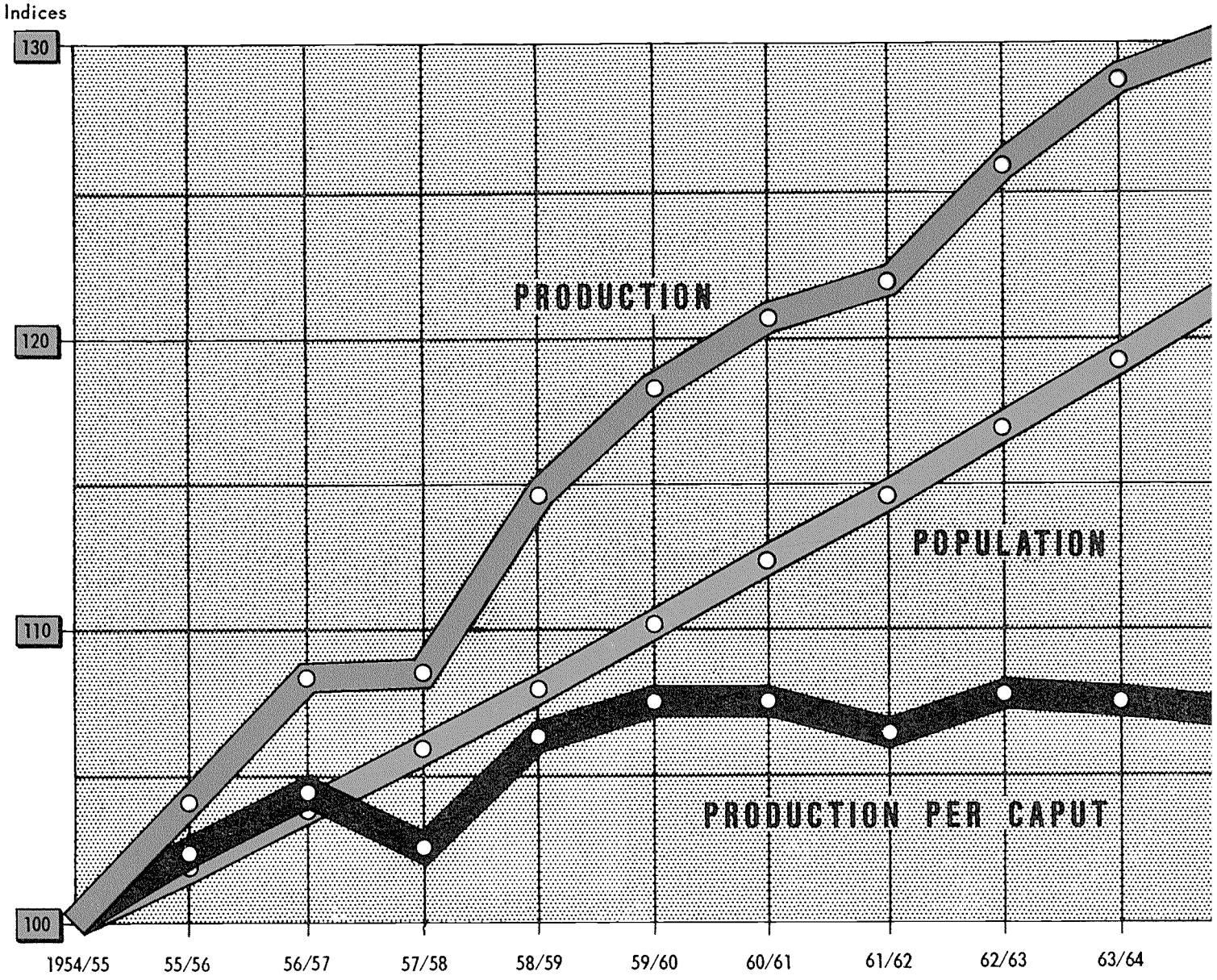
THE STATE OF FOOD AND AGRICULTURE 1965

review of the second postwar decade



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Cover graph. *This graph compares the increase in agricultural, fishery and forest production in the world, excluding China (Mainland), with the growth of population during the second postwar decade. The combined production index for agriculture, fisheries and forestry is a new feature of this year's report. It shows clearly how since about the middle of the decade there have been no further gains in production in relation to population, and thus no margin for better levels of living.*

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Review of the Second Postwar Decade

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
ROME 1965

The statistical material in this publication has been prepared from the information available to FAO up to 15 July 1965.

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Printed in Italy

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FOREWORD

In October 1945, within a few months of the end of the second world war, the charter establishing FAO was signed at Quebec. To mark the tenth anniversary of the Organization in 1955 the annual report on the state of food and agriculture was devoted to a review of the world food and agricultural situation during the first decade. This year, which brings FAO's twentieth anniversary, The state of food and agriculture *again departs from its customary pattern to review progress during the whole of the past decade.*

The history of any institution which has to grow with the times cannot be divided into clear-cut chapters. Nevertheless, it is possible to look at the brief history of FAO in three distinct phases: the first, its role in the urgent task of reconstruction in a postwar world; the second, a clearer understanding of the new forces at work in a world where one third of the human race had newly achieved the right to guide its own destiny; and the third, the techniques of action to be developed in order to mobilize worldwide efforts to avert the dangers that lie ahead.

The postwar decade was essentially a period of recovery from the devastation of war, and inevitably it was with this recovery that the 1955 review was mainly concerned. But even before it ended the pattern which was to characterize the second postwar decade had already become evident: in the economically more developed countries, rapidly increasing output per head and actual or potential surpluses; in the developing countries, a slow growth in output per head and persisting scarcities and undernutrition. The rapid progress of the developed countries was reflected hardly at all in the developing countries. The gap between rich and poor countries was widening, creating a potentially explosive situation.

The second phase, that is, the second postwar decade, was marked by a number of parallel developments of a far-reaching character. The concurrent revolutions in science and communications, in demography and in national aspirations made their impact on the outlook and work of FAO. For the first time, and in this FAO played a significant role, the world became conscious of the unprecedented rate of population growth and lagging food supply, and the grave peril that this trend, if unchecked, implied for the future peace and security of the world. One aspect of this growing consciousness was the response to the Freedom from Hunger Campaign that FAO launched in 1960. There was a new awareness of the dimensions of hunger and malnutrition in the world and of the responsibility of the world community to face the problem.

At the 1957 session of the FAO Conference, the first in which I took part as Director-General, I emphasized my view that FAO should be dedicated primarily to the clamant needs of the underdeveloped countries:

" ...I hope to be able to bring to the service of the Organization and see reflected in its Program of Work my personal knowledge of conditions and needs in those underdeveloped countries where hunger and poverty are still the constant experience of millions of people. While my allegiance is to all nations, developed and underdeveloped alike, I can in a special sense speak for the millions who are striving out of poverty today in all the world's underdeveloped regions. "

I emphasized also two trends which I foresaw would be inevitable if FAO was to play its full part in the struggle for freedom from hunger for all mankind, and which in fact have materialized and become more marked in each succeeding year. First, that the Organization must evolve from studies and advisory work to direct involvement in development operations. Second, that technical measures to improve the agriculture of the developing countries, vital though they were, by themselves were not enough. To become fully effective they must be supplemented by the provision of investment funds and credit to facilitate their adoption, and by the establishment of an agrarian structure which would give farmers in developing countries the will and the incentive as well as the financial means and the know-how to embark on more productive forms of agriculture. These developments must be guided by agricultural planning, linked closely with overall economic planning, to ensure that the limited resources available were put to the best possible use. This so-called "integrated approach" has since become the cornerstone of FAO policy.

It first took tangible shape in the same year 1957 with the launching of the Mediterranean Development Project, the first stage of which was completed in 1959. This was followed in 1961 by an integrated survey of African development potentialities. Both undertakings have led to a series of concrete development projects, and their impact is not yet exhausted. The new policies were developed further in the Forward appraisal of FAO programs 1959-64 *which I submitted to the United Nations Economic and Social Council in 1959, and in a report on* FAO's role in rural welfare *which I placed before the FAO Conference in 1959.*

A landmark in the provision of technical and financial assistance for agricultural development came with the setting up in 1958 of the United Nations Special Fund in which, as in the Expanded Program of Technical Assistance, FAO has become much the largest, single operating agency. As a further step I initiated in 1961 the studies which led in the following year to the establishment of the World Food Program, jointly sponsored by the United Nations and FAO, to use surplus foods for economic development. FAO became still more directly involved in development work with the establishment in 1964 of the FAO/IBRD co-operative program to encourage and assist the flow of funds for agricultural development from the International Bank. In 1965 I inaugurated a similar agreement with the Inter-American Development Bank to facilitate agricultural development in Latin America. These new programs of direct aid now account for a large share of the activities of FAO.

The institutional problems of agriculture are proving more intractable than those connected with investment. FAO's studies during the past decade make it abundantly clear that the greatest single obstacle to increased farm production, probably even greater than ignorance of modern methods of agriculture, is the lack of any real incentives to cultivators in many countries to increase their production for the market, especially their production of basic foodstuffs. As I wrote in my foreword to The state of food and agriculture 1959, *which contained a special chapter on the problems of farmers in developing countries:*

"The more closely the situation is examined, the more one is impressed by the odds against the cultivator in many less developed countries. Handicapped by ignorance, poverty and debt, he must face great fluctuations of price, and because of his lack of resources must usually sell immediately after the harvest when prices are lowest. If he improves his methods of farming, much of the benefit of his increased output may go to the merchant or landlord to whom he is indebted. Often he has so little security of tenure that he has no real inducement to improve his holding. When all is considered, the wonder is that agricultural production has increased as much as it has. Until these disabilities are reduced it seems inevitable that much of the teachings of the farm advisory services will fall upon stony ground."

FAO can and does study and advise on these institutional problems. It has a growing number of experts working with the governments of developing countries in such fields as agrarian reform, co-operatives, farm credit and marketing. But the actual implementation of such measures must fall to governments, and for governments the reform of rural institutions is seldom easy, whether for political, social, economic, or administrative reasons. Yet where they can be carried through successfully, as for example in postwar Japan, the results can be remarkable. In the decades which lie ahead the central task in the developing countries, to which FAO must contribute, will be for governments to modernize the agricultural institutions in a way that will break the inhibiting factors which so often condemn their farm populations to poverty and stagnation, and release their energies to play an active role in economic development.

Trade problems have loomed large in the past decade, and the almost continuous downward trend in the terms of trade of agricultural exports has done much to frustrate the growth plans of the developing countries. The grave implications of these developments can be judged from the fact that agricultural products account for more than half the total export earnings of the developing countries, or nearly three quarters if earnings from petroleum exports, which benefit relatively few countries, are excluded. FAO contributed largely to the preparation for the United Nations Conference on Trade and Development, held in 1964, which focused world attention on these problems and emphasized the multiple links between trade and development. In the next decade, it is essential that the specialized competence of FAO, built up over the years, should be utilized effectively in co-operation with the new trade and development institutions of UNCTAD and GATT.

The focus of FAO's work during the latter half of the past decade has been provided by the Freedom from Hunger Campaign. The main objectives of the Campaign were to bring home to world consciousness the gravity of the current food and agricultural situation, and to rededicate the Organization to its task of eliminating the hunger or malnutrition from which a large proportion of mankind still suffers, something which can no longer be tolerated in a world which has the means and the resources to overcome it. The first stage of the Campaign culminated in the World Food Congress at Washington in 1963, which succeeded in bringing more prominently than ever before the problems of hunger and malnutrition to the attention of the world.

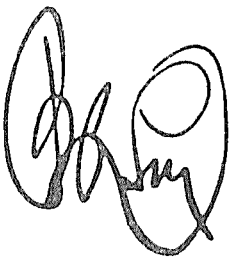
The third and most critical phase of FAO's work, which now opens with the third postwar decade, is the one when the Malthusian correctives will inexorably come into play unless organized will and dedicated endeavor, which we have been trying to build through our various efforts, can find effective expression. FAO studies, cited in the pages that follow, indicate that the total food supplies of the developing countries will have to be increased fourfold in the next 35 years, to give their vastly increased populations an adequate, though in no sense a lavish diet.

The foundation for this increase must be laid in the years immediately ahead. We know that the technical means by which this immense task might be accomplished are available. But it cannot be accomplished easily. It cannot be accomplished unless the leaders of the nations are alive to the issues at stake and are prepared to devote a large share of the world's resources to meet the looming crisis.

To assist this process, we are now working on an Indicative World Plan. The task of establishing such a world plan for agricultural development, which would chart in a broad way the goals and objectives which governments might reasonably set themselves in their fight against malnutrition and for economic betterment, should be regarded as the first step in this critical phase of our history. This would bring out (as national or even regional plans could not) the interactions between agricultural developments in different regions, and the interrelationships between agricultural and general economic development. It would not confine itself to mapping goals, but would also attempt to indicate the means and measures by which these goals might be realized.

It is not to be expected that a first attempt of such magnitude will be wholly successful, or that all governments will be in a position to make full use of it. We hope to revise it periodically and to extend it for further periods, profiting by experience to achieve something increasingly more realistic and more useful. It is a bold objective, but one which I believe well worthwhile. Despite its inevitable imperfections, the Indicative Plan should provide for the first time an overall picture of the course which agriculture could take and of the consequences if development falls short of needs. It should provide a framework on which to build the future work of FAO, and at the same time a background against which other programs of aid to agriculture can be assessed and against which Member Governments can work out their detailed national development plans for agriculture with a fuller understanding of their interrelationships with the plans and problems of other countries. I regard this Indicative World Plan as one of the major contributions which FAO can bring to agricultural development in its third decade.

It is abundantly clear that the next 35 years to the end of the century will be a most critical period in human history. As we stand at this watershed looking into the future, there is much that has been accomplished during the two decades of FAO's existence which can give us cause for hope. There has been a breakthrough in world awareness of the dimensions of hunger and malnutrition. Man's right to food has come to be universally recognized as one of his fundamental rights. Agriculture has gained in status in the economy of developing countries. Food surpluses have become available for the relief of malnutrition and for assisting the economic growth of food-deficient nations. FAO has attracted the dedication and moral commitment of countless people all over the world in the attainment of its cherished objectives. All these are no mean achievements. I earnestly hope that in this next phase of FAO's history more and more attention will be given to the human factor in economic and social progress, since the ultimate goal of our endeavor as well as the instrument for achieving it is Man.



B.R. SEN
Director-General

Chapter I. - General features of the decade

Agriculture's performance of its basic task of supplying food for the expanding population has come under more anxious scrutiny during the past decade than ever before. The implications of the accelerating population growth in the developing countries and of the unsatisfactory nutritional levels of the bulk of their populations are now widely realized. There is also a growing understanding of agriculture's wider role as a key factor in economic development.

Inevitably, a review of world agriculture during this period must be largely concerned with the developing countries. For most of the decade immediately after the second world war, developed and developing countries alike were preoccupied with the problems of postwar recovery. In the second postwar decade, while some developed countries have had to try to devise measures to prevent or arrest the accumulation of surplus stocks, attention has centered mainly on the efforts of the developing countries to increase their agricultural production.

The immense scientific and technological progress that has characterized the decade has been reflected in agricultural science and technology. Largely because of institutional defects, however, it has proved more difficult than expected to apply in the developing countries the technological advances that have already so transformed the agricultures of the more developed parts of the world. The economic development of these countries has also been hampered by the slow growth of the agricultural export earnings that are their principal source of foreign exchange.

Thus the agricultural sector has tended to lag behind in the economic development of most of the developing countries. Only small progress has been made either toward obtaining a fuller contribution from agriculture to their economic growth or toward the elimination of hunger and malnutrition.

These are some of the problems discussed in the following chapters of this report. The purpose of this introductory chapter is to set the scene for the detailed survey by examining some main factors affecting developments during the decade and by summarizing the broad evolution of the world food and agriculture situation over this period, and the national and international action that has been taken to meet it.

SOME MAIN INFLUENCES

The population explosion in the developing countries is undoubtedly the most important single factor dominating the world food and agriculture situation during the whole of the postwar period. Population growth has accelerated still further in the last decade. This has not only brought even greater urgency to the task of expanding agricultural production but has also begun to cause widespread rethinking of attitudes to population control.

In the last ten years the world's population has grown by about a fifth, representing an average annual rate of increase of 2 percent, which is much faster than ever before in history. In a number of developing countries the annual increase now exceeds 3 percent. This faster population growth has come mainly from substantial decreases in mortality, as a result of the improvement of medical services and advances in medical science. Mortality rates are likely to fall further, especially in the developing countries, and this will accelerate their population growth still more. Moreover, the growing proportion of young people in the population as a result of recent population growth will tend to raise birth rates.

The world population is now about 3,300 million, and the latest United Nations projections (still provisional) indicate a population of the order of 5,300 to

6,800 million at the end of the century in only 35 years' time, with a figure near 6,000 million as the most likely expectation.[1] Of this total, almost 80 percent would be in the poorly nourished developing countries.

Population growth in the developed countries has been much slower than in the developing countries. Combined with the relatively low income-elasticity of demand for most agricultural products in the developed countries, this too has had important implications for agriculture. For example, western Europe and North America are by far the largest markets for the agricultural exports of the developing countries, and the slow growth of population in these markets has therefore affected the developing countries' export earnings, especially since it has been accompanied by rapidly increasing productivity in their own agricultures and increasing resort to synthetic substitutes for natural products.

The effects of the unprecedentedly rapid population expansion in the developing countries have been powerfully reinforced by the drive for economic development and improved levels of living that has gathered momentum throughout the postwar period. People everywhere have not only realized that better living levels are possible but have come to expect them as a right. Although much of the emphasis has been on educational and health services and modern amenities, a large part of the world's population is so poorly fed that improvements in diets have also been a principal objective. Knowledge has greatly increased both of prevailing nutritional levels and of the serious effects on health and activity of nutritional deficiencies.

Merely to keep pace with the expected population increase without any improvement in diets would require total food supplies to be almost doubled by the year 2000, but present dietary levels in the developing countries are so inadequate that actual needs are far greater than this. Of the present world population, 10 to 15 percent are undernourished and up to half suffer from some degree of hunger or malnutrition or both, according to FAO's Third World Food Survey. The survey sets targets for nutritional improvements which would involve increasing total food supplies in the developing countries to four times the recent level, and their supplies of animal products to six times this level by the turn of the century.[2]

Fortunately, at the same time that present and expected needs for agricultural products have so vastly increased, the technological progress of the past decade has also greatly increased the means for meeting these needs. In addition to rapid advances in many of the more conventional fields of agricultural technology, there has been some headway in such aspects as the application of atomic science to agriculture and the development of new sources of human food, which may have far-reaching effects in the future. There is also more, although still insufficient, understanding of the institutional and organizational changes that are needed to clear the way for a technological revolution in the agricultures of the developing countries.

Moreover, the process of economic development and agriculture's role in it are better understood now than a decade ago. Economic science was previously concerned very largely with the problems of the advanced, industrialized economies but, with the increasing emphasis that has been placed on the needs of the developing countries, "development economics" has rapidly evolved as a new branch of study.

It is gradually becoming appreciated that there is a complex two-way relationship between agriculture and the rest of the economy, and that successful industrialization generally requires parallel progress in agriculture. In addition to its responsibility for the supply of food and raw materials, agriculture makes other contributions to economic progress that are almost as basic. In nearly all of the developing countries it is the chief earner of the foreign exchange needed to purchase the capital equipment for industrial and general development. Agricultural products themselves provide a raw material base for industrialization. Agriculture must release labor to the rest of the economy and must also supply most of the capital for the early stages of economic development. Industrialization greatly depends, especially in its initial stages, on the purchasing power of the agricultural population, which forms a large part of the market for industrial products in developing countries.

These potential contributions of agriculture to economic development may usefully be kept in mind in reviewing the performance of world agriculture during the past decade.

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[1] UNITED NATIONS. *Provisional report on world population prospects as assessed in 1963*. ST/SOA/SER.R/7, New York, 1964, p. 43-45.

[2] FAO. *Third world food survey*. Freedom from Hunger Campaign Basic Study No. 11. Rome, 1963.

Production

During the second world war, agricultural production declined in several regions, and everywhere except North America the rate of increase fell behind the growth of population. In the world as a whole, production recovered rapidly after the war and by 1952/53 had already caught up again with population growth. But the gains in per caput production were principally in the economically more developed countries, and in fact in both the Far East and Latin America per caput production remains, 20 years after the end of hostilities, less than before the war. Food supplies in these regions have generally kept pace with population in spite of the lag in production, but only at the expense of larger imports or of reduced exports of food, both of which have tended to increase balance of payments problems and to accentuate the difficulties resulting from the almost continuous decline in world prices for agricultural exports since the Korean war.

The rapid increase in world agricultural production that began in the years of recovery immediately after the war continued until the early years of the past decade. In 1958/59, good harvests were particularly widespread and there was a big rise in world production. In the six years since then production has barely kept up with population growth, leaving no margin for better nutrition, and per caput production has stagnated at around 10 percent or a little more above the prewar level. Over the decade as a whole, production has increased somewhat faster in the developing than in the developed regions. Because of their much more rapid population growth, however, the increase in per caput production in the developing regions has been considerably lower than in the developed regions. In fact, in the latter part of the decade each of the developing regions has lost part of the gain in per caput production it had achieved previously.

For fishery products, on the other hand, the rapid increase in world production has continued without slackening. However, a substantial part of the increase in the world catch during the decade has been used for nonfood or " industrial " purposes such as the manufacture of fish meal, and at present almost a third of the total world catch goes to the industrial market.

The increase in the output of industrial roundwood during the decade has been at about the same rate as the growth of population. The production of manufactured and semimanufactured forest products, however, has risen appreciably faster, largely because of the more complete utilization of roundwood which has resulted from improved processing efficiency, growing use of processing residues, and the increasing importance of industries which process wood chemically rather than mechanically.

Stocks

The unsold stocks of some agricultural products that began to accumulate, mainly in North America, in the early 1950s have continued as a major feature of the decade under review, in spite of domestic policies designed to curtail their accumulation and substantial surplus disposal activities, including their use as food aid in the economic development of the developing countries. Most of the unsold stocks are of grains and other temperate products, but there have also been large stocks of coffee for the last few years. For agricultural products as a whole, world stocks appear to have reached a peak in 1961 and subsequently have been slowly reduced.

International trade

After previously stagnating for some years at little more than the prewar level, the volume of world trade in agricultural products has grown rapidly during the past decade, though rather more slowly than trade in manufactured goods. But the increase in the volume of agricultural trade has not been matched by a corresponding rise in its value. World prices for agricultural products had fallen back to approximately the same level by the beginning of the decade as before the boom caused by the Korean war had taken them to unprecedented heights. Since then, with the main exception of a temporary break in 1962-63, prices have continued to drift slowly downward, though they remain well above the depressed levels prevailing immediately before the second world war. Earnings from agricultural exports have therefore increased only slowly, especially in terms of their purchasing power for industrial goods and in relation to the growth of population.

Most of the increase in the volume of agricultur-

al exports has been from the developed regions. Some represents increased trade between developed countries, notably intra-European trade; some reflects increased exports to the developing countries, especially shipments on concessional terms, which have emerged during the decade as an important element in world trade, and is therefore largely associated with the lag in agricultural production in developing countries. The growth of agricultural export earnings in the developing countries has been much slower than in the developed countries, and far from commensurate with their development needs.

There has been a rapid increase in world trade in fishery products, mainly reflecting the growth of imports into western Europe and North America both of food fish and of fish meal for animal feeding. In contrast to agricultural products, prices for fishery products on world markets have risen fairly steadily, although there have been sharp fluctuations in fish meal prices.

The main development in trade in forest products has been the increasing import requirements of Europe and Japan, which have been supplied largely from the coniferous forests of the U.S.S.R. and North America, but also from the tropical forests of a number of developing countries in Africa and the Far East. Prices for forest products as a whole have remained fairly stable.

The producer

Many of the main trends in the world food and agriculture situation are closely related to changes in the population distribution between agriculture and other occupations. In the developed countries the farm population has declined steadily but in the developing countries, even though its proportion in the total is gradually falling, it is still increasing in absolute numbers, since opportunities for employment in other industries are much less than the natural growth of the farm population. The movement of labor out of agriculture is mainly a reflection of disparities in living levels. Not only are incomes in agriculture generally less than in the rest of the economy, but it appears that in many countries they have lost further ground during the decade. The prices received by farmers, including government support prices, have generally increased, but usually this has simply been part of the general rise in prices, and in most countries they have not kept pace with the prices farmers must pay for production requisites or with the general cost of living.

The interplay between the decline in the farm labor force and the results of modern technology has led to considerable changes in the nature and organization of the farm unit in the developed countries. There have been rapid increases in these countries in the productivity of both land and labor, and the expansion of production has resulted entirely from higher yields.

In the developing countries, on the contrary, the greater part of the increase in production has so far been achieved through an increase in land area, although higher yields have also played a part, some resulting from a larger input of labor as well as from larger material inputs or improved methods. The use of such inputs as fertilizers, farm machinery and pesticides has increased rapidly in many developing countries, but it remains very small in total and is often mainly confined to industrial and export crops.

The consumer

From the viewpoint of the urban consumer of agricultural products a principal characteristic of the decade has been the persistent rise in prices, although in most countries this has been slower than in the first postwar decade. Consumer food prices have increased almost everywhere, and the effect of rising farm prices has been accentuated by increases in the cost of processing and marketing.

As their incomes rise, consumers in the developed countries tend to switch to more expensive foods such as livestock products. Nonetheless, their overall expenditures on food have increased only slowly in most of these countries, and much of the increase has been for better processing and marketing services, rather than in the actual value of farm sales.

In developing countries such increases as have occurred in incomes have brought rapid increases in food expenditures, in many cases faster than it has been possible to increase domestic production.

GOVERNMENT ACTION

Economic planning

An important feature of the decade has been the growing role of governments in the promotion of agricultural development. Except in a few countries, mainly among the centrally-planned economies, economic planning was still in its infancy ten years ago. Today the planning of agricultural development, in the framework of overall economic development, is undertaken in almost all of the developing countries as well as in a number of developed countries.

At first the emphasis of development policies was mainly on rapid industrialization. But many countries have experienced the serious consequences of the neglect of agriculture, and it is becoming more widely recognized that the lag in this sector has been a principal cause of the limited success in overall economic growth in many developing countries.

While there have been considerable advances in techniques and organization for the formulation of plans, the implementation of agricultural plans in developing countries has met with only limited success, and where a comparison is possible actual achievements appear often to have fallen short of planned targets. The implementation of plans has been hampered by shortages of finance and trained manpower, and the absence of an adequate administrative structure. A major factor, still insufficiently recognized in many countries, seems to have been the need for institutional improvements (for example, changes in land tenure, better marketing facilities, systems of stabilized or guaranteed prices, credit facilities) in order to give farmers the incentive and the possibility to adopt improved methods.

Research, education and extension

In both developed and developing countries there have been considerable expansions in such government services to agriculture as research, agricultural education and training, and extension. However, in most developing countries these services, and especially the extension services, are severely hampered by the shortage of trained staff and of financial resources, both capital and recurrent, and do not yet reach the majority of farmers.

Price policies

Agricultural price support policies have continued as a major field of government intervention in the developed countries, where the principal aim has been to reduce the widening disparity between agricultural incomes and those in other occupations. Adjustments have continually been necessary in these countries in an attempt to prevent or arrest the accumulation of surpluses, and to limit the mounting cost of agricultural supports.

In the developing countries the situation is entirely different. The nonagricultural sector is too small to make it possible for agricultural prices to be subsidized at a high level. On the contrary, price policies have been aimed principally at combating inflation and avoiding higher prices to consumers. In more and more of these countries, however, it has come to be recognized that the assurance of stable and reasonably remunerative prices, effective at the farm level, is a prerequisite to increased production for the market. Many developing countries therefore have adopted policies of guaranteed or minimum farm prices though, because of weaknesses in the marketing structure and in loal administration, few of them have yet succeeded in making price supports fully effective at the farm level.

In the centrally-planned countries also there has been greater recognition of the need for price incentives.

Institutional improvements

In many countries, particularly developing countries, incentives to increase and improve agricultural production are still blunted by institutional obstacles, especially outmoded systems of land tenure, inadequate and too costly credit, and inefficient marketing systems. Land tenure questions have received considerable prominence during the decade. In the developed countries this has chiefly meant improvements in the farm structure through increasing the size of holdings. In the developing countries the emphasis has been on the breaking up of large estates and their redistribution to former tenants and landless laborers, and on modifications in tribal systems of tenure. But while many laws have been passed, their implementation has often been incomplete, mainly because of the strength of the landed interests and the lack of adequate government services and credit facilities to replace those formerly provided by the landlord.

Although facilities for institutional agricultural credit have been greatly expanded, they remain much less than is needed, and are often too rigid and cumbersome administratively to meet the needs of small farmers. Especially in most of the developing countries, noninstitutional credit, usually at high interest rates from such sources as landlords, merchants, produce brokers, and professional moneylenders, as well as the friends and relations of the farmer, still predominates heavily.

Agricultural marketing systems in developed countries have changed considerably, in line with the changing needs of urban consumers. In developing countries, in spite of considerable progress during the decade, antiquated marketing facilities often remain a brake on the development of production in line with demand. The intervention of public and semipublic agencies in agricultural marketing has greatly increased in the developing countries, initially mainly for export products but more recently for products for the domestic market as well.

Measures in the fields discussed above, especially land tenure, credit, marketing, price policy and extension, are closely interdependent. The crucial role is coming to be recognized of multipurpose cooperatives or other farmers' organizations, capable of providing a focal point for agricultural development through improvements in all these related fields.

Fisheries

Government intervention in fisheries has also expanded during the decade. In the developed countries much stress has been laid on the rationalization and modernization of the fishing fleet, and government assistance has been provided particularly for the purchase of new vessels and equipment, and for the promotion of research.

In many developing countries, because of the lack of capital and trained manpower to build up and operate modern fishing fleets, fishery development has been undertaken with the assistance of foreign companies which can supply these needs. Most developing countries have also encouraged the development of fishermen's co-operatives, while some have established special organizations for direct intervention in fishing, processing and marketing activities.

Forestry

Because the forests in many countries are largely publicly owned, most governments have been primarily concerned in this sector with the direct administration of these forests, and it has often been possible for forestry development plans to be implemented by the forest services themselves. For the same reason most countries have given higher priority to the training of forestry officers than to extension work with private forest owners. In addition to training and the direct administration of public forests, government services in such fields as research and forest inventory have also expanded considerably, though they are still far from adequate in most developing countries.

INTERNATIONAL ACTION

International co-operation in respect of food and agriculture, for which the foundations were laid in the first postwar decade, has greatly expanded. Freedom from hunger has taken its place as a major international aim. Technical and financial assistance for agriculture has substantially increased and a beginning has been made in the use of surplus food as an additional form of aid for economic development. New attitudes have evolved concerning international trade in relation to development needs.

With the rapid spread of political independence, the numerical predominance of the developing countries in the United Nations and other international organizations has increased still further.[3] These bodies have become more and more concerned with problems of economic development, as is epitomized by the designation of the 1960s as the United Nations Development Decade. Although efforts to secure the establishment of a United Nations capital development fund were unsuccessful, the United Na-

[3] At the end of 1955 FAO had 72 Member Nations, of which 46 could be classed as developing; in mid-1965 the total is 108, of which 81 are developing countries.

tions Special Fund was set up in 1958 to provide assistance in surveys, applied research, training and related preinvestment projects. Partly because of its responsibility as Executing Agency for the largest share of these Special Fund projects, FAO's work has increasingly consisted in the provision of various forms of direct assistance to developing countries.

There have been considerable increases in the sums available for financial and technical assistance through both bilateral and international programs. But, although financial aid for agriculture has expanded, its share of the total has generally remained small. Moroever, most of this financial aid has been channeled to irrigation projects or other rather large-scale projects of capital investment. There has been little recognition on the part of either bilateral or multilateral financing agencies of the essential need for resources for small-scale projects, for the implementation of institutional changes, or for current expenditure (for example, for extension, fertilizers, and credit).

A significant event was the decision of the International Bank for Reconstruction and Development, announced in 1963, to devote a greater share of its resources to projects in the agricultural sector. This has already led to the establishment of a new co-operative program between FAO and the International Bank designed to identify and help to elaborate a much larger number of agricultural projects for Bank financing, but its full fruition still lies in the future. A similar agreement has also been reached between FAO and the Inter-American Development Bank.

Bilateral programs for the disposal of surplus food have increasingly stressed its constructive use in economic development. In 1963 the multilateral World Food Program, established under joint United Nations and FAO auspices, began operations on an experimental basis. Safeguards have been developed to ensure that the use of surplus food in this way does not interfere with commercial trade or the development of domestic production.

Although direct financial aid has expanded, much of the increase has been nullified by the effect on export receipts of the deterioration in the terms of trade. It has become clear that effective assistance to the developing countries cannot be confined to grants and loans, and that special measures are necessary if they are to obtain from their exports, almost always predominantly agricultural, the foreign exchange they need to finance their economic development. The evolution of this new attitude to foreign trade has been accompanied by intense activity in respect of international commodity arrangements and consultations, policy confrontations, and other attempts to ameliorate the situation on world markets. It culminated toward the end of the period under review in the United Nations Conference on Trade and Development, which is likely to have far-reaching effects in the next decade and beyond.

The past decade has seen much progress in regional and subregional schemes for economic integration. They have so far had little effect on agricultural production and trade, however, except in western Europe, where the common agricultural policy of the European Economic Community has gradually been elaborated during the last few years. Little progress has yet been made in the international confrontation and co-ordination of agricultural plans. A basic purpose of the Indicative World Plan for Agricultural Development, now in preparation by FAO and discussed in the final chapter of this report, is to provide a framework for the better co-ordination of national plans.

The Freedom from Hunger Campaign, launched by FAO in 1960, has made the elimination of hunger and malnutrition a matter of international concern. The gravity of the world food problem has become much more widely appreciated and the world's conscience has been awakened as a result of the Campaign. The World Food Congress held at Washington in 1963 declared that the persistence of hunger and malnutrition was unacceptable morally and socially, and called on all men and women, all governments, and all international and other organizations to take up the challenge of eliminating hunger as a primary task of this generation. A significant achievement of the Freedom from Hunger Campaign is the mobilization of the efforts of private individuals and organizations throughout the world, as well as the governments on whom international action usually depends.

Other examples of international co-operation in food and agriculture include joint projects for research and for the control of pests and diseases, in particular the various regional projects for locust control. Agreements have been drawn up during the period under review for the international division of the waters of two major rivers, the Indus and the Nile, and the implementation has begun of a plan for the joint development of the Mekong river basin.

In forestry, a principal example of international co-operation has been the series of timber trends

studies which have examined on a regional basis the past trends and future prospects of production, trade and consumption of forest products in relation to the adequacy of forest resources and of the policies for their development and for the expansion of forest industries.

Because of the common property characteristic of most marine resources, international action is of particular importance in respect of fisheries. They have received greatly increased international attention, both because many sea areas are underexploited as a source of food, and because the fleets of a number of developed countries have immensely increased their range of operation.

Much progress has been made in agreements for the conservation and more rational exploitation of particular fishery resources. Attempts to reach universal agreement on fishing limits and on the breadth of territorial seas, however, have been less successful. At the two United Nations Conferences on the Law of the Sea held in 1958 and 1960, none of the several proposals advanced obtained majority support. Subsequently, a number of countries have extended their territorial waters or fishing limits.

* * *

From this summary it is clear that the gains hoped for at the beginning of the last decade have been realized to a limited extent only. At the material level we have done little more than hold our ground, though in the face of an unprecedented acceleration in the growth of population. It may well be that in years to come, when it is possible to view the events of the decade in the perspective of history, it will be regarded as significant mainly as a beginning: as a time when the developing nations, rejecting the heritage of the past, began consciously to plan a more rewarding future; when new concepts of international co-operation began to be evolved, in particular new attitudes to aid and trade, and the idea took shape of mankind's collective responsibility for the elimination of hunger and malnutrition.

Chapter II. - Supplies of agricultural products

According to FAO's new combined index for agricultural, fishery and forest products, world production, excluding China (Mainland), increased by about 30 percent between 1954/55 and 1964/65 (Table II-1). During the same period population grew by about 22 percent, so that on a per caput basis the increase in production was only 7 percent.

Moreover, all of the increase in per caput production was achieved in the first half of the decade, since when production has barely kept pace with population growth.

The course of agricultural production was close to that of the combined index, of which it is by far the largest component. The most rapid increase in production during the decade was for fish, of which total landings rose by more than 40 percent. Forest production, in terms of roundwood, lagged slightly behind population growth, but this chiefly reflects the more efficient use of raw materials, and the output of final forest products increased a good deal faster.

REGIONAL AGRICULTURAL PRODUCTION

The usual FAO regional indices of agricultural production are shown in Table II-2, together with grouped indices for the developed and developing regions. Country and subregional indices of agricultural production are shown in Annex Tables 1 and 2. These tables do not include fishery and forest production, for which regional indices are not yet available.

TABLE II-1. - INDICES OF WORLD [1] PRODUCTION OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	Prewar average	Average 1948/49-1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65 (Preliminary)	Increase 1954/55 to 1964/65
	Indices, average 1952/53-1956/57 = 100														*Percent*
TOTAL PRODUCTION	...	...	97	99	103	107	107	113	116	119	120	124	126	128	30
Agriculture	76	88	98	98	103	107	107	114	117	119	120	124	127	129	31
Fisheries [2]	[3] 86	86	95	100	104	108	110	111	114	119	126	132	136	142	42
Forestry [2]	...	...	93	100	105	108	107	108	113	115	115	116	116	119	19
POPULATION	80	93	98	100	102	104	106	108	110	112	114	117	119	121	22
PER CAPUT PRODUCTION	...	...	99	99	101	103	101	105	106	106	105	106	106	105	7
Agriculture	96	95	100	99	101	103	101	105	106	106	105	107	106	106	7
Fisheries [2]	[3] 115	100	106	109	112	114	114	112	113	115	119	123	125	128	17
Forestry [2]	...	...	95	100	103	104	101	100	103	102	100	99	97	98	— 2

NOTE: FAO production indices for fisheries and forestry and combined indices for agricultural, fishery and forest products are shown here for the first time. For details of the methodology and coverage of these indices, as well as of the usual world and regional indices of agricultural production, reference should be made to the explanatory note to the Annex Tables.

[1] Excluding China (Mainland). - [2] Calendar years. - [3] 1938 only.

TABLE II-2. - INDICES OF WORLD [1] AND REGIONAL AGRICULTURAL PRODUCTION IN RELATION TO POPULATION

	Prewar average	Average 1948/49-1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65 (Preliminary)
	Indices. average 1952/53-1956/57 = 100													
Total production														
ALL AGRICULTURAL PRODUCTS														
Western Europe	82	86	101	101	102	103	107	109	113	118	117	124	126	126
Eastern Europe and U.S.S.R.	81	86	94	96	104	116	118	129	132	132	136	139	134	144
North America	68	93	99	97	101	103	98	106	108	109	108	112	118	116
Oceania	78	90	97	98	103	105	102	117	119	123	126	132	136	142
Four above regions	76	89	98	98	102	107	106	114	116	119	119	124	126	128
Latin America	73	88	96	100	103	107	113	117	121	121	125	127	130	129
Far East [1]	84	87	98	100	104	108	107	112	116	120	123	125	127	129
Near East	73	85	99	97	101	109	112	118	122	122	124	132	135	136
Africa	67	88	98	101	101	106	105	109	112	118	115	122	125	128
Four above regions	77	87	97	100	103	107	109	114	118	120	122	126	128	130
ALL ABOVE REGIONS	76	88	98	98	103	107	107	114	117	119	120	124	127	129
FOOD PRODUCTS ONLY														
Western Europe	82	86	101	101	102	103	107	109	113	118	117	124	127	127
Eastern Europe and U.S.S.R.	82	87	95	96	104	116	119	131	133	134	138	141	135	146
North America	66	92	98	97	101	104	101	109	110	111	110	113	120	118
Oceania	81	92	99	98	103	100	99	117	115	122	124	133	137	146
Four above regions	76	89	98	98	102	107	107	115	117	120	120	125	127	129
Latin America	69	88	96	100	102	109	112	116	116	118	121	123	128	130
Far East [1]	82	87	98	100	104	108	107	112	118	122	124	126	128	129
Near East	73	85	101	97	100	109	113	118	120	120	122	130	133	131
Africa	69	89	98	101	100	106	103	107	110	116	114	119	121	124
Four above regions	76	87	98	100	102	108	108	113	116	120	121	125	127	129
ALL ABOVE REGIONS	76	88	98	99	102	107	108	115	117	120	121	125	127	129

The sharp contrast between trends in the developed and developing regions of the world is brought out in these tables and even more clearly in Table II-3 and Figure II-1. Agricultural production has risen somewhat faster during the decade in the developing than in the developed regions. However, this advantage has been entirely wiped out by their much more rapid population growth. Thus, while in the developed regions the average annual increase in production has been well over 1 percent ahead of the growth of population, in the developing regions the margin has been only about half of 1 percent.

