (unmanufactured) | 0.24 | 0.23 | 0.25 | 0.26 | 0.23 | 0.27 | 0.28 | 0.29 | 0.29 | 0.26 | 0.24 | 0.30 | 0.31 |
| Cotton (lint) | 1.45 | 0.87 | 0.99 | 1.19 | 0.86 | 0.82 | 0.90 | 0.88 | 0.55 | 0.68 | 0.94 | 0.70 | 1.25 |
| | | | | | | *Thousand metric tons* | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 141.9 | 157.3 | 159.1 | 197.5 | 216.4 | 240.0 | 224.9 | 252.1 | 225.4 | 211.2 | 224.6 | 233.8 | 264.1 |
| Dried, salted or smoked fish | 65.3 | 59.9 | 70.0 | 61.4 | 54.3 | 53.6 | 56.2 | 56.7 | 51.9 | 54.1 | 60.2 | 57.9 | 57.8 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 19.0 | 18.9 | 22.8 | 24.5 | 25.6 | 23.7 | 24.2 | 26.9 | 34.0 | 36.1 | 38.4 | 36.2 | 47.3 |
| Fish products and preparations, whether or not in airtight containers | 24.2 | 26.4 | 31.2 | 42.8 | 36.0 | 37.1 | 42.4 | 34.6 | 36.4 | 31.3 | 31.6 | 38.0 | 45.2 |
| Crustacean and molluscs products and preparations, whether or not in airtight containers | 4.5 | 6.6 | 7.2 | 7.7 | 10.4 | 10.6 | 11.5 | 9.7 | 9.5 | 8.5 | 9.8 | 9.4 | 10.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 61.2 | 61.7 | 129.8 | 87.4 | 58.7 | 41.1 | 46.7 | 37.6 | 103.8 | 94.8 | 118.1 | 95.1 | 120.7 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 38.8 | 46.2 | 54.3 | 60.4 | 57.5 | 51.7 | 51.3 | 66.0 | 73.0 | 77.4 | 71.8 | 42.3 | 63.0 |
| | | | | | | *Million metric tons* | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Pulpwood [10] | 3.17 | 3.20 | 2.88 | 3.14 | 3.44 | 3.52 | 3.07 | 2.64 | 2.66 | 2.84 | 2.10 | 1.70 | 1.45 |
| Coniferous logs [10] | 2.28 | 2.24 | 4.33 | 4.85 | 5.25 | 6.42 | 9.25 | 11.84 | 10.93 | 13.39 | 10.85 | 14.10 | 14.80 |
| Broadleaved logs [10] | 0.31 | 0.40 | 0.41 | 0.38 | 0.45 | 0.52 | 0.52 | 0.51 | 0.43 | 0.37 | 0.34 | 0.50 | 0.55 |
| Sawn softwood [10] | 13.28 | 14.50 | 16.68 | 17.36 | 17.43 | 16.51 | 17.25 | 19.16 | 18.27 | 20.06 | 22.02 | 25.71 | 27.50 |
| Sawn hardwood [10] | 0.55 | 0.60 | 0.59 | 0.69 | 0.74 | 0.91 | 0.81 | 0.66 | 0.75 | 0.67 | 0.79 | 1.01 | 1.07 |
| Plywood and veneers [10] | 0.21 | 0.29 | 0.31 | 0.45 | 0.50 | 0.60 | 0.62 | 0.67 | 0.72 | 0.68 | 0.80 | 0.90 | 1.00 |
| Mechanical wood pulp | 0.22 | 0.24 | 0.23 | 0.26 | 0.29 | 0.24 | 0.22 | 0.22 | 0.25 | 0.28 | 0.23 | 0.27 | 0.29 |
| Chemical wood pulp | 3.48 | 3.59 | 4.08 | 4.47 | 4.59 | 4.86 | 5.21 | 5.97 | 6.91 | 7.59 | 6.88 | 7.31 | 7.76 |
| Newsprint | 5.84 | 5.68 | 5.74 | 6.29 | 6.60 | 7.19 | 6.85 | 6.90 | 7.60 | 7.47 | 7.24 | 7.49 | 7.65 |
| Other paper and paperboard | 0.99 | 1.04 | 1.22 | 1.57 | 1.76 | 2.01 | 2.22 | 2.64 | 2.83 | 3.03 | 3.33 | 3.48 | 3.48 |
| **Oceania** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 5.02 | 6.29 | 4.82 | 7.81 | 6.47 | 5.68 | 6.97 | 6.99 | 5.37 | 7.38 | 9.48 | 8.71 | 5.63 |
| Barley | 0.77 | 0.71 | 0.23 | 0.40 | 0.38 | 0.23 | 0.43 | 0.12 | 0.45 | 0.63 | 1.12 | 1.83 | 0.79 |
| Oats | 0.34 | 0.35 | 0.32 | 0.30 | 0.37 | 0.25 | 0.40 | 0.18 | 0.33 | 0.22 | 0.56 | 0.33 | 1.14 |
| Sugar (raw equivalent) [3] | 0.81 | 0.86 | 1.17 | 1.14 | 1.29 | 1.27 | 1.67 | 1.63 | 2.07 | 1.39 | 1.57 | 2.01 | 2.12 |
| Beef and veal | 0.23 | 0.32 | 0.40 | 0.41 | 0.44 | 0.39 | 0.37 | 0.38 | 0.40 | 0.51 | 0.52 | 0.59 | 0.77 |
| Mutton and lamb | 0.41 | 0.41 | 0.43 | 0.48 | 0.47 | 0.47 | 0.46 | 0.55 | 0.58 | 0.59 | 0.60 | 0.69 | 0.53 |
| Butter | 0.25 | 0.24 | 0.27 | 0.28 | 0.27 | 0.28 | 0.32 | 0.27 | 0.29 | 0.30 | 0.28 | 0.24 | 0.23 |
| Cheese | 0.11 | 0.12 | 0.12 | 0.13 | 0.12 | 0.12 | 0.14 | 0.12 | 0.13 | 0.13 | 0.13 | 0.12 | 0.12 |
| Wool (actual weight) | 0.89 | 0.89 | 0.91 | 0.92 | 0.90 | 0.92 | 0.88 | 0.94 | 1.01 | 1.06 | 0.98 | 0.98 | 1.00 |
| | | | | | | *Thousand metric tons* | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 3.0 | 3.0 | 3.0 | 4.0 | 4.4 | 5.0 | 3.0 | 3.8 | 4.1 | 7.8 | 10.0 | 14.4 | 13.6 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 5.0 | 6.0 | 6.0 | 7.0 | 8.0 | 8.0 | 10.1 | 13.0 | 12.9 | 13.6 | 16.3 | 17.5 | 16.7 |

See notes at end of table.

ANNEX TABLE 3. – VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS (*concluded*) | | | | | | | | | | | | | |
| Fish products and preparations, whether or not in airtight containers | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | — | 0.4 | 0.5 | 0.6 | 0.7 | 1.0 | 0.4 | 0.7 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | — | — | — | — | 1.0 | 1.0 | 1.2 | 2.0 | 2.0 | 1.9 | 2.6 | 3.6 | 3.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 11.0 | 8.0 | 4.0 | 5.3 | 9.0 | 6.0 | 3.9 | 6.5 | 5.6 | 4.2 | 6.4 | 5.8 | 8.0 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | — | — | — | — | — | — | — | 0.3 | 0.1 | — | 1.8 | — | 0.5 |
| | *Million cubic metres* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Coniferous logs | 0.27 | 0.29 | 0.29 | 0.36 | 0.45 | 0.55 | 0.80 | 1.44 | 1.68 | 1.80 | 1.81 | 1.80 | 1.80 |
| | *Million metric tons* | | | | | | | | | | | | |
| **Latin America** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 1.10 | 2.87 | 1.97 | 4.31 | 7.44 | 5.26 | 2.37 | 2.44 | 2.79 | 2.47 | 1.16 | 1.81 | 3.19 |
| Maize | 1.79 | 3.00 | 3.18 | 3.75 | 4.79 | 5.29 | 6.05 | 5.08 | 5.50 | 6.78 | 7.76 | 3.64 | 6.01 |
| Millet and sorghums | 0.39 | 0.67 | 0.64 | 0.89 | 0.34 | 1.18 | 1.17 | 0.88 | 1.54 | 2.19 | 2.51 | 0.74 | 2.15 |
| Rye | 0.04 | 0.01 | — | 0.11 | 0.10 | — | — | 0.02 | 0.01 | 0.03 | — | — | — |
| Rice (milled equivalent) [2] | 0.34 | 0.31 | 0.18 | 0.15 | 0.44 | 0.60 | 0.32 | 0.47 | 0.36 | 0.41 | 0.43 | 0.19 | 0.30 |
| Sugar (raw equivalent) [3, 13] | 10.90 | 8.89 | 7.69 | 7.64 | 10.17 | 9.25 | 11.03 | 10.39 | 10.07 | 11.65 | 10.72 | 10.98 | 12.01 |
| Bananas | 3.21 | 3.18 | 3.43 | 3.35 | 3.64 | 4.07 | 4.13 | 4.67 | 4.64 | 4.84 | 5.10 | 5.38 | — |
| Vegetables oils and oilseeds (oil equivalent) [14] | 0.49 | 0.58 | 0.51 | 0.41 | 0.61 | 0.50 | 0.59 | 0.44 | 0.56 | 0.67 | 0.60 | 0.71 | 0.93 |
| Oilseed cake and meal | 1.29 | 1.50 | 1.42 | 1.29 | 1.66 | 1.71 | 1.56 | 1.51 | 1.73 | 2.18 | 2.32 | 2.56 | 2.67 |
| Cattle | 1.09 | 1.39 | 1.20 | 0.88 | 1.04 | 1.07 | 1.06 | 1.20 | 1.36 | 1.44 | 1.24 | 1.42 | 1.11 |
| Beef and veal | 0.37 | 0.51 | 0.67 | 0.62 | 0.51 | 0.54 | 0.52 | 0.48 | 0.70 | 0.71 | 0.55 | 0.84 | 0.68 |
| Coffee (green) | 1.83 | 1.92 | 2.06 | 1.82 | 1.69 | 1.90 | 1.93 | 2.11 | 2.09 | 1.94 | 2.01 | 2.10 | 2.18 |
| Cocoa beans | 0.19 | 0.15 | 0.18 | 0.16 | 0.19 | 0.21 | 0.22 | 0.20 | 0.21 | 0.22 | 0.23 | 0.22 | 0.17 |
| Tobacco (unmanufactured) | 0.11 | 0.11 | 0.13 | 0.15 | 0.13 | 0.11 | 0.12 | 0.12 | 0.14 | 0.15 | 0.16 | 0.18 | 0.18 |
| Wool (actual weight) | 0.23 | 0.21 | 0.19 | 0.14 | 0.20 | 0.21 | 0.18 | 0.22 | 0.18 | 0.17 | 0.15 | 0.11 | 0.11 |
| Cotton (lint) | 0.76 | 1.01 | 0.98 | 0.91 | 1.03 | 1.05 | 0.80 | 0.89 | 1.17 | 0.92 | 0.67 | 0.84 | 0.85 |
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 30.5 | 33.7 | 35.9 | 24.3 | 30.6 | 32.0 | 39.5 | 40.2 | 47.4 | 53.9 | 56.0 | 72.1 | 87.0 |
| Dried, salted or smoked fish | — | 1.1 | — | 1.6 | 1.6 | 0.4 | 0.8 | 0.8 | 1.0 | 1.5 | 1.1 | 1.6 | 2.0 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 59.0 | 62.1 | 62.2 | 64.5 | 68.5 | 65.3 | 70.3 | 68.3 | 73.7 | 88.1 | 87.4 | 90.8 | 90.0 |
| Fish products and preparations, whether or not in airtight containers | 22.8 | 20.6 | 17.8 | 18.2 | 14.0 | 14.1 | 8.2 | 9.8 | 8.2 | 8.7 | 16.0 | 19.3 | 22.0 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 3.9 | 4.0 | 4.7 | 3.5 | 5.0 | 3.4 | 3.2 | 3.8 | 4.8 | 4.7 | 2.6 | 3.4 | 3.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 140.8 | 161.3 | 154.2 | 137.6 | 171.3 | 114.9 | 210.6 | 344.9 | 178.1 | 217.5 | 308.0 | 318.5 | 20.0 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 775.5 | 1143.7 | 1139.4 | 1590.6 | 1500.3 | 1506.6 | 1727.4 | 2269.5 | 1860.0 | 2011.8 | 1972.0 | 1712.3 | 391.0 |
| | *Million cubic metres* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Pulpwood | 0.24 | 0.34 | 0.24 | 0.41 | 0.34 | 0.36 | 0.33 | 0.36 | 0.42 | 0.38 | 0.37 | 0.38 | 0.41 |
| Broadleaved logs | 0.39 | 0.40 | 0.36 | 0.41 | 0.54 | 0.55 | 0.40 | 0.39 | 0.38 | 0.36 | 0.31 | 0.22 | 0.23 |
| Sawn softwood | 1.37 | 1.06 | 1.05 | 1.39 | 1.49 | 1.66 | 1.52 | 1.94 | 1.60 | 1.52 | 1.64 | 1.33 | 1.42 |

See notes at end of table.

ANNEX TABLE 3. – VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Million metric tons* | | | | | | | | | | | | |
| **Far East** [15] | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Maize | 0.73 | 0.69 | 0.94 | 1.31 | 0.93 | 1.47 | 1.35 | 1.67 | 1.73 | 1.75 | 2.15 | 1.95 | 1.41 |
| Rice (milled equivalent) [2] | 4.11 | 3.87 | 4.54 | 4.56 | 4.32 | 3.70 | 2.93 | 2.30 | 2.32 | 2.72 | 2.93 | 3.27 | 2.19 |
| Sugar (raw equivalent) [3] | 1.55 | 1.62 | 1.98 | 1.75 | 1.62 | 1.64 | 1.22 | 1.17 | 1.20 | 1.62 | 2.23 | 1.86 | 2.11 |
| Pulses (dry) | 0.16 | 0.16 | 0.20 | 0.16 | 0.22 | 0.22 | 0.19 | 0.18 | 0.23 | 0.23 | 0.26 | 0.23 | 0.25 |
| Vegetable oils and oilseeds (oil equivalent) [5,16] | 1.54 | 1.49 | 1.60 | 1.60 | 1.47 | 1.70 | 1.44 | 1.75 | 1.64 | 1.73 | 2.17 | 2.61 | 2.53 |
| Oilseed cake and meal | 1.05 | 1.33 | 1.57 | 1.66 | 1.48 | 1.43 | 1.35 | 1.46 | 1.29 | 1.55 | 1.57 | 1.84 | 1.96 |
| Coffee (green) | 0.16 | 0.13 | 0.17 | 0.12 | 0.17 | 0.16 | 0.25 | 0.18 | 0.26 | 0.22 | 0.20 | 0.20 | 0.18 |
| Tea | 0.45 | 0.47 | 0.48 | 0.47 | 0.48 | 0.44 | 0.48 | 0.48 | 0.43 | 0.48 | 0.48 | 0.46 | 0.46 |
| Pepper and pimento | 0.10 | 0.11 | 0.11 | 0.09 | 0.08 | 0.10 | 0.13 | 0.14 | 0.12 | 0.11 | 0.13 | 0.13 | 0.12 |
| Cotton (lint) | 0.15 | 0.17 | 0.27 | 0.26 | 0.22 | 0.21 | 0.21 | 0.20 | 0.24 | 0.15 | 0.23 | 0.34 | 0.26 |
| Jute and kenaf | 0.75 | 0.99 | 0.89 | 1.00 | 1.11 | 1.19 | 1.21 | 0.87 | 0.87 | 0.94 | 0.85 | 0.96 | 0.93 |
| Rubber (natural) [8] | 0.77 | 0.90 | 0.71 | 0.81 | 0.86 | 0.83 | 0.80 | 0.94 | 1.04 | 2.59 | 2.67 | 2.63 | 3.11 |
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 54.7 | 74.9 | 84.2 | 99.5 | 93.3 | 107.9 | 214.0 | 140.9 | 130.4 | 137.9 | 140.3 | 158.9 | 219.0 |
| Dried, salted or smoked fish | 52.3 | 43.9 | 40.7 | 37.6 | 33.9 | 46.0 | 44.0 | 44.8 | 44.9 | 58.6 | 53.3 | 41.3 | 51.8 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 33.3 | 35.1 | 39.2 | 53.8 | 56.9 | 58.5 | 64.7 | 67.3 | 83.8 | 106.2 | 132.7 | 161.5 | 184.0 |
| Fish products and preparations, whether or not in airtight containers | 7.6 | 3.5 | 4.3 | 5.6 | 9.0 | 8.1 | 6.0 | 7.1 | 10.5 | 9.3 | 10.0 | 6.4 | 12.0 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 9.8 | 10.2 | 9.2 | 9.6 | 10.7 | 11.3 | 12.5 | 12.7 | 12.0 | 15.3 | 15.3 | 23.7 | 30.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 1.1 | 0.4 | 0.1 | — | 0.4 | 0.3 | 0.5 | 0.6 | 0.9 | 0.6 | 0.4 | — | — |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 8.1 | 11.9 | 12.4 | 14.8 | 21.9 | 29.2 | 25.8 | 23.7 | 25.7 | 39.0 | 40.5 | 62.6 | 74.0 |
| | *Million cubic metres* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Broadleaved logs | 7.78 | 8.30 | 10.91 | 11.89 | 13.34 | 15.76 | 17.13 | 21.04 | 24.57 | 29.07 | 30.77 | 32.99 | 41.00 |
| Sawn hardwood | 0.99 | 0.94 | 1.10 | 1.45 | 1.48 | 1.50 | 1.59 | 2.07 | 2.33 | 2.52 | 2.48 | 3.07 | 3.20 |
| Plywood | 0.09 | 0.11 | 0.18 | 0.27 | 0.34 | 0.50 | 0.57 | 1.01 | 1.14 | 1.38 | 1.70 | 2.10 | 2.38 |
| | *Million metric tons* | | | | | | | | | | | | |
| **China and other Asian centrally planned countries** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Maize | 0.04 | 0.01 | 0.15 | 0.19 | 0.24 | 0.16 | 0.08 | 0.06 | 0.02 | — | — | — | — |
| Rice (milled equivalent) [2] | 0.59 | 0.65 | 0.79 | 0.98 | 1.07 | 1.50 | 1.40 | 1.02 | 1.03 | 1.94 | 2.28 | 2.43 | 3.57 |
| Sugar (raw equivalent) [3] | 0.80 | 0.90 | 0.90 | 1.18 | 1.21 | 1.31 | 1.02 | 0.93 | 0.70 | 0.50 | 0.66 | 0.65 | 0.64 |
| Tea | 0.05 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.05 | 0.06 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 |
| **Near East** [17] | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 0.04 | 0.29 | 0.23 | 0.26 | 0.09 | 0.10 | 0.12 | 0.25 | 0.07 | 0.04 | 0.03 | 0.63 | 0.60 |
| Barley | 0.16 | 0.76 | 0.54 | 0.29 | 0.47 | 0.19 | 0.07 | 0.15 | 0.36 | 0.22 | 0.02 | 0.14 | 0.02 |
| Rice (milled equivalent) [2] | 0.23 | 0.14 | 0.38 | 0.54 | 0.37 | 0.36 | 0.44 | 0.58 | 0.78 | 0.68 | 0.55 | 0.49 | 0.32 |
| Potatoes | 0.14 | 0.24 | 0.20 | 0.19 | 0.18 | 0.23 | 0.24 | 0.21 | 0.25 | 0.29 | 0.25 | 0.28 | 0.31 |
| Pulses (dry) | 0.09 | 0.18 | 0.18 | 0.20 | 0.31 | 0.14 | 0.18 | 0.12 | 0.13 | 0.11 | 0.12 | 0.14 | 0.16 |
| Citrus fruit [4] | 0.15 | 0.16 | 0.18 | 0.19 | 0.23 | 0.23 | 0.27 | 0.33 | 0.41 | 0.43 | 0.60 | 0.50 | 0.73 |
| Dates | 0.22 | 0.26 | 0.37 | 0.31 | 0.30 | 0.32 | 0.30 | 0.28 | 0.33 | 0.40 | 0.32 | 0.35 | 0.35 |
| Oilseed cake and meal | 0.37 | 0.43 | 0.50 | 0.54 | 0.59 | 0.62 | 0.61 | 0.70 | 0.70 | 0.77 | 0.62 | 0.83 | 0.65 |
| Sheep, lambs and goats [6] | 0.88 | 1.51 | 1.55 | 1.63 | 1.90 | 1.61 | 1.23 | 1.36 | 1.20 | 1.23 | 1.15 | 0.93 | 1.09 |
| Cotton (lint) | 0.66 | 0.70 | 0.84 | 0.80 | 0.83 | 1.00 | 0.90 | 0.87 | 0.86 | 1.09 | 1.10 | 1.05 | 1.05 |

See notes at end of table.