In two respects the agricultural production situation in the developing regions is even less satisfactory than appears from Table II-3. Firstly, as already noted, the small gains in per caput production were all concentrated in the first half of the decade. Secondly, in two of the developing regions, the Far East and Latin America, it has still not been possible to make good on a permanent basis the setback of the war years, when the increase in production fell behind the growth of population, and per caput production in these regions remains less than it was before the war.

TABLE II-2. - INDICES OF WORLD [1] AND REGIONAL AGRICULTURAL PRODUCTION IN RELATION TO POPULATION (*concluded*)

	Prewar average	Average 1948/49-1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65 (Preliminary)
	Indices, average 1952/53-1956/57 = 100													
Per caput production														
ALL AGRICULTURAL PRODUCTS														
Western Europe	93	89	102	101	101	101	104	106	109	112	110	116	117	116
Eastern Europe and U.S.S.R.	83	92	96	96	103	113	113	122	123	121	123	124	119	125
North America	88	100	101	97	99	100	93	98	98	98	96	97	102	98
Oceania	104	99	99	97	101	100	95	107	106	107	107	110	112	114
Four above regions	85	94	100	98	101	104	102	108	109	110	109	111	112	113
Latin America	110	98	98	100	100	102	104	106	106	103	104	103	102	99
Far East [1]	109	93	100	100	102	103	100	103	105	106	106	106	105	104
Near East	95	94	102	97	98	104	104	107	108	106	104	108	108	106
Africa	95	97	100	101	99	101	97	99	99	101	96	99	99	99
Four above regions	104	95	100	100	101	103	102	104	105	105	104	105	104	103
ALL ABOVE REGIONS	96	95	100	99	101	103	101	105	106	106	105	107	106	106
FOOD PRODUCTS ONLY														
Western Europe	93	89	102	101	101	101	104	106	109	113	111	116	117	116
Eastern Europe and U.S.S.R.	84	92	96	96	103	112	114	123	124	123	124	126	119	127
North America	85	99	100	97	100	100	96	101	100	100	97	99	103	100
Oceania	108	102	102	98	101	96	92	106	103	106	106	111	112	117
Four above regions	85	94	99	98	101	104	103	109	110	111	110	113	113	114
Latin America	104	97	98	100	99	103	103	105	102	101	100	100	101	101
Far East [1]	106	93	101	100	102	103	100	103	106	107	107	106	105	104
Near East	96	93	103	97	98	104	105	107	107	104	103	107	107	102
Africa	98	99	101	101	98	101	96	97	97	99	95	97	96	96
Four above regions	102	95	100	100	100	103	101	103	104	104	103	104	103	101
ALL ABOVE REGIONS	95	95	100	99	101	103	102	106	106	107	105	107	107	106

NOTE: See explanatory note to Table II-1.
[1] Excluding China (Mainland).

In Latin America, per caput food production surpassed the prewar level only in the particularly favorable season of 1958/59, and has since fallen back again. In the following year the prewar level of per caput food production was also regained in the Far East, excluding China (Mainland); this level was held for the next three years, but in 1963/64 and 1964/65 per caput food production was again slightly less than before the war. For total agricultural production, as opposed to food production, the prewar level has still not been regained even temporarily in these two regions.

The 1958/59 season was in fact a period of good harvests almost all over the world. Excluding China (Mainland), production rose by no less than 6 percent, by far the largest increase in any single year during the decade; while in China (Mainland) it was the year of the " great leap forward. "

There was a further slight rise in world per caput production in 1959/60, but since then there has been no further sustained progress. All that can be said is that on a world basis the gains made in the exceptional 1958/59 season have not been lost.

The only regions where per caput production has

TABLE II-3. - REGIONAL CHANGES IN AGRICULTURAL PRODUCTION AND POPULATION

	Average annual increase,[1] 1952/53-1954/55 to 1962/63-1964/65				
	Total agricultural production		Population	Per caput production	
	All agricultural products	Food products		All agricultural products	Food products
	Percent per year				
Western Europe	2.5	2.5	0.9	1.6	1.6
Eastern Europe and U.S.S.R.	4.1	4.2	1.4	2.6	2.7
North America	1.6	1.8	1.7	— 0.1	0.1
Oceania	3.5	3.4	2.2	1.2	1.1
Four above regions	2.6	2.7	1.3	1.3	1.4
Latin America	2.9	2.8	2.7	0.2	0.1
Far East[2]	2.8	2.9	2.2	0.6	0.7
Near East	3.3	3.1	2.5	0.8	0.6
Africa	2.5	2.2	2.6	— 0.1	— 0.4
Four above regions	2.9	2.8	2.3	0.5	0.4
ALL ABOVE REGIONS	2.7	2.7	2.0	0.7	0.8

[1] Minus sign (—) denotes decrease. - [2] Excluding China (Mainland).

continued to rise in the last few years are western Europe and Oceania. In eastern Europe and the U.S.S.R., nearly the whole of the substantial gain in per caput production was made in the three years 1955/56, 1956/57 and 1958/59. In North America, the level of per caput production has been kept down by measures to restrict surplus production in the United States. In the developing regions, per caput production reached a peak in the Near East in 1959/60, which has since been equaled but not surpassed, while in Africa production has lagged slightly behind population in the decade taken as a whole. Trends in the Far East and Latin America have already been discussed.

If individual countries are considered, trends in agricultural production in relation to population are found to have varied even more widely. The 55 countries for which FAO production indices are calculated are classified in Figure II-2 according to the annual average change in per caput agricultural production during the decade. Per caput production increased during this period in 19 of the 24 developed countries for which indices are available, in three of them (Greece, Israel and Yugoslavia) by more than 3 percent per year. In the developing countries, on the other hand, per caput production declined in no less than 13 of the 31 such countries included in Figure II-2.

Trends in agricultural production during the last decade are discussed in more detail below, region by region. Regional production of the main agricultural products is shown in Annex Table 3, and livestock numbers in Annex Table 4.

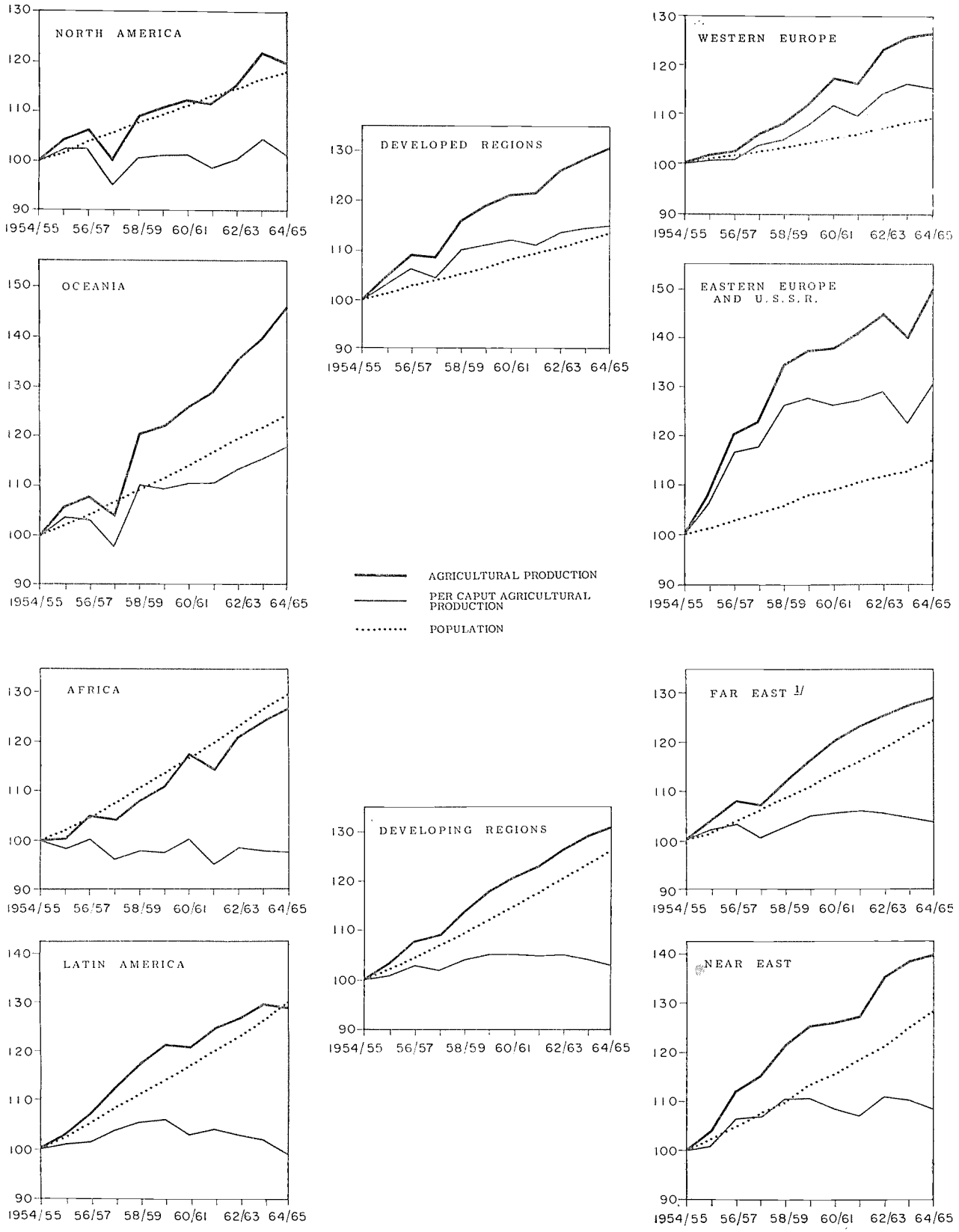
Western Europe

Agricultural production has continued to increase rapidly both in northwestern Europe and in the less industrialized countries of southern Europe. The only exception is Sweden, where agricultural production has declined slightly during the last decade in line with government policy to reduce production gradually until it covers only 90 percent of domestic requirements.

The region's grain production increased by about 30 percent during the decade; the increase was mainly due to higher yields (especially in northwestern Europe), but there has also been some substitution of wheat, barley and maize for the lower yielding rye and oats, and some expansion in area in some countries. The production of potatoes increased substantially in southern Europe, because of the expanding market for early potatoes, but production was reduced slightly in northwestern Europe as a result of the continued decline in consumption. Sugar production increased by about half during the decade. There were large increases in the production of a number of specialized crops in southern Europe, including fruit, vegetables, olive oil, and tobacco.

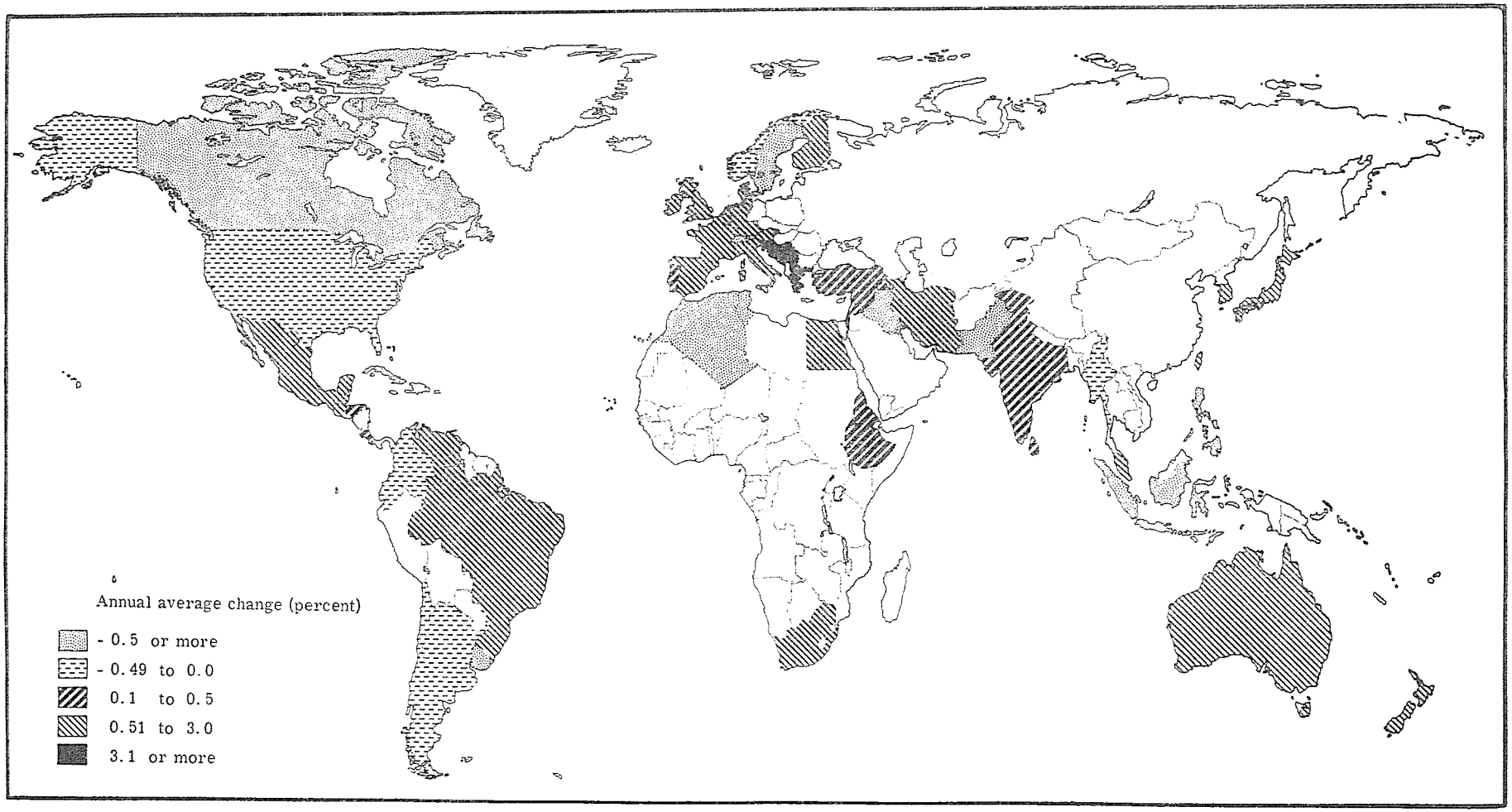
The increase in livestock production in western Europe has been particularly striking. Dependence on imported grains for livestock feeding has increased further, imports rising from 19 percent of the total grains fed in 1952/53 to 24 percent in 1959/60 in the 1961 OEEC area. Beef and veal production increased not only because of larger herds and better breeding and feeding, but also because of the raising of calves to higher weights and especially of a sharp reduction in the number slaughtered at birth. Much of the increase in pigmeat production also was due to faster turnover of the stock, resulting from improved feeding methods and reduced losses. Milk yields and production rose mainly in northwestern Europe; in the last few years, cow numbers have tended to decline and the expansion of milk produc-

FIGURE II-1. - REGIONAL TRENDS IN AGRICULTURAL PRODUCTION AND POPULATION
(Indices, 1954/55 = 100)



1/ Excluding China (Mainland).

FIGURE II-2. - AVERAGE ANNUAL CHANGE IN PER CAPUT AGRICULTURAL PRODUCTION, BY COUNTRY, 1952/53-1954/55 TO 1961/62-1963/64



NOTE: Based on the FAO country indices of agricultural production (see Annex Table 1B).

tion has slowed down, as in many countries small herds have gone out of production faster than the larger herds have increased. The production of poultry meat, no longer mainly a by-product of egg production, rose by about 140 percent during the decade; the increase was more than tenfold in Spain and nearly fourfold in Italy. Egg production also increased substantially, especially in southern Europe.

Eastern Europe and U.S.S.R.

The increase in agricultural production over the decade was faster in eastern Europe and the U.S.S.R. than in any other main region of the world. This reflects the continuing efforts in these countries to increase production as rapidly as possible to meet the expanding demand, and is in sharp contrast to the need in a number of other developed countries to prevent production from outrunning demand, to avoid uneconomic prices or a further accumulation of surpluses. Even so, production in this region has generally fallen well behind planned targets.

At the beginning of the decade, agricultural production in Czechoslovakia and probably also in Eastern Germany and Hungary was less than before the war. National indices of agricultural production indicate increases during the decade ranging from 15 percent in Czechoslovakia to more than 40 percent in Bulgaria. In the eastern European countries as a whole, livestock production has increased faster than crop production, although difficulties with feed supplies have led to fluctuations in livestock numbers and in the output of livestock products. While the grain area has been reduced, the area under industrial crops, vegetables, potatoes, orchards and vineyards has expanded.

As already noted, a large part of the increase in the region's production took place in the three years 1955/56, 1956/57 and 1958/59. Production in 1958/59 was no less than 35 percent greater than in 1954/55. The expansion in these years was chiefly the result of the opening up of the virgin lands in the eastern U.S.S.R. In addition to bringing a very substantial increase in U.S.S.R. grain production, this made it possible to transfer land and labor to other crops and to expand forage production. Between 1958 and 1962, however, agricultural production in the U.S.S.R. rose by only 7 percent, and in 1963 production dropped sharply because of adverse weather. The recovery in 1964 took production to 10 percent above the level of 1963 and 12 percent above that of 1958.

TABLE II-4. - UNITED STATES: FARM PRODUCTION INDICES

	Farm output	All crops	Feed grains	Food grains	Cotton	Livestock products
	.... *Indices, average 1957-59 = 100*					
Average 1942-44	82	87	78	81	99	87
Average 1952-54	93	94	79	99	123	96
Average 1962-64	110	109	102	105	124	112
	..... *Percent*					
Increase, 1942-44 to 1952-54.....	13	8	1	23	24	10
Increase, 1952-54 to 1962-64.....	18	16	29	6	1	17

SOURCE: UNITED STATES GOVERNMENT. *Economic report of the President*. Washington, D.C., 1965, Table B-75.

North America

Agricultural production in North America has risen at approximately the same rate as the population during the last decade. This is much less than the potential rate of increase, and reflects the measures taken by the United States Government to limit the accumulation of surplus stocks of grains and some other commodities. In Canada there have been some sharp fluctuations in output from year to year, mainly because of irregular rainfall.

It is remarkable, however, that in the United States production rose somewhat faster during the last ten years, when efforts were being made to slow it down, than the previous decade, during the latter part of which (from the Korean war) the aim was a rapid increase. The national indices of farm production show an increase of only 13 percent between 1942-44 and 1952-54, compared with 18 percent from 1952-54 to 1962-64 (Table II-4). This is a striking reflection of the great strides made in agricultural technology between the two periods. While the crop area decreased, crop production per acre increased by 31 percent from 1952-54 to 1962-1964 and livestock production per unit by 28 percent. The effect of government policies is apparent, however, in that for food grains and cotton the rate of increase has been considerably reduced from the first to the second decade, and the rapid increase in total production during the more recent period stems mainly from the expansion of feed-grain and livestock production.

Oceania

Largely because of immigration into Australia and New Zealand, population growth is a good deal faster in Oceania than in the other developed regions, but agricultural production has continued to increase more than 1 percent faster than population each year.

In Australia, all major sectors of agriculture, except for dairying, have participated in the rapid expansion of production. Sheep numbers rose from 131 million in 1955 to 165 million in 1964, and wool production has increased fairly steadily. Wheat production has fluctuated considerably, but because of lower returns from wool there has been a sharp increase in wheat acreage on wheat-sheep farms in recent years, and production has set a number of new records. Other products for which output has reached record levels in recent years include sugar, rice, dried fruit and tobacco.

Production has also increased rapidly in New Zealand. However, whereas during the first postwar decade the expansion was mainly in dairying, in the more recent period the biggest increases have been in the sheep industry and in beef production.

Latin America

Agricultural production in Latin America has increased only fractionally faster during the decade than this region's particularly rapid population growth, and on a per caput basis remains less than the prewar level. In Cuba and Uruguay, total agricultural production has actually declined during the decade. In Cuba, the sharp changes in policy following the revolution have resulted in some disorganization of production. The trend in Uruguay is sharply affected by the disastrous 1963/64 season, but there has also been a tendency for agricultural production to stagnate, partly because of insufficient economic incentives. Production has lagged slightly behind the growth of population in Argentina, Chile, Colombia, and Peru. On the other hand, it has exceeded population growth by quite a wide margin in Brazil, Guatemala, Venezuela, and especially Mexico.

The region's production of wheat has fluctuated rather widely, chiefly reflecting rainfall conditions in Argentina. Rice production increased sharply at the beginning of the decade, but has since leveled off. Sugar production fell to abnormally low levels in the three years 1961/62-1963/64, mainly because of the reduced harvests in Cuba, but the region's production appears to have recovered in 1964. Coffee production has fluctuated steeply, and preliminary estimates for 1964/65 indicate a crop less than half the record level reached in 1959/60. The region's meat production has shown little growth for several years.

Far East

In the Far East, excluding China (Mainland), agricultural production has increased at about the same rate during the past decade as in Latin America, but because of the slower population growth the improvement in per caput production has been somewhat greater. Even so, in this region also per caput production remains less than before the war, and the increase in production during the decade has lagged markedly behind population growth in Indonesia, Pakistan, and the Philippines. In Ceylon and India the margin over population growth has been very small. China (Taiwan), the Republic of Korea, Malaysia, and above all Japan and Thailand, in contrast, have succeeded in increasing production considerably faster than population growth.

The region's paddy area rose by about 20 percent during the decade, but yields per hectare have fluctuated sharply in accordance with weather conditions. An increase of about 40 percent in wheat production has come mainly from the expansion of area during the first half of the decade and from higher yields during the second half. There have been spectacular increases in sugar production in several countries. Oilseeds production has risen by about 20 percent. Among industrial crops, both the area and production of jute have increased by about 50 percent, while the production of cotton and rubber rose by about 20 percent. In Japan, milk production has increased fourfold and meat production threefold, but elsewhere in the region the increase in livestock production appears to have been comparatively slow.

China (Mainland)

Unfortunately it is still not possible to include in FAO's estimates of agricultural production data for the large segment of the world (almost a quarter of

the total population) represented by China (Mainland). Since the massive downward revisions of 1959, no official statistics of agricultural production have been issued, while unofficial estimates vary widely.

Official figures of "food-grain" production (including also pulses, potatoes and sweet potatoes in grain equivalent) showed increasing quantities every year up to 185 million tons for 1957 and 375 million tons (subsequently revised to 250 million tons) in 1958, the year of the "great leap forward." Unofficial estimates of the probable production in 1958 vary from 163 to 205 million tons. Such estimates, based on official local and provincial data and percentage figures, together with conclusions drawn from such things as the level of rations and imports, are all that is available for more recent years, but there can be no doubt, both from official statements and from these unofficial estimates, that 1959 to 1961 were years of abnormally low production, partly because of natural calamities and partly because of the radical changes in agricultural institutions and the inexperience of those managing them. There appears to have been a gradual recovery of food-grain production from 1962. Most estimates place the average production in 1962-64 at around 180 million tons.

Cotton production in China (Mainland) also appears to have dropped to abnormally low levels during the lean years and not yet to have recovered even to the levels reached in 1956-57. The area devoted to other crops is said to have increased but to remain below the levels reached in 1957-58. While there has been some recovery in livestock numbers, full recovery appears likely to take some years yet.

Near East

Agricultural production has risen somewhat faster in the Near East than in the other developing regions, though the margin over population growth during the decade has still been a good deal less than percent per year. Production in this region has fluctuated particularly sharply as a result of the uncertain rainfall. In Iraq, Jordan, Lebanon, and Syria, there were four successive years of severe drought from 1958/59 to 1961/62. Per caput agricultural production appears to have declined in Iraq and to have increased only very slightly in Syria, but the annual fluctuations in these countries have been so great as to make the trend practically meaningless.

The increase in grain production during the decade has been slower than the growth of population, and the main advances have been in such crops as sugar, citrus and other fruit, vegetables, potatoes and cotton. Sugar production has doubled during the decade and cotton production increased by about three-quarters.

Africa

Trends in agricultural production in the African region [1] have been particularly disappointing. The average annual increase in agricultural production, and especially food production, has lagged slightly behind the growth of population, which is now almost as fast as in Latin America. There have been very sharp annual fluctuations in northwest Africa, but over the decade as a whole a downward trend in per caput production is apparent in each of the countries in this subregion. In Algeria, total production also appears to have declined. South of the Sahara the statistics are probably less reliable, but it seems that in this part of the region total agricultural production has increased fairly steadily and has kept slightly ahead of the growth of population, although here also the output of food products may have fallen slightly on a per caput basis.

The region's wheat and barley production has been particularly affected by the fluctuations in production in northwest Africa. Maize production has increased more steadily, although drought in South Africa brought a sharp drop in 1963/64. Sugar production has been expanded especially rapidly in several countries. The fastest increases in regional production, however, have been for cocoa and coffee. The production of coffee has increased rapidly throughout the postwar period. Cocoa production remained at little more than the prewar level until about the middle of the decade, since when production has approximately doubled, mainly because of improved disease control measures.

[1] The continent, excluding Libya, Sudan, and the United Arab Republic.

Food and nonfood production

World agricultural production consists predominantly of food products, and nonfood production accounts for only about 12 percent of the total (Table II-5). [2] On the whole the proportion of nonfood production is somewhat higher in the developing than in the developed regions. Among individual regions, nonfood products loom largest in Oceania (wool) and Latin America (mainly coffee), while in western Europe they are estimated to account for a bare 2 percent of total production.

During the last decade, food production has increased slightly faster than nonfood production (Table II-6). The developed and developing regions, however, have shown opposite trends, food production increasing considerably faster than nonfood production in the developed regions, and nonfood production showing the faster increase in the developing regions.

A main reason for the slow growth of nonfood production in the developed regions appears to be United States policies to limit the expansion of the production of cotton and tobacco, as a result of which nonfood production in North America has hardly increased at all. However, nonfood production has also increased more slowly than food production in each of the other developed regions except Oceania, where wool production has risen particularly rapidly in both Australia and New Zealand.

The Far East is the only developing region where the faster increase has been in food production. In both Africa and the Near East, nonfood production, mostly for export, has increased much faster, and the margin would probably be equally large in Latin America but for the recent falling off in coffee production. In Africa, the main increase in nonfood production has been in coffee, and in the Near East, cotton.

Crop and livestock production

Table II-6 also compares the rate of growth of the crop and livestock components of food production, and here too a sharp contrast is apparent between the developed and developing regions.

[2] In terms of the price-weighted aggregates of FAO's index numbers of agricultural production.

TABLE II-5. - SHARE OF MAIN COMMODITY GROUPS IN TOTAL AGRICULTURAL PRODUCTION, AVERAGE 1962/63-1964/65

	Food			Nonfood [2]
	Total	Crops	Livestock [1]	
	Percent of total agricultural production			
Western Europe	98	24	74	2
Eastern Europe and U.S.S.R.	91	38	53	9
North America	89	26	63	11
Oceania	64	23	41	36
Four above regions	91	29	62	9
Latin America	80	45	35	20
Far East [3]	87	64	23	13
Near East	84	49	35	16
Africa	86	59	27	14
Four above regions	85	57	28	15
ALL ABOVE REGIONS	88	38	50	12

[1] Gross production. - [2] Coffee, tea, tobacco, inedible oilseeds, animal and vegetable fibers. - [3] Excluding China (Mainland).

Whereas in the world as a whole crop and livestock production have expanded at almost the same rate, the faster increase has been in livestock in the developed regions and in crops in the developing regions.

TABLE II-6. - CHANGES IN PRODUCTION OF MAIN AGRICULTURAL COMMODITY GROUPS

	Average annual increase, 1952/53-1954/55 to 1962/63-1964/65				
	All agricultural products	Food			Nonfood [2]
		Total	Crops	Livestock [1]	
	..... *Percent per year*				
Western Europe	2.5	2.5	0.8	3.1	2.0
Eastern Europe and U.S.S.R.	4.1	4.2	3.7	4.6	3.1
North America	1.6	1.8	2.4	1.6	0.2
Oceania	3.5	3.4	5.4	2.5	3.6
Four above regions	2.6	2.7	2.6	2.8	1.7
Latin America	2.9	2.8	3.0	2.6	3.1
Far East [3]	2.8	2.9	3.0	2.6	2.6
Near East	3.3	3.1	3.4	2.7	4.4
Africa	2.5	2.2	2.4	1.7	5.1
Four above regions	2.9	2.8	2.9	2.5	3.3
ALL ABOVE REGIONS	2.7	2.7	2.8	2.7	2.4

[1] Gross production. - [2] Coffee, tea, tobacco, inedible oilseeds, animal and vegetable fibers, and rubber. - [3] Excluding China (Mainland).

The faster increase in livestock production in the developed regions reflects the rapid growth of demand for livestock products. It is the result mainly of trends in Europe and in the U.S.S.R. In North America, the assured market for the main crops in the United States has brought a somewhat faster increase in crop production. In Oceania, too, where much of production is for export, crop production has shown by far the bigger increase.

In each of the developing regions the growth of livestock production appears to have lagged considerably behind crop production. The gap is probably too large to be explained by the scarcity and unreliability of statistics of livestock production in these regions.

Main commodities

Trends in the world production of the main agricultural commodities are shown in Figure II-3 and Annex Table 3A. While total agricultural production has increased at an annual average rate of 2.7 percent during the decade, for individual commodities the trend has varied from a decline of 2.6 percent a year in the production of oats to an increase of 7.9 percent a year for soybeans. Oats are the only product for which total production has declined, but for olive oil, copra and rubber also the increase has been less than the growth of population.

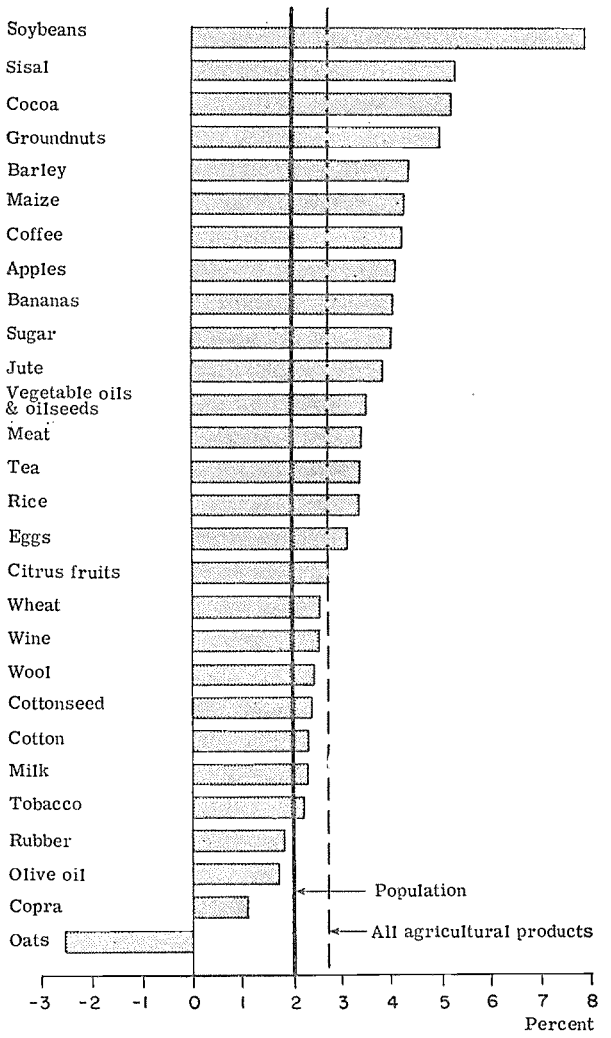
Among the principal grain crops, world production of rice and especially of barley and maize has increased a good deal faster than agricultural production as a whole. Most of the main Far Eastern producers have shared in the rapid expansion of rice production, while there have also been large increases in Brazil and the United States. Barley and maize have increased particularly rapidly in the United States, the U.S.S.R., and several European countries.

Wheat production, in contrast, has increased only at about the same rate as total agricultural production. While there have been rapid increases in a number of major producing countries, including Argentina, Australia, India, Turkey and the U.S.S.R., overall production has been held back by measures to restrict output in the United States. The continued decline in the production of oats is mainly a reflection of the replacement of horses by tractors in Europe, North America, and the U.S.S.R.

The increase in sugar production has been at the rate of about 4 percent per year. A falling off in Cuban production in the last few years has been accompanied by rapid expansion elsewhere. Of the main fruit crops, both apples and bananas have increased at about 4 percent per year. The increase in production of citrus fruit, however, has slowed down in recent years. Wine production remains little more than a third greater than the average level before the war.

The total production of vegetable oils and oilseeds has risen by about 3.5 percent a year, but for the individual crops the increase has ranged from only about 1 percent for copra to 5 percent for groundnuts and almost 8 percent for soybeans.

FIGURE II-3. - AVERAGE ANNUAL CHANGE IN WORLD [1] PRODUCTION OF MAIN AGRICULTURAL COMMODITIES, 1952/53-1954/55 TO 1962/63-1964/65



[1] Excluding China (Mainland).

The rapid expansion of soybean output has been very largely in the United States, where production has doubled during the decade.

The production of both meat and eggs has increased by more than 3 percent a year during the decade. As already noted, the increase has been chiefly in the developed regions. By far the most rapid increase among livestock products has been in the output of poultry meat in Europe and North America. Milk production appears to have increased little faster than the growth of population.

The beverage crops, cocoa, coffee and tea, are among those which have shown the most rapid expansion, and cocoa and especially coffee have substantially outrun the growth of demand. The rate of increase of coffee production would have been even greater but for drought, frost and fire damage to recent Brazilian crops. Tobacco production, on the other hand, has increased comparatively slowly.

Sisal production has increased by more than 5 percent a year; in the first part of the decade the main increases were in Latin America, but more recently the greater expansion has been in Africa. Jute production has also increased rapidly, not only in India and Pakistan but also in a number of minor producing countries. The increase in world cotton production has been slowed down by efforts to limit expansion in the United States. Wool production also has risen relatively slowly, although there has been a steady expansion in both Australia and New Zealand in the last few years. Natural rubber is probably the product most directly affected by the competition of synthetics, and the increase in output during the decade has been slightly less than the growth of population.

FISHERY PRODUCTION

The world fish catch has increased by about three-quarters during the last decade (Table II-7 and Annex Table 5). Since much of the increase has been due to landings of lower-value fish for industrial purposes, the expansion indicated by the provisional FAO price-weighted indices of fishery production, shown in Table II-1 above, is somewhat less (about 42 percent). Even this increase, however, is much greater than the rise in agricultural production or in the output of most individual agricultural products. It is also unprecedented within the fishery sector itself, and compares with an increase of only about 15 percent from 1938 to 1954.

More than half of the rise in fish production during the decade has come from the fisheries of developing countries. The largest rise in production was in the fisheries of Latin America, where the combined catches of Peru and Chile have risen to over 10 million tons from less than half a million tons in 1954. This was due chiefly to the exploitation of easily fishable stocks of anchoveta off the Pacific coast of South America. Other developing countries made only a small contribution to the increase in world production.

TABLE II-7. - ESTIMATED WORLD [1] CATCH OF FISH, CRUSTACEANS, AND MOLLUSKS

	1938	Average 1948-52	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
	Million metric tons												
Western Europe	5.63	6.31	7.42	7.54	7.98	7.54	7.43	7.82	7.68	7.92	8.12	8.35	8.8
Eastern Europe and U.S.S.R.	1.62	1.94	2.50	2.76	2.90	2.83	2.93	3.09	3.42	3.64	4.03	4.49	5.1
North America	3.11	3.50	3.83	3.79	4.13	3.80	3.76	3.99	3.79	4.01	4.15	4.01	3.9
Oceania	0.09	0.09	0.11	0.10	0.10	0.12	0.11	0.13	0.13	0.13	0.13	0.13	0.1
Latin America	0.28	0.60	0.80	0.97	1.09	1.33	1.84	3.20	4.70	6.62	8.62	8.84	11.6
Far East [1]	8.44	6.85	8.41	9.01	9.22	10.21	10.14	10.41	11.20	11.13	12.31	12.44	11.9
Near East	0.31	0.35	0.40	0.38	0.41	0.39	0.38	0.38	0.38	0.40	0.44	0.50	0.5
Africa	0.47	1.06	1.59	1.63	1.81	1.91	1.96	2.08	2.19	2.37	2.50	2.67	2.9
WORLD TOTAL [1]	20.00	20.70	25.10	26.20	27.60	28.10	28.60	31.10	33.50	37.00	40.30	41.40	44.8

[1] Excluding China (Mainland).

The centrally-planned countries have more than doubled their fish production during the decade. Both China (Mainland) and the U.S.S.R. have made substantial gains in production.

The share of the developed countries in the world fish catch has declined in the last ten years. In Europe and North America catches have grown only slowly, in spite of considerable technological advances in catching methods. This is partly because of the depletion of some traditional fishing grounds. The only major producer among the developed countries which has had a large increase in production is Japan, where landings have risen by about 40 percent. As with the U.S.S.R., this is mainly due to a considerable expansion of fishing activity in new grounds.

The utilization of the world catch has also shown substantial changes in the past decade, especially the growth of industrial or nonfood uses. The proportion of the world catch used for such purposes has risen from about 15 percent to about 30 percent during the decade. Almost the entire catch of Peru and Chile is reduced to fish meal. This is an important component of pig and poultry feed, the market for which has been growing rapidly in Europe and North America.

The proportion of the world catch marketed fresh has declined during the decade from over 40 percent to less than a third. This trend has become increasingly pronounced in recent years, as a result of advances in processing and storage technology, the increase in the proportion of fish traded and transported over long distances, the exploitation of new markets for fish products, and consumer preference for a more standardized product with good keeping qualities. Many of the same factors account for the reduced portion of the total catch which is cured. The share used for canning has also declined slightly.

On the other hand, fish freezing has expanded rapidly, and about a tenth of the world catch is now frozen. This is partly because of technological improvements, such as freezing at sea, and partly because of changed marketing and distribution patterns, such as the growth of supermarkets and cold chains, and of frozen food storage facilities in the home.

FOREST PRODUCTION

The newly calculated index of world output of roundwood, shown in Table II-1 above, indicates an increase of only about 20 percent between 1954 and 1964, which is less than the growth of population. This is largely due to the decline in the use of wood for fuel. Nearly half of all the wood cut in the world today is still used for fuel, and the massive weight of fuelwood in total production holds down the growth in the aggregate (Table II-8).

Output of industrial wood (that is, all wood uses

TABLE II-8. - INDICES OF WORLD [1] ROUNDWOOD PRODUCTION

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)	Increase[2] 1952-54 to 1962-64
	Indices, average 1952-56 = 100													*Percent*
INDUSTRIAL WOOD														
Saw and veneer logs	90	93	99	109	108	106	111	120	123	122	123	123	125	32
Pulpwood and pitprops	93	88	96	106	116	115	109	116	123	124	126	126	135	40
Other	100	88	103	101	107	110	102	100	92	88	89	93	93	— 5
Total	92	92	99	107	110	108	109	117	119	118	119	120	123	28
FUELWOOD	99	99	101	98	102	104	102	103	101	104	104	104	105	5
TOTAL ROUNDWOOD	94	93	100	105	108	107	108	113	115	115	116	116	119	22

[1] Excluding China (Mainland). - [2] Minus sign (—) denotes decrease.

other than fuelwood) increased by nearly 30 percent over the decade. But the more highly processed forms of wood products showed much faster rates of growth. Whereas output of wood for use in the round (for example, as poles, posts and pitprops) rose by only about 15 percent, the production of sawnwood grew by about 25 percent, woodpulp by about 60 percent, and wood-based panel products (plywood, veneers, particle board and fibreboard) by as much as 120 percent. Because growth was concentrated on the higher-value products, the rise of about 30 percent in the volume of industrial wood raw material was accompanied by a growth in value (at constant prices) of wood products produced of nearly 50 percent.