ANNEX TABLE 3. – VOLUME OF EXPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*concluded*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FISHERY PRODUCTS | | | | | | *Thousand metric tons* | | | | | | | |
| Fresh, chilled or frozen fish | 10.7 | 8.9 | 9.5 | 10.9 | 14.7 | 13.5 | 9.8 | 9.8 | 9.7 | 10.4 | 8.1 | 8.2 | 11.0 |
| Dried, salted or smoked fish | 7.7 | 4.7 | 6.2 | 6.7 | 8.3 | 9.9 | 5.3 | 6.7 | 6.5 | 8.0 | 10.1 | 10.1 | 10.3 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 2.8 | 5.1 | 4.0 | 3.5 | 3.6 | 2.8 | 4.6 | 4.9 | 4.8 | 2.9 | 5.4 | 4.7 | 8.4 |
| Fish products and preparations, whether or not in airtight containers | 0.6 | 0.6 | 0.6 | 0.3 | 0.4 | 0.7 | 0.8 | 0.8 | 0.5 | 0.6 | 0.9 | 0.8 | 1.0 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 0.9 | — | — | — | — | 0.9 | 0.5 | 0.1 | 0.1 | — | — | — | 1.2 |
| Oils and fats, crude or refined, of aquatic animal origin | 0.1 | 0.1 | 0.1 | 0.3 | 0.3 | 0.1 | 0.1 | — | 0.5 | 0.3 | — | 1.0 | 1.0 |
| | | | | | | *Million metric tons* | | | | | | | |
| **Africa** [18] | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) [19] | 0.18 | 0.19 | 0.25 | 0.26 | 0.21 | 0.22 | 0.08 | 0.10 | 0.09 | 0.15 | 0.07 | 0.08 | 0.09 |
| Barley | 0.04 | 0.04 | 0.28 | 0.35 | 0.02 | 0.07 | 0.01 | 0.01 | 0.14 | 0.13 | 0.01 | — | — |
| Maize | 0.46 | 0.62 | 0.43 | 0.22 | 0.29 | 0.34 | 0.73 | 0.84 | 0.62 | 0.27 | 0.35 | 0.54 | 0.29 |
| Sugar (raw equivalent) [3] | 0.90 | 0.98 | 1.07 | 1.08 | 1.20 | 1.14 | 1.13 | 1.24 | 1.24 | 1.25 | 1.10 | 1.27 | 1.39 |
| Bananas | 0.35 | 0.43 | 0.47 | 0.44 | 0.43 | 0.38 | 0.38 | 0.37 | 0.38 | 0.39 | 0.40 | 0.46 | 0.42 |
| Citrus fruit [4] | 0.61 | 0.64 | 0.67 | 0.75 | 0.66 | 0.68 | 0.69 | 0.75 | 0.79 | 0.84 | 0.76 | 0.91 | 1.02 |
| Pulses (dry) | 0.21 | 0.27 | 0.31 | 0.36 | 0.30 | 0.28 | 0.26 | 0.40 | 0.37 | 0.39 | 0.30 | 0.46 | 0.46 |
| Groundnuts and oil (oil equivalent) | 0.67 | 0.68 | 0.71 | 0.71 | 0.70 | 0.82 | 0.75 | 0.89 | 0.66 | 0.55 | 0.33 | 0.48 | 0.40 |
| Palm kernels and oil (oil equivalent) | 0.36 | 0.32 | 0.32 | 0.33 | 0.33 | 0.34 | 0.24 | 0.26 | 0.26 | 0.28 | 0.29 | 0.25 | 0.22 |
| Palm oil | 0.36 | 0.31 | 0.31 | 0.31 | 0.28 | 0.27 | 0.18 | 0.20 | 0.18 | 0.22 | 0.20 | 0.16 | 0.14 |
| Oilseed cake and meal | 0.57 | 0.52 | 0.52 | 0.84 | 0.67 | 0.72 | 0.82 | 0.85 | 0.81 | 0.81 | 0.65 | 0.90 | 0.75 |
| Cattle [6] | 0.93 | 0.98 | 0.99 | 1.00 | 0.99 | 0.99 | 0.98 | 1.00 | 1.03 | 0.96 | 0.97 | 0.91 | 0.82 |
| Sheep, lambs and goats [6] | 2.55 | 2.78 | 2.80 | 2.98 | 2.90 | 3.06 | 2.54 | 3.62 | 3.71 | 3.70 | 3.79 | 3.93 | 3.62 |
| Coffee (green) | 0.67 | 0.76 | 0.78 | 0.85 | 0.85 | 0.92 | 0.91 | 0.99 | 0.98 | 1.01 | 0.99 | 1.08 | 1.12 |
| Cocoa beans | 0.80 | 0.86 | 0.83 | 0.84 | 1.08 | 0.88 | 0.83 | 0.82 | 0.75 | 0.86 | 0.92 | 0.98 | 0.95 |
| Wine | 1.60 | 1.78 | 1.04 | 1.29 | 1.08 | 1.21 | 0.72 | 0.84 | 1.37 | 1.43 | 0.67 | 0.72 | 0.97 |
| Tobacco (unmanufactured) | 0.11 | 0.11 | 0.11 | 0.14 | 0.16 | 0.14 | 0.11 | 0.08 | 0.08 | 0.08 | 0.10 | 0.11 | 0.10 |
| Cotton (lint) | 0.27 | 0.20 | 0.28 | 0.28 | 0.28 | 0.31 | 0.33 | 0.31 | 0.32 | 0.45 | 0.41 | 0.38 | 0.36 |
| Sisal | 0.36 | 0.41 | 0.40 | 0.39 | 0.36 | 0.37 | 0.34 | 0.34 | 0.31 | 0.37 | 0.30 | 0.29 | 0.25 |
| Rubber (natural) | 0.14 | 0.15 | 0.15 | 0.14 | 0.15 | 0.16 | 0.15 | 0.17 | 0.18 | 0.19 | 0.19 | 0.20 | 0.19 |
| | | | | | | *Thousand metric tons* | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 20.4 | 36.2 | 33.5 | 17.8 | 17.2 | 19.2 | 17.1 | 19.4 | 18.6 | 30.7 | 41.9 | 50.8 | 70.5 |
| Dried, salted or smoked fish | 50.2 | 38.3 | 36.8 | 33.7 | 42.3 | 38.7 | 35.0 | 36.6 | 34.4 | 40.2 | 36.4 | 29.9 | 24.0 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 2.4 | 2.9 | 2.9 | 3.5 | 3.8 | 3.3 | 5.2 | 6.6 | 7.8 | 9.7 | 11.5 | 13.9 | 13.0 |
| Fish products and preparations, whether or not in airtight containers | 32.3 | 59.4 | 56.3 | 63.0 | 37.6 | 56.7 | 52.7 | 61.8 | 62.3 | 60.0 | 69.4 | 60.4 | 82.0 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | — | 0.8 | 0.7 | 0.6 | 0.5 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | — | — | — |
| Oils and fats, crude or refined, of aquatic animal origin | 7.0 | 7.6 | 8.3 | 12.7 | 6.5 | 11.1 | 13.1 | 14.9 | 16.6 | 16.9 | 11.7 | 24.9 | 31.0 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 70.7 | 49.6 | 49.0 | 77.1 | 77.2 | 92.8 | 63.5 | 83.6 | 121.1 | 91.5 | 76.6 | 150.7 | 132.0 |
| | | | | | | *Million cubic metres* | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Broadleaved logs | 4.73 | 4.48 | 5.17 | 6.06 | 5.64 | 5.60 | 5.61 | 6.46 | 7.84 | 6.85 | 6.99 | 7.17 | 7.95 |
| Sawn hardwood | 0.57 | 0.59 | 0.58 | 0.71 | 0.73 | 0.77 | 0.71 | 0.75 | 0.74 | 0.76 | 0.65 | 0.69 | 0.79 |

[1] Including the U.S.S.R., eastern Europe, and China and other Asian centrally planned countries. — [2] Including paddy converted at 65%. — [3] Including refined sugar converted at 108.7%. — [4] Oranges, mandarins and lemons. — [5] Excluding reexports of copra from Malaysia, but including unrecorded shipments of copra from Indonesia and the Philippines to Malaysia. — [6] Million head. — [7] Beef and veal, mutton and lamb, pork, poultry meat. — [8] Excluding imports into Malaysia for reexport and exports from Hong Kong, but including unrecorded shipments from Indonesia to Malaysia. — [9] Excluding China. — [10] Million cubic metres. — [11] Linseed, sunflowerseed, olive oil, groundnut oil, coconut oil, palm oil, palm-kernel oil, soybean oil, sunflowerseed oil, castor oil, cottonseed oil, linseed oil. — [12] Groundnuts, soybeans, sunflowerseed, linseed, cottonseed, groundnut oil, coconut oil, soybean oil, linseed oil, castor oil, cottonseed oil. — [13] Excluding trade between the United States and its territories. — [14] Groundnuts, copra, palm kernels, soybeans, sunflowerseed, linseed, castor beans, cottonseed, olive oil, groundnut oil, coconut oil, palm oil, palm-kernel oil, sunflowerseed oil, linseed oil, castor oil, cottonseed oil. — [15] Excluding Japan, and China and other Asian centrally planned countries. — [16] Groundnuts, copra, palm kernels, soybeans, cottonseed, groundnut oil, coconut oil, palm oil, palm-kernel oil, soybean oil, cottonseed oil. — [17] Excluding Israel. — [18] Excluding South Africa. — [19] Including coarse ground flour.

ANNEX TABLE 4. – WORLD AVERAGE EXPORT UNIT VALUES OF SELECTED AGRICULTURAL, FISHERY AND FOREST PRODUCTS

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *U.S. dollars per metric ton* | | | | | | | | | | | | |
| **Agricultural products** | | | | | | | | | | | | | |
| Wheat | 64 | 66 | 66 | 66 | 61 | 63 | 67 | 64 | 65 | 62 | 65 | 69 | 103 |
| Wheat flour | 83 | 85 | 85 | 86 | 86 | 89 | 86 | 85 | 85 | 86 | 91 | 92 | 132 |
| Barley | 47 | 57 | 57 | 57 | 63 | 69 | 67 | 64 | 58 | 53 | 60 | 57 | 93 |
| Maize | 51 | 51 | 55 | 56 | 58 | 58 | 57 | 52 | 56 | 60 | 64 | 63 | 86 |
| Rice (milled) | 111 | 123 | 126 | 125 | 125 | 134 | 158 | 175 | 164 | 131 | 117 | 138 | 212 |
| Sugar (raw) | 110 | 97 | 133 | 142 | 99 | 99 | 95 | 95 | 102 | 118 | 127 | 148 | 188 |
| Apples | 130 | 142 | 148 | 133 | 142 | 153 | 153 | 147 | 157 | 157 | 167 | 186 | 244 |
| Bananas | 82 | 78 | 75 | 83 | 92 | 91 | 92 | 86 | 89 | 86 | 86 | 90 | 95 |
| Oranges | 122 | 117 | 133 | 117 | 117 | 127 | 125 | 121 | 129 | 127 | 142 | 150 | 178 |
| Raisins | 227 | 275 | 301 | 357 | 368 | 360 | 339 | 341 | 344 | 348 | 326 | 365 | 730 |
| Dates | 88 | 121 | 105 | 109 | 106 | 104 | 111 | 126 | 105 | 108 | 121 | 148 | 163 |
| Cottonseed | 76 | 68 | 62 | 63 | 68 | 74 | 76 | 72 | 69 | 66 | 79 | 72 | 101 |
| Copra | 247 | 143 | 157 | 164 | 189 | 162 | 159 | 189 | 161 | 178 | 168 | 126 | 211 |
| Palm kernels | 124 | 118 | 134 | 136 | 165 | 147 | 126 | 159 | 136 | 146 | 137 | 112 | 171 |
| Soybeans | 97 | 95 | 101 | 101 | 107 | 114 | 109 | 103 | 98 | 103 | 115 | 126 | 215 |
| Groundnuts (shelled) | 176 | 171 | 168 | 175 | 192 | 185 | 172 | 158 | 189 | 209 | 226 | 249 | 342 |
| Olive oil | 531 | 561 | 793 | 548 | 622 | 636 | 660 | 694 | 637 | 667 | 685 | 780 | 1 118 |
| Cottonseed oil | 301 | 298 | 265 | 255 | 297 | 299 | 295 | 285 | 270 | 303 | 363 | 316 | 355 |
| Coconut oil | 233 | 222 | 255 | 278 | 307 | 262 | 262 | 316 | 275 | 307 | 288 | 210 | 301 |
| Palm oil | 214 | 196 | 189 | 202 | 237 | 203 | 193 | 146 | 144 | 226 | 227 | 189 | 251 |
| Palm-kernel oil | 236 | 215 | 217 | 240 | 296 | 261 | 241 | 321 | 267 | 299 | 302 | 248 | 333 |
| Soybean oil | 285 | 244 | 239 | 243 | 293 | 313 | 272 | 220 | 225 | 278 | 316 | 288 | 362 |
| Groundnut oil | 345 | 300 | 306 | 323 | 339 | 314 | 321 | 272 | 316 | 341 | 393 | 376 | 430 |
| Cattle[1] | 116 | 108 | 121 | 139 | 142 | 130 | 133 | 126 | 142 | 156 | 174 | 232 | 275 |
| Pigs[1] | 44 | 42 | 38 | 36 | 36 | 38 | 36 | 40 | 45 | 49 | 48 | 55 | 64 |
| Beef and veal | 558 | 522 | 561 | 679 | 756 | 760 | 754 | 780 | 814 | 910 | 1 069 | 1 265 | 1 561 |
| Mutton and lamb | 390 | 382 | 422 | 442 | 529 | 503 | 493 | 464 | 483 | 551 | 556 | 588 | 937 |
| Poultry meat | 629 | 649 | 660 | 669 | 686 | 705 | 641 | 643 | 678 | 673 | 668 | 748 | 1 039 |
| Bacon, ham, salted pork | 659 | 657 | 712 | 761 | 752 | 867 | 827 | 740 | 806 | 864 | 855 | 1 009 | 1 479 |
| Canned meat | 958 | 1 000 | 946 | 1 035 | 1 080 | 1 106 | 1 069 | 1 065 | 1 087 | 1 130 | 1 235 | 1 319 | 1 546 |
| Milk, condensed and evaporated | 313 | 307 | 311 | 333 | 340 | 338 | 325 | 305 | 310 | 312 | 357 | 427 | 481 |
| Milk, powdered | 321 | 286 | 283 | 286 | 379 | 388 | 399 | 336 | 369 | 355 | 480 | 590 | 620 |
| Butter | 730 | 773 | 827 | 879 | 916 | 848 | 791 | 740 | 752 | 733 | 976 | 1 219 | 1 075 |
| Cheese | 707 | 785 | 698 | 745 | 817 | 835 | 849 | 831 | 894 | 939 | 1 071 | 1 254 | 1 442 |
| Potatoes | 51 | 66 | 59 | 49 | 62 | 67 | 63 | 54 | 67 | 74 | 66 | 70 | 114 |
| Coffee | 674 | 648 | 643 | 830 | 800 | 768 | 712 | 753 | 721 | 944 | 833 | 922 | 1 081 |
| Cocoa | 475 | 452 | 488 | 499 | 381 | 406 | 542 | 604 | 782 | 767 | 626 | 572 | 828 |
| Tea | 1 138 | 1 101 | 1 127 | 1 106 | 1 073 | 1 047 | 1 034 | 941 | 884 | 934 | 930 | 972 | 985 |
| Wine | 198 | 184 | 219 | 219 | 236 | 233 | 267 | 271 | 254 | 271 | 295 | 352 | 452 |
| Tobacco (unmanufactured) | 1 152 | 1 151 | 1 251 | 1 191 | 1 199 | 1 261 | 1 276 | 1 275 | 1 303 | 1 294 | 1 269 | 1 380 | 1 480 |
| Linseed | 126 | 135 | 125 | 125 | 121 | 114 | 120 | 127 | 122 | 112 | 104 | 120 | 257 |
| Linseed oil | 254 | 230 | 200 | 208 | 201 | 188 | 174 | 210 | 213 | 213 | 196 | 194 | 302 |
| Castor beans | 126 | 109 | 111 | 116 | 107 | 107 | 117 | 145 | 126 | 116 | 121 | 156 | 337 |
| Castor oil | 285 | 276 | 256 | 249 | 213 | 245 | 321 | 333 | 259 | 265 | 325 | 451 | 906 |
| Cotton | 637 | 605 | 622 | 618 | 629 | 604 | 598 | 632 | 616 | 628 | 694 | 772 | 878 |
| Jute and kenaf | 240 | 211 | 159 | 193 | 222 | 206 | 205 | 229 | 224 | 218 | 228 | 257 | 242 |
| Sisal | 195 | 198 | 296 | 287 | 182 | 163 | 140 | 126 | 138 | 127 | 124 | 156 | 310 |
| Wool (greasy) | 1 109 | 1 137 | 1 233 | 1 456 | 1 217 | 1 197 | 1 169 | 989 | 1 056 | 964 | 801 | 927 | 2 116 |
| Rubber (natural) | 505 | 426 | 485 | 450 | 440 | 432 | 361 | 329 | 419 | 392 | 333 | 304 | 551 |

See notes at end of table.

ANNEX TABLE 4. — WORLD AVERAGE EXPORT UNIT VALUES OF SELECTED AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*concluded*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *U.S. dollars per metric ton* | | | | | | | | | | | | |
| **Fishery products** [2] | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 301 | 315 | 297 | 289 | 329 | 353 | 325 | 347 | 396 | 424 | 491 | 618 | 803 |
| Dried, salted or smoked fish | 331 | 345 | 361 | 391 | 427 | 455 | 470 | 456 | 468 | 517 | 633 | 778 | 1 029 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 684 | 758 | 846 | 796 | 892 | 989 | 1 033 | 1 127 | 1 248 | 1 230 | 1 324 | 1 380 | 1 591 |
| Fish products and preparations, whether or not in airtight containers | 601 | 659 | 649 | 639 | 703 | 682 | 733 | 706 | 725 | 771 | 882 | 977 | 1 211 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 1 151 | 1 146 | 1 211 | 1 283 | 1 319 | 1 469 | 1 453 | 1 486 | 1 579 | 1 672 | 1 869 | 1 889 | 2 273 |
| Oils and fats, crude or refined, of aquatic animal origin | 173 | 133 | 137 | 183 | 194 | 182 | 129 | 93 | 122 | 201 | 212 | 195 | 264 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 87 | 104 | 108 | 110 | 125 | 145 | 119 | 109 | 129 | 164 | 167 | 175 | 410 |
| **Forest products** [2] | | | | | | | | | | | | | |
| Fuelwood [3] | 8 | 8 | 9 | 9 | 9 | 10 | 8 | 8 | 9 | 9 | 10 | 11 | 14 |
| Charcoal | 38 | 37 | 39 | 45 | 46 | 46 | 47 | 46 | 39 | 49 | 54 | 58 | 7 |
| Coniferous logs [3] | 19 | 20 | 16 | 17 | 18 | 18 | 19 | 21 | 22 | 24 | 24 | 26 | 45 |
| Broadleaved logs [3] | 24 | 24 | 25 | 24 | 24 | 23 | 24 | 25 | 25 | 23 | 24 | 25 | 43 |
| Pulpwood [3] | 12 | 12 | 11 | 11 | 12 | 11 | 11 | 11 | 11 | 12 | 14 | 13 | 22 |
| Pitprops [3] | 14 | 14 | 13 | 14 | 15 | 16 | 16 | 15 | 16 | 17 | 18 | 20 | 34 |
| Sawn softwood [3] | 37 | 36 | 36 | 37 | 39 | 39 | 38 | 39 | 43 | 44 | 47 | 50 | 68 |
| Sawn hardwood [3] | 59 | 61 | 61 | 61 | 63 | 63 | 62 | 64 | 65 | 67 | 68 | 80 | 108 |
| Veneer sheets [3] | 282 | 274 | 249 | 247 | 255 | 247 | 242 | 233 | 256 | 265 | 233 | 247 | 296 |
| Plywood [3] | 144 | 147 | 146 | 142 | 141 | 144 | 144 | 140 | 146 | 145 | 151 | 166 | 199 |
| Particle board | 59 | 56 | 55 | 56 | 58 | 59 | 59 | 58 | 63 | 67 | 66 | 76 | 91 |
| Fibreboard, compressed | 84 | 84 | 85 | 90 | 94 | 92 | 89 | 88 | 91 | 97 | 100 | 113 | 136 |
| Mechanical wood pulp | 66 | 66 | 65 | 65 | 69 | 69 | 68 | 69 | 70 | 77 | 79 | 78 | 91 |
| Chemical wood pulp | 123 | 117 | 117 | 126 | 129 | 123 | 123 | 120 | 127 | 149 | 155 | 154 | 180 |
| Newsprint | 129 | 128 | 126 | 127 | 125 | 127 | 130 | 132 | 135 | 141 | 147 | 151 | 172 |
| Other printing and writing paper | 238 | 234 | 227 | 235 | 236 | 243 | 246 | 245 | 243 | 255 | 266 | 277 | 316 |

[1] U.S. dollars per head. — [2] Excluding China and other Asian centrally planned countries. — [3] U.S. dollars per cubic metre.