The consumption of processed wood products continues to be heavily concentrated in the developed regions. Europe, the U.S.S.R., North America, and Japan account for about 90 percent of total consumption of sawnwood, paper and paperboard, and wood-based panel products.

In the developed countries, the increase in the consumption of sawnwood has been held back by such factors as design savings, the substitution of new or improved materials for sawnwood, and the introduction of new constructional and manufacturing techniques for which sawnwood is not appropriate. In Europe, for example, the average consumption of sawnwood per dwelling fell by about 30 percent during the 1950s, and there was a decline of similar magnitude in its use per unit of furniture production.[3] In the high income, wood-rich countries of North America, Scandinavia and Australasia, where sawnwood has been used particularly lavishly, the proportionate decline was even sharper. On the other hand, in many of those developing countries which have abundant wood resources, cheap sawnwood has continued to prove the most appropriate and cheapest material for the simpler constructional and furniture-making techniques which are practiced, and there has thus not always been the same proportionate decline in its use.

There has been a remarkable growth in the consumption of wood-based panel products, in part because of the emergence of what is virtually a new product, particle board. Consumption of particle board rose from about 400,000 tons in 1953-55 to 3.3 million tons in 1962-64. In addition, the consumption of such long-established products as plywood and veneer much more than doubled and the use of fibreboard also doubled. All these products are interchangeable with sawnwood over a wide range of uses, and much of their growth was at the expense of sawnwood.

Consumption of paper and paperboard has also grown very rapidly. Packaging remains the most important use of paper and paperboard, and the consumption of packaging grades grew fastest during the decade, but the use of cultural papers has grown almost as quickly.

Regional trends in the output of the main forest products are shown in Annex Table 6. Output of roundwood in western Europe, which had hitherto been fairly stable, has increased considerably during the decade. Technological advances in the more highly industrialized areas, in particular in the pulp and panel industries, have substantially widened the range of species, sizes and qualities of wood raw material which can be utilized by industry. Nevertheless, the aggregate increase in the production of wood raw material has not been sufficient to meet in full the growth in requirements, and the latter part of the decade has seen Europe emerge for the first time as a major wood deficit region.

In North America, the use of roundwood and sawnwood, though declining, remains substantial, and the rate of decline is not as yet offset by the growing use of pulp and panel products. Total domestic use of wood continued to decline during the past decade. Technological and organizational advances in the wood-using industries were even more pronounced than in Europe. Production of virtually all wood products has kept pace with requirements, and the region also supplies considerable quantities of various wood products to the world market.

In Japan, the production of processed wood products has increased very rapidly. Japan's production of industrial roundwood, on the other hand, grew by less than 20 percent, which was quite insufficient to feed the huge expansion of the wood-using industries.

There has been a 50 percent rise during the decade in the U.S.S.R.'s production of sawnwood. The past decade has seen a major effort to bring into use the vast, rich forest resources of Siberia and the Soviet Far East. Giant *combinats* are being built in the remoter forested areas, each of them an integrated group of industries designed to use the full range of roundwood and wood residues avail-

[3] FAO/ECE. *European timber trends and prospects: a new appraisal, 1950-1957*, Geneva, 1964.

able, and to carry out all processing of the wood and manufacture of the wood products in a single location, close to the supply of wood.

The countries of eastern Europe, being much less richly endowed with forest resources, have had to make much more concentrated and immediate efforts to improve the production and use of wood. The overall rise in the consumption of wood has been held in check, notably by restricting the use of wood in the round and of sawnwood. Output of wood-based panel products, which was very small at the beginning of the decade, has risen rapidly, and there has also been a substantial growth in the production of pulp products.

Developments in China (Mainland) have been even more stringently determined by lack of wood. The average consumption of wood and wood products per caput is one of the lowest in the world. Such evidence as is available indicates that, inadequate though domestic production had been earlier to satisfy the country's needs, output of roundwood has nevertheless been substantially reduced in recent years. A high point in production of about 40 million cubic meters seems to have been reached in 1959, since when annual production has been steadily cut back, partly as a result of the limited success of afforestation measures, to an estimated 29 million cubic meters in 1962.[4] Some development of industrial output of wood products has taken place; paper output, for example, is reported to have grown from 180,000 tons in 1949 to 2.24 million tons in 1960.

In the developing countries, quantitatively the most important wood products remain fuelwood and building poles. Statistics of fuelwood and pole removals are very inadequate. There is, however, ample evidence from many parts of the world that rising populations, in their need for wood and for land for cultivation or grazing, are pressing heavily upon fast wasting wood resources.

Increasing concern has been expressed in recent years at the anomalous position in which these countries find themselves, whereby even those rich in wood resources are importers of high-value processed wood products but exporters of mainly lower valued roundwood. Growing attention has therefore been paid to building up wood-using industries in these countries in order to check the growing import bill, to improve and expand the range of wood products available domestically, and to add to the value of exports. However, developments in this respect have been uneven. Most of the increased production of pulp products in Africa, for example, took place in South Africa. But there were sizable increases in production of pulp products in a number of countries in the Far East and Latin America, although a very large part of this growth was with nonwood fibers, chiefly bamboo and bagasse. Increases in the production of panel products were even more widespread in the developing countries.

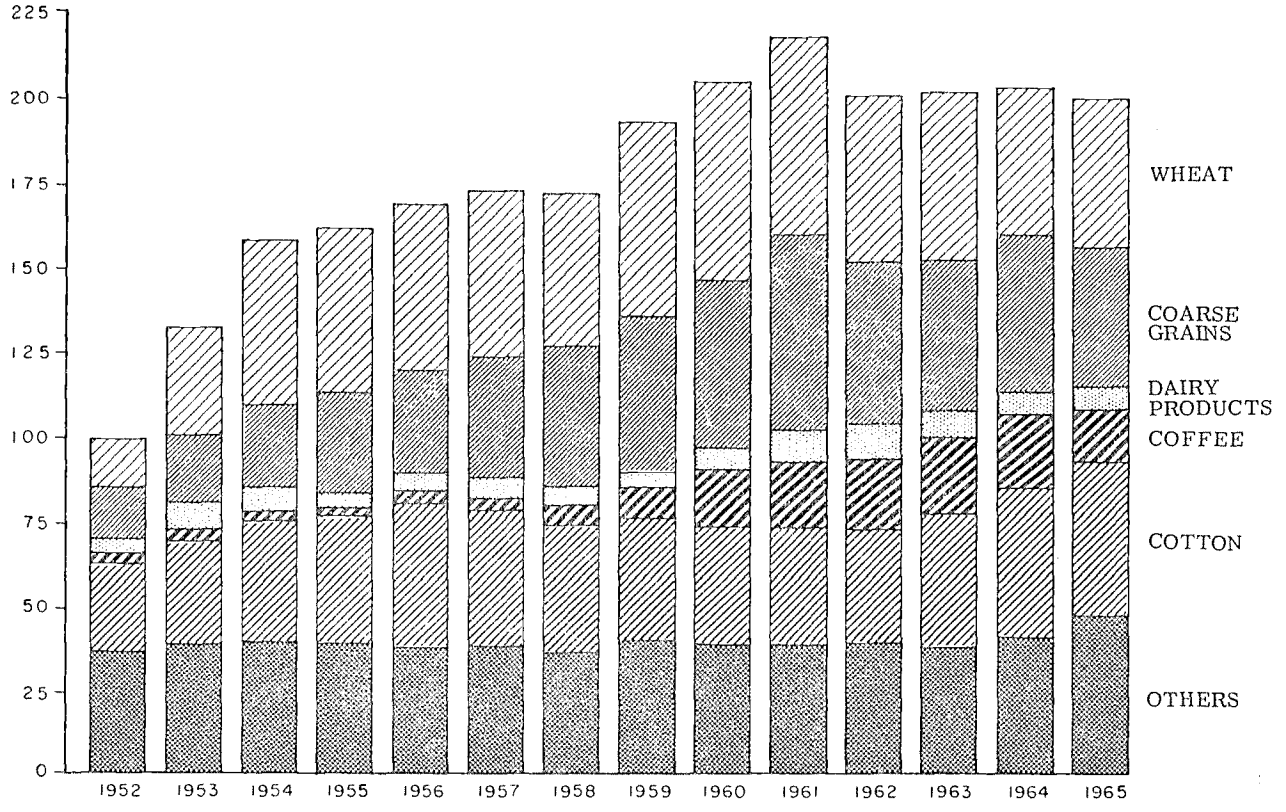
Most of the major increases in sawnwood production have been in exporting countries in west Africa and southeast Asia. The plywood and veneer industries in these regions have also been able to expand their scale of operation, in part at least to meet export markets. Nevertheless, this growth in processing capacity has in most cases been of minor proportions, by comparison with the rapid increase in the output of logs for export.

CHANGES IN STOCKS

Already at the beginning of the 1950s the tendency had begun for part of the production of some commodities to go not into increased consumption, but into surplus stocks. Such stocks have been a persistent feature of the last decade, just as they were of the depression years of the 1930s. Most of them are held by governments, which although it has tended to encourage surplus production has also prevented a collapse on world markets. The postwar stocks have therefore represented less of a threat to world agricultural prices than those in the 1930s, when although smaller they were mostly in private hands. However, they have been a major influence on world markets for agricultural products throughout the decade under review. Furthermore, as discussed in Chapter VII, they have formed the basis for the use of food aid in the economic development of the developing countries.

[4] S.D. RICHARDSON. Production and consumption of forest products in China (Mainland). *Unasylva*, 19 (1), 76. p. 24-31. FAO, Rome, 1965.

FIGURE II-4. - CHANGES IN STOCKS OF MAJOR AGRICULTURAL PRODUCTS
(Indices, 1952 = 100)



NOTE: Stocks are those shown in Annex Table 7.

Surplus stocks are a reflection, on the one hand, of the vast potential of modern agricultural technology and of the assured market resulting from some kinds of price support and, on the other, of the low level of effective demand in the needy countries. Especially in the United States, efforts to keep production in line with the growth of demand have tended to be vitiated by the persistent rise in crop yields resulting from improved technology, since at least until recently most of the restrictions were on area rather than on output. There has also been an inherent conflict in government policies designed at the same time to restrict production and to prevent any decline in agricultural incomes.

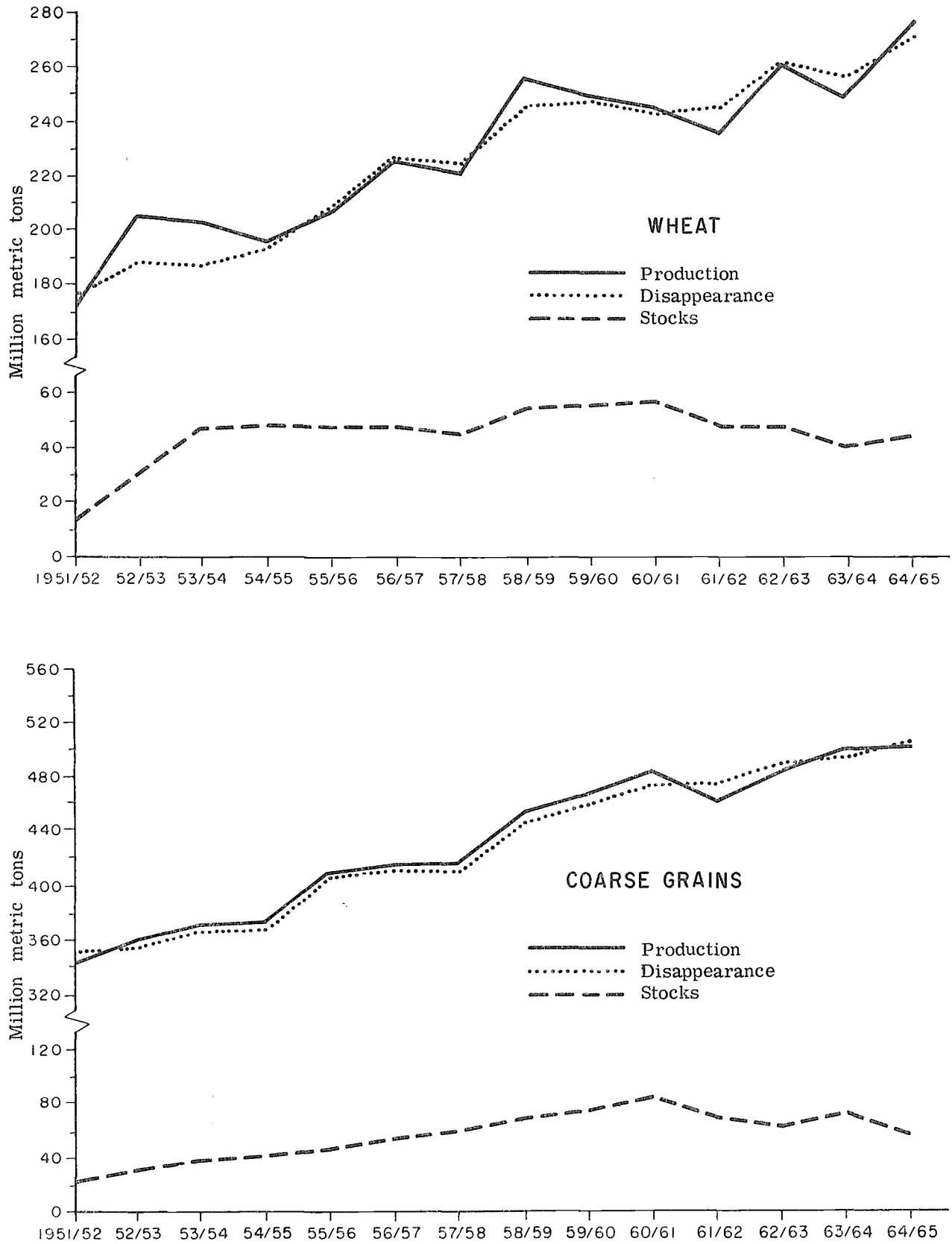
Figure II-4 and Annex Table 7 show trends in the stocks of the main agricultural products. Owing to the lack of any objective criteria of what constitutes a " normal " level of stocks, and what is "surplus," the entire known holdings are shown for each commodity and country. There can be no question, however, that stocks of the commodities included in the table have grown to levels well beyond those necessary to absorb normal fluctuations in production and trade.

The surplus stocks initially consisted mainly of temperate-zone products, especially grains. In the latter part of the 1950s, however, the tendency to surplus production spread to some tropical products as well, particularly coffee.

The total amount of stocks (on a price-weighted basis) has shown two periods of rapid growth, first from 1951 to about 1954, and again from 1958 to 1961. Between 1954 and 1958 there was only a slow increase, while since 1961 there has been some decline in the overall level of stocks.

The movements in total stocks have chiefly reflected the level of stocks of wheat and coarse grains, particularly in North America, where around 70 percent of the price-weighted total of the known agricultural stocks have been concentrated throughout the decade. The first period of expansion in wheat stocks, up to 1954, coincides with the period of recovery in production in the main importing areas and with a period of relatively slow growth in world agricultural trade. As can be seen from Figure II-5, it is the excess of output over disappearance in the two crop years 1952/53 and 1953/54 that was mainly responsible for the initial emergence

FIGURE II-5. - WORLD PRODUCTION, DISAPPEARANCE AND STOCKS OF WHEAT AND COARSE GRAINS



NOTE: Production and disappearance include estimates for China (Mainland). Wheat stocks are those held in the four major exporting countries (United States, Canada, Argentina, Australia). Coarse grains stocks are those held in the two major exporting countries (United States, Canada) and refer to barley, oats, maize, sorghum, millet, rye, and mixed grains.

of surplus wheat stocks. In the subsequent years until 1958/59, output and disappearance moved closely in step, in part from the United States because of larger imports of developing countries under government financed programs, and the level of stocks was stabilized. The next big rise in wheat stocks came in 1958/59, a year of good crops in many parts of the world. A major reduction in wheat stocks took place in 1961/62, when below average output in many countries, particularly in Canada and (partly as a result of government programs) in the United States coincided with large import requirements, especially by China (Mainland). There was a further significant fall in wheat stocks in 1963/64, to the lowest level since 1953, mainly because of the large wheat purchases of the U.S.S.R. following an exceptionally poor harvest.

For coarse grains, it is evident from Figure II-5 that production has exceeded the estimated disappearance by a small margin until 1961/62, when output dropped steeply both because of adverse weather in a number of countries and the acreage restrictions in the United States under the Emergency Feed Grain Program. Stocks of coarse grains therefore continued to accumulate until they reached a peak of over 80 million tons in 1961, since when they too have declined sharply.

Wheat and coarse grains differ somewhat with regard to the size of stocks in relation to output, consumption and trade (Table II-9). In both cases the carryovers in the major exporting countries amount to somewhat under 20 percent of annual world production and consumption. However, whereas wheat stocks are now slightly less than the annual volume of world trade, stocks of coarse grains are equal to approximately two years of the comparatively small world trade. Considering North America alone, where almost all of the grain stocks are located, those of coarse grains are considerably lower than those of wheat in relation to the region's production and consumption, but are much the larger in relation to the volume of exports. Nevertheless, United States wheat stocks are the more burdensome, for whereas over half of the wheat crop is exported (largely on special terms) only about 10 percent of coarse grain production is exported, most of it commercially.

Cotton stocks still amount to about half of the annual volume of world production and consumption, and to almost one and a half years' trade. Of the total stocks, the greater part, and one which has fluctuated rather little, has been held in importing countries and in exporters other than the United States. The surplus element of cotton stocks has,

TABLE II-9. - STOCKS OF MAIN AGRICULTURAL COMMODITIES IN RELATION TO PRODUCTION, CONSUMPTION AND TRADE IN 1962-64 (ANNUAL AVERAGE)

	Stocks	Production	Consumption	Trade	Stocks as percentage of		
					Production	Consumption	Trade
WHEAT	*Million tons*				*Percent*		
North America	43.2	49.2	20.1	31.2	88	215	138
World [1]	[2] 44.8	233.4	232.4	49.6	19	19	90
COARSE GRAINS							
North America	66.3	144.9	134.3	17.3	46	49	383
World [1]	[3] 66.3	404.8	406.7	34.1	16	16	194
COFFEE							
Brazil	3.5	1.3	0.7	1.0	269	500	350
World [1]	[4] 4.2	3.7	4.2	2.9	114	100	145
COTTON							
United States	2.3	3.3	1t9	1.0	70	121	230
World [1]	5.0	10.0	10.1	3.5	50	50	143

[1] Excluding China (Mainland). - [2] Four major exporters (Argentina, Australia, Canada, United States). - [3] Two major exporters (Canada, United States). - [4] Five countries (Brazil, Colombia, Ivory Coast, Uganda and United States).

however, been largely concentrated in the United States, which has since the war assumed the role of a residual supplier on world markets. The peak level of United States cotton stocks was reached in 1956. Subsequently the carryover fell back, as production was reduced under the influence of lower support prices and acreage restrictions, but with a renewed increase in output it has tended to increase again since 1961.

The stocks of dairy products have been a minor portion of the total, but the abundance of butter and cheese in certain years has had a disproportionate effect on prices because of the narrowness of the free international markets. Because of their marginal character relative to output, the fluctuations in stocks of dairy products have been very wide, particularly in the United States. In the case of dried skim milk, these fluctuations have at times threatened the continuity of bilateral and multilateral aid programs, including those of UNICEF.

Coffee stocks, though small in quantitative terms relative to those of wheat and coarse grains, are of high value and therefore gain importance in the total if expressed on a price-weighted basis, as in Figure II-4. They are also larger than the stocks of any other product relative to the total annual output, which they have equaled or exceeded in several recent years. On the other hand, although exact information is lacking on the quality of the stocks, it is doubtful whether all of them are of exportable quality.

Detailed information on the total value of stocks and on the cost of holding them is available for the United States. Annex Table 8 shows the year-by-year changes in the quantity and value of the investment (stocks pledged for outstanding loans and in the price support inventory) of the United States Commodity Credit Corporation (CCC). The total value of CCC's investment rose sharply up to 1956 and has since declined slowly each year with the exception of 1959 and 1963. In spite of these reductions, however, it still amounts to almost $7,000 million. Related costs of storage, transport and interest rose from an annual level of $450 million in 1954 to over $1,000 million in 1960.

Annex Table 7 also shows the level of stocks of the main forest products. These have generally not been in the nature of " surplus " stocks, but for some products they have shown steep fluctuations in line with short-term changes in demand.

FOOD SUPPLIES AND CONSUMPTION

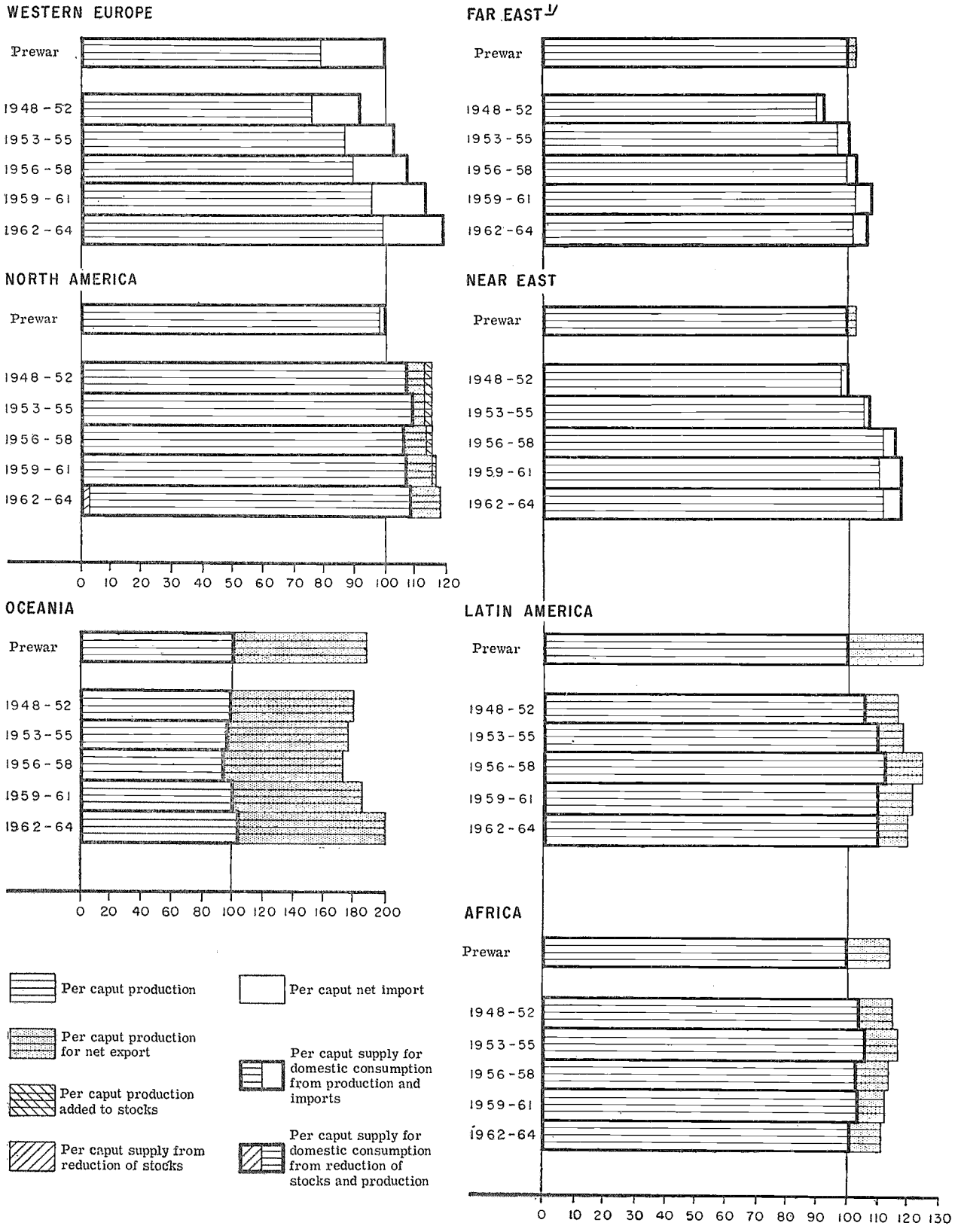
The total stocks of food products shown in Annex Table 7, large as they are for some commodities, are equivalent on a price-weighted basis to only about 6 percent of annual world food production. It is not likely, therefore, that changes in these stocks will have had much effect on total food supplies, so that the indices of per caput food production quoted earlier should provide an adequate indication of the course of per caput food supplies at the world level.

For individual countries and regions, however, trends in supplies have often differed from those in production as a result of changes in international trade. In particular, many developing countries have had to offset their lagging per caput production by reducing exports or increasing imports of food. For example, exports of grains and meat from Latin America have in most recent years been less than they were before the war, as have exports of oilseeds from the Far East and of grains from northwest Africa. Increasing imports of food have been even more widespread; to cite some recent examples, imports of wheat rose in Brazil from 63 percent of the total supply in 1954-56 to 76 percent in 1960-62, in India from 12 to 24 percent, in Pakistan from 13 to 22 percent, and in the United Arab Republic from 23 to 50 percent during the same period.

As a result of such changes, both the Far East and Near East, which were small net exporters of food before the war, have had a growing net import throughout the postwar period. Africa's net exports of food have increased only slowly, and those of Latin America are less than before the war.

The exact measurement of trends in food supplies presents many difficulties. Aside from the doubtful nature of much of the basic data, it is necessary to match production and trade seasons and to allow for feed and seed, waste, and changes in stocks. This is done in the FAO food balance sheets, which are now available for 53 countries. Data from these food balance sheets are summarized in Annex

FIGURE II-6. - ESTIMATED PER CAPUT FOOD PRODUCTION, NET TRADE AND SUPPLIES, BY REGION
(Indices, prewar supplies = 100)



[1] Excluding China (Mainland).

TABLE II-10. - CHANGES IN REGIONAL FOOD PRODUCTION, TRADE, FOOD SUPPLIES AND POPULATION, 1953-55 TO 1962-64

	Increase,[1] 1953-55 to 1962-64						
	Production	Import	Export	Stocks	Supplies	Population	Per caput supplies
	Percent						
Western Europe	24	46	57	...	27	8	17
North America	19	41	124	76	15	17	— 1
Oceania	38	41	48	...	30	22	7
TOTAL ABOVE REGIONS	22	45	82	...	21	12	9
Latin America	28	35	32	...	28	27	1
Far East[2]	27	66	28	...	30	22	7
Near East	32	155	34	...	40	25	12
Africa	22	57	36	...	21	26	— 4
TOTAL ABOVE REGIONS	27	68	32	...	29	23	5

[1] Minus sign (—) denotes decrease. - [2] Excluding China (Mainland).

Table 9, and some of their nutritional implications are discussed in Chapter V.

A somewhat cruder indication of trends in per caput food supplies in the main regions of the world is presented in Figure II-6 and Table II-10, where some of the difficulties mentioned above are minimized by considering averages for several years.

It is apparent that in general the trend in per caput supplies in the developing regions has been more favorable than in per caput production. Thus in both Latin America and the Far East per caput supplies of food appear to be above the prewar level, in spite of the lag in per caput production. In Africa, however, the increase in gross imports during the decade seems to have been insufficient to prevent a slight decline in per caput supplies, though statistics of food production for domestic consumption in this region are particularly unreliable.

The increase in per caput food supplies in the developing regions has been somewhat less than the increase in the much higher levels prevalent in the developed regions. Thus there is little doubt that the gap in food consumption levels between these two groups of regions has widened further during the decade.

Chapter III. - International trade in agricultural products

International trade in agricultural products during the last decade has been characterized by an abundant supply of most commodities, while for many of them demand on the major import markets has continued to grow only slowly. The volume of trade has expanded fairly rapidly, but this has been accompanied by a widespread and in some cases severe fall in prices, with only a few temporary recoveries. Thus total earnings from agricultural exports have grown considerably more slowly than the volume of shipments.

The slow growth of the agricultural export earnings of the developing countries, with its severe consequences for their economic development, has led to the intensive international consideration of agricultural and general trade problems, especially toward the end of the decade. These efforts culminated in the holding of the United Nations Conference on Trade and Development in 1964.

Government measures to aid exports have been greatly intensified, in particular United States programs for exports on concessional terms. Such exports have emerged during the decade as an important element in world trade.

An important feature of the decade has been the evolution of a number of regional and subregional schemes for economic integration, especially in western Europe and Latin America. Although, except in western Europe, their effects on agricultural trade appear so far to have been small, they are likely to have an increasing influence in future years.

MAIN TRENDS

This year, for the first time, it is possible to show indices of world trade in agricultural, fishery and forest products combined, although these indices (shown here on a provisional basis) are so far available for only a limited period.

According to the new indices, the volume of trade in agricultural, fishery and forest products rose by about 40 percent between 1955 and 1963 (Table III-1). This growth was achieved, however, at the expense of a fall of 6 percent in prices while, but for a temporary recovery toward the end of the decade, the decline in prices would have been rather greater (10 percent between 1955 and 1962). Total earnings from exports of agricultural, fishery and forest products rose in current prices by only about 20 percent between 1955 and 1962.

Because of the slow rise in the prices of manufactured goods in world trade, the " terms of trade " of exports of agricultural, fishery and forest products in relation to those of manufactured goods declined by almost 20 percent from 1955 to 1962. The increase in the " real " value of these exports (in terms of their purchasing power for manufactured goods) during this period was limited to about 10 percent, or only about a third of the rise in their volume.

For agricultural products proper, the postwar course of world trade may be divided into three fairly distinct phases (Figure III-1). The first was a period of recovery lasting till 1950 or 1951; the volume of exports recovered rapidly to the prewar level, and there was also a substantial rise in prices, culminating in the steep increases at the time of the Korean war. In the second period, from 1951 to 1954 or 1955, the volume of trade was almost stable at only slightly more than the prewar level, while prices dropped sharply, so that export earnings also fell. During the third period, roughly coinciding with the decade reviewed here, the increase in the volume of exports has been resumed, but

TABLE III-1. - INDICES OF WORLD [1] TRADE IN AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	Prewar average	Average 1948-52	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
	Indices, average 1957-59 = 100													
VOLUME OF EXPORTS	...	...	...	...	89	95	98	97	105	111	118	121	125	...
Agricultural products [2]	79	77	83	83	88	97	99	97	103	110	116	118	122	130
Fishery products	[3] 55	58	68	79	82	90	91	100	108	111	117	130	133	140
Forest products	...	...	77	86	96	94	97	96	106	118	122	126	138	152
AVERAGE EXPORT UNIT VALUE	...	...	...	...	105	103	105	99	96	94	94	94	99	...
Agricultural products [2]	38	113	110	112	106	103	106	99	96	96	93	93	99	103
Fishery products	[3] 36	93	91	92	93	98	101	100	99	101	102	107	107	113
Forest products	...	...	96	97	102	103	104	99	97	98	97	95	93	96
TERMS OF TRADE [4]	...	...	...	...	111	105	104	99	97	95	92	91	96	...
Agricultural products [2]	78	120	115	120	113	106	105	99	96	95	91	90	97	99
Fishery products	[3] 73	100	95	99	98	100	100	100	100	100	100	104	105	109
Forest products	...	...	100	104	109	106	103	99	98	97	94	93	91	92
VALUE OF EXPORTS IN CURRENT PRICES	...	...	...	...	93	98	103	96	101	107	111	113	124	...
Agricultural products [2]	28	86	92	93	94	100	105	96	100	105	108	109	121	133
Fishery products	[3] 19	55	63	73	76	88	92	101	108	109	115	134	137	158
Forest products	...	...	73	83	98	97	101	96	103	115	118	119	128	145
"REAL" VALUE OF EXPORTS [5]	...	...	...	...	99	100	102	96	102	106	109	110	121	...
Agricultural products [2]	58	92	96	99	100	102	104	96	100	104	106	106	118	128
Fishery products	[3] 39	58	66	78	80	89	91	101	108	108	112	131	134	152
Forest products	...	...	77	89	104	99	100	96	104	114	115	116	125	140
AVERAGE EXPORT UNIT VALUE OF MANUFACTURED PRODUCTS [6]	49	94	95	94	94	98	101	100	99	101	102	102	102	104

NOTE. FAO indices of world trade in fishery and forest products and combined indices for agricultural, fishery and forest products are shown here for the first time. For details of the methodology and coverage of these indices, as well as of the usual world and regional indices of agricultural trade, reference should be made to the explanatory note to the Annex Tables.

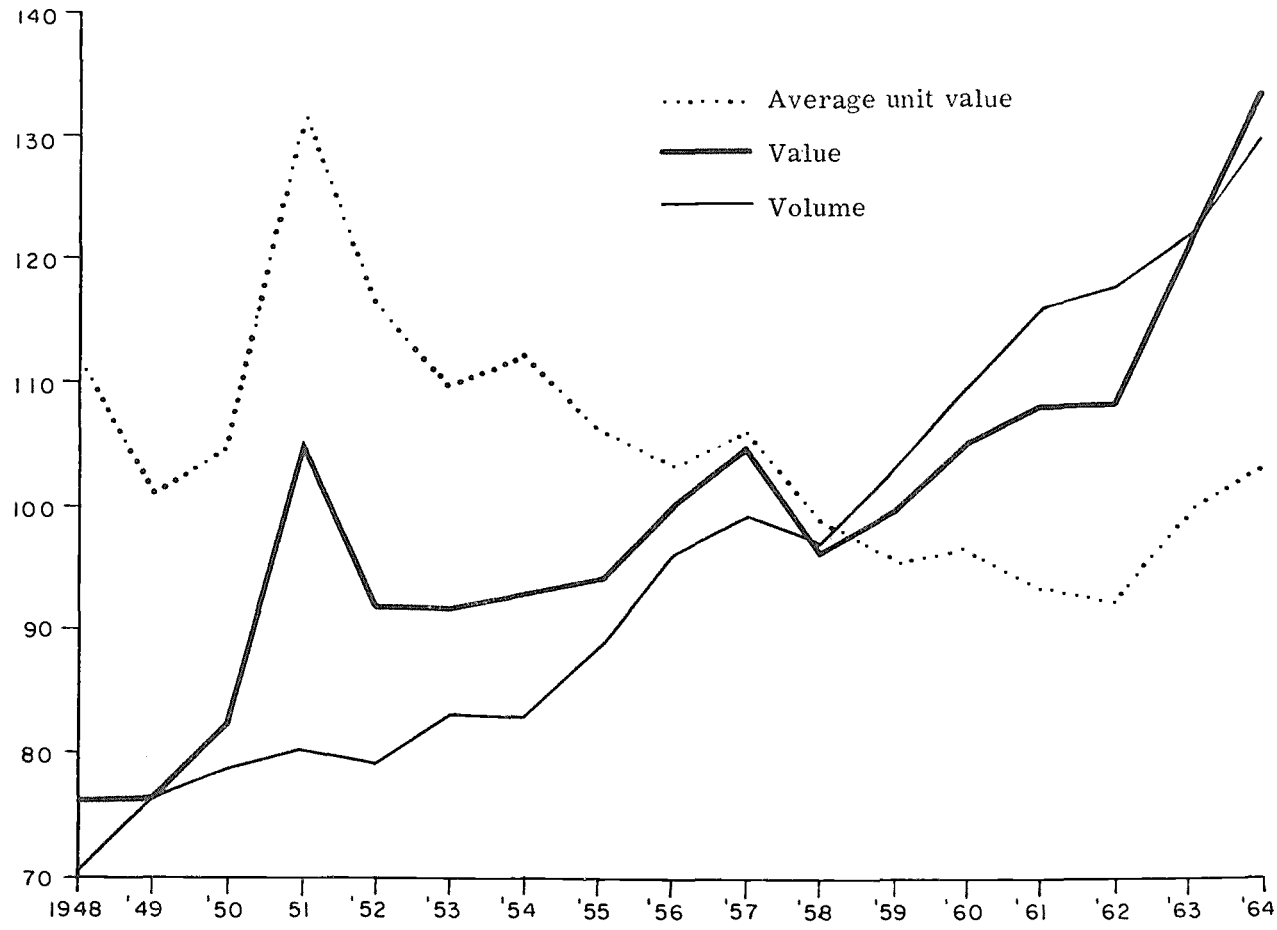
[1] Excluding exports of China (Mainland). - [2] Excluding exports of eastern Europe and the U.S.S.R., as well as China (Mainland). [3] 1938. - [4] Export unit values deflated by United Nations index of export unit value of manufactured products. - [5] Value in current prices deflated by United Nations index of export unit value of manufactured products. - [6] United Nations index.

prices have declined irregularly, although remaining considerably above the depressed levels of the immediate prewar years.

From late 1962 until early 1964 there was a substantial recovery in agricultural prices on world markets, which gave rise at the time to widespread hopes that a new trend was emerging but has now shown itself to have been only temporary. Annual average prices show a further increase in 1964, as a result of the high prices at the beginning of the year. However, as is indicated in the more detailed account of price trends given below, prices of most agricultural products have now been falling steadily since the early months of 1964.

Trends have generally been more favorable for fishery and forest products than for agricultural

FIGURE III-1. - VOLUME, VALUE AND AVERAGE UNIT VALUE OF WORLD [1] EXPORTS OF AGRICULTURAL PRODUCTS
(Indices, average 1957-59 = 100)



[1] Excluding exports of eastern Europe, U.S.S.R. and China (Mainland).

products. The volume of fishery exports has risen even more rapidly than for agricultural products. This is mainly due to the massive expansion of fish meal exports, which more than doubled in the short period from 1958 to 1961, but there has also been a substantial rise in exports of fresh, chilled and frozen fish (Annex Table 11). In contrast to the prices of agricultural products, those of fishery products have risen during the decade.

The volume of exports of forest products has also increased rapidly, especially during the last few years. The comparatively small trade in plywood and veneers showed the fastest increase, but there were also particularly large increases in exports of roundwood, chemical woodpulp, and other paper and board (Annex Table 12). Prices of forest products have been fairly stable during most of the period.