ANNEX TABLE 5. – VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Million metric tons* | | | | | | | | | | | | |
| **Western Europe** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 15.13 | 13.32 | 12.07 | 10.59 | 12.66 | 12.42 | 10.45 | 10.94 | 13.57 | 13.57 | 13.34 | 13.49 | 14.07 |
| Barley | 4.19 | 4.72 | 3.63 | 4.51 | 4.84 | 5.02 | 4.95 | 4.10 | 4.62 | 6.40 | 6.68 | 5.69 | 5.50 |
| Maize | 9.43 | 12.91 | 13.87 | 14.48 | 16.95 | 18.69 | 19.38 | 18.76 | 16.63 | 17.47 | 19.60 | 20.17 | 23.38 |
| Oats | 0.86 | 1.32 | 1.07 | 0.97 | 1.32 | 1.28 | 1.05 | 1.02 | 0.96 | 1.23 | 1.24 | 1.05 | 1.20 |
| Rye | 0.75 | 1.02 | 0.74 | 0.46 | 0.36 | 0.41 | 0.41 | 0.27 | 0.24 | 0.22 | 0.27 | 0.27 | 0.37 |
| Millet and sorghums | 1.77 | 2.88 | 2.03 | 2.18 | 2.74 | 3.20 | 2.43 | 1.49 | 0.84 | 1.36 | 1.93 | 0.89 | 1.42 |
| Rice (milled equivalent) [1] | 0.54 | 0.58 | 0.58 | 0.59 | 0.61 | 0.73 | 0.58 | 0.71 | 0.70 | 0.63 | 0.69 | 0.76 | 0.80 |
| Sugar (raw equivalent) [2] | 3.99 | 4.22 | 5.32 | 4.97 | 4.54 | 4.97 | 4.84 | 4.67 | 4.42 | 4.49 | 4.66 | 4.98 | 0.84 |
| Potatoes | 1.48 | 1.97 | 1.72 | 1.56 | 2.39 | 2.06 | 1.95 | 1.85 | 2.36 | 2.32 | 2.05 | 2.55 | 2.37 |
| Pulses (dry) | 0.45 | 0.61 | 0.68 | 0.66 | 1.03 | 1.00 | 0.81 | 0.97 | 1.16 | 0.94 | 0.88 | 1.09 | 1.13 |
| Apples | 1.11 | 1.23 | 0.96 | 1.13 | 1.36 | 1.28 | 1.24 | 1.30 | 1.34 | 1.27 | 1.41 | 1.64 | 1.46 |
| Bananas | 1.66 | 1.75 | 1.73 | 1.74 | 2.13 | 2.28 | 2.28 | 2.23 | 2.22 | 2.12 | 2.31 | 2.56 | 2.56 |
| Citrus fruit [3] | 2.71 | 2.98 | 2.71 | 3.30 | 3.21 | 3.31 | 3.19 | 3.14 | 3.43 | 3.61 | 3.43 | 3.68 | 3.76 |
| Grapes (fresh) | 0.37 | 0.43 | 0.37 | 0.44 | 0.50 | 0.48 | 0.49 | 0.48 | 0.51 | 0.51 | 0.55 | 0.46 | 0.50 |
| Vegetable oils and oilseeds (oil equivalent) [4] | 3.62 | 3.61 | 3.90 | 3.85 | 3.90 | 4.20 | 4.21 | 4.32 | 4.52 | 4.88 | 5.38 | 5.71 | 5.57 |
| Oilseed cake and meal | 4.60 | 5.67 | 5.91 | 6.17 | 7.00 | 7.99 | 7.48 | 7.44 | 8.05 | 9.11 | 9.82 | 10.37 | 10.58 |
| Cattle [5] | 1.83 | 1.49 | 2.02 | 2.03 | 2.03 | 2.03 | 2.56 | 2.99 | 3.33 | 3.29 | 3.53 | 3.93 | 3.27 |
| Sheep, lambs and goats [5] | 0.88 | 1.35 | 1.32 | 1.37 | 1.93 | 1.79 | 1.74 | 2.16 | 2.53 | 2.54 | 2.82 | 3.01 | 2.72 |
| Pigs [5] | 1.04 | 0.96 | 0.74 | 0.91 | 1.24 | 1.25 | 1.14 | 1.30 | 1.83 | 2.13 | 2.37 | 3.00 | 2.80 |
| Meat (fresh, chilled and frozen) [6] | 1.27 | 1.44 | 1.72 | 1.81 | 1.89 | 1.91 | 2.06 | 2.04 | 2.26 | 2.72 | 2.86 | 3.35 | 3.45 |
| Butter | 0.47 | 0.49 | 0.51 | 0.56 | 0.52 | 0.52 | 0.57 | 0.54 | 0.53 | 0.59 | 0.55 | 0.51 | 0.59 |
| Cheese | 0.36 | 0.39 | 0.42 | 0.43 | 0.46 | 0.47 | 0.48 | 0.50 | 0.50 | 0.54 | 0.59 | 0.60 | 0.63 |
| Coffee (green) | 0.99 | 1.04 | 1.12 | 1.19 | 1.18 | 1.24 | 1.28 | 1.39 | 1.47 | 1.50 | 1.51 | 1.61 | 1.68 |
| Cocoa beans | 0.52 | 0.56 | 0.56 | 0.54 | 0.59 | 0.60 | 0.55 | 0.54 | 0.55 | 0.53 | 0.55 | 0.60 | 0.61 |
| Tea | 0.29 | 0.29 | 0.30 | 0.29 | 0.30 | 0.28 | 0.32 | 0.34 | 0.28 | 0.32 | 0.31 | 0.29 | 0.30 |
| Wine | 2.33 | 2.55 | 1.95 | 2.10 | 1.92 | 2.16 | 1.62 | 1.68 | 1.97 | 2.49 | 2.05 | 2.62 | 2.92 |
| Tobacco (unmanufactured) | 0.48 | 0.52 | 0.52 | 0.54 | 0.53 | 0.52 | 0.56 | 0.54 | 0.57 | 0.58 | 0.63 | 0.65 | 0.68 |
| Wool (actual weight) | 0.86 | 0.88 | 0.86 | 0.81 | 0.80 | 0.80 | 0.73 | 0.79 | 0.83 | 0.78 | 0.73 | 0.78 | 0.57 |
| Cotton (lint) | 1.59 | 1.46 | 1.44 | 1.54 | 1.39 | 1.57 | 1.45 | 1.41 | 1.44 | 1.35 | 1.26 | 1.28 | 1.52 |
| Sisal | 0.36 | 0.39 | 0.40 | 0.37 | 0.38 | 0.39 | 0.34 | 0.37 | 0.36 | 0.34 | 0.33 | 0.32 | 0.33 |
| Rubber (natural) | 0.78 | 0.76 | 0.75 | 0.74 | 0.76 | 0.76 | 0.76 | 0.81 | 0.91 | 0.94 | 0.94 | 0.95 | 1.00 |
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 598.9 | 648.8 | 727.2 | 747.3 | 820.9 | 792.5 | 816.9 | 869.7 | 814.3 | 894.9 | 967.7 | 980.2 | 1065.0 |
| Dried, salted or smoked fish | 207.8 | 203.2 | 200.6 | 188.9 | 196.9 | 202.3 | 211.8 | 198.0 | 195.4 | 211.5 | 210.1 | 232.1 | 182.0 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 104.4 | 117.3 | 109.0 | 136.8 | 138.1 | 132.0 | 143.1 | 151.3 | 160.3 | 176.4 | 195.8 | 248.3 | 237.0 |
| Fish products and preparations, whether or not in airtight containers | 219.0 | 261.8 | 254.3 | 269.4 | 272.8 | 256.6 | 255.8 | 269.0 | 244.9 | 245.5 | 254.4 | 281.4 | 307.0 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 13.4 | 17.6 | 21.8 | 28.1 | 31.6 | 34.0 | 31.7 | 34.5 | 35.7 | 42.5 | 43.5 | 43.6 | 54.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 570.7 | 596.0 | 640.9 | 593.6 | 623.9 | 568.3 | 742.4 | 766.6 | 662.7 | 599.4 | 619.4 | 662.9 | 566.0 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 960.2 | 1165.6 | 1195.5 | 1496.2 | 1564.7 | 1469.5 | 1723.0 | 1997.1 | 2082.9 | 1904.2 | 1752.6 | 1 881.0 | 1 091.0 |
| | *Million metric tons* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Pulpwood [7] | 8.55 | 7.47 | 6.92 | 8.78 | 9.42 | 8.99 | 9.14 | 9.78 | 11.00 | 14.53 | 12.08 | 9.24 | 11.50 |
| Coniferous logs [7] | 2.28 | 2.25 | 2.44 | 2.23 | 2.25 | 2.52 | 2.51 | 2.53 | 2.38 | 2.52 | 2.25 | 2.78 | 4.15 |
| Broadleaved logs [7] | 5.78 | 5.51 | 6.08 | 6.76 | 6.21 | 6.41 | 6.30 | 7.00 | 8.34 | 7·78 | 8.19 | 9.00 | 10.50 |
| Pitprops [7] | 1.82 | 1.44 | 1.30 | 1.34 | 1.16 | 0.87 | 0.44 | 0.40 | 0.54 | 0.59 | 0.40 | 0.29 | 0.29 |
| Sawn softwood [7] | 19.62 | 20.22 | 21.68 | 24.25 | 23.57 | 21.85 | 22.09 | 23.66 | 23.88 | 24.40 | 23.54 | 25.47 | 28.70 |
| Sawn hardwood [7] | 2.03 | 1.91 | 2.20 | 2.48 | 2.60 | 2.67 | 2.65 | 3.10 | 3.36 | 3.54 | 3.43 | 3.99 | 5.60 |
| Plywood and veneers [7] | 0.90 | 0.98 | 1.10 | 1.33 | 1.40 | 1.38 | 1.65 | 1.88 | 2.01 | 2.25 | 2.19 | 2.53 | 3.20 |

See notes at end of table.

ANNEX TABLE 5. – VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FOREST PRODUCTS (*concluded*) | | | | | | *Million metric tons* | | | | | | | |
| Fibreboard | 0.68 | 0.76 | 0.81 | 0.89 | 0.84 | 0.77 | 0.83 | 0.87 | 0.90 | 0.83 | 0.84 | 0.89 | 0.89 |
| Mechanical wood pulp | 1.06 | 0.97 | 1.04 | 1.16 | 1.21 | 1.14 | 1.00 | 1.07 | 1.08 | 1.07 | 0.79 | 0.84 | 0.92 |
| Chemical wood pulp | 4.89 | 4.96 | 5.80 | 6.23 | 6.04 | 6.56 | 6.69 | 7.46 | 8.22 | 8.79 | 7.13 | 8.37 | 9.08 |
| Newsprint | 1.43 | 1.49 | 1.56 | 1.69 | 1.70 | 1.84 | 1.72 | 1.90 | 2.29 | 2.41 | 2.35 | 2.86 | 2.94 |
| Other paper and paperboard | 2.98 | 3.25 | 3.73 | 4.31 | 4.65 | 4.99 | 5.23 | 6.14 | 7.10 | 7.44 | 7.86 | 8.45 | 9.26 |
| **Eastern Europe and U.S.S.R.** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 5.46 | 4.18 | 8.21 | 15.09 | 10.80 | 12.58 | 6.17 | 5.85 | 4.91 | 6.72 | 8.42 | 13.09 | 19.96 |
| Barley | 0.69 | 0.67 | 0.89 | 1.17 | 1.93 | 0.44 | 0.78 | 0.97 | 0.84 | 2.16 | 1.32 | 5.49 | 3.32 |
| Maize | 0.61 | 1.37 | 0.96 | 1.20 | 1.26 | 1.10 | 1.10 | 1.36 | 1.37 | 1.06 | 2.51 | 6.11 | 8.16 |
| Rye | 0.76 | 0.87 | 0.78 | 0.15 | 0.06 | 0.23 | 0.28 | 0.22 | 0.26 | 0.18 | 0.40 | 0.34 | 1.41 |
| Rice (milled equivalent) [1] | 0.24 | 0.55 | 0.50 | 0.63 | 0.50 | 0.59 | 0.65 | 0.51 | 0.58 | 0.55 | 0.61 | 0.50 | 0.37 |
| Sugar (raw equivalent) [2] | 4.22 | 3.42 | 1.91 | 2.18 | 2.96 | 2.53 | 3.23 | 2.67 | 2.10 | 4.34 | 2.87 | 2.81 | 3.55 |
| Citrus fruit [3] | 0.24 | 0.27 | 0.27 | 0.37 | 0.45 | 0.54 | 0.59 | 0.62 | 0.69 | 0.70 | 0.76 | 0.90 | 0.92 |
| Vegetable oils and oilseeds (oil equivalent) [8] | 0.39 | 0.37 | 0.40 | 0.48 | 0.44 | 0.49 | 0.49 | 0.50 | 0.48 | 0.46 | 0.49 | 0.54 | 0.59 |
| Sheep, lambs and goats [5] | 1.76 | 1.38 | 1.25 | 1.15 | 1.41 | 1.93 | 1.67 | 1.09 | 0.95 | 1.00 | 1.02 | 1.21 | 1.21 |
| Meat (fresh, chilled and frozen) [6] | 0.25 | 0.41 | 0.33 | 0.43 | 0.39 | 0.34 | 0.30 | 0.25 | 0.22 | 0.40 | 0.45 | 0.22 | 0.35 |
| Coffee (green) | 0.08 | 0.07 | 0.09 | 0.10 | 0.11 | 0.12 | 0.12 | 0.14 | 0.16 | 0.17 | 0.16 | 0.18 | 0.18 |
| Cocoa beans | 0.07 | 0.10 | 0.11 | 0.13 | 0.16 | 0.12 | 0.16 | 0.19 | 0.17 | 0.18 | 0.22 | 0.24 | 0.22 |
| Wine | 0.19 | 0.18 | 0.22 | 0.25 | 0.26 | 0.31 | 0.41 | 0.48 | 0.90 | 0.94 | 0.99 | 1.03 | 0.92 |
| Tobacco (unmanufactured) | 0.12 | 0.13 | 0.16 | 0.20 | 0.17 | 0.13 | 0.13 | 0.13 | 0.11 | 0.12 | 0.13 | 0.16 | 0.16 |
| Cotton (lint) | 0.66 | 0.66 | 0.71 | 0.68 | 0.71 | 0.74 | 0.68 | 0.70 | 0.67 | 0.86 | 0.80 | 0.74 | 0.71 |
| Rubber (natural) | 0.52 | 0.48 | 0.45 | 0.35 | 0.43 | 0.48 | 0.44 | 0.50 | 0.48 | 0.52 | 0.44 | 0.45 | 0.50 |
| | | | | | | *Thousand metric tons* | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 130.8 | 153.4 | 153.7 | 146.1 | 145.6 | 159.4 | 138.4 | 126.0 | 119.8 | 132.0 | 82.8 | 88.6 | 92.0 |
| Dried, salted or smoked fish | 43.9 | 51.6 | 56.4 | 45.8 | 26.8 | 19.7 | 20.9 | 24.0 | 15.9 | 9.4 | 28.6 | 16.5 | 16.0 |
| Fish products and preparations, whether or not in airtight containers | 28.9 | 31.1 | 26.0 | 27.6 | 23.8 | 21.4 | 26.4 | 38.0 | 31.0 | 29.8 | 30.3 | 26.6 | 28.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 49.1 | 61.4 | 84.9 | 75.2 | 65.4 | 52.7 | 31.0 | 21.0 | 24.0 | 22.0 | 21.8 | 17.8 | 12.0 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 55.2 | 86.4 | 163.0 | 197.7 | 292.3 | 292.5 | 314.7 | 366.0 | 344.0 | 403.0 | 437.4 | 435.6 | 266.0 |
| | | | | | | *Million metric tons* | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Sawn softwood [7] | 2.05 | 2.32 | 2.32 | 2.41 | 2.66 | 2.55 | 2.65 | 2.86 | 2.81 | 3.10 | 3.30 | 3.00 | 3.04 |
| Sawn hardwood [7] | 0.38 | 0.40 | 0.36 | 0.43 | 0.43 | 0.44 | 0.48 | 0.46 | 0.42 | 0.40 | 0.39 | 0.37 | 0.41 |
| Pulp and pulp products | 0.72 | 0.77 | 0.79 | 0.95 | 1.15 | 1.30 | 1.55 | 1.34 | 1.95 | 2.35 | 2.32 | 2.35 | 2.40 |
| **North America** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Maize | 0.61 | 0.92 | 0.61 | 0.55 | 0.49 | 0.54 | 0.76 | 0.81 | 0.69 | 0.55 | 0.25 | 0.45 | 0.82 |
| Sugar (raw equivalent) [2,9] | 4.54 | 4.98 | 4.83 | 3.98 | 4.37 | 4.62 | 5.18 | 5.39 | 5.29 | 5.72 | 5.73 | 5.66 | 5.71 |
| Bananas | 1.70 | 1.44 | 1.51 | 1.60 | 1.73 | 1.79 | 1.82 | 1.86 | 1.82 | 2.05 | 2.13 | 2.15 | 2.17 |
| Citrus fruit [3] | 0.20 | 0.20 | 0.22 | 0.25 | 0.23 | 0.23 | 0.24 | 0.26 | 0.26 | 0.26 | 0.28 | 0.28 | 0.28 |
| Vegetable oils and oilseeds (oil equivalent) [8] | 0.60 | 0.63 | 0.59 | 0.65 | 0.65 | 0.76 | 0.71 | 0.76 | 0.80 | 0.76 | 0.80 | 0.98 | 0.84 |
| Cattle [5] | 1.05 | 1.25 | 0.86 | 0.58 | 1.13 | 1.11 | 0.78 | 1.05 | 1.05 | 1.22 | 1.08 | 1.26 | 1.26 |
| Meat (fresh, chilled and frozen) [6] | 0.35 | 0.49 | 0.58 | 0.41 | 0.35 | 0.44 | 0.48 | 0.55 | 0.65 | 0.71 | 0.67 | 0.80 | 0.79 |
| Coffee (green) | 1.41 | 1.54 | 1.51 | 1.44 | 1.35 | 1.39 | 1.36 | 1.61 | 1.30 | 1.27 | 1.40 | 1.34 | 1.40 |
| Cocoa beans | 0.37 | 0.31 | 0.30 | 0.29 | 0.38 | 0.34 | 0.30 | 0.25 | 0.24 | 0.30 | 0.34 | 0.31 | 0.27 |
| Wool (actual weight) | 0.16 | 0.13 | 0.13 | 0.11 | 0.14 | 0.14 | 0.09 | 0.12 | 0.09 | 0.07 | 0.06 | 0.05 | 0.03 |
| Rubber (natural) | 0.43 | 0.47 | 0.42 | 0.50 | 0.50 | 0.49 | 0.51 | 0.60 | 0.65 | 0.62 | 0.68 | 0.68 | 0.73 |

See notes at end of table.