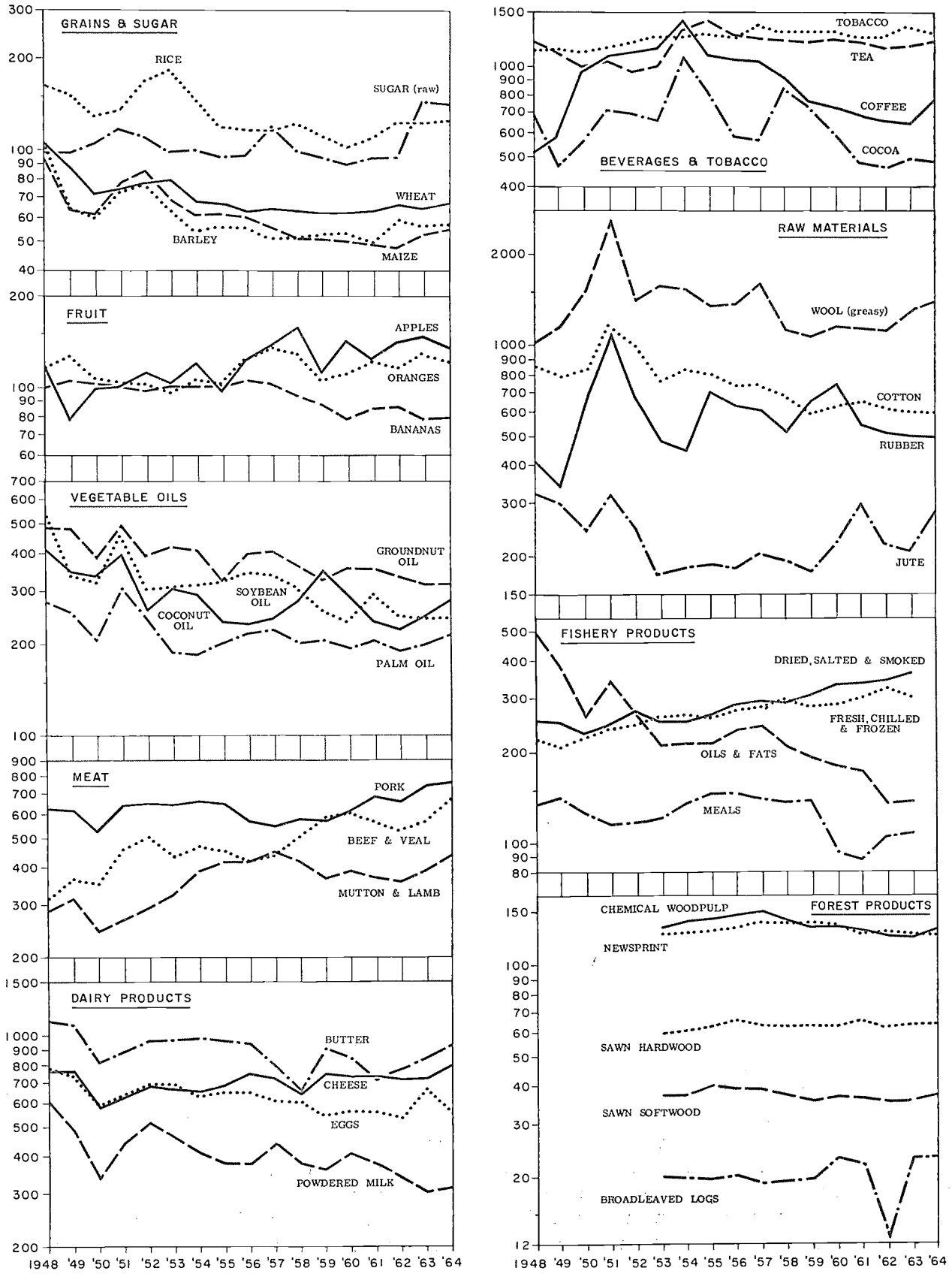
Price trends in world markets

Price trends during the decade for the main agricultural, fishery and forest commodities are shown in Figure III-2. Further details are available in Annex Table 14, while indices for the main commodity groups are shown in Table III-2.

Aside from the Korean boom years of 1951 and 1952, average export unit values for agricultural products as a whole reached their peak in 1954. Since then the price index has fallen almost continuously, except for a slight recovery in 1957 and, as already noted, a larger one centered on 1963. Prices in 1962-64 averaged about 13 percent lower than in 1952-54.

The rise in prices in 1954 mainly reflected a steep increase in the prices of cocoa, coffee and tea. Their prices had already been rising during most of the

TABLE III-2. - AVERAGE EXPORT UNIT VALUES OF AGRICULTURAL PRODUCTS, BY MAIN COMMODITY GROUPS
(U.S.$ per metric ton, [1] semilogarithmic scale)



[1] U.S.$ per cubic meter for sawn softwood, sawn hardwood and broadleaved logs.

TABLE III-2. - INDICES OF WORLD [1] AVERAGE EXPORT UNIT VALUES OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS, BY MAIN COMMODITY GROUPS

	Prewar average	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)	Increase [2] 1952-54 to 1962-64
	Indices, average 1957-59 = 100																		*Percent*
ALL AGRICULTURAL PRODUCTS	38	111	101	105	132	116	110	112	106	103	106	99	96	96	93	93	99	103	— 13
Food and feedstuffs	42	132	114	102	115	115	111	105	100	101	103	99	98	97	96	97	108	110	— 5
Grains	45	168	135	115	124	137	134	114	107	103	102	100	98	97	97	103	103	106	— 19
Fruit	41	95	95	91	92	90	87	92	90	102	106	105	89	90	93	93	98	93	5
Edible oils and oilseeds	32	140	117	105	136	108	112	107	96	100	101	98	101	97	95	91	98	98	— 12
Meat	40	78	83	77	90	95	96	98	97	97	95	101	104	108	106	102	110	119	14
Dairy products	50	132	124	96	106	116	113	109	109	111	104	92	104	103	96	96	102	106	— 10
Beverages and tobacco	29	79	76	94	104	104	107	130	110	103	104	105	92	88	83	82	85	91	— 24
Agricultural raw materials	40	102	98	120	187	128	110	110	114	108	112	94	94	103	97	92	96	99	— 17
FISHERY PRODUCTS [3]	[4] 36	105	98	85	92	88	91	92	93	98	101	100	99	101	102	107	107	113	18
FOREST PRODUCTS [3]	...	...	...	...	...	...	96	97	102	103	104	99	97	98	97	95	93	96	— [5] 2

[1] Excluding the U.S.S.R., eastern Europe and China (Mainland). - [2] Minus sign (—) denotes decrease. - [3] Excluding China (Mainland) only. - [4] 1938. - [5] 1953-54 to 1962-64.

earlier postwar years, with the gradual liberalization of imports in western Europe and only a slow increase in output. In 1954 there were supply shortages for each of these commodities, and the average export unit values of coffee and tea rose by 20 to 30 percent and of cocoa by more than 60 percent. The subsequent fall in prices has also been steepest for these products. Consumption in North America reacted promptly to the high prices of 1954, but in western Europe the reaction was cushioned by the dampening effect of internal taxation on fluctuations in retail prices and by the still substantial reservoir of pent up demand. The high prices of the earlier postwar years had stimulated new planting, and supplies subsequently expanded rapidly. Even with the recovery in prices at the end of the decade, the price index for the beverages and tobacco group as a whole averaged 24 percent lower in 1962-64 than in 1952-54. The fall in tea prices, however, has been much less than for cocoa and coffee.

Price trends have differed somewhat for the other main commodity groups. For food and feedstuffs, the largest group and the one which originates from the greatest number of countries, the highest prices (even above those of the Korean boom) were reached during the shortages of the early postwar years. Prices for the group as a whole and for most individual commodities have subsequently declined slowly, though with considerable fluctuations. The main exceptions have been fruit and meat, both of them products whose consumption is still rising rapidly in the principal importing countries. Prices of most categories of meat have shown a rising trend during most of the postwar period. Fruit prices have fluctuated sharply and generally reached peak levels in the late 1950s. Sugar prices also have shown considerable year-to-year fluctuations, culminating in the massive price increases of the end of the decade, which are discussed separately below.

Prices of fishery products also reached high levels in the immediate postwar years, but since the early 1950s they have been slowly rising again, and by the end of the decade they were a good deal higher than the earlier peak levels. This trend has been mainly due to rising prices for food fish. For fish meal and fish oil prices have declined, especially since the end of the 1950s.

The prices of raw materials of agricultural origin have shown wide fluctuations. More than other agricultural products, they respond to changes in industrial production and general economic activity in the main importing countries. They showed by far the steepest rise with the Korean boom in 1951, and the steepest subsequent decline. In 1957 they were the main contributors to the slight recovery in agricultural prices as a whole, but in the following year they dropped sharply as a result of the recession in the industrialized countries. Most of the commodities in this group have remained at levels well below the first postwar peaks reached prior to 1951. Wool prices, however, were at peak

levels (apart from the Korean boom) in 1953 and 1957, and rubber prices in 1955 and 1960.

Except for minor fluctuations, the prices of forest products have changed little during the decade, although they have declined somewhat from the (post-Korean) peak levels reached in 1957. Prices of large-sized logs (sawlogs and veneer logs) have tended to rise slowly, and prices have been especially firm for top qualities and sizes. Prices of pulpwood and pitprops have fluctuated sharply. The main declines in prices have been for some of the more highly processed products, such as panel products and paper, reflecting cost reductions because of technological improvements and also a tendency for capacity to outstrip demand.

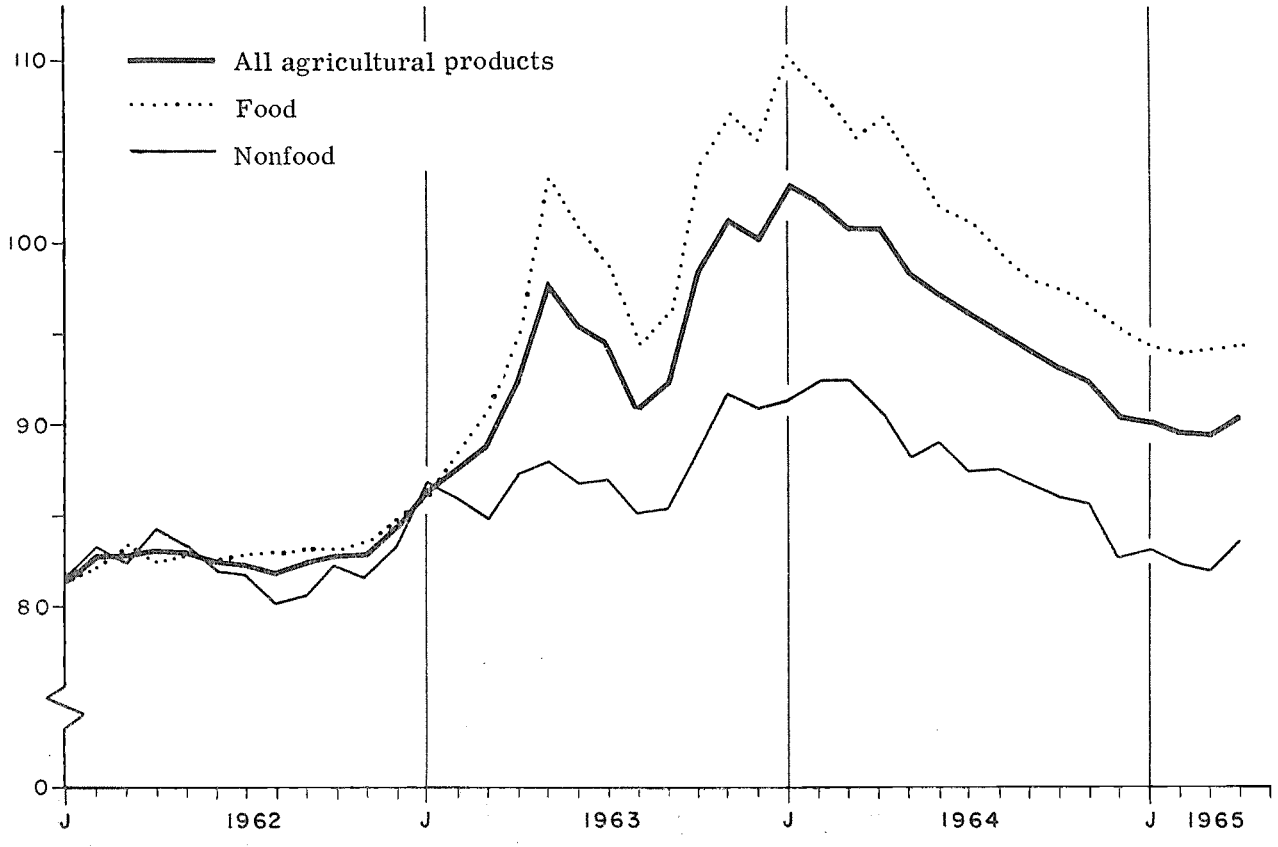
Recent price movements

The price movements at the end of the decade have been so different from the longer term trends just discussed as to warrant separate consideration. They can be followed in Figure III-3, which shows monthly price indices from the beginning of 1962 to the early months of 1965.

Prices of many products began to rise in the middle of 1962 and continued to do so during all or most of 1963. For 1963 as a whole the index of average export unit values was 7 percent higher than the year before, which was the biggest rise in any single year since the Korean war. By far the largest increases in 1963 (more than 50 percent) were in the average export unit values of sugar, of which harvests were poor both in the Caribbean and in Europe, and of sisal, mainly because of heavy purchases for stock in anticipation of short supplies. While no other major product registered price rises of comparable magnitude, there were smaller increases over a wide range of commodities.

Although there were widespread hopes that these price rises might reflect new forces which would finally reverse the long downward trend, it already appeared at the time that many, if not all, of the factors involved were of a short-term character. This has in fact proved to be the case, and by the

Figure III-3. - Monthly price indices for agricultural exports
(Indices, 1957 = 100)



Source: National Institute of Economic and Social Research, *National Institute Economic Review*, 32, May 1965 and previous issues.

early months of 1964 the prices of many commodities had already started to fall again. Although for 1964 as a whole the index of average export unit values showed a further increase of about 3 percent, it is clear from the monthly price indices in Figure III-3 that by the end of 1964 the greater part of the gain made in 1963 had already been lost.

Sugar prices have fallen steeply since late 1963, initially in response to the expectations of larger crops in virtually all regions. Although for 1964 as a whole there was little change in the average export unit value, by early 1965 price quotations were back to the postwar low of just over 2 U.S. cents per pound, compared with a peak of nearly 12 U.S. cents in November 1963. There were less dramatic but still substantial declines in the prices of wheat, coffee, cocoa, wool, sisal and a number of other commodities. Wheat prices, especially for Argentine and Australian exports, turned down at the end of 1963, as a result of the recovery in production in the U.S.S.R. and elsewhere and the consequent reduction in import demand. Coffee prices, which had risen steeply in response to the short Brazilian crop, have declined since March 1964. Cocoa prices lost ground again in 1964, as output was more than adequate to meet the slow growth of consumption. Wool prices, which had risen since mid-1962, had by early 1964 reached levels where they were no longer competitive with synthetic fibers, so that demand fell and by the end of the year prices were back almost to the 1962 level. Sisal prices declined in 1964 as the expected rise in consumption failed to materialize.

The prices of a limited number of products, including meat (especially beef and veal), vegetable oils, jute, and long and extra long staple cotton, experienced varying periods of rising prices in 1964, thus contributing to the high average export unit value for the year. In the main, however, these increases were also due to short-term factors, mainly fluctuations in production. and the prospects are for a return to lower prices. Only in the case of meat were longer term factors at work, reflecting the steadily increasing demand for livestock products in the high-income countries.

TABLE III-3. - INCREASE [1] IN THE VOLUME, VALUE AND UNIT VALUE OF AGRICULTURAL EXPORTS, BY REGION, 1952-54 TO 1962-64

	Volume	Unit value	Value in current prices	"Real" value [2]	"Real" value per caput [2]
	Percent				
Western Europe	73	1	72	60	47
North America:					
Total	85	— 12	56	46	23
Commercial [3]	[3] 43	— 15	21	13	— 5
Oceania	48	— 9	37	28	2
Total of above	72	— 9	56	46	29
Total commercial [3]	55	— 9	41	32	17
Latin America	40	— 21	7	—	— 23
Far East [4]	23	— 8	12	5	— 15
Near East	33	— 17	15	7	— 16
Africa	55	— 19	24	16	— 11
Total of above	38	— 18	13	5	— 16
TOTAL	51	— 13	32	23	1
TOTAL COMMERCIAL [3]	43	— 13	25	17	— 5

[1] Minus sign (—) denotes decrease. - [2] Deflated by United Nations index of export unit values of manufactured products. - [3] Excluding United States exports on concessional terms from 1955. - [4] Excluding China (Mainland).

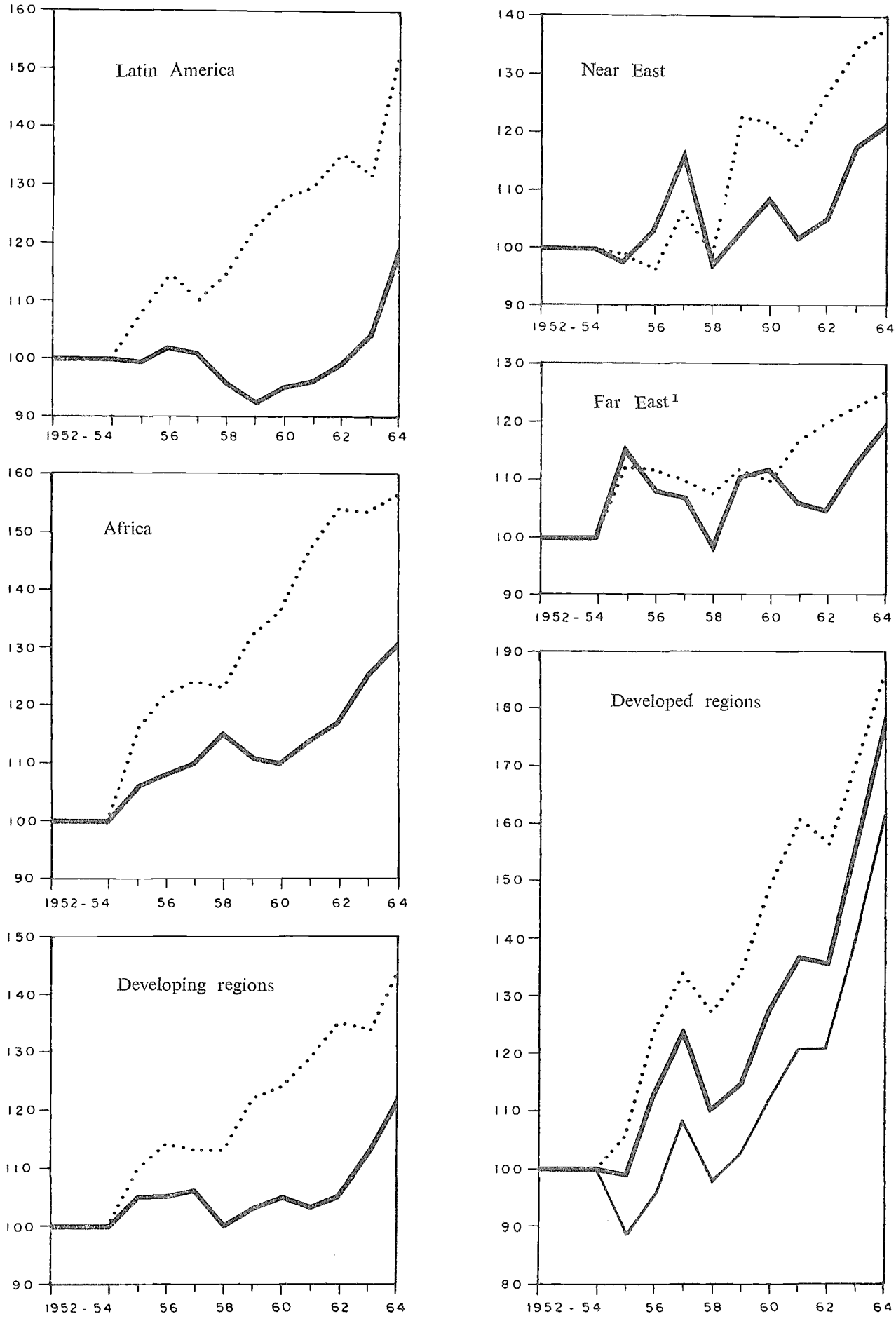
Regional trends in agricultural export earnings

The growth of agricultural export earnings has varied greatly as between the different regions of the world (Table III-3 and Figure III-4). In particular, the export earnings of the developing regions have increased much more slowly than those of the developed regions, even if shipments on concessional terms are excluded from the latter. [1]

Comparing 1962-64 with 1952-54, the agricultural exports of the developing regions have grown by about 38 percent in volume, as against 55 percent for the commercial exports of the developed regions. As noted above, the fall in prices during the decade has been steepest for beverage crops and agricultural raw materials. It has therefore chiefly affected the exports of the developing regions, the average unit values of which have fallen by 18

[1] The exports of agricultural products from the United States on concessional terms (discussed more fully later in this chapter) differ significantly from normal commercial transactions. The exporting country's gains of foreign exchange are only a small proportion of their total value, amounting to that part of the counterpart funds generated in the recipient country which is used for purposes normally requiring dollar expenditure. The recipient country, on the other hand, saves rather than spends foreign exchange, since it can pay in domestic currency for products it would otherwise have to purchase on the world market.

FIGURE III-4. - VOLUME AND VALUE OF REGIONAL AGRICULTURAL EXPORTS. (Indices, average 1952-54 = 100)



[1] Excluding China (Mainland).

..... Volume. - ▬▬ Value. - ——— Value of commercial exports

percent, in contrast to a decline of 9 percent for the developed regions. The disparity between the two groups of regions has thus been even greater in respect of export earnings than for the volume of exports. In current prices the export earnings of the developing regions have increased by only 13 percent between 1952-54 and 1962-64, in comparison with an increase of 41 percent in the developed regions. As a result of these trends, the share of the developing regions in the total value of agricultural trade has declined from 57 percent in 1952-54 to 49 percent in 1962-64.

Africa did best among the developing regions, a rise of 55 percent in the volume of exports bringing 24 percent more in export earnings at current prices. However, an equivalent rise in the volume of commercial exports from the developed regions as a whole brought an increase of no less than 41 percent in earnings.

At the other extreme, an increase of 40 percent in the volume of exports from Latin America was reduced by price falls (especially for coffee) to a gain of only 7 percent in export earnings at current prices. If account is taken of the rise in prices of manufactured goods, Latin America's export earnings showed no rise at all in terms of their purchasing power for these goods. For the developing regions as a whole, the substantial increase of 38 percent in the volume of exports has brought only 5 percent more purchasing power for manufactured imports, which is far less than the increase in population.

The agricultural exports of the centrally-planned countries are only a small proportion of the total, and consist mainly of transactions within the group. Indices compiled by FAO of the trade of eastern Europe and the U.S.S.R. are now available for the limited period 1955-63 and indicate that both the volume and value [2] of agricultural exports almost doubled during this time (Annex Table 13A.) This is a more rapid increase than in any other region.

It is not yet possible to include China (Mainland) in FAO's index numbers of agricultural trade owing to lack of data. Shipments of such main exports as rice and soybeans declined with the poor harvests beginning in 1959, but have recently recovered partially.

[2] Because of difficulties concerning exchange rates and the pricing of barter transactions. the trade of these countries has been priced at the world average export unit values.

Agricultural imports

Among the developed regions, which account for some 80 percent of the world total, agricultural imports have increased rapidly in western Europe (Figure III-5). The increase of more than 40 percent in the volume of imports between 1952-54 and 1962-64 is almost five times as fast at the growth of population. In North America, however, not only has the volume of imports shown only a small increase, but their value is somewhat less than at the time of the Korean boom (Annex Table 13B).

In both these two main importing regions the growth of imports has been slowest for agricultural raw materials. North American imports of agricultural raw materials, in spite of some fluctuations, have tended downward during most of the decade, while those of western Europe have shown no definite trend up or down. It is these products (and especially fibers and rubber) that have been chiefly affected by the competition of synthetic and other man-made substitutes, the development of which has advanced considerably during the decade. The effects of such substitutes on agricultural trade were analyzed in detail in last year's issue of this report. [3]

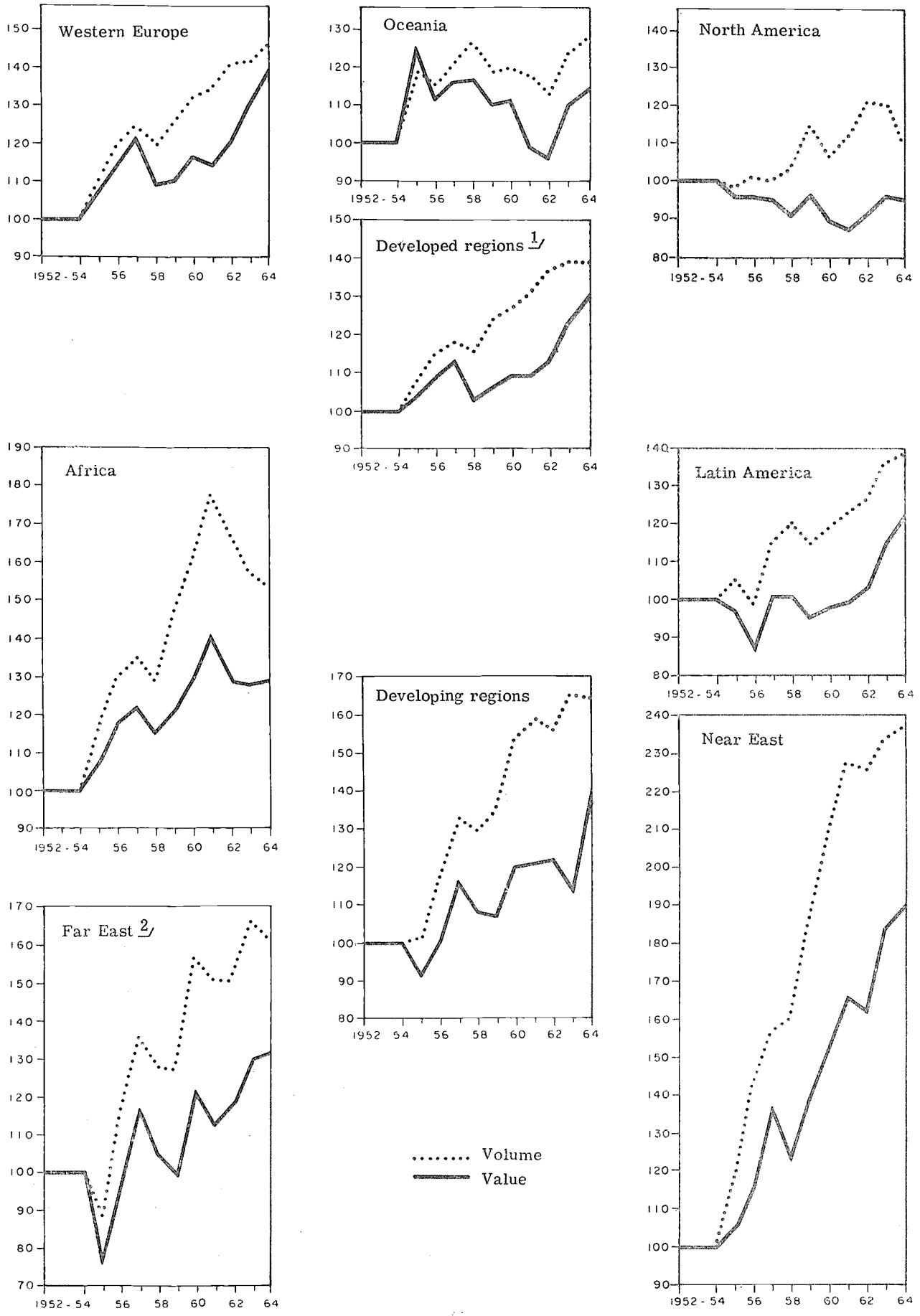
Western Europe's imports of beverages and tobacco have continued to increase fairly rapidly, but in North America they have leveled off and in value terms have actually declined in the last few years. Food and feedstuffs have accounted for a large part of the increase in imports of both regions. In western Europe much of this represents increased intraregional trade.

The agricultural imports of the developing regions, representing about 20 percent of the world total, have increased greatly. Food imports have expanded particularly rapidly in the Far East and the Near East. As is discussed below much of the increase in food imports into developing countries has consisted of shipments on special terms.

The new FAO indices show that agricultural imports into eastern Europe and the U.S.S.R. rose by about 60 percent between 1955 and 1963, which is a good deal faster than the increase in western Europe and North America, though the total volume is still small in comparison with these regions. There has been a particularly rapid increase in imports of sugar, following the suspension of the United States quota for Cuban sugar. There have also been substantial increases in imports of fruit, agri-

[3] FAO. *The state of food and agriculture 1964*. p. 133-191.

FIGURE III-5. - VOLUME AND VALUE OF REGIONAL AGRICULTURAL IMPORTS. (Indices, average 1952-54 = 100)



[1] Including Japan. - Excluding China (Mainland) and Japan.

cultural raw materials (mainly natural rubber), beverage crops, and (in 1963) grains. However, the earlier very rapid increase in agricultural imports appears to have slowed down. Imports of vegetable oils and oilseeds and of livestock products have tended to fall for some years, and those of food and feedstuffs as a whole and also of raw materials have leveled off or declined since 1961.

In spite of recent increases, the imports of tropical products of eastern Europe and the U.S.S.R. remain low, indicating a considerable potential for increased trade in the future. If the retail prices of coffee and cocoa in these countries are compared (in terms of their purchasing power for wheat flour) with prices in western Europe or North America, they appear to be very high, although there have recently been substantial reductions in some countries. It has been estimated by FAO [4] on the basis of the likely growth of per caput incomes and past trends in countries at comparable income levels, that the per caput consumption of coffee in eastern Europe and the U.S.S.R. could increase three or four times between 1961 and 1970, and that of cocoa approximately double. Whether such supplies will actually be imported, however, depends on administrative decisions, which in turn will depend on such factors as the availability of foreign exchange.

The main feature of the agricultural imports of China (Mainland) in recent years has been its large grain imports, following the series of poor domestic harvests. Grain imports, mainly from Australia, Argentine and Canada, have run at an annual level of 5 to 6 million tons in each season since 1961/62.

Exports on concessional terms

Exports on concessional terms [5] have in recent years constituted about 5 percent of global agricultural exports. For some commodities they account for a large proportion of world exports, amounting in 1962-64 to 29 percent of the total trade in wheat, 20 percent for soybean oil (including oil equivalent of soybeans), 8 percent for cotton, 7 percent for maize, 7 percent for dried milk, and 4 percent for tobacco. In most recent years such exports have been about 30 percent of total United States agricultural exports, though the proportion is much higher for certain commodities, such as wheat and dairy products (Table III-4).

The development of United States surplus disposal programs is discussed in the section of Chapter VII concerning food aid. Here it will suffice to mention that most of the shipments during the decade have been under the Agricultural Trade Development and Assistance Act (Public Law 480), which was passed in July 1954, when there had been a steep fall in the country's agricultural exports from the peak levels of the immediate postwar years. This had followed the gradual cessation of the various government-financed supply and relief programs that had been responsible for a large part of the total shipments during the war and early postwar years, and the failure of commercial shipments to expand sufficiently to make up for them.

Trends in shipments under the various titles of P.L.480, as well as under the Mutual Security Acts, are shown in Annex Table 16. The bulk are under Title I of P.L. 480 (sales for payment in the currencies of the recipient countries). Shipments of such magnitude have clearly helped prevent surplus stocks from reaching even higher levels. The data presented in Chapter II, however, indicate that in spite of surplus disposal programs stocks of a number of commodities have remained very large.

Table III-5 indicates that grain shipments under special terms have become a major element in the total grain imports of developing countries. The dependence on such shipments is greatest in the Near East, where in recent years they have accounted for about three-quarters of the total imports both of wheat and wheat flour and of coarse grains, but it is also high in each of the other developing regions.

Concern has been expressed from the first by commercial exporters about the effect of concessional exports on the level of export prices, and because of the danger of their displacement from their traditional markets. The effect on prices is difficult to judge in the absence of knowledge of the price effects of various alternative United States policies. As for displacement of commercial exports, a principal difficulty is to establish a "normal" base

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[4] FAO. *Agricultural commodities - the outlook for 1970 in eastern Europe*. Document CCP 63/7/1. Rome, 1963.

[5] The discussion here concentrates on the concessional exports from the United States, both because they are by far the most important and because more information is available on them than on comparable shipments from other countries. They include shipments under P.L. 480 and under the Mutual Security Acts. It should be noted however that the line between commercial and concessional terms sales is somewhat indefinite. Thus, in addition to the programs discussed here, the United States farm exports are assisted by favorable credit facilities granted by the Commodity Credit Corporation (CCC) under its Export Credit Sales program, and similar assistance is provided by a number of other governments, e.g., Canada in the case of the recent wheat exports to China (Mainland).

TABLE III-4. - UNITED STATES EXPORTS OF AGRICULTURAL PRODUCTS UNDER GOVERNMENT PROGRAMS, CALENDAR YEARS 1956-64 [1]

	1956	1957	1958	1959	1960	1961	1962	1963	1964
	Total shipments under Public Law 480 and Mutual Security Programs								
	Million dollars								
Wheat and wheat flour	587	567	498	563	757	887	776	968	1 054
Coarse grains	219	147	125	123	145	159	156	74	76
Rice	105	74	45	44	86	48	86	86	69
Dairy products	189	154	129	75	52	71	72	99	83
Fats, oils and oilseeds	172	130	146	148	114	84	139	123	148
Cotton	332	387	264	192	230	197	153	157	155
Tobacco	51	22	30	55	60	72	54	37	41
Other agricultural products	95	71	35	24	25	45	69	87	94
TOTAL	1 751	1 554	1 274	1 227	1 470	1 564	1 505	1 631	1 720
	Shipments under special programs as percentage of total United States agricultural exports								
	Percentage of total value								
Wheat and wheat flour	73	64	68	73	74	68	68	73	69
Coarse grains	59	41	26	22	28	30	20	9	9
Rice	71	57	51	43	59	44	56	49	34
Dairy products	74	72	69	58	47	72	63	60	41
Fats, oils and oilseeds	29	21	30	23	19	14	20	15	15
Cotton	46	37	40	43	23	22	29	27	23
Tobacco	15	6	9	16	16	18	14	9	10
Other agricultural products	10	8	4	3	2	4	6	6	3
TOTAL	42	34	33	31	30	31	30	29	27

[1] Calendar year data are not available for earlier years.

period for comparison. It does in fact appear that the United States share in the world trade of a number of products has tended to rise, and that only in the case of cotton, among major exports, has this share recently been markedly less than in earlier years. The possible effects of concessional sales on the economies of the recipient countries are considered in Chapter VIII.

TABLE III-5. - IMPORTS OF CEREALS ON CONCESSIONAL TERMS AS A PERCENTAGE OF TOTAL CEREAL IMPORTS, 1962-64 [1]

	Wheat and wheat flour	Coarse grains [2]	Rice [2]
	Percent		
Western Europe	11	4	1
Latin America	34	25	5
Far East [3]	56	20	13
Near East	71	74	5
Africa	43	45	9

[1] Concessional terms imports refer to fiscal years 1961/62-1963/64. - [2] 1961-63 for total imports and 1960/61-1962/63 for those on concessional terms. - [3] Excluding China (Mainland).

Fishery products

Industrialization of operations on sea and on land has laid the basis for a large expansion in the volume of fishery trade. Much of the increased volume is attributable to fish meal, which now accounts for over a third of the total trade in fishery products.

Trade in fishery products for human consumption has benefited from the favorable demand situation in western Europe and North America, which have absorbed increasing quantities of frozen fish from Scandinavia and Japan. Much smaller in volume, but because of the high unit value most important for the producing countries, have been imports of frozen crustaceans. A number of developing countries in Central America and in the Far East, in particular, have substantially increased foreign exchange earnings as a result of this trade.

On the whole, international trade in fishery products expanded faster than during the first postwar decade. Against the remarkable advances made by fish meal and frozen crustaceans, however, must be set less satisfactory developments in other products. Dried, salted, and smoked fish, for example, showed a declining trend over the period.

Forest products

The commodity composition of world trade in forest products has undergone substantial changes during the decade. Trade in newsprint and sawnwood rose more slowly than the average, chiefly because of the slower growth of demand for these products, but also because domestic production has gained a larger share of the market, particularly of newsprint.

The comparatively fast growth of trade in roundwood has resulted chiefly from increasing shortages of some kinds of home-grown timber in Europe and Japan. The expansion of trade in chemical pulp and other paper and paperboard was close to the growth in world consumption. An increasing proportion of Europe's paper and paperboard exports entered intra-European trade, and the region changed from a net exporter to a net importer of chemical pulp. Plywood and veneers account for a major part of the trade of the panel products' group, the smallest but the most rapidly expanding trade sector of forest products.

The main increases in trade during the decade were in exports from North America and the U.S.S.R. and in imports by Europe and Japan. Sizable increases in exports also occurred in Asia and Africa consisting almost entirely of tropical hardwood logs, with some increases also of sawn hardwood from both regions, and of plywood and veneers from Asia. The developing countries have, however, been able to raise their exports of the more highly manufactured forest products only to a limited extent.

In contrast to agricultural products, the exports of forest products of the developing countries rose much faster than those of the developed countries. However, rather few developing countries are major exporters of forest products. Nevertheless, the share of the developing countries in the total world trade in forest products rose from only 7 percent in 1953-55 to 11 percent in 1962-64.

EFFECTS IN AGRICULTURAL EXPORTING COUNTRIES

The trends discussed above have had serious consequences for the developing countries, because most of them depend very largely on their agricultural export earnings for the foreign exchange needed to import capital goods for the execution of their development plans. Table III-6 demonstrates the high proportion of agricultural, fishery and forest products in the toal value of the exports of most developing countries. A number of developed countries, including Australia and New Zealand and several countries in Europe, also rely heavily on agricultural exports. But, taking all the developing countries together, agricultural products accounted for three-quarters of the total value of exports (excluding petroleum and other fuels) in 1959-61, as compared with little more than a quarter in the rest of the world. [6]

The slow growth of the agricultural export earnings of the developing countries is even more serious when viewed against the rapid growth of their populations. The small rise in the export earnings of the developing regions shown in Table III-3 becomes a substantial decrease on a per caput basis.

In addition to the rough overall measure of the "terms of trade" of agricultural exports in relation to exports of manufactured goods in Table III-1, it is of interest to examine changes in the actual terms of trade of some individual countries. Table III-7 indicates that in 18 of the 25 agricultural exporting countries for which data are available the terms of trade have deteriorated in recent years, often very sharply.

Of the few countries which experienced more favorable terms of trade, only Mauritius showed an improvement of more than 10 percent. Mauritius, however, is a special case; it imports most of its food and has therefore benefited from low agricultural prices, while its main export, sugar, has recently enjoyed a brief period of high prices. In the other

[6] FAO. *Trade in agricultural commodities in the United Nations Development Decade*, Vol. I, Part I, p. 3, Rome, 1964. Fuels (mainly petroleum and petroleum products) have been excluded on the grounds that they are exported from a limited number of countries, none of which is a major agricultural exporter.

TABLE III-6. - SHARE OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS IN TOTAL VALUE OF EXPORTS, BY COUNTRY, AVERAGE 1961-63

	Percent
WESTERN EUROPE	
Iceland	98
Greece	82
Ireland	69
Denmark	60
Spain	56
Finland	50
Yugoslavia	43
Portugal	39
Netherlands	31
Norway	30
Sweden	25
Malta	24
France	20
Austria	18
Italy	17
Belgium-Luxembourg	11
United Kingdom	9
Switzerland	7
Germany, Federal Republic of	3
NORTH AMERICA	
Canada	37
United States	26
OCEANIA	
New Zealand	97
New Guinea	89
Fiji	78
Australia	77
Papua	71
LATIN AMERICA	
Costa Rica	97
Ecuador	[1] 96
Argentina	95
Honduras	92
Nicaragua	90
Dominican Republic	[2] 90
Brazil	89
El Salvador	88
Barbados	80

	Percent
LATIN AMERICA *(concluded)*	
Colombia	79
British Guiana	66
Panama	66
Jamaica	41
Surinam	[3] 18
Trinidad and Tobago	[1] 11
Venezuela	1
Netherlands Antilles	—
FAR EAST	
Ceylon	97
Burma	[1] 94
Thailand	[1] 88
Malaysia: Sabah	[1] 85
Indonesia	[2] 65
Malaysia: Malaya and Singapore	[1] 63
India	46
Malaysia:Sarawak	40
Hong Kong	12
Japan	10
NEAR EAST	
Turkey	[1] 89
United Arab Republic	70
Cyprus	54
Israel	34
Aden Colony	15
Libya	13
AFRICA	
Gambia	100
Mauritius	95
Somalia	[1] 91
Tanzania: Zanzibar	[1] 88
Uganda	88
Tanzania: Tanganyika	83
Nigeria	82
Ghana	82
Kenya	79
Liberia	[4] 51
South Africa	[1] 47
Sierra Leone	16

NOTE: Includes commodities classified under SITC Sections 0, 1, 2, and 4, excluding nonagricultural products such as crude fertilizers and minerals (SITC 027) and metalliferous ores and metal scrap (SITC 28).Wood manufactures and pulp and paper manufactures (SITC 63 and 64) are also excluded. Total trade includes fuels (SITC 3).

[1] 1960-62. - [2] 1959-61. - [3] 1962-63. - [4] 1959-60.

countries where the terms of trade improved, a decline in the unit value of imports was generally the main factor, and only in India and Yugoslavia was there much improvement in export unit values.

In most countries, the deterioration in the terms of trade has been offset by the increased volume of exports. However, in no less than six of the countries included in Table III-7 (Brazil, Ceylon, Colombia, Ghana, Honduras, Jamaica), the "real" value of agricultural exports (that is, their value in current prices deflated by the national index of import unit values) also fell, in most cases substantially.

These trends have been a major influence in a sharp deterioration in the balance of trade of the developing regions. Some data on changes in the balance of trade between 1953-55 and 1961-62 are summarized in Table III-8. These indicate a halving of the small trade surplus of the Latin-American region,

TABLE III-7. - CHANGES IN THE TERMS OF TRADE [1] OF SELECTED COUNTRIES, 1953-55 TO 1961-62

Percentage change, 1953-55 to 1961-62

— more than 15 percent		— 11 to 15 percent		— 6 to 10 percent		— 5 percent or less		+ 10 percent or less		+ more than 10 percent	
El Salvador	— 43	New Zealand	— 15	Argentina	— 10	Ireland	— 5	India	+ 10	Mauritius	+ 18
Ghana	— 39	Panama	— 15	Tanzania:		Cyprus	— 4	Yugoslavia	+ 9		
Colombia	— 34	Nigeria	— 13	Tanganyika	— 7	Canada [4]	— 3	United Arab Rep. [5]	+ 7		
Honduras [2]	— 31	Trinidad						Denmark	+ 6		
Australia	— 30	and Tobago [3]	— 13					Netherlands	+ 2		
Brazil	— 22	Ceylon	— 11					South Africa	—		
Jamaica	— 19										
Philippines	— 16										

[1] Unit value of exports divided by unit value of imports. - [2] 1956-60. - [3] To 1960. - [4] From 1954-55. - [5] To 1959.

an increase of about 40 percent in the trade deficit of the Near East and a more than sixfold increase in the deficit of the Far East. Of the countries shown in the table, the balance of trade has improved only in Iran, Iraq and Venezuela, where oil revenues have been rapidly increasing.

The developing countries have also experienced difficulties as a result of the sharp year-to-year fluctuatons in their export earnings. The fluctuations at the regional level are already substantial (Annex Table 13A), and they are even wider for individual countries. While, at the national level, changes in the volume of exports have sometimes offset changes in prices, it has also often happened that the two have reinforced one another, so that export earnings have fluctuated even more than prices. Calculations by the International Monetary Fund [7] indicate that the average annual deviation from the trend in the value of exports of primary products from 38 countries in 1948-58 was 9 percent, with the deviation for individual countries ranging from 5 to 6 percent in a number of countries (mainly in Latin America) to nearly 20 percent in Malaysia (Malaya) and Sudan.

For a number of reasons, such fluctuations have particularly serious consequences for developing countries. These countries depend on imports for most of the capital goods and other manufactured products they require. Exports constitute a high proportion of their national income and a still higher share of the monetized sector of their economies. Export and import taxes are a main source of government revenue. The effects of fluctuations in export earnings are therefore quickly transmitted to the economy as a whole, while the imperfections of their monetary, fiscal and administrative machinery limit the possibilities of countervailing domestic policies.

TABLE III-8. - IMPORTS, EXPORTS AND BALANCE OF TRADE IN DEVELOPING COUNTRIES, 1953-55 AND 1961-62

	1953-55			1961-62		
	Imports	Exports	Balance [1]	Imports	Exports	Balance [1]
	..... *Million U.S. dollars* ..... :					
LATIN AMERICA						
(21 countries) of which	6 737	7 685	948	8 756	9 193	437
Argentina	982	1 019	37	1 408	1 090	— 319
Brazil	1 208	1 506	297	1 298	1 310	12
Colombia	589	628	39	516	481	— 36
Mexico	831	696	— 135	1 148	890	— 258
Venezuela	938	1 697	759	1 087	2 485	1 398
NEAR EAST						
(9 countries) of which:	2 065	1 743	— 322	3 577	3 116	— 461
Iran	170	132	— 38	586	918	332
Iraq	229	485	256	395	677	282
Turkey	442	348	— 94	508	382	— 125
United Arab Republic	501	403	— 98	804	446	— 358
FAR EAST						
(12 countries)	4 140	3 861	— 278	7 148	5 329	— 1 820

SOURCE: International Monetary Fund, *Balance of payments yearbook*.

[1] Sum of the national debit or credit balances on merchandise account.

[7] INTERNATIONAL MONETARY FUND. Fund policies and procedures in relation to the compensatory financing of commodity fluctuations. *Staff papers*, 8, Nov. 1960, p. 1-76.

AGRICULTURAL TRADE POLICIES

Last year's issue of this report[8] contained a full account of the development of the national and international policy measures that have influenced the trends discussed above or have been taken in response to them. Only a brief summary will therefore be presented here.

National policies

DEVELOPED COUNTRIES

Policies in developed countries which directly affect trade in agricultural products have generally stemmed from three main considerations: the protection of the balance of payments, the raising of internal revenue, and in particular the implementation of farm price and income policies. These policies include import restrictions by means of quotas, duties and internal fiscal charges, and the promotion of exports by such means as export subsidies, credit facilities, and the shipment of surplus stocks on special terms.

There has been a gradual lowering of those barriers which were motivated principally by balance of payments and revenue considerations. Quantitative restrictions on imports of tropical products into industrial countries have therefore been largely dismantled. Import duties and internal fiscal charges on these products have also generally been lowered, although they are by no means eliminated. Efforts to reduce barriers to imports of temperate zone products, however, have been less successful, because of the commitment of most countries to farm price and income support policies, of which the import controls are a part.

The promotion of agricultural exports by means of subsidies and by government financing of exports on concessional terms is another manifestation of the effects of the farm price and income support programs in the developed countries. The practice of export assistance has expanded in step with the growth of output and the gradual decline in world prices of most temperate zone farm products, until even the lower cost agricultural exporters, such as Australia and Denmark, have generally found it necessary to give government support to their farmers, in order to provide incomes not too far out of line with those in other sectors. The competitive disposal of surplus production in world markets has thus become a major trade problem among developed countries.

DEVELOPING COUNTRIES

The principal aim of the policies of the developing countries has been to maximize the foreign exchange earnings they need in order to import capital equipment and other goods. The policies pursued to this end have included state trading and centralized sales through marketing boards, bilateral agreements and other measures for widening and stabilizing export markets, increased domestic processing of agricultural products, increased attention to quality and grading, and various fiscal measures. Many countries have also attempted to diversify their production for export, in many cases consisting very largely of one or two main products, in order to lessen the year-to-year fluctuations in their export earnings.

The production of most export crops is geographically widely dispersed, and the exercise of anything like a monopoly over export supplies, whether by a single country or by a group of countries, is therefore seldom possible, especially in view of the possibilities of substitution in end uses. On the other hand, there has been little effort to co-ordinate the trade and related production policies of the various exporting countries. As a result, the unilateral efforts of individual countries to obtain a larger share of the market for their products have been a major factor in the substantial increase in the total exportable supplies of most products and the consequent declines in prices.

Some other factors have also contributed to the growth of supplies. One is the very high level of prices in world markets for many tropical products in the early 1950s, which provided an incentive to investment (including that of foreign capital) in tropical export crops. The efforts of developing countries to lessen their dependence on a limited range of products for their export earnings, through the diversification of output and exports, has also contributed to the expansion of exportable supplies.

A number of developing countries have been able to escape some of the worst effects of both the gradual

[8] FAO. *The state of food and agriculture 1964*. p. 48-65.

decline in the prices of their exports and fluctuations in export prices through a combination of state marketing agencies at home and preferential treatment in their main markets. Examples of the latter arrangements include those in force until recently between France and its former dependent territories, the Commonwealth preference system and the Commonwealth Sugar Agreement, and the United States arrangements with its traditional sugar supplies.

Such preferential treatment has been criticized because of its discriminatory character. However, the level of preference granted under the agreement between the European Economic Community and the Associated Overseas Countries and Territories is lower than that previously granted by France.

International policies

The developing countries have been faced principally by two sets of problems requiring international action: those associated with their need to increase the quantity and variety of their agricultural exports, and those associated with their need for more stable prices and terms of trade. The agricultural trade problems of the developed countries, on the other hand, derive (except from the effect of technological improvements) principally from the conflict between the pursuit of their national agricultural policies, aiming at the maintenance of farm incomes at a socially and politically acceptable level relative to incomes in nonfarm occupations, and the interests of the exporting countries, in particular the traditional low-cost producers of temperate zone products.

Although the commodities of interest to the two groups of countries are to a large extent distinct (consisting principally of temperate zone food crops on the one hand and tropical crops on the other) they also compete in the case of a number of products, such as sugar, oilseeds and tobacco, which are produced in both temperate and tropical climates. Similarly, agricultural raw materials compete with their man-made substitutes in the developing countries. The emergence of surpluses of temperate zone foodstuffs, however, and their increasing use as food aid has created an area of common interest between the two groups of countries with regard to production and trade policies for this group of products.

After the failure in the early postwar years to provide comprehensive international machinery to deal with the world's trade problems, efforts at their solution have been pursued within a complex framework of institutional arrangements, gradually built up and shaped according to changing requirements. The measures that have been taken fall mainly into four categories: trade liberalization through negotiation on tariffs and other obstacles to trade; international commodity agreements; commodity consultations, both on problems of specific commodities and on questions of more general bearing; and negotiation on national policies and policy confrontation.

The role of trade in the development of the developing countries, and their special problems in this regard, were to some extent recognized in the Havana Charter of 1948, especially in dealing with their need to impose measures of protection and in connection with intergovernmental commodity agreements. Even though the Havana Charter was never ratified, much of its basic philosophy was accepted as a guide for international trade relations. Thus the principle of nondiscrimination, the method of tariff cutting, and the prohibition, in principle, of quantitative restrictions specified in the Charter were embodied in the General Agreement on Tariffs and Trade (GATT) under which the first Tariff Conference was held in 1947. The principles with regard to international commodity agreements, spelled out in Chapter VI of the Charter, were taken over as guiding lines by the Economic and Social Council (ECOSOC) and its Interim Co-ordinating Committee on International Commodity Agreements (ICCICA).

Over the years, however, it gradually became increasingly clear to the developing countries that the provisions of GATT were not always well suited to their needs. For example, they feel that the principle of nondiscrimination prevents them from building up their trade with other developing countries, while it also prevents the developed countries from granting any new preferential treatment to developing countries.

Under the pressure of events, including the increasing political and economic influence of the developing countries, the work of GATT has increasingly taken into account their special problems. This trend culminated in the approval in early 1965, of a new chapter of the Agreement dealing with trade and development, and the setting up of a permanent committee to pursue action under the new chapter.

However, with regard to international commodity agreements, GATT has made hardly any progress. Chapter VI of the Havana Charter, dealing with this subject, was originally left out of the Agreement, and no action has been taken on various later proposals to include it. Action on commodity arrange-

ments has consequently been pursued in other institutions, although again achievements have so far been limited. The International Wheat Agreement, first negotiated in 1949, mainly concerns the developed countries. Of the two postwar commodity agreements of interest to developing countries, the International Sugar Agreement is no longer actively in operation, as the exporter members have been unable to agree on the division of export quotas after the radical changes in the structure of the world " free market " for sugar that followed the suspension of Cuba's United States quota in 1961. Nor was the Agreement ever able to stabilize the price of " free market " sugar when faced with large-scale changes in demand or supply. Sugar prices have therefore fluctuated widely since the Suez crisis in 1956-57.

The International Coffee Agreement, in operation since 1963, contains a number of novel features in keeping with the current ideas on the role and content of commodity agreements. Its objective is " to increase the purchasing power of coffee-exporting countries, by keeping prices at equitable levels and by increasing consumption, " rather than to iron out short-term price variations. In line with the Havana Charter philosophy, but in contrast to the practice hitherto followed, it also provides for long-term adjustments in the output of exporting countries with a view to matching the total supply with total demand.

The successful establishment of the International Coffee Agreement gave rise to hopes for the negotiation of an International Cocoa Agreement, for which preparation had been made over a long period by the FAO Cocoa Study Group. In the event, however, the views of the producing and consuming countries on the desirable range of cocoa prices were so divergent that the negotiating conference was adjourned in October 1963. The cocoa exporting countries have since drawn up, under the auspices of their own organization, the Cocoa Producers' Alliance, an agreement based on the earlier draft, but have, found it hard to maintain the minimum price level proposed, because of the very large cocoa harvests of 1964/65.

The FAO Cocoa Study Group is an example of the many intergovernmental committees set up since the war to study the problems of specific products. There are now 11 such study groups for agricultural products. Four of these, dealing with rubber, cotton, tea and wool, are of prewar origin. Seven have been established since the war by FAO's Committee on Commodity Problems (CCP), and deal with grains, rice, coconut and coconut products, cocoa, citrus fruit, jute and allied fibers, and bananas. Although none of these groups has so far resulted in the negotiation of a commodity agreement, they have contributed, together with the CCP and the Committee on International Commodity Trade (CICT), to the stability of commodity markets by the exchange of commercial and statistical information, and by the wider understanding of the problems and policies of the participating countries.

As to the trade policies of the developed countries, international efforts through the GATT machinery to reduce import restrictions and export subsidization have had only limited success. In a good many cases, quantitative restrictions on agricultural imports have been maintained in one form or another, at first principally for balance of payments reasons. However, the May 1963 Ministers' Meeting of GATT decided to include agricultural products in the current Kennedy Round of tariff negotiations, and to make nontariff barriers as well as tariffs negotiable. Negotiations on agricultural products are in fact scheduled to begin in September 1965.

Other efforts to influence the agricultural production and trade policies of the industrial countries include the formulation by the CCP in 1953-54 of a set of Principles of Surplus Disposal and Guiding Lines for Dealing with Agricultural Surpluses. These Principles seek to minimize the possible harmful effects on " normal patterns of production and international trade " of the disposal of agricultural surpluses under concessional terms. The Consultative Subcommittee on Surplus Disposal established by the CCP has gradually developed a system of consultations between countries. The FAO Guiding Principles for Agricultural Price Stabilization and Support Policies with Special Reference to the Need to Minimize Adverse Effects on International Trade were approved in their final form by the FAO Conference in 1961, and have since been accepted by some 50 governments.

Increasingly, however, the view has been stressed that longer term adjustments in the patterns of output and trade of temperate zone products can only be made in the framework of comprehensive international arrangements. Among the new ideas in this field are those known as the Baumgartner-Pisani proposals on the " organization of markets, " which aim at raising the world price level of temperate zone products somewhere nearer those of the major producers in industrial regions, and the institution of expanded food-aid programs to dispose of surpluses

not salable at the higher commercial prices. Simultaneously, commodity programs could be set up for selected tropical products to guarantee their outlets in developed countries, possibly at higher prices than have recently prevailed in world markets.

The need for a more comprehensive type of commodity agreement than has hitherto been negotiated was also stressed in the Final Act of the United Nations Conference on Trade and Development. This act, which was signed by 120 countries, although with some reservations on the part of some of the developed countries, was summarized in last year's issue of this report. It defined principles of international behavior in trade relations and policies, recommended policies and measures to be followed in the field of international trade, and called for new intergovernmental machinery on trade and development to carry forward the work initiated by the conference. The detailed recommendations covered such matters as international commodity arrangements, the removal of obstacles to trade, the competition of synthetics and other products with natural products, and the compensatory finance of shortfalls in export earnings.

The new machinery recommended by the conference has now begun to function, and may be expected to have an important influence on the conduct of international trade in the coming years.

Compensatory financing

While the main problem in agricultural trade during the decade has been the long decline in agricultural prices and the consequent limited growth in agricultural export earnings, this has also been aggravated by the wide fluctuations in export earnings that have occurred from year to year.

Reducing the fluctuations in prices of primary products, and hence in earnings from their export, has been one of the principal aims of all international commodity agreements and consultations. However, it has also been recognized that the problem of instability cannot be satisfactorily solved by these means alone, and various proposals for the compensation of shortfalls in export earnings have been widely discussed since the earliest postwar years.

The only scheme that has so far come into operation has been the modification in February 1963 of the drawing policies of the International Monetary Fund in such a way that primary exporting countries experiencing temporary export shortfalls can draw additional resources from the Fund. Owing to the improvement in prices of agricultural products in 1963, however, only limited use has so far been made of this facility.

Over the last few years, thinking on compensatory financing has evolved further. Increasingly, the problem of short-term fluctuations in prices and export earnings has become overshadowed by the more serious problems of falling prices and terms of trade, and of insufficient growth of export earnings. Seen in this context, the purpose of compensatory financing is no longer merely to mitigate the effect of fluctuations, but to insure the developing countries against the effects of a long-term deterioration in their terms of trade, so as to permit both the uninterrupted implementation of the country's economic development plans and a gradual adjustment to the economic forces causing the decline in export earnings.

Regional economic co-ordination

No account of the policies influencing international trade in agricultural products would be complete without reference to the various arrangements for economic co-ordination and integration at the regional and subregional level that have evolved during the past decade. So far (except for EEC) they have had only a limited effect on agricultural trade, partly because of the exclusion of agricultural products from the provisions of many of them, and partly because of the short time they have been in operation. In the future, however, their effects on agricultural trade are likely to be much greater especially as agriculture is increasingly being brought within the scope of some arrangements from which it was originally excluded.

The establishment of EEC, the most comprehensive of these schemes, has been an important factor in inducing similar attempts elsewhere. It was formally initiated with the signing of the Treaty of Rome in 1957 by Belgium, France, the Federal Republic of Germany, Italy, Luxembourg and the Netherlands. Agriculture was included from the start within the scope of the common market, and a common agricultural policy, aiming at the free movement of agricultural products within the Community and a common trade policy toward nonmember countries, is gradually being developed. The common agricultural policy is discussed in Chapter X.

The admission of the United Kingdom to EEC would probably have required substantial modifica-

tions, but negotiations broke down in January 1963. The agricultural trade of EEC is also influenced by the preferential treatment accorded to the associated countries, mainly former dependent territories in Africa. The first convention of association chiefly implied the continuation of the preferential treatment of imports of tropical products into the metropolitan countries, particularly France. By the time this convention expired at the end of 1962, most of the countries concerned had become independent but, with one exception, they chose to maintain their links with EEC. The second convention of association, covering the period 1963-67, extends to the whole Community the duty-free entry of the products of the associated countries, previously confined to their former metropolitan countries. At the same time the margin of preference was reduced by the lowering of the common external tariff on tropical products. Prices are gradually to be aligned with world market prices, and to assist in this $230 million are to be provided during the period of the convention.

The EEC has also concluded association agreements with Greece, Turkey and the Netherlands Antilles, trade agreements with Iran and Israel, and a special agreement with Lebanon providing mainly for technical assistance. Discussions have reached varying stages with a number of other countries.

Following the failure of negotiations to form in western Europe a larger but looser economic grouping than EEC, the European Free Trade Area (EFTA) was established in 1959. Its provisions were originally limited to manufactured goods and most agricultural products were excluded from the process of tariff cutting. However, since some member countries (notably Denmark and Portugal) are heavily dependent on agricultural exports, a series of bilateral agreements have been undertaken in the agricultural field, especially between the United Kingdom and Denmark, the largest importer and the largest exporter of agricultural products. For example, duties have been eliminated on bacon, butter and a number of other products, so that about 90 percent of Danish agricultural exports to the United Kingdom are now free of tariffs. United Kingdom tariffs on certain products imported from Portugal have also been lowered. Such tariff concessions automatically benefit the other members of EFTA, while some additional agricultural commodities have also been included in the general tariff cutting. It was decided in 1963 to hold an annual review of agricultural trade.

The eastern European countries and the U.S.S.R. set up the Council for Mutual Economic Assistance (CMEA) in 1959. While specialization among member countries is a main aim, this has proved difficult to apply in respect of agriculture.

Among the developing regions, economic integration has progressed furthest in Latin America. As early as 1951, five central American countries (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua) decided to establish a Central American Integration Program. After various preliminary agreements, a General Treaty of Central American Economic Integration was signed in December 1960, though for the time being without the participation of Costa Rica. The treaty provided for the establishment of a free trade area immediately, and after five years of a common market and customs union with a single external tariff. Most agricultural products, however, are excluded from the free trade area and are subject to transitional restrictions of varying nature and duration. The group will automatically be subject to free trade at the end of the five-year transitional period; for other products free trade will be subject to the negotiation of special agreements between member countries; a further group is subject to control for an indefinite period, but it has been recommended that there should also be some liberalization in this group.

A number of studies as to the feasibility of a free trade area in South America or in Latin America as a whole led in 1960 to the signing of the Montevideo Treaty establishing the Latin-American Free Trade Association (LAFTA) by Argentina, Brazil, Chile, Mexico, Peru and Uruguay. Subsequently Colombia and Ecuador have joined the association, and Bolivia and Venezuela have announced their intention of doing so. A free trade area is gradually to be established over a transitional period of 12 years, while the ultimate goal is the establishment of a Latin-American common market and the economic integration of its members. Special provisions are made for agricultural products, imports of which may be limited in order to regulate domestic production and supplies.

In the other developing regions, efforts at economic co-ordination and integration are mainly at the exploratory stage. In Africa, there have been vigorous efforts to promote various regional and subregional groupings, culminating in the establishment in May 1963 of the Organization of African Unity (OAU), comprising all independent African countries except South Africa. The Economic and

Social Commission of OAU has called on the United Nations Economic Commission for Africa (ECA) to study the feasibility of a common external tariff and other joint institutions. Existing subregional arrangements include the Central Africa Customs and Economic Union, the East African Common Services Organization, and the West African Customs Union.

In the Near East, five members of the League of Arab States (Iraq, Jordan, Kuwait, Syria, and the United Arab Republic) signed an agreement in November 1964 to form the Arab Common Market. The Economic Council of the League of Arab States has also decided to establish a Permanent Committee on Agricultural Affairs, to co-ordinate agricultural programs and projects in member countries.

The progress of economic integration has been slowest of all in the Far East. Some studies of the possibilities have recently been carried out by the United Nations Economic Commission for Asia and the Far East (ECAFE), following a Ministerial Conference on Asian Economic Co-operation, held in December 1963.

In none of the schemes for economic integration outlined above is agriculture regarded as a dynamic force for integration. On the contrary, agriculture is the sector for which most exceptions and safeguards have been provided.

In the developed countries, the agricultures of the member nations of EEC and EFTA are largely competitive rather than complementary, the main exception being the different production patterns of the Mediterranean and northern European countries. Another obstacle is the varying degrees to which agriculture is protected and supported under long-standing national systems. Adjustments are still more difficult because agriculture is a declining branch of the economy in these countries, both as regards the share of its products in the domestic market and the manpower employed.

The pattern of agricultural production is probably more complementary in Latin America. In the LAFTA grouping some countries, such as Argentina, Chile and Uruguay, produce predominantly temperate zone products, while others, such as Brazil, Colombia and Ecuador, are exporters of tropical products. Among the Central American countries the complementarity of agricultural production is greater than might be expected from the smallness of the area; there are considerable variations in altitude, climate and pressure of population, and thus in agricultural systems. The reservations on agriculture in the two

TABLE III-9. - CHANGES IN AGRICULTURAL [1] TRADE OF EEC AND EFTA

	1957-59	1962-63	Increase 1957-59 to 1962-63
	U.S.$ 1 000 million		*Percent*
EEC			
Agricultural exports	3.60	5.29	47
of which to other EEC countries	1.51	2.62	73
Agricultural imports	8.85	12.73	44
of which from other EEC countries	1.55	2.63	70
EFTA			
Agricultural exports	3.35	3.72	11
of which to other EFTA countries	0.87	1.05	21
Agricultural imports	8.73	9.55	9
of which from other EFTA countries	0.95	1.41	20
	.... Percent		
EEC			
Share of intra-EEC trade in:			
agricultural exports	42	50	
agricultural imports	18	21	
EFTA			
Share of intra-EFTA trade in:			
agricultural exports	26	28	
agricultural imports	11	12	

SOURCE: GATT, *International trade* (various annual issues).
[1] SITC sections 0, 1, 2 and 4, excluding 28 (metalliferous ores and metal scrap).

Latin-American schemes stem mainly from the fact that agriculture will continue to employ the bulk of the rapidly growing population until industrialization has proceeded much further.

Only EEC might be expected so far to have had much influence on agricultural trade. Table III-9 indicates that trade in agricultural products has risen faster within the Community than with other countries. The share of intra-EEC trade in total exports rose from 42 percent in 1957-59 to 50 percent in 1962-63, but the share of imports has increased more slowly. However, the faster rise in intra-EEC trade appears largely to have preceded the operation of the various trade measures, and may mainly reflect the postwar tendency for a rapid growth in intra-European trade, although the trend has been much less marked in the EFTA countries. A recent FAO study[9] found little evidence that the agricultural

[9] FAO. *Agricultural commodities and the European Economic Community*. United Nations Conference on Trade and Development, Document No. E/CONF. 46/45, 1964.

trade policies of the EEC had diverted trade to intra-EEC channels, with the possible exceptions of pigmeat, poultry, and sugar. Where the share of third countries in EEC imports had fallen, this was usually a continuance of earlier trends or reflected short-term fluctuations in supplies. Nor did the preference granted to the associated countries appear to have led to any significant increase in the share of EEC in their trade. In the longer run, however, EEC appears likely to become increasingly self-sufficient in a number of temperate products, while the associated countries may be expected to increase their share of EEC imports of tropical products such as coffee and cocoa, especially in the event of further marketing difficulties for these products.

Chapter IV. - The producer

In reviewing the position during the last decade of producers of agricultural, fishery and forest products, it is necessary to draw a sharp distinction between those in developed and in developing countries. In most of the developed countries there has tended to be a decline not only in agriculture's share in the total population and national income but also in the absolute numbers engaged in agriculture. In the developing countries the fall in the share of agriculture in the economy as a whole has generally been much slower, and in almost all of them the agricultural population has continued to grow in absolute terms.

Economically, the producer has fared only moderately well during the decade. Per caput incomes in agriculture have increased in most countries for which there are data. However, it appears that in many of them agricultural incomes have lost ground in relation to those in the rest of the economy. On the whole, therefore, the gap between agricultural and nonagricultural incomes has tended to widen.

Farming in the developed countries has come more and more to be a business using modern technology. Inputs of labor have continued to decrease and those of capital to increase, while there has been an increase in the average size of farms; production has become more specialized.

It will obviously take time before developments of this kind affect more than a small minority of producers in developing countries. In their overwhelmingly agricultural economies, the impact of urban development and of international trade is still too small to have any major effect on the traditional pattern of life. Yet new concepts of land tenure and other improved institutions are already changing the outlook and status of producers. Indeed in limited areas of almost every developing country settlement schemes or experimental forms of co-operative or state farming are exposing producers to changes even more drastic than in the developed countries.

AGRICULTURAL POPULATION

The distribution of population between agriculture [1] and the rest of the economy is one of the principal indicators of the level of economic development of a country. Table IV-1 indicates that the share of agriculture in the total male labor force now ranges from 6 percent in the United Kingdom to between 70 and 80 percent in some developing countries. This share has declined during the period under review in very nearly every country for which data are available. In almost all of the developed countries the absolute size of the agricultural population has also decreased. In the developing countries, on the other hand, with very few exceptions the agricultural population and the number of adult males engaged in agriculture have continued to increase in absolute terms.

The falling share of agriculture in the population and in the labor force chiefly reflects the faster growth of demand, as incomes rise, for nonagricultural than for agricultural goods. It is also influenced by the generally higher productivity of labor in the rest of the economy than in agriculture, and the consequent higher earnings in other sectors which cause labor to shift out of agriculture.

The rate at which labor can move out of agriculture into other occupations depends on the relation between the absolute increase in nonagricultural jobs each year and the absolute numbers added to the total population. It appears from Table IV-1 that the growth of nonagricultural employment in the developing countries has generally been much faster than in the developed countries. However, this

[1] The data presented here on agricultural population and income refer to the agricultural sector in its widest sense, including fisheries and forestry.

TABLE IV-1. - CHANGES IN THE OCCUPATIONAL DISTRIBUTION OF THE POPULATION AND OF THE ADULT MALE LABOR FORCE [1]

	Period	Annual rate of increase [2]						Share of agriculture [3]			
		Total population			Adult males			Total population		Adult males	
		Total	Agricultural [3]	Nonagricultural	Total	Agricultural [3]	Nonagricultural	First year	Second year	First year	Second year
		Percent									
United Kingdom	1951-60	0.4	...	...	0.4	— 0.4	0.5	...	...	7	6
Belgium [4]	1950-59	0.6	— 0.8	0.8	— 0.2	— 4.4	0.2	13	11	14	7
United States	1951-60	1.6	— 6.3	2.6	1.3	— 4.0	2.0	15	8	14	9
Germany, Federal Republic of	1950-60	1.1	...	...	1.3	— 3.6	2.0	15	...	16	10
Netherlands	1947-60	1.3	...	...	0.9	— 2.8	1.6	...	...	20	12
Israel	1955-61	3.0	...	...	3.9	— 1.1	4.8	...	...	19	14
Switzerland	1950-60	1.5	— 2.1	2.0	1.5	— 2.4	2.3	16	11	22	15
Australia [5]	1950-58	2.3	0.9	2.5	2.0	— 0.3	2.6	12	11	19	16
Canada	1951-61	2.7	— 3.1	3.7	1.3	— 2.8	2.2	20	11	24	16
Austria	1951-61	0.2	...	...	— 0.2	— 3.6	0.7	...	...	25	18
Germany, Eastern	1946-61	0.1	...	...	— 0.4	— 2.3	0.1	21	...	23	18
New Zealand	1951-61	2.2	...	...	1.7	—	2.1	...	...	21	18
Sweden	1950-60	0 6	...	...	—	— 3.5	0.9	...	...	25	18
France	1954-62	1.0	...	...	0.3	— 2.9	1.3	...	...	26	20
Argentina [6]	1951-60	1.8	...	...	1.0	— 1.0	1.7	21	...	30	23
Denmark	1950-60	0.7	...	...	0.6	— 1.8	1.4	24	...	29	23
Norway	1950-60	0.9	1.0	0.9	0.2	— 2.5	1.3	19	19	31	24
Trinidad and Tobago	1955-57	3.0	...	...	0.1	— 9.8	3.7	...	...	30	25
Japan	1950-60	1.2	— 0.9	2.7	2.1	— 2.4	4.3	46	37	40	26
Cyprus [7]	1950-60	1.7	...	...	1.0	— 1.5	2.4	53	...	40	28
Italy	1951-60	0.6	...	...	— 0.2	— 3.9	1.7	...	...	40	29
Puerto Rico	1950-61	0.8	...	...	0.2	— 3.5	2.6	...	...	47	31
Chile	1952-60	2.5	...	...	1.4	0.4	2.0	...	...	37	34
South Africa	1951-60	2.5	...	...	2.0	1.0	2.5	...	...	38	35
Hungary	1949-60	0.7	...	...	0.6	— 2.5	3.2	...	36	52	37
Finland	1950-60	1.0	0.3	1.4	0.5	— 1.5	1.9	34	32	46	38
Venezuela	1950-61	3.9	...	...	3.1	1.0	4.7	40	...	48	38
Poland	1950-60	1.8	— 0.3	3.4	1.0	— 1.2	2.6	47	38	48	39
Ireland	1951-61	— 0.5	...	...	— 1.4	— 2.3	— 0.8	...	...	46	42
Greece	1951-61	0.9	...	...	0.5	0.2	0.7	...	...	50	48
Portugal	1950-60	0.5	0.7	0.3	1.0	0.1	1.9	41	42	52	48
Spain	1950-59	0.8	...	...	0.7	0.7	0.8	41	42	52	48
Malaysia: Malaya [8]	1955-60	3.1	...	...	1.1	— 0.5	3.3	...	...	61	52
Panama	1950-60	3.1	...	...	2.3	2.0	2.6	49	...	58	57
United Arab Republic [6]	1952-60	2.4	...	...	1.6	0.9	2 6	...	53	63	58
Mexico [9]	1951-60	3.1	...	...	2.7	1.9	4.2	...	...	69	59
Turkey	1955-60	2.9	...	...	2.1	1.3	3.4	...	...	64	61
Ecuador	1950-60	3.2	...	...	3.2	3.4	2.9	...	...	62	64
Guatemala	1950-60	3 0	...	...	3.0	2.0	5.8	62	...	76	68
Philippines	1950-60	3.1	...	...	1.4	1.0	2.3	...	...	71	68
El Salvador	1950-61	2.7	...	...	1.8	1.5	2.4	...	...	73	71
Honduras	1950-61	2.9	...	...	3.0	...	...	...	...	...	75
Colombia	1951-60	2.2	0.6	3.8	...	...	...	53	46	63	...
Czechoslovakia	1950-61	1.0	— 2 2	1.8	...	...	...	25	18	...	...

[1] Countries are arranged according to the share of agriculture in the adult male labor force in the second year. - [2] Minus sign (—) denotes decrease. - [3] Including fisheries and forestry. - [4] Adult males 1947-63. - [5] Adult males 1954. - [6] Adult males 1947-60. - [7] Adult males 1946-60. - [8] Adult males 1947-57. - [9] Adult males 1940-60.

chiefly reflects the small initial size of the nonagricultural sector in the developing countries. In absolute terms the increase in nonagricultural employment in these countries has in most cases been much less than the increase in their total labor force. Thus, as already noted, in almost every developing country the absolute size of the agricultural population and labor force has continued to increase.

These changes are of great importance in economic development. The rate at which agriculture's share of the population is declining is a measure of the need (and, even more significantly, of the opportunity) for labor productivity in agriculture to be increased if the population is to be supplied from domestic production at present levels of per caput consumption, to say nothing of increased levels as incomes rise. The increase in productivity that is required as agriculture's share of the population declines is slow to start with but accelerates gradually. It was shown in an earlier issue of this report [2] that, while a decrease from 80 to 70 percent in agriculture's share of the population implies an increase of only 14 percent in the potential domestic market for each farm family, a reduction from 30 to 20 percent brings an increase of 50 percent, and from 20 to 10 percent an increase of 100 percent. This accelerating growth in the size of the domestic market has undoubtedly been an important factor in the rapid increase in the productivity of agricultural labor in the developed countries which is discussed in Chapter VI.

AGRICULTURAL INCOME

Table IV-2 brings together for as many countries as possible data on trends in the income of the agricultural sector, derived from estimates of gross domestic product (GDP).

Canada and the United States are the only countries, out of the 28 for which such data are available, where the income of the agricultural sector (at current prices) has declined during the decade. In several other countries, however, the increase was insufficient to keep up with the general rise in prices, so that in " real " terms the income of the agricultural sector declined.

Because of the fall in the agricultural population, in almost all of the developed countries income per adult male engaged in agriculture increased, in " real " terms as well as in current prices. In the United States, the rapid decline in the agricultural population turned a reduction of 2 percent a year between 1951 and 1959-61 in the total income of agriculture into a rise of 2 percent a year on a per caput basis; even allowing for the rise in prices there was still an increase of 1 percent a year in per caput income. In Canada and South Africa, however, even on a per caput basis, income declined in real terms.

Information is available for very few developing countries, but it appears that in many cases part of the increase in income has been eroded by the continued rise in the agricultural population.

Agriculture's share of national income

As might be expected from the declining share of agriculture in the population in almost all countries, its share of the national income has also fallen during the past decade (Table IV-3). The only countries (of those for which data are available) to show an increase in agriculture's share of national income are Argentina, where there have been substantial adjustments in prices in favor of farmers, and also Poland. From Figure IV-1, it will be seen that agriculture accounts for a smaller part of the national income than of the population in almost every case where comparison is possible. This reflects the fact that, with very few exceptions, per caput incomes in agriculture are lower than in the rest of the economy.

Available data on per caput incomes in agriculture in relation to those in the rest of the economy are assembled in Table IV-3.[3] Because of the greater availability of data they are shown per head of the male labor force in agriculture, rather than per head of the agricultural population.

The data in the table confirm the generally lower levels of income in agriculture than in the rest of the economy. In none of the countries for which there are data were incomes in agriculture greater than in the rest of the economy, though in Argentina they appear to be roughly equal. In most of the developed countries the gross value added per person in agriculture is about half that in the rest of

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[2] FAO. *The state of food and agriculture 1963*. Rome, 1963, p. 131.

[3] Similar calculations were shown in the 1959 and 1964 issues of this report. Apart from differences in the periods covered, the earlier estimates included a good many interpolations to fill gaps in the data on agricultural population and labor force, so as to cover as many countries as possible. The estimates in Table IV-3 are based entirely on official data and an effort has also been made to exclude doubtful cases (for example, India, where the basis of estimation of the agricultural population and labor force has been changed).

TABLE IV-2. - CHANGES IN AGRICULTURAL INCOME [1]

	Period	Increase in agricultural income [2,3]			
		Total		Per caput [4]	
		Current prices	Real terms [5]	Current prices	Real terms [5]
		.... *Percent per year*			
Trinidad and Tobago	1954-56 to 1956-58	6	3	16	13
Israel [6]	1955 to 1960-62	15	10	16	11
Germany, Federal Republic of [7]	1950 to 1959-61	7	4	10	8
Japan [6]	1950 to 1959-61	7	3	10	6
France [7]	1954 to 1962	7	5	10	5
Finland	1950 to 1959-61	9	4	11	5
Greece	1950-52 to 1959-61	11	2	11	5
Italy	1950-52 to 1959-61	3	1	7	5
Turkey	1954-56 to 1959-61	20	6	18	5
Puerto Rico	1950 to 1960-62	2	— 1	6	3
Norway	1950 to 1959-61	4	—	7	2
Philippines [6]	1950 to 1960	4	3	3	2
United States [6]	1951 to 1959-61	— 2	— 3	2	1
Portugal	1950 to 1959-61	3	2	3	1
Ireland	1950-52 to 1960-62	2	— 1	4	1
Ecuador	1950 to 1959-61	6	5	3	1
Denmark	1950 to 1959-61	2	— 1	4	1
Cyprus	1951 to 1959-61	4	— 1	5	—
United Kingdom	1950-52 to 1959-61	3	— 1	3	—
South Africa [6]	1950-52 to 1959-61	3	—	2	— 1
Honduras	1950 to 1960-62	3	1	1	— 1
Canada	1951 to 1960-62	— 3	— 4	—	— 1
Chile [6]	1951-53 to 1959-61	36	— 2	35	— 3
Argentina	1951-53 to 1959-61	31	4	...	...
Panama	1950 to 1959-61	3	...	1	...
Germany, Eastern	1951 to 1960-62	5	...	...	...
Hungary	1954 to 1959-61	5	5	...	...
Poland	1955 to 1960	11	9	...	...

SOURCE: National income statistics.

[1] Countries are arranged according to the increase in per caput agricultural income in real terms. - [2] Minus sign (—) denotes decrease. - [3] Gross domestic product in agriculture (including fisheries and forestry) at factor cost. - [4] Per adult male engaged in agriculture. - [5] Deflated by cost-of-living index. - [6] Net domestic product at factor cost. - [7] Gross domestic product at market prices.

the economy, and in the developing countries the disparity appears to be even greater.

Table IV-3 also suggests that in many countries the increase in incomes in agriculture has tended to lag behind that in incomes in the rest of the economy, so that the disparity between the two has widened. Even from the heavily rounded data in the table this appears to be the case in 12 out of the 23 countries for which comparison is possible. In a further nine countries there seems to have been little change in the relation between agricultural and non-agricultural incomes. The Federal Republic of Germany and Israel are the only countries covered in the table where the relative income in agriculture appears definitely to ha e risen, though this seems likely also to have been the case in Argentina, for which comparable income data are not available for the beginning of the period.