ANNEX TABLE 5. – VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 282.9 | 348.4 | 322.1 | 340.2 | 361.1 | 432.7 | 394.3 | 502.7 | 492.0 | 526.7 | 530.9 | 726.7 | 792.0 |
| Dried, salted or smoked fish | 39.8 | 37.7 | 36.5 | 36.0 | 35.8 | 38.4 | 32.8 | 33.2 | 30.3 | 38.0 | 33.8 | 32.1 | 32.6 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 91.6 | 99.7 | 110.7 | 100.6 | 104.8 | 113.5 | 114.2 | 122.4 | 128.6 | 137.4 | 129.2 | 148.1 | 136.0 |
| Fish products and preparations, whether or not in airtight containers | 69.6 | 72.5 | 63.1 | 68.2 | 67.7 | 88.9 | 82.4 | 88.4 | 82.5 | 101.3 | 86.8 | 108.3 | 104.0 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 13.1 | 14.3 | 15.5 | 22.3 | 23.2 | 21.5 | 24.9 | 26.2 | 26.3 | 27.8 | 23.9 | 31.0 | 32.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 50.8 | 59.6 | 49.8 | 35.7 | 43.3 | 38.5 | 31.3 | 32.0 | 26.5 | 31.0 | 28.4 | 10.0 | 5.7 |
| Meals, solubles, and similar animal feedstuffs of aquatic animal origin | 210.2 | 234.7 | 350.6 | 406.9 | 250.3 | 410.1 | 595.3 | 779.9 | 326.8 | 227.8 | 257.0 | 356.8 | 62.6 |
| | *Million metric tons* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Pulpwood [7] | 3.43 | 3.39 | 3.08 | 1.85 | 1.83 | 1.98 | 1.86 | 1.65 | 1.64 | 1.37 | 1.06 | 1.10 | 0.90 |
| Coniferous logs [7] | 0.97 | 1.21 | 1.23 | 1.20 | 1.56 | 1.24 | 1.30 | 1.58 | 1.50 | 1.79 | 1.79 | 2.39 | 1.97 |
| Broadleaved logs [7] | 0.22 | 0.28 | 0.24 | 0.51 | 0.50 | 0.53 | 0.59 | 0.53 | 0.47 | 0.48 | 0.41 | 0.46 | 0.47 |
| Sawn softwood [7] | 9.86 | 11.15 | 12.11 | 11.73 | 11.73 | 11.39 | 11.69 | 13.98 | 14.06 | 13.86 | 17.38 | 21.52 | 21.65 |
| Sawn hardwood [7] | 0.83 | 0.97 | 0.97 | 1.00 | 1.08 | 1.26 | 1.20 | 1.09 | 1.36 | 1,01 | 1.12 | 1.43 | 1.63 |
| Plywood [7] | 0.51 | 0.66 | 0.73 | 0.90 | 0.97 | 1.16 | 1.19 | 1.75 | 2.04 | 1.90 | 2.42 | 3.12 | 3.12 |
| Wood pulp | 2.28 | 2.58 | 2.58 | 2.73 | 2.92 | 3.08 | 2.88 | 3.22 | 3.68 | 3.21 | 3.24 | 3.45 | 3.60 |
| Newsprint | 4.96 | 4.97 | 4.91 | 5.40 | 5.74 | 6.34 | 5.99 | 5.86 | 6.16 | 6.02 | 6.24 | 6.44 | 6.83 |
| Other paper and paperboard | 0.28 | 0.30 | 0.28 | 0.31 | 0.33 | 0.42 | 0.41 | 0.43 | 0.48 | 0.56 | 0.62 | 0.70 | 0.72 |
| **Oceania** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 0.17 | 0.19 | 0.18 | 0.18 | 0.17 | 0.15 | 0.10 | 0.05 | 0.01 | 0.02 | 0.08 | 0.04 | 0.05 |
| Sugar (raw equivalent) [2] | 0.14 | 0.12 | 0.13 | 0.13 | 0.11 | 0.13 | 0.13 | 0.15 | 0.15 | 0.14 | 0.16 | 0.18 | 0.17 |
| Rubber (natural) | 0.04 | 0.05 | 0.04 | 0.04 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.05 | 0.04 | 0.05 | 0.06 |
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 15.8 | 14.4 | 5.1 | 19.1 | 21.0 | 28.0 | 27.0 | 27.0 | 33.0 | 32.0 | 39.7 | 22.2 | 25.8 |
| Dried, salted or smoked fish | 4.0 | 5.0 | 5.0 | 4.9 | 4.0 | 5.0 | 3.0 | 4.0 | 5.0 | 4.0 | 4.6 | 4.3 | 3.0 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | — | 0.5 | 0.5 | 1.0 | 1.2 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.6 | 1.1 | 4.0 |
| Fish products and preparations, whether or not in airtight containers | 24.7 | 19.1 | 18.8 | 27.4 | 24.5 | 25.1 | 27.0 | 27.0 | 27.0 | 28.0 | 29.0 | 14.7 | 15.0 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 0.6 | 0.3 | 0.3 | 0.6 | 0.7 | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.5 | 3.0 | 3.2 |
| Oils and fats, crude or refined, of aquatic animal origin | 3.5 | 3.3 | 2.9 | 3.9 | 7.3 | 8.0 | 4.0 | 5.0 | 4.0 | 4.0 | 4.8 | 1.1 | 1.2 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 9.4 | 6.2 | 5.7 | 8.5 | 11.0 | 11.0 | 14.0 | 28.0 | 30.0 | 27.0 | 32.0 | 27.4 | 14.1 |
| | *Million metric tons* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Sawn softwood [7] | 0.71 | 0.60 | 0.58 | 0.73 | 0.69 | 0.72 | 0.70 | 0.69 | 0.77 | 0.72 | 0.73 | 0.74 | 0.81 |
| Newsprint | 0.30 | 0.20 | 0.22 | 0.26 | 0.29 | 0.28 | 0.28 | 0.30 | 0.30 | 0.28 | 0.29 | 0.22 | 0.27 |
| Other paper and paperboard | 0.20 | 0.15 | 0.17 | 0.17 | 0.18 | 0.17 | 0.18 | 0.20 | 0.21 | 0.25 | 0.27 | 0.30 | 0.28 |

See notes at end of table.

ANNEX TABLE 5. — VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Million metric tons* | | | | | | | | | | | | |
| **Latin America** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 4.19 | 4.90 | 5.16 | 5.72 | 5.12 | 6.07 | 6.36 | 6.72 | 6.62 | 5.68 | 6.38 | 6.89 | 8.93 |
| Maize | 0.22 | 0.36 | 0.63 | 0.66 | 0.40 | 0.41 | 0.37 | 0.63 | 0.66 | 1.52 | 0.86 | 1.20 | 2.40 |
| Rice (milled equivalent) [1] | 0.35 | 0.31 | 0.34 | 0.50 | 0.55 | 0.45 | 0.37 | 0.40 | 0.39 | 0.41 | 0.49 | 0.42 | 0.45 |
| Sugar (raw equivalent) [2] | 0.51 | 0.24 | 0.27 | 0.22 | 0.27 | 0.31 | 0.25 | 0.17 | 0.41 | 0.18 | 0.21 | 0.33 | 0.56 |
| Bananas | 0.27 | 0.23 | 0.24 | 0.24 | 0.25 | 0.25 | 0.23 | 0.24 | 0.26 | 0.29 | 0.24 | 0.19 | 0.21 |
| Pulses (dry) | 0.17 | 0.13 | 0.16 | 0.19 | 0.16 | 0.19 | 0.21 | 0.21 | 0.21 | 0.18 | 0.20 | 0.22 | 0.24 |
| Cattle [5] | 0.61 | 0.67 | 0.66 | 0.57 | 0.53 | 0.56 | 0.61 | 0.53 | 0.56 | 0.50 | 0.49 | 0.46 | 0.46 |
| Sheep, lambs and goats [5] | 0.09 | 0.12 | 0.29 | 0.14 | 0.07 | 0.09 | 0.11 | 0.13 | 0.12 | 0.13 | 0.18 | 0.11 | 0.07 |
| Milk (condensed, evaporated and powdered) | 0.18 | 0.20 | 0.23 | 0.24 | 0.24 | 0.23 | 0.28 | 0.30 | 0.29 | 0.32 | 0.34 | 0.34 | 0.35 |
| Rubber (natural) | 0.09 | 0.07 | 0.08 | 0.08 | 0.08 | 0.08 | 0.08 | 0.09 | 0.09 | 0.11 | 0.12 | 0.14 | 0.14 |
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 2.3 | 3.1 | 16.4 | 16.4 | 20.0 | 16.3 | 22.7 | 28.3 | 31.0 | 26.4 | 42.3 | 39.9 | 53.0 |
| Dried, salted or smoked fish | 65.5 | 68.5 | 78.2 | 81.1 | 59.6 | 81.6 | 90.2 | 90.8 | 102.0 | 96.7 | 82.0 | 68.7 | 70.0 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 0.5 | 0.8 | 0.9 | 1.0 | 1.4 | 3.5 | 4.8 | 6.5 | 8.0 | 8.5 | 8.1 | 6.7 | 6.0 |
| Fish products and preparations, whether or not in airtight containers | 16.3 | 21.8 | 20.7 | 25.9 | 22.8 | 28.1 | 24.6 | 22.6 | 25.4 | 25.0 | 28.9 | 40.0 | 41.0 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 0.5 | 0.5 | 0.5 | 0.6 | 1.4 | 1.5 | 1.1 | 0.8 | 0.7 | 0.4 | 1.3 | 1.0 | 1.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 10.3 | 2.3 | 7.5 | 13.5 | 18.3 | 32.5 | 19.7 | 37.3 | 41.9 | 27.0 | 29.0 | 14.5 | 24.0 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 31.0 | 48.5 | 53.8 | 72.7 | 77.1 | 91.9 | 104.7 | 137.1 | 134.2 | 160.0 | 220.7 | 174.0 | 102.0 |
| | *Million metric tons* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Broadleaved logs [7] | 0.28 | 0.23 | 0.22 | 0.25 | 0.37 | 0.35 | 0.31 | 0.23 | 0.21 | 0.22 | 0.20 | 0.19 | 0.22 |
| Sawn softwood [7] | 1.32 | 1.09 | 0.99 | 1.23 | 1.43 | 1.51 | 1.36 | 1.60 | 1.59 | 1.56 | 1.58 | 1.40 | 1.33 |
| Wood pulp | 0.49 | 0.38 | 0.41 | 0.49 | 0.50 | 0.54 | 0.49 | 0.62 | 0.63 | 0.70 | 0.61 | 0.61 | 0.67 |
| Newsprint | 0.64 | 0.58 | 0.54 | 0.56 | 0.60 | 0.66 | 0.67 | 0.76 | 0.85 | 0.87 | 0.72 | 0.72 | 0.76 |
| Other paper and paperboard | 0.31 | 0.28 | 0.29 | 0.44 | 0.43 | 0.57 | 0.63 | 0.82 | 0.80 | 1.06 | 0.97 | 0.97 | 0.98 |
| **Far East** [10] | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 6.24 | 5.99 | 8.21 | 9.21 | 10.75 | 11.52 | 11.34 | 10.76 | 8.34 | 8.90 | 7.79 | 6.94 | 12.53 |
| Barley | 0.16 | 0.09 | 0.21 | 0.20 | 0.11 | 0.01 | 0.01 | 0.16 | 0.12 | 0.04 | 0.08 | 0.39 | 0.51 |
| Maize | 0.36 | 0.47 | 0.54 | 0.34 | 0.37 | 0.30 | 0.58 | 0.35 | 0.56 | 0.85 | 1.05 | 1.31 | 1.42 |
| Millet and sorghums | 0.02 | 0.03 | 0.02 | 0.02 | 0.07 | 1.59 | 2.17 | 0.46 | 0.46 | 0.07 | 0.08 | 0.09 | 1.04 |
| Rice (milled equivalent) [1] | 4.10 | 3.71 | 4.37 | 4.29 | 3.79 | 3.92 | 4.18 | 4.04 | 3.88 | 4.99 | 4.24 | 4.72 | 4.69 |
| Sugar (raw equivalent) [2] | 0.92 | 1.01 | 0.90 | 0.91 | 1.07 | 1.24 | 1.24 | 1.55 | 1.90 | 1.57 | 1.63 | 1.35 | 1.75 |
| Dates | 0.07 | 0.05 | 0.08 | 0.08 | 0.08 | 0.08 | 0.09 | 0.10 | 0.09 | 0.11 | 0.07 | 0.06 | 0.06 |
| Vegetable oils and oilseeds (oil equivalent) [8] | 0.41 | 0.39 | 0.42 | 0.50 | 0.42 | 0.40 | 0.37 | 0.38 | 0.49 | 0.54 | 0.70 | 0.66 | 0.64 |
| Milk (condensed, evaporated and powdered) | 0.38 | 0.40 | 0.43 | 0.41 | 0.39 | 0.41 | 0.36 | 0.39 | 0.42 | 0.39 | 0.38 | 0.37 | 0.36 |
| Cotton (lint) | 0.45 | 0.44 | 0.40 | 0.44 | 0.45 | 0.46 | 0.52 | 0.58 | 0.50 | 0.59 | 0.63 | 0.56 | 0.70 |
| Jute and kenaf | 0.10 | 0.09 | 0.06 | 0.07 | 0.16 | 0.10 | 0.03 | 0.08 | 0.03 | 0.01 | 0.14 | 0.25 | 0.19 |
| Rubber (natural) [11] | 0.12 | 0.13 | 0.12 | 0.09 | 0.10 | 0.10 | 0.12 | 0.11 | 0.13 | 0.04 | 0.05 | 0.05 | 0.05 |

See notes at end of table.

ANNEX TABLE 5. – VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*continued*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 76.0 | 89.1 | 97.8 | 107.7 | 109.4 | 115.6 | 113.9 | 110.9 | 102.0 | 121.8 | 116.5 | 121.1 | 138.0 |
| Dried, salted or smoked fish | 80.1 | 57.5 | 64.4 | 62.0 | 55.8 | 72.0 | 57.8 | 62.7 | 60.9 | 61.1 | 61.8 | 62.0 | 46.0 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 36.3 | 34.2 | 43.3 | 42.0 | 39.5 | 42.5 | 40.3 | 36.6 | 35.9 | 43.9 | 50.9 | 52.0 | 53.0 |
| Fish products and preparations, whether or not in airtight containers | 96.6 | 62.9 | 67.8 | 67.1 | 64.2 | 73.8 | 82.4 | 92.9 | 102.2 | 89.5 | 97.0 | 83.6 | 81.0 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 17.9 | 17.9 | 20.1 | 17.2 | 17.1 | 12.6 | 21.8 | 23.9 | 22.6 | 27.8 | 16.0 | 15.5 | 15.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 1.6 | 1.9 | 1.8 | 1.6 | 1.6 | 2.1 | 5.2 | 5.9 | 6.9 | 8.6 | 7.4 | 4.7 | 4.0 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 44.8 | 44.3 | 42.7 | 49.2 | 52.8 | 55.8 | 70.9 | 86.2 | 112.0 | 119.5 | 125.9 | 87.2 | 58.0 |
| | *Million metric tons* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Coniferous logs [7] | 0.01 | 0.11 | 0.19 | 0.23 | 0.14 | 0.25 | 0.31 | 0.48 | 0.23 | 0.29 | 0.44 | 0.33 | 0.59 |
| Broadleaved logs [7] | 0.69 | 1.04 | 0.93 | 1.74 | 2.05 | 2.82 | 3.10 | 4.28 | 4.46 | 5.16 | 5.74 | 5.72 | 6.85 |
| Sawn softwood [7] | 0.03 | 0.05 | 0.02 | 0.02 | 0.02 | 0.02 | 0.04 | 0.01 | 0.01 | 0.01 | 0.04 | 0.04 | 0.04 |
| Sawn hardwood [7] | 0.09 | 0.12 | 0.12 | 0.35 | 0.30 | 0.37 | 0.40 | 0.65 | 0.47 | 0.47 | 0.48 | 0.56 | 0.51 |
| Wood pulp | 0.19 | 0.24 | 0.26 | 0.23 | 0.19 | 0.23 | 0.22 | 0.31 | 0.37 | 0.36 | 0.38 | 0.48 | 0.54 |
| Newsprint | 0.29 | 0.24 | 0.26 | 0.26 | 0.27 | 0.34 | 0.32 | 0.40 | 0.46 | 0.43 | 0.55 | 0.45 | 0.48 |
| Other paper and paperboard | 0.37 | 0.35 | 0.39 | 0.47 | 0.45 | 0.53 | 0.59 | 0.67 | 0.72 | 0.76 | 0.86 | 0.74 | 0.90 |
| **China and other Asian centrally planned countries** | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 3.89 | 5.14 | 4.89 | 5.99 | 5.85 | 7.13 | 4.22 | 6.14 | 4.52 | 6.62 | 5.66 | 6.28 | 7.45 |
| Barley | 1.12 | 0.50 | 0.03 | 0.58 | 0.03 | — | 0.03 | 0.05 | 0.09 | 0.24 | 0.32 | 0.46 | 0.28 |
| Maize | 0.06 | 0.52 | 0.05 | 0.41 | 0.23 | 0.09 | 0.27 | 0.38 | 0.41 | 0.60 | 0.55 | 1.99 | 2.90 |
| Millet and sorghums | 0.04 | 0.01 | 0.03 | — | — | — | — | — | — | — | 0.03 | 0.04 | 0.04 |
| Rice (milled equivalent) [1] | 0.13 | 0.03 | 0.11 | 0.13 | 0.17 | 0.07 | 0.06 | 1.08 | 1.31 | 0.90 | 1.26 | 1.11 | 1.41 |
| Sugar (raw equivalent) [2] | 1.56 | 0.97 | 0.56 | 0.46 | 0.53 | 0.68 | 0.74 | 0.65 | 0.73 | 0.79 | 0.79 | 0.99 | 0.99 |
| Dates | 0.03 | 0.06 | 0.07 | 0.06 | 0.04 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.06 | 0.09 | 0.10 |
| Vegetable oils and oilseeds (oil equivalent) [4] | 0.07 | 0.05 | 0.06 | 0.08 | 0.06 | 0.06 | 0.10 | 0.10 | 0.12 | 0.15 | 0.14 | 0.19 | 0.25 |
| Milk (condensed, evaporated and powdered) | — | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.02 | 0.02 | 0.02 | 0.03 | 0.02 |
| Cotton (lint) | 0.11 | 0.13 | 0.22 | 0.17 | 0.25 | 0.19 | 0.19 | 0.17 | 0.20 | 0.21 | 0.27 | 0.32 | 0.57 |
| Jute and kenaf | 0.01 | 0.02 | 0.03 | 0.06 | 0.06 | 0.06 | 0.07 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.09 |
| Rubber (natural, dry) | 0.10 | 0.10 | 0.13 | 0.15 | 0.16 | 0.18 | 0.16 | 0.24 | 0.30 | 0.21 | 0.20 | 0.23 | 0.29 |
| **Near East** [12] | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 3.95 | 3.56 | 4.23 | 3.43 | 4.43 | 4.39 | 4.62 | 4.57 | 3.38 | 4.98 | 7.85 | 4.85 | 4.79 |
| Maize | 0.18 | 0.33 | 0.28 | 0.53 | 0.25 | 0.31 | 0.34 | 0.35 | 0.20 | 0.26 | 0.28 | 0.41 | 0.43 |
| Rice (milled equivalent) [1] | 0.31 | 0.37 | 0.28 | 0.36 | 0.37 | 0.39 | 0.32 | 0.34 | 0.38 | 0.45 | 0.63 | 0.55 | 0.91 |
| Sugar (raw equivalent) [2] | 1.46 | 1.10 | 0.88 | 1.27 | 1.82 | 1.54 | 1.36 | 1.09 | 0.99 | 1.05 | 1.29 | 1.19 | 1.44 |
| Dates | 0.06 | 0.06 | 0.07 | 0.07 | 0.06 | 0.05 | 0.07 | 0.06 | 0.06 | 0.07 | 0.11 | 0.08 | 0.10 |
| Vegetable oils and oilseeds (oil equivalent) [8] | 0.16 | 0.24 | 0.27 | 0.22 | 0.21 | 0.22 | 0.25 | 0.26 | 0.34 | 0.37 | 0.43 | 0.50 | 0.43 |
| Sheep, lambs and goats [5] | 2.16 | 2.68 | 2.60 | 2.86 | 4.87 | 3.32 | 2.14 | 3.88 | 3.72 | 3.77 | 3.93 | 4.28 | 4.56 |

See notes at end of table.

ANNEX TABLE 5. – VOLUME OF IMPORTS OF MAJOR AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*concluded*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 5.6 | 6.5 | 6.9 | 8.5 | 13.7 | 23.8 | 21.5 | 13.6 | 9.0 | 8.0 | 8.6 | 8.3 | 8.0 |
| Dried, salted or smoked fish | 4.0 | 2.8 | 2.1 | 2.9 | 2.9 | 8.8 | 2.8 | 3.5 | 2.4 | 2.2 | 2.0 | 1.8 | 2.0 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.4 | 0.4 | 0.3 | 0.4 | 0.5 | 0.6 | 1.0 |
| Fish products and preparations, whether or not in airtight containers | 10.1 | 10.9 | 9.1 | 9.0 | 6.9 | 5.5 | 7.7 | 8.6 | 9.2 | 12.7 | 11.8 | 13.9 | 18.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 0.8 | 0.7 | 0.6 | 0.4 | 0.8 | 0.9 | 0.5 | 0.3 | 1.8 | 1.0 | 1.5 | 1.4 | 1 0 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | — | — | — | — | — | 2.5 | 5.2 | 4.5 | 7.8 | 5.4 | 6.8 | 6.0 | 1.0 |
| | *Million metric tons* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Sawn softwood [7] | 0.83 | 0.83 | 0.84 | 1.02 | 1.06 | 1.24 | 1.05 | 0.90 | 0.93 | 1.22 | 1.19 | 1.60 | 1.60 |
| All paper and paperboard | 0.27 | 0.28 | 0.28 | 0.27 | 0.31 | 0.37 | 0.46 | 0.46 | 0.52 | 0.49 | 0.62 | 0.53 | 0.54 |
| Africa [13] | | | | | | | | | | | | | |
| AGRICULTURAL PRODUCTS | | | | | | | | | | | | | |
| Wheat and wheat flour (wheat equivalent) | 2.04 | 2.04 | 1.59 | 1.57 | 1.74 | 2.53 | 3.07 | 2.78 | 2.18 | 2.87 | 3.40 | 3.53 | 4.18 |
| Barley | 0.37 | 0.24 | 0.01 | 0.02 | 0.04 | 0.09 | 0.12 | 0.05 | 0.07 | 0.02 | 0.03 | 0.08 | 0.14 |
| Rice (milled equivalent) [1] | 0.47 | 0.56 | 0.52 | 0.60 | 0.74 | 0.70 | 0.63 | 0.60 | 0.59 | 0.72 | 0.85 | 0.81 | 0.78 |
| Sugar (raw equivalent) [2] | 1.22 | 1.30 | 1.10 | 1.17 | 1.23 | 1.32 | 1.30 | 1.23 | 0.97 | 1.27 | 1.32 | 1.35 | 1.39 |
| Potatoes | 0.35 | 0.27 | 0.23 | 0.22 | 0.17 | 0.17 | 0.12 | 0.16 | 0.14 | 0.17 | 0.18 | 0.17 | 0.18 |
| Cattle [5] | 0.79 | 0.84 | 0.91 | 0.89 | 0.89 | 0.87 | 0.85 | 0.81 | 0.91 | 0.91 | 0.90 | 0.82 | 0.72 |
| Sheep, lambs and goats [5] | 2.38 | 2.29 | 2.52 | 2.34 | 2.29 | 2.36 | 2.34 | 2.36 | 2.38 | 2.35 | 2.43 | 2.29 | 2.14 |
| Wine | 0.24 | 0.22 | 0.23 | 0.25 | 0.25 | 0.27 | 0.25 | 0.26 | 0.24 | 0.22 | 0.20 | 0.19 | 0.19 |
| | *Thousand metric tons* | | | | | | | | | | | | |
| FISHERY PRODUCTS | | | | | | | | | | | | | |
| Fresh, chilled or frozen fish | 55.0 | 55.7 | 72.8 | 62.8 | 65.9 | 81.6 | 58.1 | 56.8 | 62.0 | 79.5 | 98.3 | 94.5 | 95.0 |
| Dried, salted or smoked fish | 99.7 | 97.0 | 101.0 | 91.8 | 85.8 | 97.3 | 85.9 | 71.6 | 62.1 | 63.4 | 62.4 | 48.9 | 51.0 |
| Crustacea and molluscs, fresh, frozen, dried, salted, etc. | 3.9 | 1.9 | 1.2 | 2.1 | 0.7 | 0.8 | 0.7 | 0.6 | 1.5 | 1.0 | 0.9 | 1.0 | 1.0 |
| Fish products and preparations, whether or not in airtight containers | 39.5 | 31.3 | 31.1 | 29.6 | 33.8 | 32.8 | 26.7 | 29.9 | 30.8 | 37.2 | 43.2 | 52.5 | 43.0 |
| Crustacean and mollusc products and preparations, whether or not in airtight containers | 0.1 | 0.1 | — | 0.1 | 0.1 | — | 0.8 | 0.8 | 0.4 | 0.4 | 0.6 | 0.8 | 1.0 |
| Oils and fats, crude or refined, of aquatic animal origin | 1.0 | 1.9 | 1.7 | 2.3 | 1.7 | 0.8 | 0.8 | 1.7 | 3.6 | 4.8 | 4.8 | 4.7 | 4.0 |
| Meals, solubles and similar animal feedstuffs of aquatic animal origin | 7.9 | 7.6 | 8.7 | 6.2 | 9.4 | 10.1 | 11.5 | 11.0 | 15.0 | 15.0 | 16.1 | 16.0 | 10.0 |
| | *Million metric tons* | | | | | | | | | | | | |
| FOREST PRODUCTS | | | | | | | | | | | | | |
| Sawn softwood [7] | 0.50 | 0.44 | 0.44 | 0.55 | 0.48 | 0.54 | 0.57 | 0.63 | 0.71 | 0.91 | 0.94 | 0.95 | 0.91 |
| Sawn hardwood [7] | 0.12 | 0.12 | 0.13 | 0.12 | 0.17 | 0.19 | 0.17 | 0.18 | 0.17 | 0.18 | 0.18 | 0.24 | 0.27 |
| Newsprint | 0.05 | 0.05 | 0.05 | 0.03 | 0.04 | 0.05 | 0.04 | 0.03 | 0.03 | 0.04 | 0.05 | 0.05 | 0.05 |
| Other paper and paperboard | 0.15 | 0.15 | 0.18 | 0.21 | 0.23 | 0.24 | 0.26 | 0.28 | 0.31 | 0.37 | 0.38 | 0.38 | 0.38 |

[1] Including paddy converted at 65%. — [2] Including refined sugar converted at 108.7%. — [3] Oranges, mandarins and lemons. — [4] Groundnuts, copra, palm kernels, soybeans, sunflowerseed castor beans, cottonseed, olive oil, groundnut oil, coconut oil, palm oil, palm-kernel oil, soybean oil, sunflowerseed oil, castor oil, cottonseed oil. — [5] Million head. — [6] Beef and veal, mutton and lamb, pork, poultry meat. — [7] Million cubic metres. — [8] Groundnuts, copra, palm kernels, soybeans, sunflowerseed, castor beans, linseed, cottonseed, olive oil, groundnut oil, coconut oil, palm oil, palm-kernel oil, soybean oil, sunflowerseed oil, castor oil, linseed oil, cottonseed oil. — [9] Excluding trade between the United States and its territories. — [10] Excluding Japan, and China and other Asian centrally planned countries. — [11] Excluding imports into Malaysia for reexport. — [12] Excluding Israel. — [13] Excluding South Africa.

ANNEX TABLE 6. — INDICES OF VALUE OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *1961-65 average = 100* | | | | | | | | | | | | |
| **Western Europe** | | | | | | | | | | | | | |
| Agricultural products | 85 | 88 | 100 | 109 | 118 | 122 | 131 | 135 | 156 | 179 | 207 | 259 | 365 |
| Food | 84 | 87 | 99 | 109 | 120 | 123 | 133 | 139 | 163 | 186 | 216 | 267 | 372 |
| Feed | 86 | 90 | 96 | 109 | 119 | 136 | 141 | 136 | 153 | 189 | 227 | 290 | 700 |
| Raw materials | 87 | 91 | 111 | 107 | 104 | 106 | 104 | 94 | 93 | 100 | 96 | 120 | 162 |
| Fishery products | 83 | 92 | 94 | 105 | 127 | 133 | 131 | 127 | 143 | 171 | 198 | 243 | 338 |
| Forest products | 91 | 90 | 96 | 109 | 114 | 118 | 119 | 129 | 149 | 169 | 177 | 202 | 268 |
| **Eastern Europe and U.S.S.R.** | | | | | | | | | | | | | |
| Agricultural products | 97 | 102 | 105 | 94 | 101 | 113 | 138 | 132 | 137 | 127 | 141 | 151 | 195 |
| Food | 98 | 106 | 109 | 90 | 97 | 110 | 142 | 132 | 144 | 129 | 146 | 149 | 200 |
| Feed | 150 | 149 | 110 | 31 | 59 | 130 | 129 | 108 | 117 | 13 | 18 | 5 | 21 |
| Raw materials | 96 | 89 | 95 | 107 | 113 | 116 | 121 | 127 | 103 | 113 | 117 | 145 | 170 |
| Forest products | 79 | 89 | 94 | 112 | 125 | 132 | 131 | 139 | 150 | 169 | 176 | 197 | 264 |
| **North America** | | | | | | | | | | | | | |
| Agricultural products | 89 | 87 | 98 | 115 | 110 | 123 | 110 | 106 | 97 | 123 | 135 | 160 | 299 |
| Food | 83 | 87 | 99 | 117 | 114 | 129 | 110 | 104 | 96 | 126 | 135 | 165 | 319 |
| Feed | 41 | 77 | 104 | 118 | 160 | 185 | 186 | 203 | 228 | 275 | 312 | 337 | 732 |
| Raw materials | 118 | 87 | 93 | 109 | 93 | 96 | 98 | 99 | 87 | 94 | 113 | 121 | 170 |
| Fishery products | 80 | 84 | 98 | 116 | 122 | 130 | 137 | 140 | 164 | 178 | 195 | 230 | 368 |
| Forest products | 88 | 90 | 97 | 110 | 116 | 125 | 131 | 151 | 169 | 186 | 189 | 227 | 304 |
| **Oceania** | | | | | | | | | | | | | |
| Agricultural products | 83 | 92 | 95 | 120 | 110 | 106 | 110 | 100 | 106 | 118 | 118 | 144 | 209 |
| Food | 80 | 91 | 93 | 117 | 119 | 110 | 122 | 114 | 114 | 138 | 157 | 197 | 239 |
| Feed | 60 | 100 | 116 | 136 | 88 | 46 | 102 | 103 | 142 | 197 | 152 | 188 | 403 |
| Raw materials | 87 | 93 | 97 | 122 | 101 | 101 | 96 | 83 | 95 | 93 | 72 | 82 | 174 |
| Fishery products | 72 | 96 | 92 | 101 | 133 | 166 | 174 | 237 | 286 | 294 | 406 | 527 | 613 |
| Forest products | 74 | 71 | 112 | 123 | 120 | 126 | 139 | 147 | 155 | 174 | 184 | 276 | 460 |
| DEVELOPED COUNTRIES | | | | | | | | | | | | | |
| Agricultural products | 87 | 89 | 99 | 113 | 113 | 119 | 118 | 116 | 122 | 143 | 159 | 195 | 304 |
| Food | 83 | 88 | 99 | 113 | 116 | 123 | 122 | 121 | 127 | 154 | 173 | 213 | 329 |
| Feed | 59 | 82 | 101 | 115 | 143 | 162 | 167 | 176 | 199 | 241 | 277 | 319 | 703 |
| Raw materials | 100 | 91 | 98 | 113 | 98 | 99 | 97 | 91 | 91 | 93 | 91 | 104 | 167 |
| **Latin America** | | | | | | | | | | | | | |
| Agricultural products | 93 | 91 | 99 | 107 | 111 | 112 | 108 | 112 | 120 | 137 | 131 | 157 | 223 |
| Food | 93 | 88 | 98 | 109 | 113 | 115 | 113 | 117 | 123 | 147 | 141 | 168 | 235 |
| Feed | 79 | 97 | 108 | 98 | 118 | 123 | 119 | 117 | 126 | 162 | 185 | 228 | 505 |
| Raw materials | 95 | 102 | 103 | 97 | 103 | 98 | 82 | 90 | 105 | 92 | 82 | 100 | 135 |
| Fishery products | 66 | 96 | 98 | 115 | 125 | 145 | 142 | 161 | 169 | 228 | 249 | 225 | 178 |
| Forest products | 95 | 85 | 82 | 109 | 127 | 143 | 137 | 170 | 205 | 208 | 218 | 222 | 370 |

See notes at end of table.

ANNEX TABLE 6. – INDICES OF VALUE OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*concluded*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *1961-65 average = 100* | | | | | | | | | | | | |
| **Far East** [1] | | | | | | | | | | | | | |
| Agricultural products | 96 | 94 | 103 | 103 | 101 | 99 | 93 | 92 | 98 | 101 | 103 | 110 | 150 |
| Food | 92 | 91 | 107 | 107 | 102 | 100 | 98 | 97 | 88 | 99 | 109 | 112 | 132 |
| Feed | 64 | 94 | 114 | 117 | 110 | 106 | 91 | 94 | 80 | 108 | 108 | 121 | 209 |
| Raw materials | 103 | 101 | 99 | 98 | 99 | 100 | 88 | 89 | 113 | 103 | 94 | 106 | 171 |
| Fishery products | 71 | 87 | 101 | 118 | 123 | 146 | 166 | 184 | 231 | 284 | 349 | 479 | 560 |
| Forest products | 73 | 82 | 105 | 113 | 126 | 149 | 169 | 234 | 260 | 295 | 331 | 384 | 640 |
| **Near East** [2] | | | | | | | | | | | | | |
| Agricultural products | 87 | 94 | 103 | 104 | 111 | 115 | 112 | 116 | 125 | 134 | 146 | 165 | 208 |
| Food | 76 | 103 | 103 | 106 | 114 | 105 | 112 | 122 | 147 | 128 | 134 | 163 | 222 |
| Feed | 68 | 84 | 102 | 116 | 129 | 137 | 137 | 133 | 137 | 166 | 137 | 191 | 224 |
| Raw materials | 95 | 90 | 104 | 102 | 109 | 118 | 111 | 112 | 113 | 135 | 152 | 164 | 199 |
| Fishery products | 93 | 91 | 92 | 103 | 122 | 129 | 139 | 144 | 114 | 156 | 169 | 211 | 290 |
| Forest products | 86 | 87 | 92 | 94 | 141 | 169 | 170 | 205 | 224 | 267 | 272 | 284 | 475 |
| **Africa** [3] | | | | | | | | | | | | | |
| Agricultural products | 92 | 92 | 99 | 110 | 107 | 105 | 101 | 111 | 115 | 130 | 118 | 134 | 161 |
| Food | 89 | 91 | 99 | 111 | 109 | 113 | 111 | 123 | 124 | 139 | 130 | 148 | 179 |
| Feed | 86 | 85 | 90 | 110 | 129 | 123 | 145 | 149 | 137 | 149 | 125 | 162 | 230 |
| Raw materials | 96 | 86 | 106 | 107 | 104 | 86 | 80 | 78 | 83 | 97 | 99 | 105 | 115 |
| Fishery products | 101 | 102 | 96 | 106 | 95 | 117 | 111 | 120 | 137 | 154 | 173 | 202 | 279 |
| Forest products | 83 | 81 | 101 | 120 | 114 | 113 | 114 | 130 | 158 | 147 | 148 | 178 | 300 |
| DEVELOPING COUNTRIES | | | | | | | | | | | | | |
| Agricultural products | 93 | 93 | 101 | 106 | 107 | 108 | 103 | 107 | 114 | 125 | 122 | 139 | 187 |
| Food | 91 | 90 | 101 | 109 | 109 | 110 | 109 | 114 | 117 | 133 | 131 | 149 | 196 |
| Feed | 74 | 93 | 107 | 108 | 118 | 119 | 115 | 115 | 113 | 142 | 144 | 176 | 328 |
| Raw materials | 98 | 97 | 102 | 100 | 103 | 101 | 90 | 92 | 107 | 106 | 103 | 116 | 159 |
| **World** | | | | | | | | | | | | | |
| Agricultural products | 90 | 91 | 100 | 109 | 110 | 115 | 114 | 114 | 120 | 134 | 142 | 168 | 246 |
| Food | 87 | 90 | 100 | 110 | 112 | 118 | 119 | 120 | 125 | 143 | 154 | 182 | 265 |
| Feed | 70 | 91 | 104 | 108 | 126 | 138 | 138 | 142 | 151 | 180 | 196 | 230 | 477 |
| Raw materials | 99 | 94 | 100 | 106 | 101 | 102 | 96 | 95 | 101 | 101 | 100 | 114 | 167 |
| Fishery products [4] | 80 | 95 | 96 | 109 | 121 | 131 | 131 | 137 | 151 | 179 | 206 | 245 | 309 |
| Forest products | 87 | 89 | 97 | 110 | 117 | 124 | 128 | 143 | 164 | 182 | 189 | 220 | 306 |

[1] Excluding Japan, and China and other Asian centrally planned countries. — [2] Excluding Israel. — [3] Excluding South Africa. — [4] Excluding Eastern Europe and U.S.S.R., China and other Asian centrally planned countries.

ANNEX TABLE 7. – INDICES OF VOLUME OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *1961-65 average = 100* | | | | | | | | | | | | |
| **Western Europe** | | | | | | | | | | | | | |
| Agricultural products | 93 | 93 | 99 | 103 | 111 | 114 | 125 | 136 | 145 | 161 | 172 | 186 | 204 |
| Food | 93 | 93 | 98 | 104 | 113 | 114 | 127 | 141 | 151 | 168 | 177 | 188 | 209 |
| Feed | 97 | 91 | 93 | 107 | 111 | 120 | 129 | 129 | 144 | 170 | 194 | 230 | 293 |
| Raw materials | 96 | 96 | 105 | 100 | 104 | 106 | 109 | 105 | 102 | 103 | 102 | 118 | 111 |
| Fishery products | 91 | 97 | 97 | 103 | 112 | 113 | 119 | 116 | 116 | 118 | 117 | 132 | 133 |
| Forest products | 91 | 92 | 99 | 108 | 109 | 114 | 116 | 129 | 143 | 149 | 147 | 153 | 188 |
| **Eastern Europe and U.S.S.R.** | | | | | | | | | | | | | |
| Agricultural products | 102 | 106 | 99 | 89 | 103 | 116 | 141 | 139 | 140 | 123 | 131 | 125 | 131 |
| Food | 103 | 112 | 101 | 84 | 99 | 112 | 145 | 141 | 147 | 122 | 132 | 119 | 124 |
| Feed | 168 | 150 | 102 | 30 | 52 | 122 | 116 | 99 | 97 | 12 | 10 | 4 | 8 |
| Raw materials | 99 | 89 | 92 | 105 | 114 | 124 | 127 | 131 | 107 | 116 | 117 | 133 | 144 |
| Forest products | 78 | 89 | 98 | 113 | 121 | 130 | 132 | 139 | 148 | 159 | 155 | 161 | 161 |
| **North America** | | | | | | | | | | | | | |
| Agricultural products | 91 | 88 | 99 | 115 | 108 | 118 | 105 | 104 | 94 | 117 | 122 | 139 | 174 |
| Food | 85 | 88 | 100 | 116 | 112 | 123 | 104 | 102 | 93 | 122 | 123 | 146 | 184 |
| Feed | 46 | 81 | 101 | 117 | 155 | 166 | 164 | 186 | 208 | 246 | 269 | 255 | 310 |
| Raw materials | 117 | 87 | 95 | 111 | 91 | 95 | 100 | 101 | 83 | 87 | 101 | 100 | 122 |
| Fishery products | 83 | 88 | 103 | 114 | 113 | 116 | 116 | 122 | 130 | 124 | 133 | 135 | 159 |
| Forest products | 87 | 90 | 99 | 110 | 115 | 123 | 128 | 141 | 151 | 161 | 161 | 175 | 216 |
| **Oceania** | | | | | | | | | | | | | |
| Agricultural products | 90 | 98 | 98 | 108 | 106 | 103 | 108 | 111 | 114 | 124 | 127 | 134 | 125 |
| Food | 84 | 96 | 96 | 112 | 112 | 104 | 116 | 115 | 115 | 128 | 141 | 148 | 137 |
| Feed | 58 | 98 | 124 | 138 | 80 | 35 | 88 | 91 | 123 | 186 | 112 | 132 | 188 |
| Raw materials | 97 | 100 | 100 | 104 | 99 | 102 | 99 | 106 | 114 | 120 | 111 | 119 | 110 |
| Fishery products | 81 | 89 | 84 | 101 | 134 | 136 | 153 | 205 | 207 | 223 | 278 | 316 | 299 |
| Forest products | 70 | 71 | 111 | 129 | 119 | 131 | 155 | 182 | 199 | 218 | 212 | 238 | 282 |
| DEVELOPED COUNTRIES | | | | | | | | | | | | | |
| Agricultural products | 92 | 93 | 99 | 109 | 108 | 112 | 112 | 117 | 116 | 134 | 141 | 155 | 173 |
| Food | 88 | 92 | 99 | 110 | 111 | 115 | 115 | 120 | 119 | 140 | 147 | 163 | 185 |
| Feed | 64 | 86 | 98 | 115 | 137 | 144 | 149 | 162 | 183 | 215 | 237 | 244 | 297 |
| Raw materials | 106 | 95 | 98 | 105 | 96 | 99 | 100 | 103 | 98 | 101 | 103 | 109 | 112 |
| **Latin America** | | | | | | | | | | | | | |
| Agricultural products | 95 | 100 | 100 | 96 | 107 | 111 | 110 | 112 | 118 | 121 | 114 | 118 | 126 |
| Food | 96 | 99 | 100 | 97 | 107 | 111 | 114 | 114 | 119 | 125 | 120 | 124 | 133 |
| Feed | 89 | 103 | 101 | 96 | 110 | 115 | 110 | 107 | 121 | 144 | 149 | 157 | 164 |
| Raw materials | 93 | 105 | 101 | 93 | 108 | 106 | 92 | 97 | 116 | 100 | 83 | 88 | 87 |
| Fishery products | 85 | 106 | 105 | 125 | 79 | 119 | 139 | 174 | 146 | 164 | 168 | 160 | 85 |
| Forest products | 100 | 86 | 83 | 107 | 124 | 138 | 135 | 163 | 170 | 174 | 177 | 187 | 294 |

See notes at end of table.