Changes in the relative income of agriculture and the rest of the economy will depend on changes in the physical output per man engaged in agricultural and nonagricultural occupations and on the course of the prices affecting their output, that is, the prices they receive for their products and the prices they pay for the intermediate goods and services used in the production process. Some limited data on these changes in productivity and in prices, again based on national income statistics, are shown in Table IV-4. Not only are they too few to permit

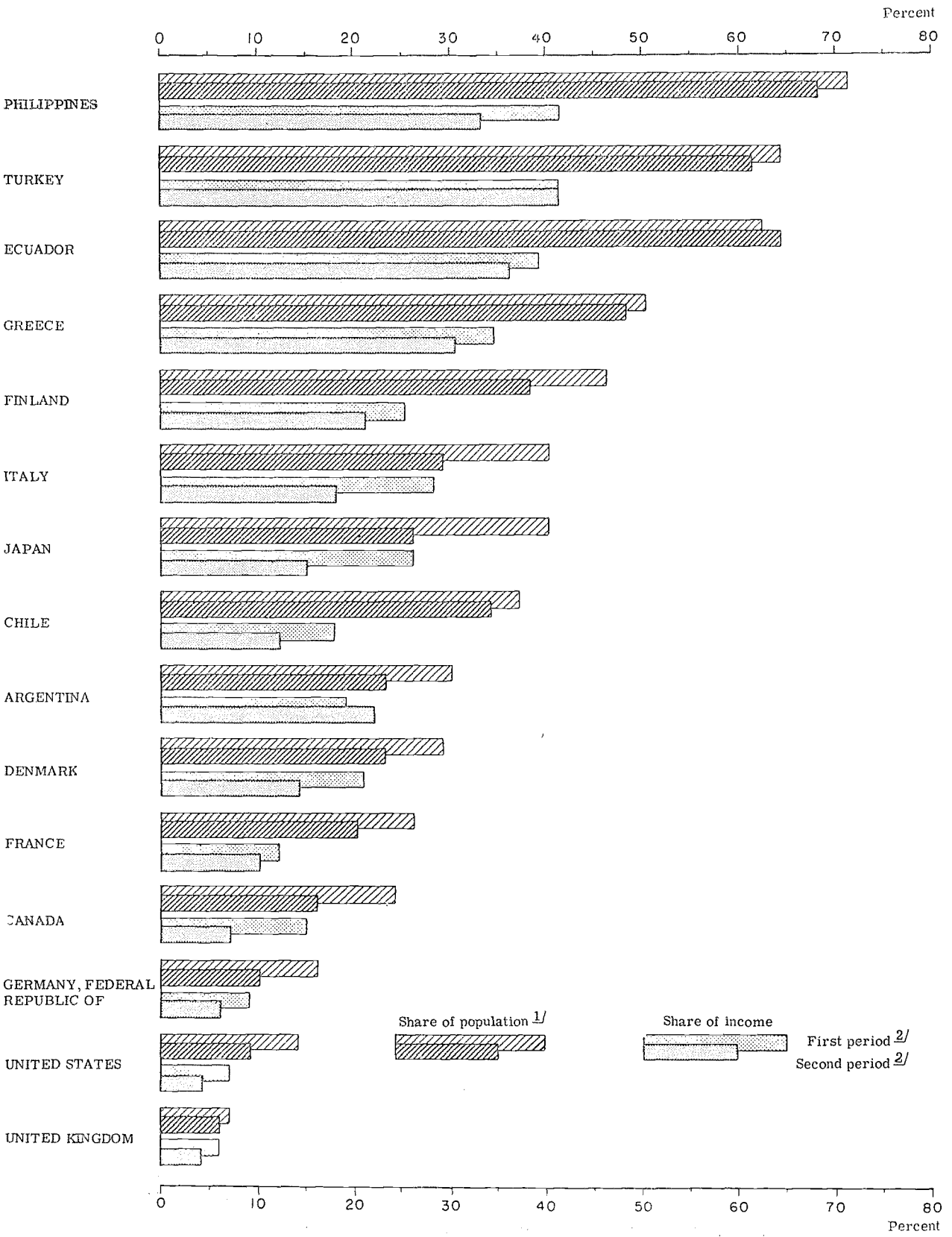
TABLE IV-3. - PER CAPUT INCOMES [1] IN AGRICULTURE IN RELATION TO THOSE IN THE REST OF THE ECONOMY [2]

	Period	Relative agricultural income [3,4]		Share of agriculture [3] in GDP	
		First year	Second year	First year	Second year
		.... *Ratio*		.. *Percent* ..	
United Kingdom	1951-60	0.9	0.7	6	4
United States [5]	1951-60	0.5	0.4	7	4
Germany, Federal Republic of [6]	1950-60	0.5	0 6	9	6
Canada	1951-61	0.6	0.4	15	7
Venezuela [6]	1961	...	0.1	...	7
France [6]	1954-62	0.4	0.4	12	10
Germany, Eastern [7]	1951-61	...	0.6	14	11
Israel [5]	1955-61	0.6	0.7	12	11
Norway	1950-60	0.4	0.4	15	11
Puerto Rico	1950-61	0.3	0.3	23	11
South Africa [5]	1951-60	0.3	0 2	15	11
Chile [5]	1952-60	0.4	0.3	18	12
Denmark	1950-60	0.7	0.6	21	14
Trinidad and Tobago	1955-57	0.5	0.5	17	14
Czechoslovakia [7]	1955-61	...	...	16	14
Japan [5]	1950-60	0.5	0.5	26	15
Italy	1951-60	0.6	0.5	28	18
Finland	1950-60	0.4	0.4	25	21
Argentina	1952-60	...	1.0	19	22
Cyprus	1951-60	0.7	0.7	27	22
Hungary [7]	1954-60	...	0.5	28	23
Ireland	1951-61	0.6	0.4	33	24
Portugal	1950-60	0.4	0.4	28	25
Poland [8]	1955-60	...	0.6	25	26
Greece	1951-60	0.5	0.4	34	30
Panama	1950-60	0.4	0.3	33	33
Philippines [5]	1950-60	0.3	0.2	41	33
Ecuador	1950-60	0.4	0.3	39	36
Turkey	1955-60	0.4	0.4	41	41
Honduras	1950-61	...	0.3	56	45

SOURCE: National income statistics.

[1] Unless otherwise specified, GDP at factor cost. - [2] Countries are arranged according to the share of agriculture in the GDP in the second year. - [3] Including fisheries and forestry. - [4] Ratio of per caput income in agriculture to per caput income in rest of economy. - [5] NDP at factor cost. - [6] GDP at market prices. - [7] Net material product. - [8] Net domestic material product.

FIGURE IV-1. - CHANGES IN THE SHARE OF AGRICULTURE IN POPULATION [1] AND NATIONAL INCOME IN SELECTED COUNTRIES



[1] Adult males. - [2] The data are generally for 1950 and 1960, but for the exact dates see Tables IV-1 and IV-3.

TABLE IV-4. - CHANGES IN OUTPUT PER ADULT MALE AND IN PRICES IN AGRICULTURE AND IN THE REST OF THE ECONOMY

	Period	Increase in output per adult male [1]		Increase in prices [1,2]	
		Agriculture [3]	Rest of economy	Agriculture [3]	Rest of economy
		.... *Percent per year*			
Denmark	1950-60	5.2	7.5	— 0.9	— 1.4
Ecuador	1950-60	0.6	2.3	1.9	1.9
Finland	1950-60	3.9	3.4	6.8	6.2
France	1954-62	4.7	3.3	5.4	5.8
Germany, Federal Republic of	1950-60	8.2	6.7	2.1	2.8
Greece	1951-60	4.8	6.0	5.6	6.3
Italy	1951-60	6.0	7.7	— 0.3	1.5
Portugal	1950-60	-	1.8	2.8	0.8
Turkey	1955-60	4.0	3.2	13.7	12.0
United Kingdom	1951-60	2.4	2.2	0.8	3.9

SOURCE: National income statistics.

[1] Minus sign (—) denotes decrease. - [2] Gross value added in current prices divided by gross value added in constant prices. - [3] Including fisheries and forestry.

any general conclusions concerning their effect on farm incomes, but they also show no consistent pattern.

From data of prices received and paid by farmers, however, it is clear that more often than not the price changes have worked against farmers (Figure IV-2 and Annex Table 17). In each of the 23 countries for which there is an index of prices received by farmers, this was higher in the latest available year than in 1955. Prices paid by farmers also rose in all of the 16 countries for which this index is available; generally the rise in prices paid by farmers was faster than that in prices received, so that the ratio of the two indices has moved against agriculture during the last decade in 9 of the 16 countries. Even in the countries where the ratio has improved in relation to 1955, there has been a sustained rise only in China (Taiwan); in each of the others the ratio has been higher at some earlier point in the decade than in the latest year.

Government payments

In most countries an important, though varying and not easily measured, proportion of the farmers' gross returns and net incomes are the direct or indirect result of government measures to support agricultural prices and incomes. The direct government payments to farmers in the United Kingdom, for instance, amounted to some £320 million a year in 1961/62 and 1962/63 compared with net income from farming of £415 million a year. In the United States, government payments to farmers have in recent years been of the order of $1,500 million, compared with a realized net income from farming of some $12,500 million, though the total cost of all price and income stabilization programs was much higher.[4] In Canada, the expenditure of the Federal Department of Agriculture for assistance to farmers was at the rate of some $215 million a year in 1960/61 and 1961/62, compared with net realized income of about $1,320 million a year. The expenditure for income improvements under the Green Plan of the Federal Republic of Germany exceeded DM1,000 million a year in 1961/62 and 1962/63, and other expenditures under the same plan amounted to a further DM1,300 million a year, compared with net farm income of about DM8,400 million. In France, the Government spent F5,400 million (of which one third for market support) on agriculture in 1961, when the net realized income from farming amounted to F21,200 million.

It should not of course be imagined that, in the absence of such payments, agricultural incomes would have declined by an exactly equivalent amount. Furthermore, in addition to these payments, farmers' incomes have been supported by a complex of other policies affecting the prices of farm products, the effects of which are less easily measurable, including tariffs, quotas, variable import levies and measures facilitating agricultural exports through subsidies and government financing of special export programs.

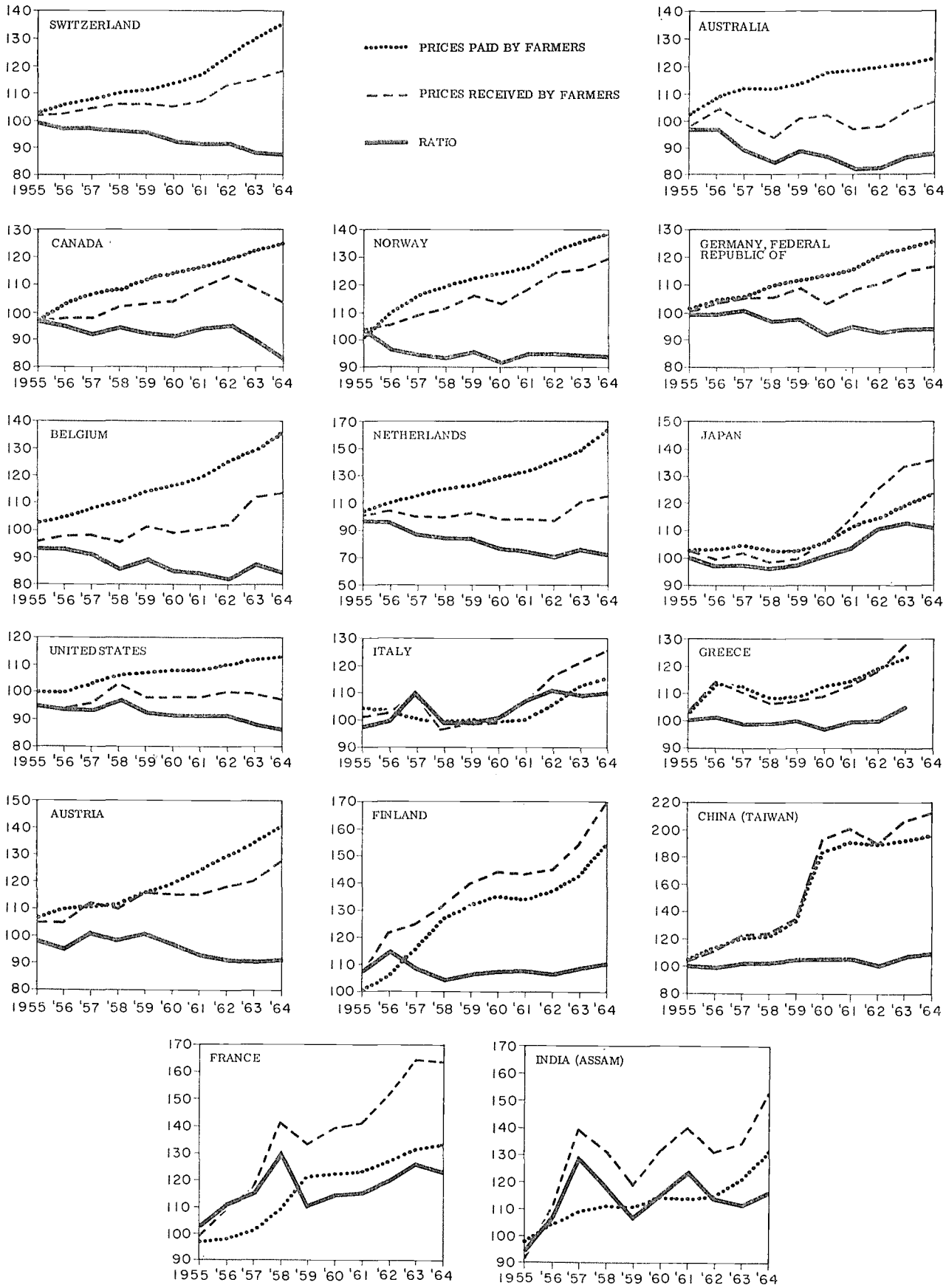
Off-farm income of farmers

Many farmers also obtain income from such off-farm sources as part-time employment in nearby factories, public works, transport, tourism, handicrafts, rental of property, or interest on investments. For a few of the developed countries there are statistical data of the magnitude of such off-farm income.[5] Nearly a tenth of the total number of farmers in Denmark and Greece, about half in Austria and Norway, and almost all farm families in Canada

[4] In 1957-59, when the direct government payments to farmers averaged $930 million a year (and the realized net farm income $11,640 million), the total cost of government farm price and income stabilization programs was $2,470 million a year. *See* DON PAARLBERG. *American farm policy*. New York, 1964, p.361.

[5] OECD. *Low incomes in agriculture: problems and policies*. Paris, 1964.

FIGURE IV-2. - INDICES OF THE PRICES PAID AND RECEIVED BY FARMERS AND OF THE RATIO BETWEEN THE TWO INDICES (INDICES, 1953-55 = 100) [1]



[1] Japan 1951-55 = 100.

are estimated to obtain some income from off-farm sources. In Japan, some 40 percent of holdings are reported as mainly dependent on nonfarm occupations.[6] In recent years such income has amounted to a fifth or less of total income of the farm population in Austria, Finland, France, and Norway, and more than two fifths in Canada and Italy.

Where data are available for a period of years, the percentage of income derived from off-farm sources appears generally to have increased. In Sweden, for instance, off-farm income on small holdings (2 to 5 hectares) increased from 36 percent of taxable income in 1953-55 to 49 percent in 1959-61.[7] In Switzerland the proportion rose from 14 percent in 1953-57 to 18 percent in 1960, and in the United States from 30 percent in 1954 to 34 percent in 1963.

CHANGES IN THE FARM UNIT

Some of the main changes that have occurred during the past decade in the nature and organization of farm units are discussed below, first for the developed and then for the developing countries. In the centrally-planned economies such changes are very closely related to institutional developments, and are therefore discussed in Chapter XI.

Developed countries

In the developed countries there have been substantial changes in the farm unit. These changes have resulted to a great extent from the trends discussed above, in particular the rapid decline in the labor force engaged in farming. They have also been influenced by developments in technology, and in marketing and processing.

One of the main adjustments has been a change in the combination of factors of production, involving principally a reduction in both the absolute and relative amount of labor. As in other industries, the increase in the cost of labor in relation to other inputs[8] has led to increased capitalization (particularly working capital) per unit of land and labor. It has also brought an increase in the average size of farms.

The share of hired labor in total inputs fell in the Federal Republic of Germany from 17 percent in 1950/51 to 9 percent in 1962/63, hired and family labor in Sweden from 58 percent in 1950/51 to 46 percent in 1959/60, and total farm labor in the United States from 40 percent in 1950 to 30 percent in 1958.

From data assembled by OECD,[9] it appears that in most of the developed countries the largest reductions have been in hired or family workers rather than in farmers themselves. In Canada and the United States, however, there has been only a slight reduction in hired workers, partly because there were initially relatively few and partly because the higher proportion of larger farms in these countries necessitates the retention of more hired workers. In Sweden there has been a rapid fall in the number of farmers, as a result of the active steps that have been taken to improve the farm structure.

The reduction in the number of farms has been particularly rapid in Canada, the Federal Republic of Germany, and above all the United States (Table IV-5). Substantial reductions have also taken place in most other countries except Finland, where there has been a large-scale refugee resettlement program, and also Australia and Belgium.

Since most of the farms given up were very small, they have made little land available for addition to other farms. In the United States, for example, "since most farm businesses going out of existence had sales of less than $2,500 and workers who left were replaced by machines — the decline in farms and farmworkers has been a minor factor in the economic welfare of those continuing to farm."[10]

Even so, in several of the countries shown in the table there has been a considerable increase in the average size of farms. Many farmers in these countries will have been able to increase the size of their holdings, thus making possible a more economic combination of land with other inputs, particularly with labor (which in small farms tends to be fixed)

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[6] OECD. *Report on the interrelationships between income and supply problems in agriculture.* Paris, 1965. Mimeographed document AGR (65)1.

[7] OECD, AGR (65)1.

[8] In most developed countries fertilizer and feedstuff prices have increased only about 50 to 60 percent as fast as wages, and machinery prices some 60 to 80 percent as fast.

[9] OECD. *Low incomes in agriculture: problems and policies,* Paris, 1963, p.28.

[10] U.S. LIBRARY OF CONGRESS. LEGISLATIVE REFERENCE SERVICE. *Farm programs and dynamic forces in agriculture.* Washington, D.C., 1965, p.9-10.

TABLE IV-5. - CHANGES IN NUMBERS AND AVERAGE SIZE OF AGRICULTURAL HOLDINGS

	Period	Change in number	Change in average size
		.... *Percent*	
WESTERN EUROPE			
Belgium	1950-59	+ 2	— 3
Denmark	1950-59	— 6	+ 5
Finland	1950-59	+ 8	— 5
Germany, Federal Republic of	1949-60	— 14	+ 12
Ireland	1949-60	— 9	+ 8
Netherlands	1950-59	— 5	+ 4
Norway	1949-59	— 7	+ 15
NORTH AMERICA			
Canada	1951-61	— 16	+ 20
United States	1950-59	— 31	+ 40
OCEANIA			
Australia	1950-60	+ 3	+ 20
New Zealand	1950-60	— 1	+ 3
LATIN AMERICA			
Argentina	1952-60	— 14	+ 1
Barbados	1946-61	— 15	+ 5
Brazil	1950-60	+ 62	— 29
Colombia	1954-60	+ 32	— 25
Costa Rica	1950-55	+ 10	— 7
Dominican Republic	1950-60	+ 64	— 31
El Salvador	1950-61	+ 29	— 20
Panama	1950-60	+ 6	+ 46
Puerto Rico	1950-59	— 14	+ 7
Uruguay	1951-61	+ 2	— 2
Venezuela	1950-61	+ 29	— 10
FAR EAST			
India	1954-1960/61	+ 10	— 10
Korea, Republic of	1955-60	+ 6	—
NEAR EAST			
Iraq	1952-58	+102	— 38
AFRICA			
Kenya [1]	1954-60	+ 14	— 3
South Africa [2]	1950-60	— 9	+ 16
Southern Rhodesia [2]	1950-60	+ 42	— 15
Zambia [2]	1950-60	+ 16	— 27

SOURCE: Agricultural census data.

[1] European and Asian holdings only. - [2] European holdings only.

but also with capital items which require a certain minimum area of land for economic utilization.

In western Europe the increases in farm sizes have been concentrated in the middle parts of the range; the number of farms in the largest size classes has in most countries tended to fall. In Canada and the United States, on the other hand, only the largest farms have increased in number.[11]

The increase in capital inputs has been mainly in working capital, particularly feedstuffs but also fertilizers and other chemicals, fuel and services. Especially in the richer countries, inputs of fixed capital in the form of machinery, equipment and buildings appear to have leveled off. It is likely that this reflects the high level of capital investment in agriculture already attained in some countries. For example, it has been estimated that, in the Federal Republic of Germany in 1956/57, the value of capital stock (excluding land but including livestock) per labor unit in agriculture was more than a third greater than the capital stock per industrial worker.[12]

Together with these changes in the pattern of inputs there has been an increasing tendency for farmers in developed countries to specialize in one or two lines of production, in place of the mixed farming that is traditional, particularly in western Europe. This has resulted from a number of factors, including the requirement of modern processing industries for large and predictable quantities of standardized products, the growing complexity of many farming operations with the application of modern technology, the increasing capital intensity of farming, and the large minimum size of many items of equipment. At the same time, technological developments have reduced the need for crop rotation.

Specialization has gone furthest in respect of livestock production, and particularly the production of eggs and poultry. In the United Kingdom, almost half of the regular suppliers of the Egg Marketing Board gave up production between 1960 and 1964, although total egg production increased.

While contract farming and other forms of vertical integration were previously confined mainly to the production of sugar beet for sugar factories and fruit and vegetables for canneries, they are now common in many countries in the production of broilers and have recently started for pigmeat and beef. The initiative for the integration of poultry and other meat production has generally come from suppliers of feedstuffs, chains of retail outlets, or meat-packing industries.

[11] OECD. AGR (65)1. p.64.

[12] ECE/FAO. *Towards a capital intensive agriculture: fourth report on output, expenses and income of agriculture in European countries. Part I. General review.* Geneva. 1961. p.29.

The nature of the contract varies from a loose agreement for the delivery of certain quantities at stipulated times to the complete assumption of the managerial function by the "integrator," under which the farmer merely receives a wage for his labor and a payment for the use of his facilities. In most cases his character as an entrepreneur will have changed substantially, since the integrating firm is likely to make most of the production decisions and bear most of the risks. There has been some concern at this loss of independence and at the reduced bargaining power of the farmers in relation to the large integrating firms. But the many advantages to the farmer include technical assistance, readily available credit, fixed prices, and an easing of his otherwise increasingly complex managerial functions.

Many of the changes described above have been reflected in a tendency for the expenses of production to rise more rapidly than the gross output. Table IV-6 indicates that, in a number of western European countries, the share of current farm operating expenses (other than labor) in gross output has increased sharply in recent years. The share varies widely between countries, however, ranging from 10 to 15 percent in southern Europe, where the use of modern technology has not yet become widespread, to between 40 and 50 percent or more in countries like the Netherlands and the United Kingdom which are not only highly mechanized but also dependent on large quantities of imported feedstuffs. For western Europe as a whole it may be estimated that current farm operating expenses (other than labor) rose by about 40 percent at constant prices between 1953-55 and 1960-62, as compared with an increase of about 20 percent in gross output.[13]

Given the relatively fixed amount of labor and land at their disposal, small farmers not using hired labor (the majority of them) have found that the best way to raise the family income is to increase the input of capital. As already noted, this has applied particularly to working capital, which from the small farmer's point of view has the advantages over fixed capital of greater divisibility and, because of the rapid return from the investment, easier financing. Price support policies, providing the security of a guaranteed price, have reinforced this tendency, and indeed the farmers' efforts to raise their income in this way are one of the principal factors behind the conflict between the objectives of maintaining incomes and keeping production in line with demand, which is the main farm policy problem of the developed countries. Within limits, there is considerable flexibility in the farmer's and his family's labor input, while the return to the farmer is in effect a residual after he has paid his cash expenses, rather than itself being a cash expense. Thus it is in the interest of the family farmer to increase inputs of working capital so long as the return (at the guaranteed price) from the last inputs covers the additional costs, even if the marginal return to labor is very small.

TABLE IV-6. - CURRENT OPERATING EXPENSES (EXCLUDING LABOR) [1] AS A PERCENTAGE OF THE VALUE OF GROSS OUTPUT

	First period [2]		Second period [2]	
	1953-55	1956-58	1957-59	1960-62
	..... *Percent*			
Austria	26	26	25	26
Belgium	32	34	33	31
Denmark	27	28	34	36
Finland	21	22	19	20
France	20	25	[3] 24	24
Germany, Federal Republic of	30	33	35	36
Ireland	25	26	27	29
Netherlands	37	41	40	43
Norway	28	30	32	36
Sweden	32	32	37	36
Switzerland	35	37	28	29
United Kingdom	56	57	53	52
Northwestern Europe	33	36	34	35
Greece	7	8	11	12
Italy	14	16	15	16
Portugal	10	10	14	13
Spain	9	11	10	12
Yugoslavia	6	9	11	13
Southern Europe	11	13	13	14
ALL ABOVE COUNTRIES	26	28	28	29

SOURCE: Replies to questionnaires sent to governments by the ECE/FAO Agriculture Division, Geneva. For fuller details for the first period reference should be made to ECE/FAO: *Towards a capital intensive agriculture: fourth report on output, expenses and income of agriculture in European countries. Part I. General review*. Geneva, 1961, p. 24.

[1] Current operating expenses relate to the purchase of materials and services for current production from other sectors of the economy and from abroad. Thus they exclude purchases of capital equipment and also interfarm sales. - [2] Because of improvements in agricultural sector accounts, the data for 1957-59 and 1960-62 are not entirely comparable with those for 1953-55 and 1956-58. - [3] 1959.

[13] Data up to 1959 are available in ECE/FAO: *Towards a capital intensive agriculture: fourth report on output, expenses and income of agriculture in European countries*. Geneva, 1961, p. 22-23. More recent data are not entirely comparable because of improvements in agricultural sector accounts, but they have been linked with the earlier series to provide an approximate indication.

The large share of expenses in the gross revenue has made farm income more sensitive to any fluctuations that may occur in the prices both of the goods bought and of those sold by farmers. It has therefore contributed to the pressures for the maintenance of price and income support policies.

With the increasingly capital-intensive nature of farming in the developed countries has come a closer integration of agriculture, both economically and socially, with the rest of the economy. Economically, agriculture has become a major customer for a wide range of industries producing such items as fertilizers, pesticides, farm machinery and other equipment, as well as for many service industries. At the same time, the increasing technical complexity of farming is resulting in the gradual emergence of a new type of farmer, more comparable to an industrial and commercial entrepreneur than to the conventional farmer with limited skills in many fields and a tradition-bound outlook. This is already helping to bridge the social and psychological gulf between town and country, and will continue to do so as the older type of farmer gradually disappears.

Developing countries

Much less information is available on the situation of farmers in developing countries. It seems clear, however, that on the whole changes have been small in comparison with the rapid evolution in the developed countries.

As already indicated, one of the major influences in the developed countries has been the pace of technological progress. In the developing countries technological change has as yet made only a limited impact on agriculture. Although, as is shown in Chapter VI, there has been a rapid expansion in the use of fertilizers, pesticides, machinery and other modern inputs, this mainly reflects the low initial level rather than any large absolute increase in their use.

Another main influence in the developed countries has been the reduction in the labor force. But in almost all of the developing countries the agricultural labor force has continued to increase. Thus, again in contrast to the developed countries, in most of the rather few developing countries for which data on the numbers and average size of farms are available in Table IV-5, their numbers have increased and the size (already very small in many instances) decreased even further. While this has probably led to some increase in the actual input of labor per unit of land, it seems likely that in most instances there has also been an increase in rural unemployment and underemployment.

In some countries the increase in the number of farms and the accompanying decline in their average size partly reflects the redistribution of land under the land reform measures that have been taken in a great many developing countries in the last decade. For example, this probably explains the very large increase in the number of holdings in Iraq between 1952 and 1958. Except in the case of the break-up of large estates worked by landless laborers, however, land reform measures have little effect on the number and size of holdings, since they usually consist to a great extent in the transfer of title to holdings that the beneficiaries are already farming as tenants.

The farmers affected by land reform measures are only a small fraction of the millions in developing countries. However, the change from being a landless laborer or a tenant or sharecropper under inequitable conditions to being owner of a holding is such a profound one that, even if the numbers involved are still small, it is undoubtedly one of the main changes affecting agricultural producers in developing countries during the period under review. The removal of the landlord, who often had many functions, including managerial decision-making, and sometimes the supply of requisites and of credit, has also brought many changes. Generally the government has had to try to provide the services formerly furnished by the landlord. Various new types of organization are being attempted, such as the pooling of land for crop rotation purposes in the United Arab Republic.

In addition to land reform projects, there are also many other projects in developing countries, for example co-operative farming projects, various forms of settlement schemes, and in some cases state farms, where limited numbers of farmers are engaged in enterprises very different from their traditional methods of farming. Although their impact is still small, some of these projects may well prove to be the springboard for more widespread change in the future.

A more general change is that farming in the developing countries is gradually becoming more commercialized. Whereas in the developed countries subsistence production, or what is consumed by the producer out of his own production, is now generally a very small proportion of total output, in most developing countries sales are still so small that, as

in most African countries for instance, subsistence production may account for well over half of the total value of production. While this proportion appears to be gradually declining, the pace at which change is possible is severely limited by the slow fall in agriculture's share of the population, which is the main determinant of the size of the domestic market.[14]

FISHERIES

The trend from small-scale and seasonal fisheries to large-scale industrialized operations has become more and more pronounced during the last decade. Large freezer trawlers and factory vessels operating with numerous catching units now fish thousands of miles from their home ports, each voyage lasting several months. These changes have profoundly influenced the role and position of the fish producer, whether the individual fisherman or crewman, the traditional skipper-owner or large multi-unit fishing companies.

Because of the special nature and risks of fisheries, a system of remuneration has long been established (the so-called share or " lay " arrangement) whereby the economic risk is shared in varying degrees between the owner and crew. As long as the fisherman was able to divide his work between fisheries and some other occupation, for instance farming, handicrafts, small-scale industries, etc., which provide a certain stability of income and livelihood between seasons, he was able to accept the burden of risk-sharing with the owner, and tended to regard his fishing earnings as a useful addition to his income. The industrialization of fisheries, however, requires full-time participation and long stays at sea, and it has become increasingly difficult to apply this system. A crewman on a modern freezer trawler or factory ship is, in fact, less of a fisherman in the traditional sense than a regularly employed professional worker, who depends on his special skills and experience for his entire annual income and spends most of his life at sea in an industrial environment. He is consequently inclined to compare his position with that of other industrial working groups, and demand comparable remuneration and conditions of work.

In spite of vastly improved equipment and techniques, the owners still have to face a considerable element of risk, and therefore often find it hard to compete with less hazarduous industries in offering regular working hours, social insurance, physical protection and amenities, as well as a guaranteed minimum income commensurate with the levels obtainable in other occupations. Fishing vessel owners have therefore been faced with increasingly serious recruitment problems in many of the developed countries, especially the typical skipper-owner or small-scale fishing enterprise operating with one or two small units, often on a periodic or seasonal basis.

The total number of fishermen is declining in most developed countries, and the trend is toward full-time participation by the reduced numbers. Stability of employment and the average level of income over the whole year, rather than the uncertain possibility of spectacular earnings during a short season, are becoming the main considerations for an increasing number of fishermen. Recruitment problems are therefore in many instances less difficult for the large-scale fishing companies engaged in all-year operations and able to spread the risk from higher guaranteed minimum wages over a large number of fishing units.

The division of the industry in the developed countries into two separate groups of large and small producers has become more and more pronounced. The large-scale fishing companies have tended to grow still larger. Some of them, having acquired large fishing fleets, now engage also in processing and marketing operations, while there is also a tendency among the large general food producers and distributors to move into fishing operations.

Prices of fishing vessels, gear and equipment have risen sharply in many countries during the decade; increased competition on the fishing grounds and longer voyages have added further to operational costs. Prices paid to producers, except for a few luxury species, have as a rule not kept pace.

This has caused considerable discontent among fishermen who are paid on the basis of a percentage of the value of the catch or a combination of fixed

[14] For a discussion of the factors involved, *see* K.C. ABERCROMBIE. Subsistence production and economic development. FAO *Monthly Bulletin of Agricultural Economics and Statistics*, 14 (5), May 1965, p.1-8.

wage and percentage. There has been continued conflict between owners and crews over the extent to which certain operational cost should be deductible from the value of the catch before calculation of the shares.

In the developing countries the industrialization of fisheries has progressed much more slowly, except in a few areas where rich newly discovered or unexploited resources have attracted foreign capital and technical know-how. In general, the main producer in these countries is still the subsistence fisherman using very primitive techniques and equipment. It has in many instances been possible to improve his efficiency through relatively simple means, for instance by equipping him with nets made of nylon instead of cotton or some crude local material. As a result, fishermen in the developing countries have in many cases been able to achieve spectacular increases in their catches. Because of inadequate marketing and distribution facilities, however, this has not always led to a corresponding increase in their income.

FORESTRY

In recent years there have been many changes in the situation of forest operators, whether owners, workers, entrepreneurs or concession holders, in both developed and developing countries. In the case of individual forest owners, particularly in developed countries, the increase in production costs and especially salaries, combined with the effect on timber prices of the competition of substitute products, has led to reduced profit margins and to a search for more planned and integrated management. Because of the need to reconvert and improve forests, the professional training of forest owners has gained in importance.

Another development has been the concentration of forest enterprises and the growth of co-operative-type groups and associations. In Sweden, the trend toward large-scale logging operations has induced forest owners' associations to extend their co-operation from marketing activities to the use of equipment, labor, road-building, etc.

Large companies owning forests have continued to seek increased profits through greater vertical integration, involving the purchase of sawmills and even pulp and paper mills.

The forest worker is increasingly seeking stability and an improved standard of living through specialization and full-time employment. This underlines the importance of professional training. There is a deficit in forest labor which in most cases it is proving possible to make good by mechanization.

In recent years the wages of forest workers have generally risen considerably. In Spain, for example, there was an increase of 300 percent between 1950 and 1960 and, in Sweden, wages increased fivefold between 1948 and 1963. Nevertheless, forest work, which remains a difficult and dangerous occupation, does not attract the younger generation.

The problems of accident prevention have received increasing attention from public authorities, and laws concerning the safety of forest workers have recently been passed in a number of countries, including India, Indonesia and the Philippines.

In the developing countries the forest worker is generally still a small farmer, who devotes some time to forest work, particularly in periods of seasonal unemployment.

The conventional forest logging enterprise has been increasingly faced with the need to undertake large-scale felling operations. In view of the shortage of forest workers, the mechanization and rationalization of the work has gained in importance. While the production of 100 cubic meters of roundwood without bark required 70 man-days in 1957, 40 man-days were required in 1964, and it is estimated that slightly less than 20 days will be required by 1975.

In developed countries the form of concessions has become increasingly complex. Efforts have been made to involve the concession holder in good management and good harvesting practices. In the province of Nova Scotia, Canada, for example, a new type of contract has been issued recently to encourage the concession holder to respect certain harvesting practices in order to enjoy more favorable terms.

In developing countries, particularly the newly independent ones, concessions have been given particular attention. Traditional concessions of 99 years, at a unit price per cubic meter extracted, are being increasingly replaced by shorter term concessions where, as in developed countries, the concession holder is more closely linked with the improvement and management of the forest.

Chapter V. - The consumer

The discussion of food supplies and consumption in Chapter II was confined to the broad changes that have occurred in the share of national supplies contributed by domestic production and imports and in per caput supplies at the level of the main world regions. The present chapter examines the position of the consumer in somewhat more detail, first from the economic and then from the nutritional point of view. After a discussion of the trends in food consumption that have resulted from changes in incomes and prices, the calorie and protein content of per caput food supplies is compared with estimated requirements for as many countries as possible.

CONSUMER EXPENDITURE ON FOOD

Data on consumer expenditure on food, based on national accounts, are assembled in Table V-1. The per caput level of consumer expenditure on food increased (at current prices) between 1953-55 and 1960-62 in all but one of the 32 countries for which data are available. Much of the increase was due to rising food prices, which are discussed in more detail below. But there were also generally substantial increases in expenditures in constant prices. Of the 22 countries for which there are data in constant prices, per caput food expenditure increased in all except Ecuador and South Africa. In Honduras, the only country where expenditure fell in current prices, this was entirely the result of lower prices, and expenditure in constant prices increased.

It is evident from Table V-1 that the main factor influencing per caput expenditure on food (in constant prices) has been the rise in overall expenditure, which in turn has reflected the growth of the national income. Changes in food expenditure are principally affected in the long run by changes in income, and in the shorter term by changes in prices, especially where there is a shift in the relation between prices of food and of other items or between prices and incomes. Relative to a given increase in income, the increase in food expenditure tends to be slower in countries where per caput incomes are high than where incomes, and thus food consumption, are still low.

During the period under review the biggest increases in income, as indicated by total consumption expenditure, have been with few exceptions in the developed countries, and it is in these countries that food expenditure has risen fastest, in spite of the higher income elasticity of demand[1] in developing countries. Countries where both total and food expenditures have increased rapidly in constant prices include a number of developed countries (Austria, Greece, Israel, and Italy) and only Honduras among the few developing countries for which data in constant prices are available.

In such high-income countries as Finland, France, the Netherlands, Norway and Sweden, food expenditure in constant prices has grown much less rapidly than total consumption expenditure. In fact, in most of the developed countries the increase in food expenditure has been rather small, even though the few countries where food expenditure increased particularly fast also fall into this group. Poorer countries where food expenditure has increased almost as fast as, or even faster than, total consumption expenditure include Honduras, the Republic of Korea, and Malta.

It should be noted, however, that a number of countries do not seem to fit into this general pattern. In several developed countries, including Ireland, Israel and Italy, per caput consumption expenditure on food appears to have increased only slightly more slowly in constant prices than total per caput

[1] The percentage increase in demand resulting from a 1 percent increase in income.

TABLE V-1. - CHANGES IN PER CAPUT PRIVATE CONSUMPTION EXPENDITURE 1953-55 TO 1960-62 [1]

	Increase [2] in per caput expenditure				Share of food in total consumption expenditure	
	All items		Food			
	Current prices	Constant prices	Current prices	Constant prices	1953-55	1960-62
	..... *Percent*					
United States	24	...	[3] 10	...	[3] 24	[3] 22
Canada	26	12	24	8	23	23
Australia [4]	21	9	[3] 12	[3] 5	[3] 24	[3] 23
Sweden	48	25	34	11	30	26
Iceland [5]	42	8	29	9	29	27
Puerto Rico [6]	52	34	26	14	37	27
Belgium	20	17	11	12	29	28
Norway	40	36	34	11	31	30
United Kingdom	39	17	[3] 26	[3] 10	[3] 32	[3] 30
Netherlands	45	24	33	11	34	31
France [7]	70	22	47	9	35	31
Austria [8]	74	44	[9] 44	[9] 35	[9] 37	[9] 32
Israel [10]	86	35	72	34	34	32
South Africa [11]	19	7	10	— 2	34	32
Luxembourg [7]	36	...	36	...	34	34
Jamaica [7]	62	...	32	...	42	35
Trinidad and Tobago [12]	61	...	55	...	38	36
Thailand [13]	34	11	13	5	44	36
Finland [12]	58	16	53	10	40	37
Ireland	28	17	[3] 27	[3] 14	[3] 40	[3] 37
Panama	17	...	6	...	41	37
Spain [14]	54	...	68	...	36	38
Malta [6]	34	24	[3] 21	[3] 18	[3] 43	[3] 40
Greece [6]	59	38	44	18	46	43
Japan	73	...	[15] 43	...	[15] 54	[15] 45
Ecuador	18	8	6	— 3	48	45
Italy	48	33	39	27	47	46
Honduras	8	42	— 4	51	45	46
Malaysia: Malaya [16]	3	...	2	...	46	46
Ghana [10]	26	...	27	...	48	49
Korea, Republic of	208	13	222	18	51	51
China (Taiwan)	99	...	[9] 80	...	[9] 60	[9] 52

SOURCE: National income statistics.