ANNEX TABLE 7. – INDICES OF VOLUME OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS (*concluded*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *1961-65 average = 100* | | | | | | | | | | | | |
| **Far East**[1] | | | | | | | | | | | | | |
| Agricultural products | 93 | 97 | 104 | 104 | 101 | 102 | 99 | 101 | 104 | 107 | 115 | 120 | 122 |
| Food | 97 | 96 | 105 | 103 | 100 | 100 | 93 | 93 | 91 | 98 | 108 | 113 | 106 |
| Feed | 75 | 95 | 111 | 116 | 103 | 99 | 93 | 103 | 93 | 111 | 113 | 122 | 133 |
| Raw materials | 90 | 100 | 103 | 104 | 103 | 106 | 106 | 113 | 123 | 117 | 123 | 128 | 142 |
| Fishery products | 87 | 90 | 95 | 112 | 116 | 129 | 170 | 144 | 154 | 180 | 198 | 235 | 255 |
| Forest products | 74 | 79 | 100 | 118 | 129 | 154 | 169 | 222 | 253 | 293 | 318 | 363 | 570 |
| **Near East**[3] | | | | | | | | | | | | | |
| Agricultural products | 87 | 99 | 103 | 103 | 108 | 116 | 110 | 111 | 116 | 129 | 131 | 138 | 135 |
| Food | 79 | 104 | 102 | 104 | 110 | 94 | 95 | 104 | 125 | 110 | 113 | 126 | 125 |
| Feed | 73 | 90 | 101 | 114 | 121 | 123 | 126 | 139 | 142 | 163 | 129 | 162 | 131 |
| Raw materials | 92 | 96 | 104 | 102 | 106 | 127 | 117 | 113 | 110 | 136 | 139 | 142 | 139 |
| Fishery products | 105 | 101 | 95 | 90 | 109 | 121 | 99 | 95 | 94 | 101 | 107 | 102 | 154 |
| Forest products | 76 | 92 | 116 | 95 | 122 | 154 | 149 | 176 | 220 | 257 | 281 | 230 | 360 |
| **Africa**[3] | | | | | | | | | | | | | |
| Agricultural products | 94 | 98 | 98 | 104 | 106 | 105 | 97 | 105 | 104 | 109 | 100 | 111 | 107 |
| Food | 91 | 98 | 99 | 103 | 108 | 108 | 102 | 111 | 106 | 108 | 103 | 116 | 112 |
| Feed | 98 | 89 | 92 | 112 | 112 | 118 | 130 | 134 | 130 | 131 | 110 | 143 | 120 |
| Raw materials | 95 | 88 | 99 | 107 | 111 | 98 | 95 | 92 | 95 | 113 | 109 | 108 | 101 |
| Fishery products | 100 | 106 | 101 | 106 | 88 | 105 | 98 | 115 | 129 | 131 | 141 | 167 | 196 |
| Forest products | 87 | 85 | 98 | 116 | 113 | 113 | 112 | 127 | 145 | 134 | 134 | 140 | 220 |
| DEVELOPING COUNTRIES | | | | | | | | | | | | | |
| Agricultural products | 93 | 99 | 101 | 101 | 106 | 107 | 104 | 107 | 111 | 115 | 113 | 119 | 122 |
| Food | 94 | 98 | 101 | 100 | 106 | 107 | 105 | 108 | 109 | 115 | 114 | 120 | 122 |
| Feed | 84 | 97 | 103 | 107 | 109 | 111 | 109 | 113 | 115 | 133 | 129 | 145 | 144 |
| Raw materials | 91 | 99 | 102 | 102 | 106 | 109 | 102 | 106 | 116 | 115 | 113 | 117 | 121 |
| **World** | | | | | | | | | | | | | |
| Agricultural products | 93 | 96 | 100 | 104 | 108 | 111 | 111 | 114 | 115 | 124 | 127 | 137 | 147 |
| Food | 91 | 96 | 100 | 104 | 109 | 113 | 114 | 117 | 117 | 128 | 131 | 142 | 154 |
| Feed | 79 | 94 | 101 | 107 | 119 | 126 | 127 | 135 | 145 | 166 | 174 | 186 | 210 |
| Raw materials | 98 | 96 | 100 | 103 | 103 | 105 | 103 | 106 | 107 | 109 | 109 | 115 | 119 |
| Fishery products[4] | 87 | 96 | 98 | 110 | 109 | 110 | 118 | 125 | 122 | 130 | 130 | 141 | 145 |
| Forest products | 87 | 90 | 99 | 110 | 115 | 122 | 126 | 141 | 155 | 163 | 164 | 176 | 185 |

[1] Excluding Japan, and China and other Asian centrally planned countries. — [2] Excluding Israel. — [3] Excluding South Africa. — [4] Excluding China and other Asian centrally planned countries.

ANNEX TABLE 8. – INDICES OF VALUE OF IMPORTS OF AGRICULTURAL AND FOREST PRODUCTS

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *1961-65 average = 100* | | | | | | | | | | | | |
| **Western Europe** | | | | | | | | | | | | | |
| Agricultural products | 88 | 93 | 100 | 107 | 111 | 116 | 113 | 109 | 120 | 131 | 144 | 169 | 236 |
| Food | 85 | 91 | 100 | 108 | 116 | 121 | 120 | 116 | 128 | 143 | 161 | 188 | 258 |
| Feed | 70 | 96 | 103 | 108 | 123 | 143 | 134 | 130 | 138 | 164 | 186 | 207 | 377 |
| Raw materials | 100 | 98 | 101 | 105 | 95 | 98 | 90 | 88 | 96 | 91 | 87 | 103 | 143 |
| Forest products | 87 | 86 | 96 | 113 | 118 | 120 | 119 | 130 | 151 | 172 | 174 | 204 | 284 |
| **Eastern Europe and U.S.S.R.** | | | | | | | | | | | | | |
| Agricultural products | 88 | 86 | 94 | 116 | 116 | 114 | 102 | 103 | 105 | 129 | 132 | 161 | 240 |
| Food | 79 | 81 | 92 | 127 | 121 | 117 | 105 | 101 | 100 | 127 | 133 | 175 | 268 |
| Feed | 40 | 61 | 92 | 145 | 166 | 176 | 172 | 192 | 187 | 221 | 252 | 342 | 744 |
| Raw materials | 106 | 96 | 98 | 97 | 104 | 104 | 90 | 95 | 96 | 114 | 109 | 111 | 156 |
| Forest products | 91 | 95 | 92 | 104 | 119 | 121 | 141 | 156 | 171 | 199 | 216 | 225 | 313 |
| **North America** | | | | | | | | | | | | | |
| Agricultural products | 93 | 98 | 102 | 105 | 102 | 110 | 109 | 122 | 121 | 139 | 139 | 154 | 207 |
| Food | 92 | 98 | 103 | 105 | 102 | 112 | 113 | 128 | 127 | 150 | 152 | 167 | 222 |
| Feed | 81 | 104 | 112 | 100 | 103 | 108 | 103 | 105 | 123 | 145 | 131 | 157 | 262 |
| Raw materials | 99 | 101 | 99 | 103 | 99 | 98 | 88 | 88 | 90 | 77 | 68 | 77 | 113 |
| Forest products | 90 | 96 | 97 | 106 | 112 | 122 | 118 | 137 | 151 | 139 | 163 | 202 | 270 |
| **Oceania** | | | | | | | | | | | | | |
| Agricultural products | 95 | 83 | 99 | 114 | 109 | 105 | 99 | 92 | 101 | 112 | 114 | 117 | 133 |
| Food | 87 | 86 | 99 | 120 | 108 | 114 | 106 | 100 | 105 | 120 | 128 | 128 | 143 |
| Feed | 25 | 10 | 66 | 160 | 239 | 532 | 492 | 688 | 453 | 631 | 677 | 514 | 540 |
| Raw materials | 107 | 80 | 99 | 105 | 108 | 90 | 86 | 74 | 90 | 94 | 86 | 93 | 108 |
| Forest products | 110 | 83 | 98 | 98 | 110 | 104 | 110 | 113 | 121 | 140 | 150 | 137 | 183 |
| DEVELOPED COUNTRIES | | | | | | | | | | | | | |
| Agricultural products | 89 | 93 | 101 | 108 | 110 | 117 | 114 | 114 | 123 | 136 | 147 | 171 | 242 |
| Food | 85 | 91 | 101 | 109 | 114 | 121 | 122 | 122 | 131 | 150 | 165 | 190 | 264 |
| Feed | 72 | 94 | 103 | 108 | 124 | 141 | 130 | 128 | 136 | 165 | 182 | 202 | 379 |
| Raw materials | 101 | 96 | 101 | 105 | 97 | 101 | 93 | 92 | 98 | 94 | 90 | 108 | 156 |
| **Latin America** | | | | | | | | | | | | | |
| Agricultural products | 85 | 93 | 101 | 114 | 107 | 115 | 117 | 121 | 123 | 131 | 144 | 165 | 251 |
| Food | 84 | 93 | 102 | 114 | 106 | 113 | 119 | 122 | 124 | 133 | 145 | 168 | 262 |
| Feed | 72 | 101 | 90 | 137 | 100 | 107 | 113 | 124 | 156 | 157 | 317 | 294 | 413 |
| Raw materials | 89 | 91 | 97 | 110 | 113 | 122 | 102 | 108 | 109 | 111 | 123 | 130 | 171 |
| Forest products | 103 | 91 | 87 | 105 | 113 | 127 | 124 | 146 | 163 | 185 | 185 | 185 | 310 |
| **Far East** [1] | | | | | | | | | | | | | |
| Agricultural products | 88 | 88 | 101 | 110 | 113 | 122 | 132 | 130 | 125 | 130 | 135 | 141 | 226 |
| Food | 85 | 86 | 102 | 113 | 114 | 127 | 136 | 131 | 124 | 129 | 129 | 132 | 228 |
| Feed | 92 | 96 | 110 | 94 | 108 | 86 | 90 | 101 | 132 | 158 | 180 | 197 | 265 |
| Raw materials | 102 | 98 | 94 | 97 | 109 | 102 | 116 | 128 | 129 | 135 | 160 | 176 | 216 |
| Forest products | 93 | 95 | 96 | 110 | 106 | 134 | 142 | 172 | 192 | 218 | 255 | 238 | 400 |

See notes at end of table.

ANNEX TABLE 8. – INDICES OF VALUE OF IMPORTS OF AGRICULTURAL AND FOREST PRODUCTS (*concluded*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *1961-65 average = 100* | | | | | | | | | | | | |
| **Near East**[2] | | | | | | | | | | | | | |
| Agricultural products | 87 | 88 | 99 | 112 | 115 | 119 | 115 | 113 | 108 | 130 | 179 | 176 | 232 |
| Food | 87 | 87 | 99 | 112 | 115 | 120 | 115 | 114 | 107 | 130 | 183 | 177 | 233 |
| Feed | 66 | 105 | 90 | 101 | 139 | 191 | 178 | 159 | 189 | 346 | 522 | 563 | 675 |
| Raw materials | 86 | 99 | 97 | 105 | 113 | 107 | 109 | 105 | 119 | 122 | 124 | 156 | 200 |
| Forest products | 100 | 101 | 84 | 99 | 117 | 133 | 132 | 127 | 143 | 165 | 192 | 204 | 332 |
| **Africa**[3] | | | | | | | | | | | | | |
| Agricultural products | 97 | 97 | 92 | 104 | 110 | 110 | 111 | 108 | 107 | 126 | 143 | 157 | 202 |
| Food | 97 | 98 | 92 | 103 | 109 | 110 | 111 | 105 | 106 | 123 | 144 | 157 | 206 |
| Feed | 51 | 67 | 88 | 119 | 178 | 166 | 183 | 177 | 219 | 276 | 332 | 405 | 409 |
| Raw materials | 87 | 77 | 81 | 126 | 129 | 128 | 139 | 149 | 142 | 176 | 182 | 210 | 246 |
| Forest products | 91 | 89 | 96 | 104 | 119 | 127 | 135 | 143 | 165 | 205 | 217 | 217 | 364 |
| **DEVELOPING COUNTRIES** | | | | | | | | | | | | | |
| Agricultural products | 89 | 91 | 99 | 110 | 111 | 118 | 122 | 121 | 119 | 130 | 147 | 157 | 230 |
| Food | 88 | 90 | 100 | 112 | 111 | 119 | 123 | 121 | 118 | 130 | 146 | 155 | 234 |
| Feed | 81 | 97 | 101 | 109 | 112 | 106 | 110 | 117 | 149 | 181 | 260 | 270 | 353 |
| Raw materials | 96 | 95 | 94 | 103 | 112 | 109 | 114 | 122 | 123 | 131 | 149 | 166 | 206 |
| **World** | | | | | | | | | | | | | |
| Agricultural products | 89 | 92 | 100 | 109 | 110 | 116 | 114 | 114 | 120 | 134 | 144 | 167 | 241 |
| Food | 85 | 90 | 100 | 111 | 114 | 120 | 120 | 120 | 125 | 143 | 157 | 181 | 258 |
| Feed | 70 | 91 | 102 | 111 | 126 | 142 | 133 | 133 | 141 | 170 | 191 | 216 | 407 |
| Raw materials | 100 | 96 | 100 | 103 | 101 | 102 | 95 | 95 | 101 | 102 | 100 | 116 | 165 |
| Forest products | 88 | 89 | 96 | 110 | 117 | 125 | 128 | 145 | 164 | 181 | 189 | 218 | 366 |

[1] Excluding Japan, and China and other Asian centrally planned countries. – [2] Excluding Israel. – [3] Excluding South Africa.

ANNEX TABLE 9. – INDICES OF VOLUME OF IMPORTS OF AGRICULTURAL AND FOREST PRODUCTS

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *1961-65 average = 100* | | | | | | | | | | | | |
| **Western Europe** | | | | | | | | | | | | | |
| Agricultural products | 93 | 99 | 100 | 102 | 106 | 111 | 110 | 111 | 116 | 121 | 124 | 132 | 134 |
| Food | 91 | 97 | 100 | 102 | 109 | 113 | 115 | 116 | 121 | 126 | 132 | 139 | 144 |
| Feed | 79 | 99 | 101 | 106 | 116 | 131 | 125 | 126 | 137 | 153 | 164 | 173 | 177 |
| Raw materials | 100 | 141 | 100 | 101 | 98 | 101 | 97 | 99 | 103 | 101 | 98 | 102 | 99 |
| Forest products | 88 | 90 | 99 | 111 | 112 | 111 | 117 | 131 | 144 | 152 | 146 | 161 | 198 |
| **Eastern Europe and U.S.S.R.** | | | | | | | | | | | | | |
| Agricultural products | 89 | 89 | 94 | 113 | 114 | 112 | 100 | 103 | 104 | 126 | 129 | 153 | 174 |
| Food | 85 | 86 | 90 | 121 | 119 | 113 | 97 | 95 | 92 | 116 | 122 | 161 | 198 |
| Feed | 45 | 62 | 94 | 136 | 163 | 179 | 161 | 189 | 184 | 214 | 239 | 300 | 337 |
| Raw materials | 99 | 96 | 101 | 99 | 104 | 104 | 96 | 104 | 100 | 117 | 111 | 111 | 111 |
| Forest products | 90 | 94 | 91 | 105 | 120 | 129 | 150 | 166 | 181 | 205 | 208 | 205 | 205 |
| **North America** | | | | | | | | | | | | | |
| Agricultural products | 97 | 104 | 102 | 97 | 99 | 106 | 107 | 117 | 111 | 115 | 117 | 124 | 128 |
| Food | 97 | 105 | 104 | 96 | 98 | 106 | 108 | 119 | 112 | 118 | 120 | 125 | 129 |
| Feed | 88 | 105 | 108 | 103 | 96 | 92 | 87 | 87 | 108 | 114 | 104 | 111 | 111 |
| Raw materials | 102 | 98 | 95 | 104 | 104 | 102 | 100 | 109 | 101 | 92 | 89 | 100 | 99 |
| Forest products | 89 | 96 | 98 | 105 | 111 | 121 | 117 | 128 | 138 | 131 | 146 | 167 | 205 |
| **Oceania** | | | | | | | | | | | | | |
| Agricultural products | 100 | 90 | 99 | 104 | 107 | 108 | 103 | 101 | 107 | 111 | 114 | 120 | 111 |
| Food | 95 | 95 | 100 | 106 | 104 | 115 | 108 | 105 | 107 | 114 | 118 | 122 | 113 |
| Feed | 29 | — | 71 | 157 | 243 | 500 | 400 | 600 | 400 | 529 | 557 | 414 | 371 |
| Raw materials | 107 | 83 | 99 | 100 | 110 | 96 | 93 | 90 | 103 | 102 | 103 | 114 | 104 |
| Forest products | 113 | 82 | 93 | 100 | 112 | 106 | 110 | 114 | 120 | 132 | 135 | 132 | 162 |
| DEVELOPED COUNTRIES | | | | | | | | | | | | | |
| Agricultural products | 94 | 98 | 100 | 102 | 106 | 112 | 111 | 115 | 118 | 124 | 127 | 135 | 140 |
| Food | 91 | 98 | 101 | 102 | 108 | 115 | 116 | 120 | 123 | 130 | 135 | 143 | 149 |
| Feed | 80 | 97 | 101 | 106 | 116 | 129 | 121 | 123 | 126 | 153 | 158 | 168 | 176 |
| Raw materials | 101 | 98 | 100 | 101 | 100 | 103 | 101 | 104 | 106 | 105 | 103 | 110 | 109 |
| **Latin America** | | | | | | | | | | | | | |
| Agricultural products | 90 | 95 | 101 | 110 | 104 | 112 | 113 | 122 | 123 | 129 | 134 | 143 | 186 |
| Food | 89 | 96 | 102 | 110 | 102 | 111 | 114 | 121 | 123 | 130 | 132 | 143 | 193 |
| Feed | 85 | 100 | 83 | 129 | 101 | 100 | 105 | 117 | 149 | 162 | 296 | 260 | 273 |
| Raw materials | 91 | 91 | 97 | 110 | 111 | 115 | 111 | 125 | 120 | 118 | 132 | 135 | 137 |
| Forest products | 104 | 90 | 86 | 107 | 113 | 129 | 130 | 160 | 166 | 193 | 175 | 174 | 274 |
| **Far East** [1] | | | | | | | | | | | | | |
| Agricultural products | 91 | 91 | 101 | 107 | 110 | 120 | 124 | 125 | 120 | 125 | 124 | 123 | 150 |
| Food | 89 | 88 | 103 | 109 | 112 | 124 | 125 | 120 | 117 | 122 | 118 | 116 | 146 |
| Feed | 96 | 96 | 109 | 96 | 101 | 75 | 82 | 97 | 134 | 151 | 170 | 184 | 162 |
| Raw materials | 101 | 102 | 94 | 96 | 106 | 104 | 124 | 145 | 139 | 136 | 150 | 150 | 164 |
| Forest products | 86 | 89 | 96 | 117 | 112 | 141 | 148 | 183 | 191 | 200 | 232 | 220 | 346 |

See notes at end of table.