[1] Countries are arranged according to the share of food in total private consumption expenditure in 1960-62. - [2] Minus sign (—) denotes decrease. - [3] Including nonalcoholic beverages. - [4] 1956 to 1962. - [5] 1957 to 1960. - [6] 1954 to 1960-62. - [7] 1953-55 to 1960-61. - [8] 1953-55 to 1960. - [9] Including beverages. - [10] 1955 to 1960-62. - [11] 1953-55 to 1959. - [12] 1954-55 to 1960-62. - [13] 1957 to 1960-62. - [14] 1955 to 1960. - [15] Including beverages and tobacco. - [16] 1957 to 1960-61.

expenditure, and in Iceland food expenditure actually increased faster. Ecuador, Puerto Rico and Thailand are examples of developing countries where food expenditure has increased much more slowly than total expenditure. In some cases these divergencies may be explained by the effect of taxation and saving, but they are likely also to be caused by deficiencies in the basic data.

In spite of such differences, however, foode xpenditure in almost all of the countries in Table V-1 has risen less rapidly than total per caput consumption expenditure. The share of food consumption in the total has fallen in 25 of the 32 countries covered in the table and has remained approximately constant in another four. In only three countries (Ghana, Honduras, and Spain) has there been a slight increase in this share. In Honduras, this may reflect the fact that retail food prices have declined, in contrast to a slight increase in the overall cost of living.

In the developed countries the share of food in total expenditure has ranged in recent years from 22 to 23 percent in Australia, Canada and the United States to 45 to 46 percent in Italy and Japan. In the developing countries, apart from Puerto Rico, where the figure is as low as 27 percent, the range has been from 35 to 37 percent in Jamaica, Panama, Trinidad and Tobago, and Thailand to 51 to 52 percent in China (Taiwan) and the Republic of Korea.

Pattern of food consumption and expenditure

With the rise in incomes there have also been changes in the pattern of food consumption and expenditure. Some of the changes that have taken place in per caput food consumption may be seen from the food balance sheet data in Table V-2.

In almost all of the developed countries there have been declines in the per caput consumption of the traditional staple foods like cereals, and potatoes and other root crops. Most of the increase in food consumption in these countries has tended to be directed to livestock products and fruit and vegetables, although in some of them there have also been substantial increases in the consumption of sugar and fats and oils.

Japan provides an example of extremely rapid changes in the pattern of food consumption. The per caput consumption of meat, eggs, and fats and oils has increased by 140 to 200 percent over the low level at the beginning of the period, while sugar consumption has also risen steeply. There have also been substantial changes in the Mediterranean countries, where per caput incomes are somewhat lower than in the rest of western Europe. In the countries with the highest income levels, such as Australia, Canada, and the United States, where a saturation or near-saturation level of consumption of most foodstuffs has already been achieved, changes have tended to be smaller.

TABLE V-2. - INCREASE [1] IN PER CAPUT CONSUMPTION OF VARIOUS FOODSTUFFS, 1951-53 TO 1960-62.

	Cereals	Potatoes and other starchy foods	Sugar	Vegetables	Meat [2]	Eggs	Milk (protein)	Fats and oils
	..... *Percent*							
WESTERN EUROPE								
Austria	— 11	— 17	42	1	45	98	4	11
Belgium-Luxemb.	— 14	— 20	11	16	23	5	10	35
Denmark	— 18	— 13	21	4	17	42	— 5	6
Finland	— 11	— 4	17	— 17	17	11	— 2	15
France [3]	— 15	— 15	10	— 29	23	4	38	...
Germany, Fed. Republic of	— 20	— 24	22	9	46	62	4	12
Greece [4]	6	— 7	38	21	88	94	58	11
Ireland	— 19	— 19	19	12	22	13	5	— 1
Italy	— 8	29	60	50	75	36	23	39
Netherlands	— 15	— 15	21	10	35	83	— 1	15
Norway	— 24	— 8	26	7	16	31	— 14	— 11
Portugal	—	— 15	38	— 1	19	20	67	5
Spain [4]	— 6	6	76	27	48	55	17	34
Sweden	— 13	— 18	—	20	4	6	— 4	13
Switzerland	— 12	— 12	11	4	25	11	— 15	28
United Kingdom	— 16	— 6	21	4	35	22	6	10
Yugoslavia [4]	— 3	5	107	74	43	45	29	44
NORTH AMERICA								
Canada	— 12	— 3	2	8	7	5	— 4	— 2
United States	— 10	— 5	—	— 1	13	— 15	2	10
OCEANIA								
Australia	— 11	— 8	— 3	5	—	14	13	— 10
New Zealand	—	36	— 4	— 8	4	31	14	3
LATIN AMERICA								
Argentina	— 13	11	10	7	— 3	— 6	— 33	— 14
Brazil	20	6	19	51	— 5	32	13	38
Chile [5]	— 5	12	— 9	37	16	— 2	11	10
Honduras [6]	12	17	—	...	...	— 6	— 9	39
Mexico [7]	—	10	7	— 51	20	19	88	12
Peru [8]	— 15	— 7	18	53	— 15	— 69	— 8	25
Uruguay [9]	— 7	19	3	48	— 18	—	30	8
Venezuela [4]	9	25	4	38	37	— 23	29	55
FAR EAST								
Ceylon [4]	8	—	15	1	— 25	— 31	—	— 8
China (Taiwan)	10	— 3	—	— 6	— 5	—	—	31
India	14	— 1	60	...	—	—	—	23
Japan	2	22	59	29	175	140	—	200
Pakistan	1	...	10	4	— 20	—	—	19
Philippines [10]	4	— 5	— 7	— 10	1	21	—	39
NEAR EAST								
Israel	— 23	— 6	56	— 3	236	54	— 8	17
Turkey [11]	12	36	105	54	— 8	38	25	—
United Arab Rep.	14	24	— 24	80	9	22	—	54
AFRICA								
Mauritius [12]	— 1	— 22	— 2	12	5	1 400	33	33
South Africa [3]	3	12	6	5	12	10	7	— 4

SOURCE: Food balance sheet data (see Annex Table 9).

[1] Minus sign (—) denotes decrease. - [2] Including offal, poultry and game. - [3] 1951-53 to 1960-61. - [4] 1952-53 to 1960-62. - [5] 1951-52 to 1960-62. - [6] 1952-53 to 1962. - [7] 1954-56 to 1962. - [8] 1952 to 1962. - [9] 1952-53 to 1961. - [10] 1953 to 1960-62. - [11] 1951-53 to 1960-61. - [12] 1955-56 to 1960-62.

In the developing countries trends have been less consistent. In most of them, however, the demand for the staple grains and root crops is still not satisfied, and per caput consumption of these products has therefore continued to increase. Many developing countries have also registered large increases in the consumption of sugar and fats and oils, and a few of them in fruit and vegetables and livestock products.

The nutritional implications of these changes are discussed later in this chapter.

Consumer food prices

In most countries rising consumer prices have been a persistent feature of the whole postwar period. During the years immediately after the second world war strong inflationary pressures resulted from the general shortage of consumer goods combined with the accumulated backlog of demand. Later, the Korean war was a major inflationary influence. Hardly anywhere, however, did consumer prices decline at the end of the Korean boom and they have continued to rise in almost all countries. As a rule the increase has been much slower than in the previous decade, but in a number of countries, especially in western Europe, a renewed wave of inflation seems to have begun in the last two years or so.

Out of a total of 96 countries for which reasonably comparable indices of consumer food prices are available for the whole of the ten-year period, they averaged higher in 1964 than in 1955 in all countries except Czechoslovakia, Guatemala, Honduras, and Sierra Leone. The rate at which prices have risen has varied considerably among the different countries but in almost half of them the increase has exceeded 30 percent during the last ten years (Table V-3).

TABLE V-3. - CHANGES IN INDICES OF CONSUMER FOOD PRICES BY REGIONS, 1955-64

Index of consumer food prices, 1964 (1955 = 100)	Europe	North America	Oceania	Latin America	Far East	Near East	Africa	Total
	..... *Number of countries*							
100 and under	1	—	—	2	—	—	1	4
101 - 110	1	—	—	5	2	—	3	11
111 - 120	7	2	3	7	2	1	4	26
121 - 130	5	—	—	2	2	4	1	14
131 - 150	3	—	—	2	3	1	6	15
151 - 200	4	—	1	—	3	1	5	14
Over 200	1	—	—	7	3	1	—	12

Countries where the rise in consumer food prices has been relatively small include British Honduras, Ceylon, El Salvador, Luxembourg, Malaysia, Mauritius, Mozambique, Nicaragua, Panama, Tanzania, and Venezuela. At the other end of the scale there has been runaway inflation for all or most of the period in at least 12 countries (Argentina, Bolivia, Brazil, Chile, Colombia, Iceland, Indonesia, the Republic of Korea, Laos, Peru, Turkey, and Uruguay).

It is difficult to distinguish the extent to which food prices have been a main cause of the rise in the cost of living or have merely reflected the general inflation. Table V-4 indicates that the developed countries are about equally divided between countries where food prices have risen faster than the cost of living, where there has been little difference between the two indices, and where food prices have risen more slowly.

In the developing countries, on the other hand, food prices rose faster than the cost of living in almost half of the countries for which data are available. This is likely to reflect the lag in food production in many of these countries, combined with their shortage of foreign exchange for food imports. A further difference between the two groups of countries is that year-to-year fluctuations in food prices have been much greater in the developing countries.

The available data on price changes for the various food groups indicate no uniform pattern among the different countries. For example, prices of livestock products rose more rapidly than grain prices in some countries, but in other countries the reverse was the case.

TABLE V-4. - RELATION BETWEEN CHANGES IN THE INDICES OF THE COST OF LIVING AND OF CONSUMER FOOD PRICES, 1955-64

Relation between the indices	Developed countries [1]	Developing countries	Total
	.... *Number of countries*		
Food prices rose faster	9	33	42
Little difference [2]	9	20	29
Food prices rose more slowly....	8	13	21
Food prices stable or declined....	1	3	4
	27	69	96

[1] Europe, North America, Australia, New Zealand, Japan. - [2] Includes all countries where the difference between the two indices in 1964 (1955 = 100) was less than 10 percent of the index of the cost of living.

TABLE V-5. - FARMER'S SHARE OF RETAIL COST OF MAIN FOOD GROUPS, IN THE UNITED STATES

	All food	Bakery and cereal products	Fruit and vegetables	Meat products	Dairy products	Poultry and eggs
	..... *Percent*					
1953	44	23	30	60	49	68
1954	43	23	29	54	47	63
1955	41	21	29	54	46	66
1956	40	21	30	52	47	63
1957	40	21	28	54	46	61
1958	40	19	29	57	45	63
1959	38	17	29	52	45	59
1960	39	17	30	52	45	62
1961	38	18	30	51	45	60
1962	38	18	29	53	44	60
1963	37	18	29	48	44	60

SOURCE: UNITED STATES DEPARTMENT OF AGRICULTURE. *The marketing and transportation situation* (various issues).

The increases in retail food prices are explained in part by the rise in producer prices, but the costs of marketing and processing have also risen sharply. These costs have frequently been responsible for the greater part of the rise in retail prices, particularly in the developed countries, where processing and packaging as well as market promotion and distribution have taken an increasing share from the retail price.

Data on marketing margins are unfortunately available for very few countries. For the United States, however, there are series extending over a long period. Table V-5 shows that the farmer's share of the consumer's food dollar in the United States has declined fairly steadily during the last decade.

The increase in marketing margins is accounted for by the expansion of marketing and processing services and the increase in their cost, especially because of rising labor costs. Since labor represents almost half of total marketing costs in the United States, the increase in salaries and wages has clearly been a major factor in the rise in the marketing bill.

Demand at farm and retail level

Consumer demand is the main driving force determining the rate and direction of agricultural development. Changes in the pattern of consumer expenditure (together with changes in the proportion and direction of investment and in the role of foreign trade) are among the principal factors behind the changes in the occupational distribution

TABLE V-6. - CHANGES IN TOTAL FOOD EXPENDITURE IN CONSTANT PRICES, 1953-55 TO 1960-62 [1]

	Increase [2] in		
	Per caput food expenditure	Population	Total food expenditure
	Percent		
Honduras	51	23	85
Israel [3]	34	26	68
Korea, Republic of	18	18	39
Austria	[4] 35	1	[4] 37
Italy	27	4	33
Canada	8	19	29
Greece [5]	18	6	26
Puerto Rico [5]	14	9	25
Netherlands	11	10	22
Malta [5]	[6] 18	3	[6] 21
Ecuador	— 3	25	21
Australia [7]	[6] 5	17	[6] 19
Norway	11	6	18
Thailand [8]	5	12	18
Finland [9]	10	7	17
France [10]	9	8	17
Belgium	12	4	16
Iceland [11]	9	7	16
Sweden	11	4	16
United Kingdom	[6] 10	4	[6] 14
South Africa [12]	— 2	13	11
Ireland	[6] 14	— 4	[6] 8

SOURCE: National income statistics.

[1] Countries are arranged according to the increase in total food expenditure. - [2] Minus sign (—) denotes decrease. - [3] 1955 to 1960-62. - [4] Including beverages. - [5] 1954 to 1960-62. - [6] Including nonalcoholic beverages. - [7] 1956-62. - [8] 1957 to 1960-62. - [9] 1954-55 to 1960-62. - [10] 1953-55 to 1960-61. - [11] 1957 to 1960. - [12] 1953-55 to 1959.

of the population and national income discussed in the previous chapter.

However, because of the tendency just noted for consumers to demand increased marketing services, changes in consumer expenditure at the retail level are felt only in greatly attenuated form at the farm level or the point of import. In other words, the income elasticity of demand is generally much less at farm than at retail level. This is especially so in the developed countries where, as is discussed in Chapter XI, consumers increasingly require more elaborate services, particularly in processing, packaging and retailing.

Another major difference between the developed and developing countries is the rate at which their populations are growing. This changes somewhat the picture of consumer demand obtained from Table V-1. It is clear from Table V-6 that, whereas in the developed countries the prime mover in increasing demand for food has generally been higher incomes, in the developing countries the effect of population growth has most often been equal to or greater than that of higher incomes, although unfortunately data in constant prices are available for very few developing countries. In those developed countries where a rapid increase in income has caused per caput food expenditure also to rise sharply, the total effect has usually been considerably dampened by the slow growth of population. In many developed countries the low income elasticity of demand for food and the slow growth of population have combined to produce a comparatively slow rate of increase in total food expenditure. In most of the developing countries, on the other hand, even if per caput demand has increased only slowly, as a result of the frequent failure of incomes to expand very rapidly, the faster population growth has brought a relatively rapid increase in total demand.

FOOD SUPPLIES IN RELATION TO NUTRITIONAL REQUIREMENTS

Increasing knowledge of human requirements for calories and essential nutrients has led during the last decade to the revision of dietary standards in a number of countries and also of those recommended by FAO and WHO on an international basis. International meetings of expert groups on calorie requirements were convened in 1949 and 1955 and on protein requirements in 1955 and 1963, while in 1961 an expert group prepared " suggested practical allowances " for calcium.

Average calorie and protein supplies per caput are compared below with estimated requirements in the 52 countries for which FAO food balance sheets are available. For fuller data of trends in supplies of calories, proteins and fats, reference should be made to Annex Tables 9B and 9C.

In making such comparisons, the unreliability of the agricultural statistics in most of the developing countries must always be borne in mind. It appears, however, that average calorie supplies are less than estimated requirements in almost all of the Far East, in most of Latin America except for the River Plate countries, and possibly also in several parts of Africa, although food balance sheets are available for very

few African countries. Protein supplies appear to meet average requirements in almost all countries. However, it must be remembered that, if average supplies are equal to average requirements, this does not necessarily mean that the requirements of the whole population are satisfied. Supplies are rarely distributed in accordance with needs and, in fact, especially in the case of protein, many people consume far more than they need, while those whose needs are greatest (children and pregnant and lactating women) often receive least. Much more than the calculated average requirements for the country is therefore necessary if all members of the population are to receive enough.

Calories

Table V-7 compares average calorie supplies per caput with estimated requirements in the countries for which food balance sheets are available.

In western Europe, North America and Oceania, calorie supplies in all countries are well above esti-

TABLE V-7. - CALORIE SUPPLIES COMPARED WITH REQUIREMENTS

	Average supplies per caput		Estimated requirements [1]
	1951/52-1953/54	1960/61-1962/63	
	Calories per day		
WESTERN EUROPE			
Austria	2 700	2 970	2 610
Belgium-Luxembourg	2 950	3 030	2 620
Denmark	3 330	3 370	2 750
Finland	3 070	3 110	2 760
France	2 840	...	2 530
Germany, Federal Republic of	2 880	2 960	2 590
Greece [2]	2 590	2 940	2 410
Ireland [2]	3 460	3 450	2 620
Italy	2 480	2 740	2 460
Netherlands	2 900	3 030	2 610
Norway	3 100	2 930	2 780
Portugal [2]	2 420	2 560	2 470
Spain	[3] 2 490	2 810	2 490
Sweden	3 020	2 990	2 800
Switzerland	3 110	3 220	2 660
United Kingdom	3 110	3 270	2 630
Yugoslavia [2]	[4] 2 690	2 990	2 620
NORTH AMERICA			
Canada	3 050	3 060	2 640
United States [2]	3 130	3 100	2 590
OCEANIA			
Australia	3 170	3 140	2 600
New Zealand [2]	3 350	3 490	2 640
LATIN AMERICA [2]			
Argentina	2 980	2 810	2 580
Brazil	2 380	2 800	2 310
Chile	[5] 2 450	2 410	2 610
Colombia	...	[6] 2 080	2 510

	Average supplies per caput		Estimated requirements [1]
	1951/52-1953/54	1960/61-1962/63	
	Calories per day		
LATIN AMERICA [2] *(concluded)*			
Dominican Republic	...	[7] 2 080	2 390
Ecuador	...	[6] 1 970	2 410
El Salvador	...	1 990	2 300
Guatemala	...	2 080	2 370
Jamaica	[8] 2 250	...	2 440
Mexico	[9] 2 360	2 600	2 450
Paraguay	...	2 560	2 280
Peru	[10] 2 260	2 310	2 500
Surinam	...	1 980	2 390
Uruguay	[4] 2 950	[6] 2 970	2 580
Venezuela	[4] 2 050	2 370	2 390
FAR EAST			
Ceylon [2]	[4] 1 990	2 080	2 290
China (Taiwan) [2]	2 140	2 350	2 290
India	1 740	2 000	2 240
Japan	1 930	2 230	2 360
Pakistan	2 000	2 010	2 250
Philippines [2]	[11] 1 690	1 810	2 200
NEAR EAST			
Israel	2 780	2 820	2 530
Jordan	...	2 160	2 410
Lebanon	...	2 460	2 410
Libya	...	[13] 2 100	2 370
Syria	[13] 2 330	...	2 380
Turkey	2 730	[14] 3 110	2 410
United Arab Republic	2 340	2 670	2 380
AFRICA			
Mauritius [2]	...	2 370	2 250
South Africa [2]	2 680	2 820	2 570
Southern Rhodesia [2]	2 450	...	2 570

[1] Calorie requirements are calculated on the basis of the current age and sex structure of the population: because this changes only very slowly, they should be valid for the whole of the period under consideration. - [2] Calendar year. - [3] 1952/53 to 1953/54. [4] 1952/53. [5] 1951-52. - [6] 1961. - [7] 1957-59. - [8] 1958. - [9] 1954/55 to 1956/57. - [10] 1952. [11] 1953. - [12] 1959. - [13] 1957. - [14] 1960-61.

mated requirements. Indeed in many of these countries problems of " overnutrition " are becoming increasingly prominent. In Italy, Spain, and Yugoslavia, however, the required level was reached only in 1951-53, and in Portugal in 1954-56; during the decade there have been further substantial increases in these countries, and their calorie intakes are now on the same high level as other developed countries.

Of the 15 Latin-American countries for which food balance sheets are available, calorie requirements are not met in Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Jamaica, Peru and Surinam, and are only marginally satisfied in Venezuela. With the main exception of Chile, however, calorie supplies in these countries have tended to increase during the past decade. Supplies have also declined in Argentina, but they remain greater than requirements. In Mexico and Venezuela supplies were less than requirements at the beginning of the decade, but have since increased considerably.

Calorie supplies are inadequate in each of the Far Eastern countries for which data are available, with the sole exception of China (Taiwan) where they are marginally adequate. In view of the uneven distribution of food supplies among the population, many people must be seriously short of calories in these countries. In most countries in this region there has been only a small increase in calorie supplies during the decade, although they have increased rapidly in both China (Taiwan) and Japan, where the increase has been accompanied by significant improvements in the quality of the diet.

In the Near East, calorie supplies are generally higher than in the Far East, and are above requirements in all of the countries for which there are data, except for Jordan and Libya. Supplies have increased substantially in both Turkey and the United Arab Republic. Food balance sheets are available for very few countries in Africa, but FAO's Third World Food Survey estimates that supplies are slightly below requirements in the region as a whole.[2]

Protein

Protein nutrition was discussed in detail in a special study in last year's issue of this report.[3] Table V-8 compares average protein supplies per caput with estimated requirements for as many countries as possible. The table also shows trends in the supply of animal protein, which gives a rough indication of the quality of the protein supply and of the diet as a whole.

Protein supplies are estimated as considerably in excess of requirements in all countries of western Europe, North America and Oceania. In most of the southern European countries, total protein supplies have increased markedly, but the proportion of animal protein remains low, in spite of recent sharp increases.

In Latin America, protein supplies are estimated as above average requirements in all countries for which data are available except Colombia and Surinam. In most countries animal protein is about 30 percent of total protein. Protein supplies have increased substantially in Brazil, Mexico, and Venezuela, but there has been some decline in the ample supplies of Argentina and Uruguay.

Protein supplies in the Far East are estimated as less than average requirements in Ceylon, Pakistan and the Philippines. Only in China (Taiwan) and Japan have both total protein and the proportion of animal protein increased. Protein supplies have declined in the latest year for which data are available from their already very low level in Ceylon, India, and the Philippines (Annex Table 9C).

In the Near East, protein supplies appear generally to be above average requirements and to have increased, except in Israel and Jordan. The proportion of animal protein remains small, however, in spite of the rapid increase in total protein supplies in some countries, such as Turkey and the United Arab Republic.

Nutritional measures

Most of these changes in apparent food consumption have stemmed primarily from market forces, that is to say from the changes discussed earlier in incomes and prices. They have also been influenced in some countries by government price policies in the interests of consumers, which are discussed in Chapter X, and by special measures for the improvement of nutritional levels, which will be considered briefly here.

Special feeding programs directed at improving the nutritional status and food consumption of vulnerable groups of the population (infants, young

[2] FAO. *Third world food survey*, Freedom from Hunger Campaign Basic Study No. 11, Rome, 1963, p. 37.

[3] FAO. *The state of food and agriculture 1964*, Rome, 1964, p. 98-132.

TABLE V-8. - PROTEIN SUPPLIES COMPARED WITH REQUIREMENTS

	Average supplies per caput				Estimated requirements,[1] total protein
	Animal protein		Total protein		
	1951/52-1953/54	1960/61-1962/63	1951/52-1953-54	1960/61-1962/63	
	Grams per day				
WESTERN EUROPE					
Austria	37.7	47.5	80.4	86.8	47
Belgium-Luxembourg	41.0	45.9	86.5	85.5	47
Denmark	53.5	57.9	94.6	93.3	47
Finland	52.9	54.7	96.4	93.9	43
France	43.0	...	92.8	...	47
Germany, Federal Republic of	39.0	49.2	77.4	80.2	44
Greece [2]	18.8	30.6	79.2	95.4	49
Ireland [2]	48.0	54.2	95.0	90.4	45
Italy	21.3	29.8	71.9	80.0	46
Netherlands	40.9	46.1	80.4	80.4	42
Norway	50.3	48.8	90.1	81.3	49
Portugal [2]	22.1	27.3	68.0	72.4	48
Spain	[3] 17.8	23.4	[3] 69.8	77.1	49
Sweden	54.1	54.3	86.5	82.7	48
Switzerland	51.0	51.3	93.5	90.1	44
United Kingdom	44.9	53.4	84.7	88.9	44
Yugoslavia [2]	[4] 19.2	25.5	[4] 87.0	96.6	52
NORTH AMERICA					
Canada	58.2	63.8	93.3	92.4	42
United States [2]	61.1	64.2	89.8	91.6	40
OCEANIA					
Australia	61.5	59.6	92.3	89.8	45
New Zealand [2]	69.4	74.8	102.5	109.4	44
LATIN AMERICA [2]					
Argentina	59.4	52.3	97.1	81.7	42
Brazil	17.1	17.5	57.8	65.3	45
Chile	[5] 26.0	29.2	[5] 75.1	78.9	46
Colombia	...	[6] 20.0	...	[6] 46.1	48
LATIN AMERICA [2] (concluded)					
Dominican Republic	...	[7] 19.8	...	[7] 49.8	45
Ecuador	...	[6] 16.4	...	[6] 49.8	45
El Salvador	...	15.2	...	56.8	44
Guatemala	...	8.5	...	54.4	44
Jamaica	...	[8] 22.5	...	[8] 57.9	45
Mexico	[9] 16.6	23.4	[9] 63.3	72.0	45
Paraguay	...	24.6	...	64.0	43
Peru	[10] 13.2	13.9	[10] 59.3	58.2	48
Surinam	...	15.1	...	44.7	45
Uruguay	[4] 66.4	[6] 61.9	[4] 99.2	[6] 94.5	42
Venezuela	[4] 19.0	25.3	[4] 54.0	63.1	44
FAR EAST					
Ceylon [2]	[4] 8.3	7.9	[4] 43.4	44.3	47
China (Taiwan) [2]	11.7	15.3	50.0	58.5	42
India	5.7	5.9	47.0	51.4	48
Japan	10.9	16.9	60.0	69.2	43
Pakistan	7.9	7.7	46.2	45.5	46
Philippines [2]	[11] 13.3	14.0	[11] 41.3	43.3	46
NEAR EAST					
Israel	27.4	36.3	87.1	85.4	44
Jordan	...	9.8	...	58.5	45
Lebanon	...	15.7	...	68.1	45
Libya	...	[12] 10.4	...	[12] 52.8	47
Syria	[13] 16.8	...	[13] 78.0	...	45
Turkey	16.8	[14] 15.9	88.4	[14] 97.5	45
United Arab Republic	10.7	12.2	67.8	79.0	45
AFRICA					
Mauritius [2]	[15] 10.5	12.3	[15] 46.6	47.6	42
South Africa [2]	27.4	[14] 31.6	74.0	[14] 80.4	41
Southern Rhodesia	16.2	...	75.2	...	41

[1] Protein requirements are calculated on the basis of the current age and sex structure of the population: because this changes only very slowly, they should be valid for the whole of the period under consideration. - [2] Calendar years. - [3] 1952/53-1953/54. - [4] 1952-53. [5] 1951-52. - [6] 1961. - [7] 1957-59. - [8] 1958. - [9] 1954-56. - [10] 1952. - [11] 1953. - [12] 1959. - [13] 1957. - [14] 1960/61. - [15] 1955-56.

children, pregnant and lactating women) have received much attention during the last decade. Supplementary feeding programs have been established in many countries, usually through Mother and Child Health centers, kindergartens and primary schools. These schemes not only compensate temporarily for the deficiencies of the local diet, but they also represent important channels for nutrition education, by which food habits can be influenced and permanently improved.

In these feeding programs considerable use has been made of milk, in liquid or dry form. Increasing emphasis has also been given, however, to the advisability of utilizing foods which can be locally produced.

Increasing recognition has been given to the role and importance of nutrition education in influencing food habits and food consumption. At the same time, it has been recognized that nutrition education has little effect unless it takes into account the psychological, sociological and cultural factors which in most societies impede rapid changes in food habits.

Various types of practical nutrition education programs have been established in many developing countries, particularly in rural areas. Since 1958 applied nutrition programs have been started in about 50 countries with international assistance. In rural areas these programs associate education in nutrition with the training of farmers in better agricultural practices, so as to improve and increase food production and consumption at the same time. The establishment of vegetable gardens, the raising of small animals, and the development of fish ponds is encouraged, and training is given in agriculture and nutrition to technical and auxiliary personnel, while nutrition education is carried out in schools and in the communities, with special attention to women's groups. Supplementary feeding programs have also been developed, making use of increased local food production.

The need to train women and girls for their roles as homemakers with major responsibility for feeding the family has been increasingly recognized in the past decade. Training in home economics is receiving more attention in schools, adult education, extension, and community development programs. There has also been growing awareness of the need for nutrition education and home economics programs directed to the consumer in urban and semiurban areas.

Feeding programs for industrial workers have been established for many years in developed countries, and have proved their utility in improving nutritional status, general health and productivity. In developing countries progress in this field has been slower, although canteens and other types of feeding service for workers have been established in a number of countries, such as Brazil, Ceylon, India, the United Arab Republic, and Venezuela. These programs are of particular importance in assisting recent migrants to towns to adjust to new living conditions.

A variety of educational methods have been used in approaching the consumer, including lectures, displays and exhibits, group discussions and study circles. Demonstrations of the preparation, storage and preservation of foods in market places and shops have proved particularly useful. The use of mobile vans, suitably equipped for demonstrations in urban and rural areas, has been adopted in several countries (for example, India, Indonesia, and Japan) on a regular basis for the popularization of particular foods and methods of food preparation. Experience indicates that this approach is more successful when utilized for a limited objective, such as a promotion campaign for a specific protein-rich food. Pamphlets, bulletins, filmstrips and films have been widely used, and pictorial material has been found effective in reaching illiterate consumers.

While programs of this kind have been successfully carried out in many areas, their more widespread application has been greatly hampered by shortage of finance and trained staff.

Chapter VI. - Progress in food and agricultural technology

Scientific and technological progress has been particularly rapid during the past decade. Although advances in food and agricultural technology have tended to be dwarfed by those in some other fields, they have themselves been very substantial.

Some advances have in fact resulted from developments in the more spectacular fields such as automation and atomic energy. Automation has already had important applications in intensive animal production and in some agricultural processing industries. Plant breeding, food preservation and pest control are proving to be among the most important of the peaceful uses of atomic energy. It is also a valuable tool in many types of agricultural research and in some areas may provide the cheapest source of power for the desalinization of sea water. For the future, the most important development during the decade may well prove to be the great strides that have been made in understanding the basic processes of life itself, which open up prospects of a far closer control over plants and animals.

This chapter reviews the progress made during the decade in each of the main branches of food and agricultural technology. Because the subjects to be covered are so many and varied the review is of necessity a cursory one, but it does bring out strikingly the very broad front on which advances have been made.

Some of the most spectacular technological developments have as yet had little or no application in practice, largely because their cost is still prohibitive. Examples are automated systems for the control of irrigation water, gigantic jungle-clearing machinery, and the use of certain unconventional sources of human food, such as protein from green leaves, algae and petroleum products. While the processes that have been developed for the desalinization of sea water are already in use for drinking water supplies, they are still not economic for irrigation purposes.

Most of the developments reviewed in this chapter are already contributing to the expansion or improvement of agricultural production, although the usefulness of a good many of them is still confined almost entirely to the developed countries. This applies particularly to some of the new types of farm machinery, especially very large tractors and such highly specialized labor-saving devices as fruit harvesting equipment and the automation of animal feeding and care. Many of the latest developments in processing technology have also been aimed primarily at saving labor. In fisheries, the use of electronics in fish detection and the freezing of fish at sea have so far found little application outside the highly capitalized, modern fleets of the developed countries.

Many of the technological advances of the decade have, however, also been put to use, at least to some extent, in the agricultures of the developing countries. This is the case with many of the results of plant breeding, especially new, high-yielding varieties of industrial crops such as cocoa and rubber. Improved pesticides and new methods of pest control are in use in many of the developing countries. The more concentrated fertilizers now being produced have particular advantages in countries where transport is often a large part of the cost.

Large-scale development projects in many developing countries are using modern techniques of aerial survey and computer analysis of hydrologic and other data. Advances in animal disease control, such as the use of live-virus vaccine, are producing valuable results in many countries. There have been improvements in the design of small boats and in the materials used for their construction, while nylon nets have been widely introduced in the fisheries of the developing countries. Forestry in many of these countries has been influenced by progress in the use of quick-growing species for plantations, by the mechanization of logging, and also by the development of new products, especially an increasing range of wood-based panel products. The development of small-scale processing equipment has had important effects in the developing countries, and recent improvements in storage structures include some that can be used by small farmers in developing countries.

But, although these and other technological improvements are being applied in some of the developing countries, their use is still extremely limited and in general the agricultures of these countries remain scarcely less backward than ten years ago. Statistical information on the application of technological improvements is very scarce, but data on fertilizer use and tractor numbers indicate that, although the most rapid increases during the decade have been in the developing countries, there is still a vast gap between their use in the developed and developing countries.

This is partly because of the high cost of many of the technological improvements in relation to the incomes and scale of operations of farmers in developing countries. Partly, too, it is because work on food and agricultural technology was for so long very largely directed to the needs of farmers in the advanced countries. Although this situation is changing, it will be many years before as much is known about agriculture in the tropics and subtropics as in the temperate areas where it has been studied for so long. Many of the technological improvements are labor-saving and skill and capital intensive, and therefore unsuitable for the conditions of the developing countries. Much more work is needed on simple tools that can be used in developing countries.

There is already, however, a wealth of relatively simple improvements suitable for these countries, such as the use of fertilizers and pesticides, better seeds and better cultivation practices. Above all, the slow rate of application of improved technology in the developing countries is due to conditions in these countries themselves. The ignorance and poverty of the farmers are reinforced by outmoded systems of land tenure and inadequate facilities for marketing and credit, so that there is little or no incentive or even possibility of making improvements. These conditions and the steps that are being taken to change them are one of the main themes of the subsequent chapters of this report.

The present chapter also attempts to assess the contribution of improved technology to the growth of agricultural production. Only a very rough analysis is possible, but this indicates a marked contrast between the developed and developing countries. It appears that in the developed countries inputs of both land and labor have declined, and that all of the increase in production during the decade has come from higher yields per unit of land and labor, which in turn have resulted from improved technology. In the developing countries much of the increase in production has come from larger inputs of land and labor. Higher yields per hectare have also played a part in these countries, but it seems probable that not all of the increase in yields has come from technological improvements and that part must result from the increased inputs of labor per hectare.

AGRICULTURAL TECHNOLOGY

The following pages review the main technological developments during the decade in each of the principal fields relating to agricultural, fisheries and forestry production. Processing and storage technology, and also the development of unconventional sources of food, are dealt with separately at the end of the chapter.

Plant production

Much progress has been made through the application to plant breeding of the latest findings in genetics. Examples are the exploitation of heterosis or hybrid vigor through synthetic varieties; hybridization in maize, sorghum, wheat and other crops; the induction of mutants and polyploids (plants in which the chromosomes are a multiple of the normal number) by various physical and chemical agents including atomic radiation; and the simplification of interspecies hybridization. Such developments have given a fresh impetus to plant breeding work all over the world, and have resulted in innumerable varieties with higher yields, better quality, disease resistance, and adaptability to adverse environmental conditions.

Much plant breeding work has been done during the decade on the basic food crops of the developing countries. The grain crops have been the subject of particularly intensive study. Significant work has also been done on the pulses, or grain legumes, which are so important as potential sources of vegetable

protein. The expansion of the production of these and other leguminous crops has been greatly facilitated as a result of studies which have demonstrated the efficiency of indigenous strains of nitrogen-fixing bacteria in areas where it was previously thought necessary to inoculate the soil with introduced strains.

The breeding of industrial and export crops such as oil palm, cocoa, coffee, and rubber has continued to give spectacular results. A striking example is that of the oil palm breeding programs carried out mainly in the Congo (Leopoldville) and in west Africa, which have resulted in *Durax pisifera* selections yielding 4 to 5 tons of palm oil per hectare, in comparison with only 1 ton or less from unimproved varieties.

Breeders of food crops have paid increased attention in recent years to improving the nutritional value of the crop and its transport, storage and marketing properties. For example, it has been established that the amino-acid content of grains can be improved by careful breeding and selection. Similarly, varieties of cotton have been developed whose seed is free from the toxic substance known as gossypol, which had previously caused much difficulty when cottonseed cake was used for animal feed or human food.

Germ plasm conservation centers have been established in many countries and modern methods of conservation, such as cold storage, have been further developed. Such methods permit the storage of seeds for long periods, until they are required for plant breeding programs.

Advances in plant physiology have also been substantial. Of especial importance in recent years has been research on the control of plant growth, which has now become feasible on a practical scale. Plant growth substances of different sorts are being increasingly used for weed control and a variety of horticultural purposes. In plant propagation, considerable progress has been made by the use of new techniques (for example, mist propagation) in horticulture associated with the dipping or soaking of the bases of the plant cuttings in solutions of rooting substances.

In addition to research in plant genetics and physiology, a great deal of effort, although still insufficient, has been devoted to crop ecology. This work has aimed to provide the basic information needed to estimate the production potential of crop plants and natural vegetation, and to determine the factors limiting their productivity. Agroecological studies carried out in several developing countries have provided much valuable information of this kind.

Ecological studies have provided information regarding the adaptability of particular crops and varieties to different environmental conditions. Such data are needed as a guide for plant introduction activities and for the organization of plant material exchange between different countries.

Quick results have often been achieved through the introduction of varieties with the required characteristics from other regions with homologous ecological conditions. It sometimes happens, however, that an introduced variety shows a good general adaptability to the local conditions and has most of the desired characteristics, but lacks one which is essential. It has thus come to be recognized that breeding work should always be associated with plant introduction schemes, even when such schemes are based on a thorough knowledge of plant requirements and ecological conditions.

There has also been steady but less spectacular progress in such aspects of crop husbandry as the better preparation of land, correct time of sowing, optimum planting density, timely harvesting, and the manuring and utilization of locally well-adapted varieties with better yielding capacity, and disease and pest resistance.

Plant protection

During the first postwar decade, the introduction of organic pesticides of high potency, together with the improvement of the equipment and techniques for their application, contributed greatly to agricultural production and public health. However, it also gave rise to many problems involving possible adverse effects on man and animals. More emphasis has therefore been given in recent years to basic studies of the biology and ecology of pests and disease-causing organisms, with the aim of developing efficient control procedures with minimum harmful side effects.

It is now recognized that the ecosystem is an essential condition in determining the insect population, and that control measures have to be designed so as not to upset this system. Instead of killing pest insects in the hope of eradicating the infestation completely, economic losses of crops may be avoided through the regulation of insect populations. Instead of killing them indiscriminately, their population level may be reduced through the disruption or change of their reproductive or metabolic processes.

Pesticides

Following the discovery of the pesticidal efficacy of DDT, BHC, 2-4D and MCPA and their introduction into general use shortly after the second world war, a wide range of synthetic organic chemicals of high potency have appeared on the market. Most of these chemicals have persistent residues and some possess systemic properties as they are absorbed into and translocated through plants. Although the use of these poisonous chemicals has been much criticized recently, it is likely that chemicals will remain a powerful weapon in combating plant diseases, insects, weeds and other pests in the foreseeable future.

The extensive use of toxic chemicals may have ill effects on wild life and beneficial organisms, and may eventually disturb the " balance of nature. " Although there has been no significant evidence that the general population has been adversely affected, there is justifiable concern over the adverse effects on human health of the prolonged ingestion of even small quantities. There are also hazards from the handling and application of poisonous chemicals.

In order to reduce such risks, most countries have placed stricter controls on the marketing and use of pesticides. Some governments have also established limits for pesticide residues in food. New pesticides have been produced which leave little or no residue, and more stringent tests have been adopted in the development of new materials. A new rodenticide, norbormide, has been developed which kills rats but no other animals so far tested.

Another problem in the use of pesticides is the development of resistance in pests. Although this phenomenon is more widespread and better known in insects of public health importance, resistance in agricultural pests is being reported at an ever-increasing rate. While efforts have been made to evolve new types of chemicals which affect entirely different physiological systems and to which the insects cannot readily adapt, resistance is also one of the reasons for the intensified search for new methods of pest control.