ANNEX TABLE 9. – INDICES OF VOLUME OF IMPORTS OF AGRICULTURAL AND FOREST PRODUCTS (*concluded*)

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 (Preliminary) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *1961-65 average = 100* | | | | | | | | | | | | |
| **Near East**[3] | | | | | | | | | | | | | |
| Agricultural products | 92 | 95 | 97 | 101 | 115 | 119 | 117 | 119 | 114 | 136 | 169 | 152 | 158 |
| Food | 93 | 94 | 97 | 101 | 115 | 119 | 115 | 117 | 112 | 134 | 171 | 147 | 155 |
| Feed | 71 | 114 | 91 | 103 | 123 | 157 | 146 | 149 | 183 | 308 | 422 | 439 | 406 |
| Raw materials | 83 | 98 | 97 | 104 | 118 | 118 | 129 | 137 | 136 | 147 | 149 | 188 | 177 |
| Forest products | 91 | 97 | 92 | 103 | 118 | 130 | 135 | 131 | 152 | 155 | 175 | 177 | 278 |
| **Africa**[3] | | | | | | | | | | | | | |
| Agricultural products | 102 | 102 | 93 | 98 | 105 | 112 | 113 | 113 | 109 | 123 | 134 | 135 | 141 |
| Food | 103 | 103 | 94 | 96 | 104 | 112 | 116 | 112 | 109 | 123 | 136 | 136 | 144 |
| Feed | 62 | 71 | 87 | 112 | 161 | 154 | 170 | 165 | 196 | 248 | 278 | 308 | 270 |
| Raw materials | 86 | 75 | 82 | 134 | 123 | 125 | 138 | 162 | 144 | 158 | 170 | 181 | 181 |
| Forest products | 95 | 89 | 95 | 105 | 115 | 121 | 128 | 136 | 149 | 178 | 184 | 186 | 292 |
| DEVELOPING COUNTRIES | | | | | | | | | | | | | |
| Agricultural product | 93 | 94 | 99 | 105 | 108 | 116 | 119 | 121 | 119 | 128 | 136 | 135 | 156 |
| Food | 93 | 93 | 100 | 106 | 108 | 118 | 119 | 119 | 116 | 127 | 135 | 132 | 156 |
| Feed | 89 | 98 | 99 | 108 | 107 | 95 | 101 | 112 | 148 | 174 | 234 | 236 | 221 |
| Raw materials | 96 | 97 | 94 | 103 | 110 | 109 | 122 | 140 | 133 | 134 | 147 | 154 | 160 |
| **World** | | | | | | | | | | | | | |
| Agricultural products | 93 | 96 | 99 | 104 | 107 | 113 | 111 | 114 | 116 | 124 | 128 | 137 | 147 |
| Food | 91 | 96 | 99 | 105 | 109 | 115 | 114 | 117 | 118 | 128 | 133 | 142 | 155 |
| Feed | 78 | 94 | 101 | 108 | 119 | 131 | 123 | 128 | 131 | 158 | 170 | 182 | 192 |
| Raw materials | 99 | 97 | 100 | 101 | 103 | 104 | 102 | 107 | 109 | 109 | 109 | 115 | 118 |
| Forest products | 87 | 91 | 98 | 110 | 114 | 122 | 126 | 143 | 154 | 164 | 164 | 179 | 206 |

[1] Excluding Japan, and China and other Asian centrally planned countries. – [2] Excluding Israel. – [3] Excluding South Africa.

ANNEX TABLE 10. – STOCKS OF SELECTED AGRICULTURAL PRODUCTS

| | Date | 1961-65 average | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 (estimated) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | *Million metric tons* | | | | | | | | |
| **Wheat** | | | | | | | | | | |
| EXPORTING COUNTRIES | | | | | | | | | | |
| United States | 1 July | 30.7 | 11.6 | 14.7 | 22.2 | 24.1 | 19.9 | 23.5 | 11.9 | 6.8 |
| Canada | 1 Aug. | 13.3 | 15.7 | 18.1 | 23.2 | 27.5 | 20.0 | 16.0 | 9.9 | 10.6 |
| Argentina | 1 Dec. | 1.5 | 0.2 | 1.0 | 0.3 | 0.8 | 0.7 | 0.5 | 0.1 | 0.1 |
| Australia | 1 Dec. | 0.6 | 2.2 | 1.4 | 7.3 | 7.2 | 3.4 | 1.4 | 0.5 | 0.5 |
| European Economic Community (1961-67, original members; 1958-74, nine member states) | 1 Aug. | 6.5 | [1]5.4 | 9.2 | 9.1 | 5.5 | 6.1 | 7.5 | [2]4.8 | [2]6.0 |
| TOTAL OF ABOVE | | 52.6 | 35.1 | 44.4 | 62.1 | 65.1 | 50.1 | 48.8 | 27.2 | 24.0 |
| IMPORTING COUNTRIES | | | | | | | | | | |
| India[3] | 31 Dec. | ... | 0.8 | 2.1 | 2.3 | 3.1 | 5.0 | 3.5 | ... | ... |
| **Coarse grains[4]** | | | | | | | | | | |
| EXPORTING COUNTRIES | | | | | | | | | | |
| United States[5] | 1 July | 62.7 | 34.2 | 44.4 | 46.0 | 44.6 | 30.9 | 45.1 | 30.3 | 18.9 |
| Canada | 1 Aug. | 4.3 | 4.9 | 4.4 | 6.7 | 7.1 | 5.4 | 6.2 | 5.7 | 5.9 |
| Argentina[6] | 1 Dec. | 0.4 | 0.6 | 1.8 | 1.7 | 1.8 | — | [7]0.2 | [7]0.1 | [7]0.6 |
| Australia | 1 Dec. | 0.2 | 0.9 | 0.8 | 1.2 | 1.2 | 1.6 | 1.0 | 0.5 | 0.6 |
| TOTAL OF ABOVE | | 67.6 | 39.6 | 51.4 | 55.6 | 54.7 | 37.9 | 52.5 | 36.6 | 26.0 |
| **Rice (milled equivalent)** | | | | | | | | | | |
| EXPORTING COUNTRIES | | | | | | | | | | |
| Pakistan[3] | 31 Dec. | ... | [8]0.02 | 0.19 | 0.24 | [9]0.38 | [9]0.26 | [9]0.38 | [9]0.10 | ... |
| Thailand[10] | 31 Dec. | ... | — | [8]0.06 | [11]0.30 | [12]1.10 | 0.89 | ... | ... | ... |
| United States[13] | 31 July | 0.24 | 0.27 | 0.21 | 0.52 | 0.52 | 0.59 | 0.36 | 0.16 | 0.25 |
| Japan[7] | 31 Oct. | — | — | — | 9.36 | 9.50 | 7.03 | 5.22 | 3.71 | ... |
| TOTAL OF ABOVE | | 0.24 | 0.29 | 0.46 | 10.42 | 11.40 | 10.03 | 5.96 | 3.97 | 0.25 |
| IMPORTING COUNTRIES | | | | | | | | | | |
| India[3] | 31 Dec. | ... | ... | 1.03 | 1.64 | 1.83 | 2.31 | 1.36 | 1.44 | ... |
| Japan[7] | 31 Oct. | 3.19 | 5.85 | 7.03 | — | — | — | — | — | ... |
| TOTAL OF ABOVE | | 3.19 | 5.85 | 8.06 | 1.64 | 1.83 | 2.31 | 1.36 | 1.44 | ... |
| **Butter** | | | | | | | | | | |
| Canada and United States | | 0.13 | 0.11 | 0.08 | 0.08 | 0.09 | 0.07 | 0.06 | 0.04 | ... |
| European Economic Community: original members[14] | | 0.09 | 0.20 | 0.33 | 0.34 | 0.16 | 0.13 | 0.34 | 0.29 | ... |
| new members | | 0.04 | 0.06 | 0.08 | 0.05 | 0.03 | 0.04 | 0.09 | | |
| Other western Europe[15] | | 0.01 | 0.02 | 0.02 | 0.03 | 0.02 | 0.02 | 0.01 | 0.02 | ... |
| Australia and New Zealand | | 0.07 | 0.06 | 0.07 | 0.09 | 0.07 | 0.05 | 0.05 | 0.07 | ... |
| TOTAL OF ABOVE | 31 Dec. | 0.34 | 0.45 | 0.58 | 0.59 | 0.37 | 0.30 | 0.55 | 0.41 | ... |
| **Dried skim milk** | | | | | | | | | | |
| United States | | 0.18 | 0.12 | 0.13 | 0.10 | 0.06 | 0.04 | 0.02 | 0.03 | ... |
| European Economic Community: original members[16] | | ... | 0.20 | 0.31 | 0.39 | 0.18 | 0.10 | 0.19 | 0.33 | ... |
| new members | | 0.03 | ... | 0.04 | 0.02 | 0.02 | 0.02 | 0.10 | | |
| TOTAL OF ABOVE | 31 Dec. | 0.21 | 0.32 | 0.48 | 0.51 | 0.26 | 0.16 | 0.31 | 0.36 | ... |
| **Sugar (raw value)** | | | | | | | | | | |
| WORLD TOTAL | 1 Sept. | 14.1 | 19.1 | 20.6 | 19.3 | 21.4 | 19.1 | 17.2 | 15.8 | 15.7 |
| **Coffee** | | | | | | | | | | |
| EXPORTING COUNTRIES | End of crop season, mainly between 31 March and 30 Sept. | [17]4.30 | 5.00 | 4.73 | 4.15 | 3.55 | 2.90 | 2.70 | 2.69 | 2.12 |

[1] July until 1967 included (except Federal Republic of Germany, 1 June). — [2] Commercial stocks. — [3] Government (or official agency) stocks only. — [4] Barley, oats, maize, sorghum and rye. — [5] Maize and sorghum, 1 October. — [6] Maize, 1 April. — [7] Government stocks only. — [8] November. — [9] 31 October. — [10] Old crop for export. — [11] September. — [12] 31 January 1971. — [13] Including paddy converted to milled rice at 69.5%. — [14] Excluding Italy and Luxembourg. — [15] Finland, Norway, Sweden, Switzerland. — [16] Excluding Italy. — [17] 1963-65.

ANNEX TABLE 11. – ANNUAL CHANGES IN CONSUMER PRICES: ALL ITEMS AND FOOD

| | All items | | | | | Food | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1960 to 1965 | 1965 to 1970 | 1970 to 1971 | 1971 to 1972 | 1972 to 1973 | 1960 to 1965 | 1965 to 1970 | 1970 to 1971 | 1971 to 1972 | 1972 to 1973 |
| | *Percent per year* | | | | | | | | | |
| **Developed countries** | | | | | | | | | | |
| WESTERN EUROPE | | | | | | | | | | |
| Austria | 3.9 | [1] 3.3 | 4.7 | 6.3 | 7.5 | 4.4 | [1] 2.1 | 3.8 | 5.8 | 7.8 |
| Belgium | 2.5 | 3.5 | 4.4 | 5.4 | 7.0 | 2.9 | 3.5 | 1.9 | 6.9 | 8.0 |
| Denmark | 5.5 | 7.5 | 5.8 | 6.6 | 9.3 | 4.2 | 7.5 | 5.9 | 9.3 | 13.0 |
| Finland | 5.3 | [2] 4.6 | 6.5 | 7.1 | 11.7 | 5.9 | [2] 5.2 | 4.4 | 9.3 | 12.5 |
| France | 3.8 | 4.3 | 5.5 | 5.9 | 7.3 | 4.3 | 3.8 | 6.5 | 6.7 | 9.4 |
| Germany, Fed. Rep. of | 2.8 | 2.4 | 5.1 | 5.8 | 6.9 | 2.6 | [3] 2.4 | 3.8 | 6.2 | 7.6 |
| Greece | 1.6 | 2.5 | 3.0 | 4.3 | 15.4 | 2.5 | 2.6 | 5.2 | 3.8 | 21.3 |
| Iceland | 11.0 | 12.8 | 6.4 | 10.3 | 20.1 | 15.2 | 13.3 | 2.0 | 16.6 | 27.9 |
| Ireland | 4.2 | 5.3 | 8.9 | 8.7 | 11.3 | 3.9 | 4.3 | 7.4 | 11.8 | 16.4 |
| Italy | 4.9 | 3.0 | 4.8 | 5.7 | 10.8 | 4.6 | 2.2 | 4.0 | 6.3 | 12.0 |
| Netherlands | 3.5 | 4.8 | 7.6 | 7.8 | 7.9 | 4.0 | 4.3 | 4.2 | 6.6 | 7.9 |
| Norway | 4.1 | 5.0 | 6.3 | 7.2 | 7.5 | 4.5 | 5.3 | 6.0 | 7.2 | 7.0 |
| Portugal | 2.6 | 6.4 | 12.0 | 10.7 | 12.9 | 2.8 | 5.2 | 8.9 | 9.9 | 9.2 |
| Spain | 7.0 | 5.1 | 8.3 | 8.3 | 11.4 | 7.7 | 3.7 | 7.8 | 9.1 | 12.6 |
| Sweden | 3.6 | 4.5 | 7.4 | 6.0 | 6.8 | 5.3 | 4.5 | 9.2 | 9.1 | 5.8 |
| Switzerland | 3.2 | 3.4 | 6.6 | 6.7 | 8.7 | 2.9 | 0.9 | 6.4 | 6.5 | 6.0 |
| United Kingdom | 3.6 | 4.6 | 9.5 | 7.1 | 9.2 | 3.6 | 4.6 | 11.1 | 8.8 | 15.1 |
| Yugoslavia | 13.6 | 10.5 | 15.6 | 18.4 | 21.4 | 17.3 | 9.0 | 16.6 | 23.1 | 25.9 |
| NORTH AMERICA | | | | | | | | | | |
| Canada | 1.6 | 3.8 | 2.9 | 4.8 | 7.6 | 2.2 | 3.4 | 1.1 | 7.6 | 14.5 |
| United States | 1.3 | 4.2 | 4.3 | 3.3 | 6.2 | 1.4 | 4.0 | 3.0 | 1.3 | 14.5 |
| OCEANIA | | | | | | | | | | |
| Australia | 1.8 | 3.1 | 6.0 | 5.9 | 9.4 | 2.0 | 2.1 | 3.9 | 3.8 | 15.2 |
| New Zealand | 2.7 | 4.1 | 10.4 | 6.9 | 8.2 | 2.4 | 4.1 | 9.1 | 4.8 | 11.3 |
| OTHER DEVELOPED COUNTRIES | | | | | | | | | | |
| Israel | 7.1 | 4.0 | 12.0 | 8.7 | 19.9 | 5.6 | 3.1 | 13.6 | 12.9 | 20.7 |
| Japan | 6.0 | 5.4 | 6.1 | 4.5 | 11.7 | 7.2 | 6.1 | 6.0 | 3.8 | 13.0 |
| South Africa | 2.1 | 3.4 | 6.1 | 6.5 | 9.5 | 2.6 | 3.0 | 4.8 | 7.1 | 15.2 |
| **Developing countries** | | | | | | | | | | |
| LATIN AMERICA | | | | | | | | | | |
| Argentina | 23.0 | 19.4 | 34.7 | 58.5 | 60.3 | 23.0 | 18.3 | 41.7 | 63.1 | 55.1 |
| Bolivia | 5.1 | 5.9 | 3.7 | 6.5 | [4] 20.9 | 2.1 | 7.8 | 4.0 | 6.3 | [4] 21.1 |
| Brazil | 60.0 | 28.0 | 21.1 | ... | [5] 12.4 | 60.0 | 26.0 | 23.9 | ... | [5] 16.1 |
| Chile | 27.0 | 26.0 | 20.1 | 77.8 | 333.0 | 30.0 | 26.0 | 23.8 | 115.2 | 376.0 |
| Colombia | 12.4 | 10.1 | 7.1 | 14.3 | 22.8 | 13.4 | 9.2 | 7.5 | 19.2 | 31.9 |
| Costa Rica | 2.3 | 2.5 | 3.0 | 4.7 | 15.2 | 2.2 | 3.8 | 3.7 | 1.2 | 21.6 |
| Dominican Republic | 2.7 | 1.0 | 2.3 | 7.8 | 15.1 | 2.5 | 0.1 | 5.1 | 6.0 | 18.4 |
| Ecuador | 4.0 | 4.6 | 8.4 | 7.9 | 12.9 | 4.9 | 6.0 | 6.5 | 11.1 | 20.3 |
| El Salvador | 0.2 | 1.1 | 0.3 | 1.8 | 6.4 | 1.1 | 2.2 | 0.3 | 1.1 | 7.5 |
| Guatemala | 0.1 | 1.5 | –0.5 | 0.7 | 14.4 | 0.1 | 1.7 | –1.9 | –0.3 | 19.2 |
| Guyana | 1.9 | 1.5 | 2.1 | 4.5 | 8.9 | 2.3 | 2.8 | 2.3 | 6.0 | 18.4 |
| Haiti | 3.7 | 1.7 | 10.3 | 3.2 | 22.7 | 4.1 | 1.8 | 6.1 | 10.2 | 27.4 |
| Honduras | 2.7 | 1.6 | 2.3 | 5.2 | 3.2 | 3.2 | 1.8 | 3.8 | 8.1 | 2.0 |
| Jamaica | 2.9 | 4.3 | 6.7 | 5.8 | 19.9 | 2.4 | 4.7 | 7.9 | 3.2 | 25.8 |
| Mexico | 1.9 | 3.5 | 3.2 | 6.4 | 16.4 | 1.6 | 3.8 | 1.9 | 6.3 | 18.7 |
| Panama | [6] 1.1 | 1.6 | 1.8 | 5.6 | 6.9 | [6] 1.4 | 1.7 | 2.4 | 4.6 | 9.9 |
| Paraguay | ... | 1.2 | 5.0 | 9.2 | 12.8 | ... | 0.3 | 8.6 | 11.1 | 21.6 |
| Peru | 9.4 | [7] 7.8 | 6.8 | 7.2 | 9.5 | 10.5 | [7] 7.1 | 6.9 | 7.4 | 10.1 |

See notes at end of table.

ANNEX TABLE 11. — ANNUAL CHANGES IN CONSUMER PRICES: ALL ITEMS AND FOOD (*concluded*)

| | All items | | | | | Food | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1960 to 1965 | 1965 to 1970 | 1970 to 1971 | 1971 to 1972 | 1972 to 1973 | 1960 to 1965 | 1965 to 1970 | 1970 to 1971 | 1971 to 1972 | 1972 to 1973 |
| | *Percent per year* | | | | | | | | | |
| LATIN AMERICA (*concluded*) | | | | | | | | | | |
| Puerto Rico | 2.2 | 3.2 | 4.3 | 3.2 | 7.3 | 3.0 | 4.1 | 5.7 | 3.6 | 12.6 |
| Trinidad and Tobago | 2.2 | 3.8 | 3.5 | 9.3 | 14.9 | 2.1 | 3.7 | 4.6 | 11.5 | 19.0 |
| Uruguay | [8] 16.2 | 60.0 | 23.9 | 76.5 | 97.0 | [8] 13.1 | 60.0 | 24.5 | 93.8 | 102.8 |
| Venezuela | [6] 1.7 | [6] 1.6 | 2.7 | 3.0 | 4.3 | [6] 1.7 | 0.9 | 2.9 | 5.9 | 9.2 |
| FAR EAST | | | | | | | | | | |
| India | 6.1 | [9] 8.9 | 3.3 | 6.3 | 16.8 | 6.5 | [9] 9.8 | 1.5 | 6.4 | 21.3 |
| Indonesia | ... | 100.0 | 4.3 | 6.4 | 31.1 | ... | 100.0 | 2.6 | 10.4 | 43.4 |
| Khmer Republic | 4.3 | 4.5 | 71.4 | 25.4 | 157.9 | 2.7 | 6.7 | 94.4 | 28.4 | 186.4 |
| Korea, Rep. of | 15.4 | 12.3 | 13.5 | 11.9 | 3.2 | 18.3 | 12.5 | 18.9 | 3.5 | 2.6 |
| Laos | 38.0 | 6.0 | 1.3 | 25.2 | 30.7 | 39.0 | 4.0 | 0.7 | 34.9 | 40.4 |
| Malaysia, West | 0.5 | [2] 0.4 | 1.5 | 2.6 | 10.6 | 0.6 | [2] 0.4 | 1.0 | 3.0 | 15.3 |
| Nepal | ... | 6.2 | 2.0 | 8.4 | 11.4 | ... | 7.2 | –3.5 | 9.0 | 11.7 |
| Pakistan | 2.6 | 5.6 | 4.7 | 8.0 | 22.6 | 3.8 | 6.0 | 5.2 | 10.8 | 28.8 |
| Philippines | 4.8 | [1] 3.6 | ... | 15.7 | 7.1 | 6.8 | [1] 5.2 | ... | 18.0 | 4.6 |
| Sri Lanka | 1.7 | 4.2 | 2.6 | 6.4 | 9.6 | 1.3 | 4.9 | 2.0 | 6.0 | 12.7 |
| Thailand | 1.5 | 2.5 | 2.0 | 4.0 | 11.7 | 2.0 | 4.2 | 0.6 | 6.4 | 14.4 |
| NEAR EAST | | | | | | | | | | |
| Cyprus | 0.3 | [2] 2.9 | 4.1 | 4.9 | 7.8 | 0.2 | [2] 3.2 | 4.8 | 6.8 | 8.5 |
| Egypt | 3.2 | [3] 3.2 | 3.1 | ... | [10] 2.9 | 6.5 | [3] 6.2 | 5.4 | ... | [10] 4.7 |
| Iran | 2.0 | 1.4 | 4.1 | 6.5 | 9.8 | 3.1 | 0.9 | 0.7 | 8.6 | 6.8 |
| Iraq | ... | 3.5 | 3.6 | 5.2 | 4.9 | ... | 3.1 | 4.2 | 5.2 | 4.9 |
| Jordan | ... | [2] 2.8 | 4.2 | 8.2 | 10.5 | ... | [2] 5.1 | 6.2 | 11.1 | 18.9 |
| Lebanon | ... | [7] 1.8 | 1.6 | 4.9 | 6.0 | ... | [7] 2.0 | 2.6 | 8.7 | 9.7 |
| Libyan Arab Republic | ... | [1] 6.1 | –2.7 | –1.4 | [11] 6.3 | ... | [1] 8.3 | –11.1 | –4.4 | [11] 8.5 |
| Sudan | 3.3 | [1] 3.4 | 1.3 | 11.8 | 17.0 | 4.2 | [1] 2.8 | 0.8 | 8.1 | 16.3 |
| Syrian Arab Republic | [6] 1.3 | 4.2 | 4.9 | 0.8 | 20.0 | [6] 1.3 | 4.7 | 3.8 | — | 22.1 |
| Turkey | 3.6 | [3] 7.1 | 16.3 | 13.0 | 16.0 | 4.8 | [3] 8.7 | 14.0 | 11.0 | 20.0 |
| AFRICA | | | | | | | | | | |
| Ethiopia | ... | [7] 3.0 | 0.5 | –6.1 | 8.9 | ... | [7] 3.5 | –0.2 | –12.0 | 12.9 |
| Gabon | [6] 4.4 | 3.0 | 3.4 | ... | [12] 5.3 | [6] 3.3 | 2.1 | 6.4 | ... | [12] 8.2 |
| Ghana | 11.8 | 3.7 | 2.6 | 14.0 | [4] 8.8 | 14.0 | 2.1 | 2.7 | 17.7 | [4] 12.2 |
| Ivory Coast | 2.6 | 4.9 | –0.8 | 0.4 | [11] 9.3 | 2.8 | 5.9 | –1.8 | –1.1 | [11] 16.0 |
| Kenya | 2.0 | 1.7 | 1.9 | ... | 8.2 | 1.9 | 2.0 | 2.4 | ... | 4.8 |
| Liberia | ... | 4.4 | 0.2 | 4.0 | 19.6 | ... | 3.4 | –9.2 | — | 30.2 |
| Madagascar | ... | 2.3 | 5.4 | 6.7 | 6.1 | ... | 2.2 | 5.3 | 6.2 | 9.3 |
| Malawi | ... | [3] 2.0 | 8.1 | 3.9 | 5.1 | ... | [3] 3.4 | 11.2 | 4.3 | 6.8 |
| Mauritius | [6] 1.0 | 3.0 | 0.3 | 5.4 | 13.5 | [6] 0.6 | 3.0 | 0.1 | 6.2 | 15.7 |
| Morocco | 4.0 | 0.6 | 4.1 | 3.7 | 4.5 | 4.6 | 0.1 | 6.3 | 5.1 | 5.4 |
| Mozambique | [13] 1.9 | 3.7 | 15.6 | 7.1 | 5.4 | [13] 0.7 | 4.7 | 13.6 | 14.0 | –1.7 |
| Niger | ... | 3.8 | 4.3 | 9.7 | 11.7 | ... | 4.4 | 5.5 | 16.3 | 17.2 |
| Nigeria | 3.2 | 5.6 | 13.5 | 2.9 | 3.6 | 2.0 | 8.8 | 26.2 | 1.5 | –2.4 |
| Sierra Leone | [13] 3.9 | 4.3 | –2.3 | 3.9 | [11] 5.7 | [13] 0.6 | 4.8 | –5.7 | 7.5 | [11] 10.8 |
| Somalia | 7.4 | [7] 2.5 | 0.3 | –2.9 | [11] 4.5 | 7.5 | [7] 2.8 | –0.6 | –2.4 | [11] 8.4 |
| Tanzania | 1.2 | [9] 3.7 | 3.7 | 9.9 | 5.1 | 1.2 | [9] 2.5 | 5.0 | 10.7 | 5.0 |
| Togo | ... | [7] 2.1 | 6.3 | 7.7 | 3.8 | ... | [7] 2.6 | 6.8 | 8.3 | [11] 7.3 |
| Tunisia | [7] 4.5 | 2.9 | 5.7 | 2.2 | 4.4 | [7] 4.8 | 3.1 | 10.3 | 2.4 | 6.6 |
| Uganda | 5.4 | 4.0 | 15.7 | –3.0 | [11] 16.5 | 7.3 | 3.5 | 24.7 | –5.5 | [11] 9.1 |
| Zaire | [14] 15.6 | 23.0 | 4.9 | 15.1 | 15.7 | [14] 19.0 | 22.0 | 10.5 | 17.6 | 16.6 |
| Zambia | 2.4 | [9] 8.7 | 6.1 | 5.2 | 5.8 | 2.4 | [9] 8.8 | 6.6 | 4.6 | 5.7 |

[1] 1965-69. — [2] 1967-70. — [3] 1968-70. — [4] Average January-June. — [5] Average January-July. — [6] 1962-65. — [7] 1966-70. — [8] 1960-62. — [9] 1965-68. — [10] Average January-August. — [11] Average January-September. — [12] Average January-October. — [13] 1961-65. — [14] 1963-65.

ANNEX TABLE 12.– MAIN FEATURES OF CURRENT DEVELOPMENT PLANS

| | Currency | Duration of plan | Scope [1] | Investment | | Foreign exchange component of total investment | Share of agriculture | | Planned growth rate of: | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | GNP | Agricultural production | | Export earnings | | Employment | |
| | | | | Total | Public | | Total investment | Public investment | | Total | Cereals | Total | Agricultural | Total | Agricultural |
| | | | | *Million currency units* | | ..... *Percent* ..... | | | ..... *Percent per year* ..... | | | | | | |
| LATIN AMERICA | | | | | | | | | | | | | | | |
| Argentina | Pesos | 1974-77 | C | 410 500 | 172 060 | ... | 14.3 | ... | [2] 7.5 | 6.5 | ... | 19.6 | ... | ... | ... |
| Barbados | EC $ | 1972-76 | C | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Bolivia | Pesos | 1971-75 | C | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Brazil | Cruzeiros | 1972-74 | C | 179 240 | [3] 53 517 | ... | 8.7 | [3]11.2 | [2] 9.0 | 7.5 | ... | 10.0 | ... | 3.1 | 1.2 |
| Costa Rica | Colones | 1974-78 | C | 14 657 | 4 093 | 24.8 | 15.0 | ... | [2] 7.5 | 4.7 | ... | 9.6 | 4.8 | 4.2 | 2.1 |
| Cuba | Pesos | 1971-75 | C | ... | ... | ... | ... | ... | [4] 11.1 | 10.0 | ... | ... | ... | ... | ... |
| Dominican Rep. | Pesos | 1970-74 | PS | ... | 530 | ... | ... | ... | [2] 6.6 | 5.6 | ... | 12.4 | ... | 4.5 | ... |
| Ecuador | Sucres | 1973-77 | C | [5] 78 922 | [5] 31 743 | 15.7 | 17.6 | 15.4 | [2] 9.9 | 5.3 | ... | 8.7 | 3.9 | 3.5 | 2.0 |
| El Salvador | Colones | 1973-77 | PS | ... | 876 | 47.9 | ... | ... | 6.9 | 5.0 | ... | ... | ... | ... | ... |
| Guatemala | Quetzales | 1971-75 | C | 1 828 | 403 | 29.7 | ... | 14.7 | [2] 6.2 | 4.8 | ... | 3.6 | ... | ... | ... |
| Guyana | Guy $ | 1972-76 | C | 1 150 | 650 | ... | ... | ... | [3] 8.5 | ... | ... | ... | ... | ... | ... |
| Haiti | Gourdes | 1972-76 | PS | ... | 453 | 47.0 | ... | 21.0 | [2] 7.7 | ... | ... | ... | ... | ... | ... |
| Honduras | Lempiras | 1974-78 | C | ... | ... | ... | ... | ... | ... | 8.1 | ... | ... | ... | ... | ... |
| Nicaragua | Cordodas | 1972-76 | PS | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Panama | Balboas | 1971-75 | PS | ... | 526 | ... | ... | 8.0 | 8.0 | ... | ... | ... | ... | ... | ... |
| Paraguay | Guaranis | 1972-77 | C | ... | ... | ... | ... | 24.5 | [2] 6.0 | 5.0 | ... | 8.2 | ... | ... | ... |
| Peru | Soles | 1973-74 | C | ... | 75 500 | ... | ... | 14.8 | [2] 7.6 | 4.5 | ... | ... | ... | 6.7 | 4.3 |
| Surinam | Guilders | 1972-76 | C | ... | 335 | 83.3 | ... | 19.4 | [2] 8.3 | 7.1 | ... | ... | ... | ... | ... |
| Uruguay | Pesos | 1973-77 | PS | ... | ... | ... | ... | ... | [6]4.0/5.0 | [6]3.8/4.6 | ... | 10.0 | ... | ... | 1.9 |
| Venezuela | Bolivares | 1970-74 | C | 60 919 | 24 311 | 12.2 | 7.6 | 6.8 | [2] 6.3 | 6.1 | 10.2 | 4.1 | 14.0 | 4.0 | 0.9 |
| FAR EAST | | | | | | | | | | | | | | | |
| Bangladesh | Taka | 1973-78 | C | 4 455 | 3 952 | 27.0 | 24.0 | 26.3 | 5.5 | 4.6 | 6.4 | 10.3 | ... | ... | 4.5 |
| India | Rupees | 1974/75-1978/79 | C | 47 561 | 31 400 | 5.0 | [1] 14.4 | 12.7 | 5.5 | 4.7 | 4.0 | 7.6 | ... | ... | ... |
| Indonesia | Rupiahs | 1974/75-1978/79 | C | 4 859 000 | ... | ... | ... | ... | 7.5 | 5.3 | 4.4 | — | ... | ... | ... |
| Korea, Rep. of. | Wons | 1972-76 | C | 4 524 500 | ... | 20.9 | 11.8 | ... | 8.6 | 4.5 | 6.7 | 24.3 | 22.5 | 2.3 | 1.0 |
| Laos | Kips | 1969/70-1973/74 | C | 20 579 | 5 729 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Malaysia | M $ | 1971-75 | C | [7] 15 015 | [7] 6 691 | ... | ... | [7]32.8 | [7] 6.9 | [7] 7.1 | [7] 6.3 | [7] 6.4 | ... | [7,8]3.4 | [7,8]1.8 |
| Nepal | Rupees | 1970-75 | C | 2 930 | 2 280 | 65.0 | 32.9 | 26.1 | 4.0 | ... | 3.0 | ... | ... | ... | ... |
| Philippines | Pesos | 1971-74 | C | 23 550 | 4 638 | 10.0 | ... | [9]16.7 | 5.6 | 6.2 | 6.2 | 8.5 | ... | 4.0 | ... |
| Sri Lanka | Rupees | 1972-76 | C | 15 000 | 7 038 | 19.3 | 20.0 | 24.0 | 6.0 | 4.9 | 7.1 | 6.2 | ... | 3.4 | 2.5 |
| Thailand | Bahts | 1971/72-1975/76 | C | 100 000 | 69 000 | ... | ... | ... | 7.0 | 5.1 | ... | 7.0 | ... | ... | ... |
| NEAR EAST | | | | | | | | | | | | | | | |
| Afghanistan | Afghanis | 1973-77 | C | 33 400 | 27 700 | ... | ... | 39.0 | 4.8 | 3.9 | ... | ... | ... | ... | ... |
| Egypt | E pounds | 1973-82 | C | 8 400 | ... | ... | 12.0 | ... | 6.0 | 3.8 | ... | ... | ... | 3.0 | ... |
| Iran | Rials | 1973-78 | C | [10]2400 000 | [10]1520 000 | ... | 14.0 | 20.0 | 11.4 | 5.4 | ... | ... | ... | ... | ... |
| Iraq | Dinars | 1970-74 | C | [10] 1 144 | [10] 859 | ... | 19.7 | 24.5 | 7.1 | 7.0 | ... | 2.7 | ... | 4.5 | 4.1 |
| Jordan | Dinars | 1973-75 | C | 179 | 100 | ... | 15.5 | 23.7 | [2] 8.0 | 6.4 | ... | 16.0 | 20.0 | 5.9 | 2.6 |
| Lebanon | L pounds | 1972-77 | C | 7 200 | 1 740 | ... | ... | 22.0 | 7.0 | 5.0 | ... | 7.3 | 5.5 | 3.4 | ... |
| Libyan Arab Rep. | Dinars | 1973-75 | C | 2 170 | 1 813 | ... | 14.4 | 15.9 | [2]10.4 | 16.0 | ... | 5.1 | ... | 7.0 | 3.8 |
| Saudi Arabia | S Rials | 1971-75 | C | ... | ... | ... | ... | ... | 9.3 | 5.0 | ... | ... | ... | ... | ... |
| Sudan | Sd pounds | 1971-75 | C | 370 | 200 | ... | 27.9 | 37.2 | 7.6 | 10.0 | 11.4 | 10.6 | 10.6 | 2.0 | 1.6 |
| Syrian Arab Rep. | S pounds | 1971-75 | C | 8 000 | 6 450 | ... | 31.5 | 39.0 | 8.2 | 5.1 | ... | 6.5 | ... | 4.7 | 2.8 |
| Turkey | Liras | 1973-77 | C | 291 200 | ... | ... | 12.0 | ... | [2] 7.9 | 4.6 | ... | 9.4 | 3.0 | ... | ... |
| Yemen Arab Rep. | Rials | 1974-76 | C | 1 610 | 823 | 53.4 | ... | 17.0 | 6.0 | 6.0 | ... | ... | ... | ... | ... |
| AFRICA | | | | | | | | | | | | | | | |
| Algeria | Dinars | 1974-77 | C | ... | ... | ... | ... | ... | [2,11]8.0 | ... | ... | ... | ... | ... | ... |
| Botswana | Rands | 1970-75 | PS | 130 | ... | ... | ... | ... | 15.0 | ... | ... | ... | ... | 8.0 | ... |
| Cameroon | CFA francs | 1971-76 | C | 280 000 | 145 300 | ... | 10.5 | 15.5 | 6.7 | 4.0 | ... | 9.4 | ... | ... | ... |
| Central African Republic | CFA francs | 1971-75 | C | 63 779 | 16 690 | ... | ... | 25.1 | 8.8 | ... | ... | ... | ... | ... | ... |
| Gabon | CFA francs | 1971-75 | C | 150 000 | 65 000 | ... | 1.2 | 1.2 | ... | ... | ... | ... | ... | ... | ... |
| Guinea | Sylis | 1973-78 | C | 59 488 | 21 045 | ... | ... | 9.4 | ... | ... | ... | ... | ... | ... | ... |
| Ivory Coast | CFA francs | 1971-75 | C | 505 000 | 210 000 | ... | 11.0 | 22.0 | 7.7 | 4.1 | ... | 6.8 | 3.0 | 5.5 | 4.0 |
| Kenya | K £ | 1974-78 | PS | ... | ... | ... | ... | ... | 7.4 | 6.7 | ... | 7.0 | ... | ... | ... |
| Lesotho | Rands | 1970/71-1974/75 | C | 60 | 288 | ... | ... | 23.0 | 5.0 | 3.1 | ... | ... | ... | ... | ... |
| Mauritius | Rupees | 1971-75 | C | 1 052 | 536 | ... | 20.0 | 21.0 | 7.0 | ... | ... | ... | ... | 6.0 | 5.0 |
| Morocco | Dirhams | 1973-77 | C | 26 300 | [12] 11 200 | ... | 15.8 | 26.2 | [2] 7.5 | 3.6 | 3.5 | 10.0 | 4.7 | 4.0 | 1.0 |
| Niger | CFA francs | 1971-74 | PS | 47 631 | ... | ... | 15.0 | ... | ... | ... | ... | ... | ... | ... | ... |
| Nigeria | N £ | 1970-74 | C | 1 595 | 780 | ... | ... | 17.0 | [2] 6.6 | 3.0 | ... | ... | ... | ... | ... |
| Senegal | CFA francs | 1973-77 | C | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Swaziland | Rands | 1973-77 | PS | ... | ... | ... | ... | 19.0 | 5.0 | ... | ... | ... | ... | ... | ... |
| Tanzania | T £ | 1969-74 | C | 404 | 296 | ... | 13.5 | 23.0 | 6.7 | 4.5 | ... | ... | ... | 5.0 | ... |
| Togo | CFA francs | 1971-75 | C | 75 889 | 56 203 | ... | 15.0 | 10.0 | 7.7 | 6.6 | ... | ... | ... | ... | ... |
| Tunisia | Dinars | 1973-76 | C | 1 194 | 707 | 24.3 | 14.9 | 14.5 | [2] 6.6 | 5.8 | 6.4 | 5.3 | 7.1 | ... | ... |
| Uganda | U shillings | 1972-76 | C | 7 890 | 3 927 | ... | ... | ... | 5.6 | 4.8 | ... | 4.8 | ... | ... | ... |
| Upper Volta | CFA francs | 1972-76 | C | ... | ... | ... | ... | ... | 6.5 | ... | ... | ... | ... | ... | ... |

NOTE: Where possible, data refer to net investment. In many cases, however, no distinction is made in the plan, and data may refer to gross investment or may include some elements of recurrent expenditure. The agricultural sector includes animal production, fisheries, forestry, irrigation, land reclamation, community development and agricultural extension.

[1] C = comprehensive; PS = public sector. — [2] Gross domestic product. — [3] Capital expenditures. — [4] Gross material product. — [5] 1972 sucres. — [6] Low and high hypotheses. — [7] As revised by Mid-Term Review of the Plan. — [8] West Malaysia only. — [9] Water resource development only. — [10] Planned investments are to be exceeded. — [11] From draft Plan. — [12] Excludes investment in semi-public interprise.

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