Insect control by irradiation

There are two ways of applying radiation in insect control. One is direct killing or sterilization and the other the sterile male technique. The latter procedure involves the rearing, sterilizing and release of males in sufficient numbers to exceed the natural male population. The sterile males then compete with the untreated males of the wild population and, in appropriate conditions, most of the females will lay sterile eggs. By repeating this process for a few generations, very effective control can be achieved. The successful use of this technique in the control of the screw-worm fly in the United States has led to intensive research with many other insects, notably various species of tropical fruit flies.

Direct control through irradiation is applicable only to the eradication of insects in stored foodstuffs and is discussed later in this chapter in relation to storage technology.

New approaches in chemical control

A number of chemicals have recently been evolved which function differently from the conventional pesticides. They either control the behavior of insects or disrupt their physiological processes. Sex-attractants and chemosterilants appear to have particularly great potentialities.

Sex-attractants are extremely powerful chemicals which are capable of luring insects of one sex to death or any desired destination. The sex-attractant isolated from the American cockroach is so effective that 30 molecules of the pure chemical are reportedly enough to excite a male. Other achievements in this field include the isolation and synthesis of the sex-attractant chemical of the female silkworm moth, and the preparation of Gyplure, which is an analogue to the natural sex-attractant of the gypsy moth. In addition, highly effective artificial attractants have been produced for males of the Mediterranean fruit fly and a few other insects. Another aspect of the application of sex-attractants that is now being investigated is the possibility of using them to prevent breeding by confusing insects in their search for males.

Interest in chemosterilants has been stimulated by the successful application of the sterile male technique in the eradication of the screw-worm fly. A long list of chemical compounds are reported to be capable of reducing or stopping reproduction in insects. They may be used either as a substitute for radiation to sterilize insects reared for release in infested areas, or to sterilize part of the natural population and thus avoid the need to rear and release large numbers of insects.

Biological control

The past decade has seen a marked revival of interest in the biological method of pest control, because of the need for supplements and alternatives to chemical control. Biological control may be achieved either through the introduction of parasites, predators or disease-causing microorganisms, or through the modification of environment to favor existing natural enemies. The use of virus preparations and preparations containing spores of the bacterium *Bacillus thuringinensis* has been successful with a wide range of insects.

The use of biological agents for the destruction of weeds has also received widespread attention. Following earlier successful results with perennial weeds, recent work in Hawaii has demonstrated the feasibility of controlling annual weeds biologically. The possibility of employing biological agents to control aquatic weeds is also being explored.

Integrated control

An important new concept is that of integrated control, which is based on the application of fundamental ecological principles to control and manipulate pests, and involves the co-ordination of all known control measures so as to obtain the maximum total benefit and minimum harmful side effects. In an ideal integrated control program, the average level of pest abundance would be reduced by the application of self-perpetuating biotic agents, with their effects intensified by suitable environmental manipulation. The pest population would then be further reduced and incipient outbreaks suppressed by application of appropriate pesticides.

While it is now generally recognized that integrated control is the most efficient and logical approach in modern agriculture, a great deal of research and investigation must still be carried out before it can be applied on a sound basis. Basic knowledge is needed of the ecosystem, and in particular of natural enemies and their significance in relation to the pest population.

Fertilizers

Improvements in fertilizer technology have been especially marked in the past decade. Many of these improvements have contributed to reductions in the costs of production of fertilizers. For example, the use of cheap natural gas has replaced the gas generated from coke and steam as a source of hydrogen for the synthesis of ammonia. More efficient and less costly manufacturing processes have been developed, including the replacement of " batch " processes by continuous processes. Materials have been developed that are suitable for cheaper methods of application, such as liquid fertilizers, bulk-blended fertilizers, and materials for multiple-hopper truck spreading. Probably the most effective means of reducing cost to the farmer, particularly in developing countries, has been the increased concentration of fertilizers through such measures as the elimination or reduction of fertilizer fillers and the removal of gypsum from phosphorus carriers.

Much research has been devoted to the development of a nitrogen product which will minimize losses due to leaching and eliminate the necessity for more than one application of fertilizer. The ideal product is one which will release nutrients more slowly than the materials currently in use, but fast enough to supply the crop's requirements throughout the growing period. Attempts to produce such a carrier for nitrogen have led to the production of " ureaform, " a term which covers a multitude of products which are mixtures of methylene ureas. The manufacture of urea itself is complex and expensive, however, and efforts are being made to reduce costs by means of a process using urea reactor effluent and sulfuric acid.

A number of metal ammonium phosphates have been produced, of which magnesium ammonium phosphate (the " one-shot " fertilizer) seems to be the most promising. It has been suggested that products with different rates of release can be produced by mixing these slowly available sources of nitrogen, as well as the urea-formaldehydes, with existing easily soluble nitrogen products. Unfortunately, however, the metal ammonium phosphates, like the urea-formaldehydes, are costly to produce.

An alternative to the production of a fertilizer with a controlled rate of release is the development of nitrifying inhibitors that could be added to existing cheap sources of nitrogen to control the rate of release by decreasing the activity of nitrifying bacteria. A product has already been developed which shows considerable promise. If successful, mixtures of this with commonly used materials like ammonium nitrate should be considerably cheaper than the slowly available urea-formaldehydes.

Changes in the production of phosphorus carriers

have taken place largely in manufacturing processes. The most important are the trend toward continuous processing and the increased concentration of the materials. Although the development of agronomically superior materials seems to have received less attention, some new materials have been produced. Through the use of superphosphoric acid and high temperature, a process has been developed by the Tennessee Valley Authority which produces superphosphate with the unusually high P_2O_5 content of 54 percent.

As with nitrogen, the metal ammonium phoshates show promise from the standpoint of controlling release of phosphorus in the soil. It has been suggested that a mixture of these materials and the more soluble phosphates, combined with suitable methods of fertilizer placement, could supply phosphorus in available form throughout the growing period.

For potassium, studies have been directed toward developing an economical method of producing potassium metaphosphate with the potassium in slowly available form. Increased demand for muriate of potash products in coarse and granular forms has resulted in the developing and application of techniques for transforming finely divided muriate of potash, initially recovered by flotation and crystallization, into products of large particle size.

In the more concentrated fertilizers that are now increasingly used impurities have been reduced to a minimum. This often results in the elimination of valuable trace elements. Other factors which have caused increasing attention to be given to the secondary and micronutrients (that is, those other than nitrogen, phosphorus and potassium) have included the use of higher-yielding crop varieties and of improved cropping practices involving an increased uptake of plant nutrients. There have also been improvements in the means of diagnosing the deficiencies of such nutrients.

Although some attempts have been made to replace them in the more concentrated fertilizers, most of the effort has been directed toward the production of compounds containing these nutrients, usually sulfur, boron, zinc, manganese, molybdenum, iron and copper. Calcium and magnesium have received less attention because they are still contained as impurities in many of the mixed fertilizers. They can also be added to the more concentrated fertilizers in amounts which do not have to be determined very critically because they are not harmful to plants except in rather high concentrations. The metal ammonium phosphates mentioned earlier are in the experimental stage as sources of trace elements and are showing considerable promise.

Progress has also been made in the determination of nutrient requirements. For example, within the last decade extraction of the soil with neutral normal ammonium acetate has become the most widely accepted procedure for measuring exchangeable potassium, which in many soils may be equated with available potassium as measured by plant uptake. For many of the micronutrients critical levels in the plant material have been established, and a combination of plant analysis and observation of plant behavior has been found most useful in diagnosing deficiencies.

Much more is now known about the optimum timing and placement for fertilizer applications. The use of foliar sprays has also been considerably developed. They have often been found to be the most effective and at times the only means of correction and control of deficiency disorders, although their use has so far been confined largely to secondary and micronutrients.

Farm machinery

The last decade has seen the widespread application of scientific methods to the design of agricultural machinery. In North America, large manufacturers now employ considerable numbers of highly trained agricultural engineers for the development of improved machinery. There has also been rapid progress in Europe and Oceania, though the application of science and technology in this field is less advanced than in North America. The equipment used by the majority of the world's farmers, however, remains unaffected by scientific and technological progress.

There has been a marked tendency to increase the size of power units in agriculture. There is also an increased number of models in the lower range of horsepower ratings, but sales of the bigger models are much greater. There are now rubber-tired tractors of standard design of 100 hp and more and a small but increasing number of four-wheel drive models of 200 hp and over, used mainly for large-scale wheat farming in North America.

A number of devices to ease tractor operation have been introduced, including power steering and even

automatic pilot steering, use of hydraulic controls for implements and attachments, and improved clutches and transmissions. The conventional designs of tractors are so far little changed but revolutionary new designs are being developed, allowing a better view of implements and with an equal number of speeds in either direction, reversible seat and controls, and better transfer of engine power to traction.

It has proved difficult to produce a small tractor of standard design at a price which farmers with very small holdings can afford. Power tillers have been in production for many years but are not sufficiently versatile to be used as a general power unit. The walking-type garden tractor that has been the basis of the rapid mechanization of Japanese agriculture involves too strenuous work for it to be suitable for use on heavy soils or in tropical climates. An interesting development in this field is the so-called monowheel tractor developed by the National Institute of Agricultural Engineering in the United Kingdom, but its production is not yet on a sufficient scale to make it possible to predict whether small farmers in the developing countries will take to it.

Because of the risk of compacting the soil from the frequent use of heavy equipment, multiple tools have been produced which can carry out simultaneously all the operations required for seedbed preparation and seeding. This is a rather new field and experiments are still being made to determine the minimum tillage needed for each agricultural environment.

The most spectacular advances in farm machinery during the last decade have been in horticultural and fruit harvesting equipment. The shortage and high cost of labor in the United States have led to the development of methods for the mechanization of operations which were once thought impossible to mechanize. Crops whose harvesting can now be done by machine include grapes, tomatoes, carrots, beets, onions, and lettuce. There have been successful experiments on the mechanical harvesting of asparagus. Apart from these fully mechanized operations, there are also methods in which machines are used in combination with manpower, where the need for sorting or maturity selection causes problems. A number of berries are harvested by machine, and tree-shaking for fruit harvesting is carried out mechanically for a variety of fruits.

The improvement of handling equipment is related to these developments in harvesting, since it is often found that produce harvested mechanically has to be sorted and cleaned more thoroughly than that harvested by hand. Full mechanization is now possible for the cleaning and grading of grains that have been harvested in unfavorable climatic conditions and have to be conditioned before storage. The processing industries now use a great variety of devices for sorting and grading agricultural products, such as the spectrophotometer for color sorting.

The feeding and care of animals can be mechanized almost completely. Modern poultry production consists to a large extent of supervising an electronically programed machine operation. For cattle feeding the machinery operating the silo unloading and the feeding out to animals is programed by electronic clocks.

Much research has been done on methods and equipment for fodder preservation. So far little has been forthcoming that has been widely accepted by farmers, particularly in the field of silage making from pasture crops. Although in many countries the hay baler has been readily accepted by the farmer because of its labor-saving qualities, it is also recognized that it has often increased the proportion of hay that is spoiled.

Technological advances have made possible the production of stronger equipment for land reclamation and the clearing of scrub and bush. The equipment used for civil engineering works and canal building and lining has been greatly improved. Subsurface tile drainage has been completely mechanized with a machine that digs and places the plastic tubing in the ground in one operation.

There have been striking developments in implements for use in areas with limited and usually unpredictable rainfall. The development of equipment for better soil treatment and better water conservation was started many years ago, and such equipment is now widely used in the United States Midwest, and in Australia and Canada. The experience gained in these areas will be of great value in the developing countries, particularly when applying powered equipment. The use of tractor power is necessary for such implements as the heavy-duty cultivator, the chisel plow and the subsoiler, which cannot be pulled through the soil by animal power. A recent development has been a subsoiler which employs the power takeoff for vibrating the soilworking parts, thus reducing power requirements.

Most of the scientific developments in machinery design and mechanized operations listed above are of little interest to the developing countries except

where large plantations are concerned. In most developing countries, powered equipment can hardly be considered in the first instance except for large-scale land reclamation. Improved methods and equipment operated by hand and by animal draft have first to be introduced in order to raise yields to a level at which it would be economic to apply powered equipment. A further problem is that the more complicated machinery needs a well-trained operator to make full use of its potential. Good maintenance, which again involves training, is essential in order to obtain a sufficient life for the equipment for it to be economic and in order to keep repair costs to a minimum.

Water development

Irrigated agriculture has frequently suffered from the lack of a good inventory of the extent and variability of the water supply derived from watersheds. During the last decade there has been no major development in surface hydrology techniques to measure runoff and obtain climatic data. There have been considerable advances, however, in methods of recording the data for analysis by electronic computers. This has permitted the evaluation of the factors affecting runoff, and has thus made possible a rational extrapolation of data from watersheds with records covering many years to those with only short records. Hydrologic data should also be greatly improved as a result of new developments in telemetry, the automatic recording of data, and the use of tracers, particularly radioisotopes.

With advances in photogeology and in geophysical techniques it is now possible to obtain a much better and cheaper evaluation of potential groundwater supplies. In many parts of the world groundwater represents the greatest unexploited potential for increasing water supply, and these new techniques are a great advance in planning its utilization. The enrichment of rain with tritium as a result of atmospheric H-bomb experiments has permitted advances in hydrogeology. The use of other tracers and the carbon dating techniques may also help to provide better data.

With the better techniques that have been developed for the inventory of water resources, it is becoming possible to work out mathematical models of systems utilizing both surface and ground waters, and by the use of electronic computers to maximize the use of the available supply. This represents a great advance in water utilization. It has highlighted the need to develop new techniques for increasing groundwater recharge, a subject to which sufficient attention has not yet been given.

Artificial inducement of rainfall and the control of evaporation from reservoirs are two areas of research that for a time raised great hopes of significantly increasing water supplies. Progress in these areas has been disappointing but there are others, such as watershed management, that are proving far more promising. It is being found possible to increase the frequency and amount of runoff while enhancing the other resources of the watersheds.

Water desalinization has also been a disappointment in some ways. Particularly in locations along seashores where there are no problems of supply or disposal of the waste brine, it has become feasible for high-value urban and industrial use, but it is still far too costly for agricultural use. A great deal of research is under way to develop improved and cheaper processes. Probably the biggest potential breakthrough is in the use of waste energy from other operations, such as thermal electric plants, for desalinization.

Learning to irrigate with brackish water must also not be overlooked. Plants vary greatly in their tolerance of salinity, and it is already possible to maintain a profitable agriculture with somewhat saline irrigation water. It is high time to study the possibility of breeding plants, possibly entirely new types, that can be grown profitably with highly saline water.

Much irrigation water is lost because farmers do not know how to use it efficiently. Research has developed methods of estimating how much water to use for peak production efficiency. Better methods of irrigation have also been developed.

Most water distribution systems must be ready for a total delivery based on expected peak requirements during any given period, and water may have to be released from storage some weeks in advance of when it is expected to be required. A sudden change in the weather often makes the flow unnecessary by the time it arrives, which results in waste. Some costly automated systems have been developed which can provide instant response, thus saving this waste, but less expensive systems are needed for use in the developing countries.

There is a great potential both for making better use of present irrigation water supplies and for expanding present supplies. This depends less on the new scientific developments discussed above

than on the more systematic application of known principles and the more general utilization of modern scientific tools.

Grassland

During the past decade rapid progress has continued in improving the production and utilization of forage and fodder resources in the developed countries. This has been achieved through the application of science and technology to improve production from native forage-producing lands, the use of sound grazing management practices, reseeding to improved forage species, and the control of undesirable or noxious plants. Cultivated forage and fodder have been produced more efficiently by the use of better species and varieties, and as a result of improvements in agronomic and management practices, and in farm machinery. Substantial advances have been made in understanding the factors which determine pasture growth, including the role of legumes and fertilizers. Much of the harvesting, drying and processing of fodder in developed countries is now mechanized; together with improved packaging and marketing, this has ensured the regular availability of feeds of controlled quality. Much has also been learned about the level of feeding of various classes of livestock to obtain the greatest economic returns.

In the developing countries progress has been less but still significant. The most important development is an increasing awareness of the value of forage and fodder resources. As a consequence, efforts have been intensified to assemble information on these resources.

Improved pastures which are cultivated, fertilized and intensively managed will, for the foreseeable future, be limited in developing countries because of their high cost and because they must compete with other uses of arable land. The high quality of cultivated forages and their value for carrying animals through times of scarcity of forage from native grasslands, however, give such improved pastures an importance far greater than is implied by their relative area. This is especially true in dairying, where high levels of nutrition are essential for profitable milk yields.

Demonstration and pilot farms using improved pastures have been used to stimulate production of high quality forage and fodder. In arid areas, irrigated pastures are being used to supplement native ranges. Along the rivers and oases of the Near East and Africa, the establishment of small plots of irrigated forage crops is giving a " home base " to nomads.

Cultivation for grain production where rainfall is too low or too sporadic for satisfactory yields has devastated millions of hectares of native rangeland in many countries, especially in the Near East. Steps are at last being taken to classify such submarginal land, and laws are being promulgated to prevent unwise plowing. Research and demonstration are being undertaken to find suitable methods for re-establishing a grass cover, using the extensive and inexpensive methods dictated by the inherently low productive capacity of this land.

The world's natural grasslands, in spite of their huge area, have been largely taken for granted, but the growing importance of livestock in many developing countries has made it impossible to continue with this neglect. Previously inaccessible grasslands are being made available for grazing by the development of watering facilities. Too often, however, in the absence of wise grazing controls, deterioration of the new productive capacity, made available by watering points, is rapid and the new grazing areas are quickly reduced to deserts. Similarly, animal health programs have successfully reduced death from disease, but as a result animal numbers often outgrow forage-producing capacity.

In many countries, emergency feed storage depots are being established on the rangelands in order to avoid the catastrophic starvation losses that occur when drought strikes. But these are at best temporary solutions since they tend to maintain animal numbers in excess of the long-term capacity of the pasture.

Clearing bush has been found to be an important aspect of the reclamation of tsetse-infested land. However, these areas tend to revert to bush quickly without considerable recurrent expenditure to maintain them. Goats do much to break down the bush growth in areas from which fly has been eradicated and could reduce the costs and labor involved in opening up and using for mixed farming the land from which tsetse have been eliminated. Until more satisfactory methods are found for maintaining the cleared areas, the expansion of grazing in such areas is fraught with hazards.

In addition to the applied studies that are needed for immediate action, the scientific basis for future progress has also received attention during the past decade. Studies in agroclimatology have sought to

describe and evaluate the environments in which natural plant communities develop and which set the limits for cultivated agriculture, using for the most part the climatic factors of solar radiation, precipitation, evaporation, temperature and wind. The use of quantitative climatic data in specially adapted forms permits the description and comparison of environments on an objective basis, and can guide the selection of species and varieties for range reseeding and set the limits of potential forage production in different regions.

Ecological studies of grazing land management are based on the fact that natural areas are complex entities with which animals and man are in dynamic interaction. Land policy must be based on an understanding of all the factors involved and of the long-term effects of their manipulation by man. This approach is proving especially fruitful in some parts of Africa, where such varied interests as wildlife, forestry and watershed protection, as well as domestic livestock, are all closely concerned with natural grazing lands.

Ecological thinking is also contributing to modifications in many of the details of range and pasture development and management. Range inventories and surveys use natural ecological communities as a basis for mapping. Habitats are classified and evaluated by ecological criteria, so as to permit the introduction of new forage plants that are suited to the environment.

Animal production

Breeding

In the past, genetic studies in cattle have sometimes been overemphasized in relation to existing nutritional limitations. Genetic improvements alone have been shown to induce only small increases in milk yields, and misguided emphasis on conformation and pedigree characteristics may retard progress even further. Increasing reliance in breeding policies has come to be given to the identification of superior sires based on their progeny performances.

There has been a great expansion in the use of artificial insemination, mainly of cattle. Whereas in advanced countries bulls are carefully appraised before their widespread use, in the developing countries semen is often distributed from unproved sires. Used wisely, artificial insemination has been demonstrated to be a valuable means of reviewing and controlling fertility and of reducing the incidence of such breeding diseases as trichomoniasis and vibriosis, provided accurate records are kept. Where artificial insemination is not properly controlled, however, experience has shown that it can be a major source for the spread of infection and of undesirable genetic factors, including infertility. These dangers are enhanced by the now widespread use of deep freezing and other techniques for the long-term preservation of semen.

In recent years, the potential of blood grouping has come to be appreciated as an important tool in the study of animal genetics. Knowledge is now accumulating rapidly but there are still limitations to its practical application. Blood group studies on wild animals may throw light on breed relationships and assist in the formulation of breeding policies. So far, most of the work has been on cattle, and its greatest practical application at present lies in parentage determination. The work done so far on immunogenetics (which is that branch of genetics concerned with the inheritance of antigenic and other characters related to the immune response) indicates that in coming years this may make a substantial contribution, particularly regarding climatic adaptation, infertility, and disease suceptibility.

Studies are now being initiated in germ plasm conservation which may have a profound effect on breeding programs during coming decades. The techniques of semen preservation and ovum transplantation which have evolved during the past decade will have a notable role in this work.

Nutrition

Nutrition is still a dominant factor in restricting animal productivity. Considerable attention has been given to the need to produce balanced feeds for the more productive livestock in the developing countries. Investigations into chemical and pathological conditions are gradually deciphering the complexities of deficiency diseases and are indicating the methods to be applied for their successful prevention or cure.

Intensive egg and broiler units have spread to developing countries, and suitable feeding and management systems have been devised based upon the use of animal protein feeds. It has been found that the addition of certain presynthesized amino acids to available feed mixtures can significantly reduce the quantity of animal protein feeds required.

The digestion of celluloses, pentosans, starches and sugars by microorganisms in the rumen of such animals as cattle has been intensively studied, and the metabolic significance of the derived volatile fatty acids is now better appreciated. The use of nonprotein nitrogenous compounds has been expanded in the nutrition of these animals.

Intensive animal production units

Because poultry meat and eggs are of high nutritive value and can be produced relatively rapidly, the intensive production units which the more advanced countries have developed during the past 20 years are now being emulated in many of the less developed areas. Where there is satisfactory control of such diseases as fowl pest, and a sufficient supply of feed, these efforts have been most successful. Where the necessary marketing facilities have kept pace with the expanding production, substantial reductions in egg and broiler prices have been made possible.

The need to reduce unit costs of labor, housing, transport and management has led to steady increases in the average size of hatcheries, and of egg and broiler units. Special strains of poultry for egg and meat production have been developed, and hybrid vigor is being widely used to increase output. Health control measures are being tightened, and have been strengthened by developments in the pharmaceutical industry and by progress in the preparation of new vaccines and antibiotics.

There has been a trend toward intensive and fully mechanized houses to provide a controlled environment for the birds, and automation is being widely applied in the operation of the general services, including watering and feeding. Deep litter and cage systems are increasingly being used, better balanced rations have been formulated and improved marketing methods introduced.

During the last few years such systems of "factory farming" have been extended, with appropriate adaptations, to calves and pigs. It is frequently charged that such intensive systems involve cruelty to the animals and that there is a loss of flavor and palatability in the end product. It seems likely that the first of these charges can be refuted and that the second, if correct, can be rectified. Such intensive production can reach a high degree of efficiency, and therefore merits the closest examination and experimentation. Milk production is similarly becoming increasingly mechanized and new methods of housing dairy cattle, for example, in cubicles and on slatted floors, are becoming widespread in certain of the advanced countries.

Animal health

Disease control and eradication

In the last decade remarkable progress in disease eradication has been made in many of the advanced countries. Equally remarkable have been the successes in certain of the developing areas in bringing epizootics under adequate control: for example, in the Near East in controlling African horse sickness in 1959-62, and in limiting the spread of the highly invasive SAT 1 type of foot-and-mouth disease virus since 1962.

The eradication of bovine tuberculosis has been reported by the Federal Republic of Germany, Luxembourg, Netherlands, Sweden, Switzerland, and the United Kingdom. The incidence of bovine tuberculosis in children has also been greatly reduced. The control of bovine brucellosis has been shown to be practicable in Denmark, Finland, Norway, and Sweden, and as a result many other countries are now instituting programs for the eradication of this disease which, like tuberculosis, is not only of great economic importance but also of significance to public health.

Systematic disease control schemes were begun in many countries after the second world war and have gained momentum in the last decade. In many countries, both advanced and developing, there are now plans for the control of the infectious infertilities and of mastitis in cattle, while there have been considerable advances in controlling the major economic diseases of poultry and pigs.

The current losses caused by animal diseases in most developed countries are estimated to be 15 to 20 percent of the annual production. In countries where veterinary activities are limited or of recent introduction, losses of 30 to 40 percent appear to be not uncommon.[1] For effective disease control measures it is essential to have a complete picture of the incidence, distribution and relative economic importance of the livestock diseases occurring in the country. Such information is as yet rarely avail-

[1] FAO/WHO/OIE. *Animal health yearbook 1962*, FAO, Rome, 1963, p.290.

able, and can only be acquired from disease surveys carried out by trained veterinary personnel.

In spite of the advances recorded in the past ten years the animal disease problem is not lessening. Indeed, with the great increase in movements of men and animals and in international trade, the difficulties have been increased. In some cases — for example, African swine fever in certain African territories and (since 1960) in the Iberian peninsula — adequate control has so far proved to be impossible and there have been great losses. Many of the virus diseases of livestock in Africa, which have hitherto been confined to relatively restricted areas, have shown a marked tendency to invade new areas and even to appear in countries far removed from their traditional sites. These include bluetongue, African swine fever, African horse sickness, SAT 1 type foot-and-mouth disease, and lumpy skin disease.

Recent improvements in the control of certain groups of animal diseases and of conditions like mastitis which tend to become chronic have received much of their impetus from the technological progress in chemistry, pharmacy and microbiology. They have been further assisted by advances in veterinary administration, the compilation of reliable disease statistics, and the increasingly accurate evaluation of the economic importance of specific diseases of livestock. Progress in these fields has been a major factor in making possible the intensification of animal production methods.

Among the conditions of outstanding economic or public health importance against which increasingly successful control measures have been applied during the last decade are trypanosomiasis, parasitism, foot-and-mouth disease, rinderpest, contagious bovine pleuropneumonia, and the zoonoses. For the last-named, the diseases intercommunicable between man and animals, the most important control measures are those which apply to domesticated animals. If man is ever to be permanently protected from tuberculosis, rabies, brucellosis, anthrax and a host of parasitic infestations, the control measures of the past decade must be transformed into eradication campaigns, since the elimination of the disease in the reservoir animals is essential for ultimate eradication in man.

Immunology and vaccine production

Vaccines for animal immunization have undergone many changes during the past ten years as a result of advances in different fields of science.

Lyophilization (the technique of drying in vacuum from the frozen state) is being applied to an increasing range of vaccines and other biological products. The preservation and transport of large quantities of dry-frozen vaccine is increasingly accepted as an essential factor in the logistics of disease control and is being successfully used in the field, for example, in the control of rinderpest in Africa and Asia.

One of the most significant trends in animal disease control during the past decade has been the utilization of various types of living animal cells for the propagation, characterization and classification of infections agents, and for fundamental cytological studies in relation to infectious processes. The preparation of virus free from extraneous protein is leading to more detailed work on the animal viruses and thence to their purification. Fundamental studies on the nucleic acid and protein fractions of viruses are producing significant information on pathogenesis in particular, but also on biological processes in general.

The injection of living agents in a state of attenuation is increasingly replacing their injection in small doses together with antiserum, or the injection of agents which have been subjected to heat or chemical action. Attenuated strains of pathogenic agents have been found under natural conditions, — for example, strain 19 *Brucella abortus*, and the " F, " Venezuelan and Mukteswar strains of Newcastle disease virus.

The effectiveness of live-virus vaccines, the use of which has come to the fore during the last decade, may cause the radical alteration of convictions as to the need for the absolute eradication of disease as opposed to its effective control. In many countries, such as those of Latin America where the livestock industry is of paramount importance, foot-and-mouth disease has been estimated to cause an overall loss in animal production of 25 percent.[2] Highly promising work in controlling the disease is now in progress with living attenuated strains of the virus, and similar successes have been reported from some of the African countries. It is possible that within the next few years this will become the type of vaccine of choice in certain parts of the world. Its general use, however, may be restricted in other areas, for example in Europe, by such considerations (though perhaps unduly optimistic) as the possibility of complete eradication in the near future.

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[2] E. A. Eichhorn, " To protect our meat supply. " *Américas*, 5 (5), 1953, p.3-5, 42-43.

The control of helminth disease by vaccination has received much publicity during the last five years and it will undoubtedly form a productive line of research work for the near future. Naturally occurring helminth disease induces a high degree of immunity, and it has been shown that immune ewes in the field may remain completely healthy while ingesting daily an otherwise lethal number of larvae. The recent development of an effective vaccine against parasitic bronchopneumonia caused by *Dictyocaulus* species has been a highly significant development, although similar advances have not been reported in any other nematode disease.

Another significant trend is the development of combined vaccines. This is illustrated by the vaccination of sheep against seven clostridial diseases with one " cocktail " dose of vaccine. It is tempting to contemplate that the time may not be far distant when all livestock will be vaccinated once against all likely infections.

Fisheries

Advances in fisheries technology have contributed materially to the rapid increase in the world catch of fish during the past decade. While some progress has come from the application of techniques and equipment developed for other purposes, much has resulted from the increasing research directed primarily to fishery problems. Improvements in boat design and construction have resulted in more versatile and efficient fishing craft. Progress in the design, construction and operation of fishing gear and the introduction of improved auxiliary equipment, together with the application of electronics in fish detection, have greatly increased productivity.

The science of naval architecture has made considerable progress. Sea behavior, safety and strength have been the aspects mainly stressed in fishing boat design. With the more general application of scientific principles to fishing boat design, it has become easier to expand fishing operations, to reduce losses of fish and, because of the extended radius of action of improved craft, to increase productivity. The lower fuel requirements of the improved boats have made possible increases in fishing without adding to the cost.

In the Federal Republic of Germany, Japan, Poland, the United Kingdom and the U.S.S.R., large stern trawlers have been developed which are capable of freezing and processing at sea. Such vessels can fish in distant waters for long periods under any climatic conditions and still land a first-quality product. The success of the large stern-trawler type has also focused attention on the possibility of developing small, highly automated vessels for less distant fishing grounds.

In general, the tendency has been to build faster vessels. Engines have been made lighter but more powerful. In developing countries the installation of small inboard diesel engines in small fishing craft has become more widespread, as has the use of outboard engines for local craft unsuitable for inboard mechanization.

Considerable progress has been made in the improvement of construction materials for small boats. Improved welding techniques have permitted more widespread use of steel and aluminum. Plastic reinforced with glass fiber, which has good resistance to deterioration in tropical waters, has also been introduced on a limited scale, although it is still costly. Greater use is being made of plywoods adapted to marine purposes.

In fishing techniques the outstanding developments during the past ten years have been: firstly, the general use of echo sounders, and more recently sonar, for the acoustic detection of fish; secondly, the almost complete changeover from natural to synthetic fibers for net materials; thirdly, the more fully mechanized handling of gear, which has not only saved labor, but has also made it possible to fish with bigger gear, in greater quantities and in deeper water.

The most spectacular example in recent years embodying all these three elements is the greatly improved purse-seining techniques. The strong, light-weight synthetic twines permit the use of bigger and stronger nets, which are easily hauled with labor-saving power blocks and other powered (mainly hydraulic) winches. This has caused a revolutionary changeover in the American tuna fishery from livebait fishing to purse seining, which has greatly increased catches and lowered fishing costs per unit weight. In Iceland, these developments have opened up an entirely new fishery for deep-swimming schools of herring detected by sonar, which is also used to guide the setting of the big purse seines around the fish. This method is already being introduced in the North Sea herring fishery and is likely to find wide application.

Tuna longlining has also made rapid advances, largely through the pioneering efforts of the Japanese. It now extends to virtually all waters where deep-swimming tuna are found in worthwhile quantities.

A major factor has been the development of fleet planning operations with radio reporting of catching rates and the charting of the fishing operations. Largely as a result of this, the central recording of information on hydrographic conditions suitable for tuna has been developed and the stock resources have become better known. This in turn has helped the planning of fleet operations. Mechanization of line hauling and the use of harder wearing, rot-proof synthetic materials have also been important.

The rate of development in trawling has been slower than in purse seining, as it started from a more highly developed base. The modernization of trawling has nevertheless been impressive. Although synthetic materials have played a useful part, it is not the development of either the nets or the method of fishing that have been of chief importance in this instance. Bigger, more powerful ships have increased fishing power and stern trawlers have made possible easier handling and the greater safety of the crew. Navigational aids such as echo sounders, radar, Decca, loran, radio direction finders and the radio telephone have increased the searching power and precision of fishing operations. Fleet operations, particularly on the part of Japan, Poland, Spain, and the U.S.S.R., have put trawling on a global scale. Knowledge of the fishing grounds possessed by the skippers is being assembled on fishing charts.

The development of these powerful ships and the competition between them has emphasized the demand for improved fishing gear to match their performance. The designing of improved trawls has, however, proved more difficult than expected. It is becoming recognized that the design of fishing gear, and of trawling gear in particular, requires a more scientific approach.

Midwater trawling, using the latest technique of fishing with an echo sounder (Netzsonde) mounted on the net, has made headway in Japan and the Federal Republic of Germany. In Japan, one-boat midwater trawling has been in commercial operation for some years. Although a start in the study of deck machinery has been made by seagoing development engineers, much more remains to be done.

Gillnetting has greatly increased in productivity because of the much greater catching power and durability of synthetic materials. Mechanical handling of the nets has made it possible to handle far greater quantities of gear and to fish at greater depths with less labor. The U.S.S.R. herring driftnet fishery, the Japanese salmon driftnetting in the North Pacific, and the Icelandic bottomset cod gill net fishery have been foremost in introducing mechanical handling.

The development of hydraulic deck machinery, particularly in purse seining, has seen its most advanced development on the west coast of America, but there has also been progress in Norway and recently very rapid developments in Iceland. Perhaps more than anything else the saving of labor by power handling will make fishing a modern industry, which is essential if it is to be able to continue to recruit manpower.

Advances in electronics have had important effects on the fishing industry. With the development of the white line recorder, the echo sounder has evolved from a navigational instrument concerned with the safety of the ship into what amounts to the fishermen's eyes. The Netzsonde has been evolved into an essential aid in guiding the net onto schools of pelagic fish and keeping the vulnerable pelagic trawl clear of the bottom. The development of navigational aids such as the Decca navigator system, with its greatly expanded chain of stations, has made possible precision fishing and has also provided an important tool in the preparation and use of fishing charts.

Forestry

The greater part of the additional output of wood in the past decade continued to come from the natural forests of the world. Some progress was made in improving silvicultural techniques and management practices designed to raise the forest yield. The major advances, however, were not of a technological nature but were the result of a much wider recognition of the need to put forests under proper management and the considerable success achieved in extending the area managed. A serious problem that still remains to be solved is the massive and uncontrolled destruction of forests in many developing countries. Shifting cultivation, burning, grazing, etc., continue unchecked, and in many parts of the world cause a much heavier drain on the forest resource than timber extraction.

Major advances have been recorded in the extended use of quick-growing plantations as a source of wood. This was made possible by technological advances in several fields. Improvements in, and greater control over, the characteristics of the plant material, achieved through trials involving the elimination of unsuitable species, have resulted in a wider

choice being available to the forest manager; this, in turn, has extended the range of sites on which tree plantations can be established. Great strides have been made in forest genetics and tree breeding, which have become a recognized part of forest research programs. For example, it was found in Queensland that the best crosses of selected phenotypes of *Pinus elliottii* gave 30 percent more volume than routine stock at 10 years after planting and also showed substantial superiority in straightness of stem.

Improvements have also been realized through greater recognition of the need to obtain selected seed from identified sources. Many seed orchards have been developed during the decade. Wider use of statistical design in experimental trials and computer analysis have permitted savings in both time and manpower.

Mechanization of afforestation processes is another factor that, although requiring heavy initial expenditure, has contributed significantly to raising yields from plantations. The use of heavy-duty tractors for land clearance, stump ripping and cleaning, and deep plowing, and of lighter equipment for cultivation are all receiving wider attention. Development of such techniques has led to high yields on land, for example, in Zambia, formerly regarded as having a low forest potential.

Application of commercial fertilizers, a well-established practice in forest nurseries, is becoming more widespread and has been shown to bring substantial increases in the yields of some species on appropriate sites. For example, *Cryptomeria* pulpwood plantations in Japan, when fertilized at establishment, produce the same volume in 30 years as they would in the normal 40-year rotation.

Technological advances have also been made in irrigation methods. By the use of underground as opposed to surface irrigation, and by employing individual disposable drains set alongside seedlings, the quantities of water used and the duration of irrigation schedules can be cut back most significantly. The use of such drains in Tunisia, for example, has made it possible to cut water consumption to 10 percent of former requirements.

During the past decade the area of plantation forests has doubled, to a figure of some 4.5 million hectares. As more plantations reach maturity and are harvested, more statistical information is becoming available and the advantages of plantations are becoming more widely recognized. These advantages include high yield of usable material, production of a homogeneous crop to suit selected management objectives, choice and accessibility in siting, rapid turnover and high returns on investment.

The improvement of equipment has been considerable and in many instances has radically changed working techniques. The use of gasoline powered saws, for example, has spread very rapidly and these are used now for almost all of the felling and cutting operations in the developed countries. Their use has also spread to the developing countries, but lack of facilities for training personnel and for maintenance and repair work remains a problem, as it does for other operations in this field.

There has been considerable improvement in operational practices through the application of methodical time and motion studies. Improvements in tires and tracks have stimulated the use of tractors for moving timber in the forests, and recently several excellent medium-powered articulated tractors have appeared and assumed an important role in forest operations.

In the field of transport a more thorough study of the network of communications, roads, cables, and waterways has led to more extensive planning and to the development of forests which were previously inaccessible or uneconomic for exploitation.

Finally, the application of new logging techniques and of new equipment such as full tree logging and harvesting machines, hydraulic loaders, limbing and barking machines and chippers, has opened up possibilities for spectacularly transforming logging operations. This should result in a continuing trend toward partial or complete conversion at the raw material source, a significant increase in production, and the reduction of prime costs.

A notable advance has been a growing recognition of the need for national forest inventories as an indispensable basis for forestry and forest industry development. This has been demonstrated by the number of forest inventories initiated in the last few years in the developing countries. In these forest inventories there has been increasing use of aerial photography to replace ground procedures for the preparation of forest maps. The combination of aerial photography for stratification and new statistical designs has resulted in more forest inventory information being obtained at less cost. In addition, inventories are now more frequently designed to meet required specifications of accuracy. Electronic computers have provided a powerful tool for the solution of mensurational problems such as volume table preparation and for data processing of measurements in forest inventory compilation.

APPLICATION OF TECHNOLOGICAL IMPROVEMENTS IN AGRICULTURAL PRODUCTION

It is difficult to assess the extent to which technological improvements — not only the advances of the last decade but also the accumulated knowledge of previous decades — have been applied in practice. There is little doubt, however, that most of the benefit from the technological advances described above still lies in the future, at least so far as the developing countries are concerned.

Some idea of the pace at which modern methods are being applied in agricultural production may be obtained from statistics of fertilizer consumption and tractor use, which are available in reasonably comparable form for a sufficient number of countries to make possible broad comparisons between the different regions of the world. Fertilizers are one of the most important sources of increased production and productivity, and tractor numbers provide a rough indication of the general level of mechanization. Some limited data are also available on the use of pesticides. For most other aspects of improved methods and technology, however, there is very little information outside the developed countries.

It must be emphasized that data on single technological improvements may be misleading. What matters is always the combination of improved practices. For example, to derive the full benefit from fertilizers requires progress in other fields as well, including the use of higher-yielding varieties, control of weeds and pests, and better cultivation practices. Similarly, as production is intensified in this way, more attention should be given to farm management aspects, and to sound land use and soil and water conservation.

TABLE VI-1. - CONSUMPTION OF COMMERCIAL FERTILIZERS

	Total consumption [1]			Increase 1954/55-1963/64	Consumption per hectare of arable land, 1963/64 [2]
	1945/46	1954/55	1963/64		
	Million metric tons			*Percent*	*Kilograms*
Western Europe	3.2	6.3	12.5	99	120
Eastern Europe and U.S.S.R.	0.8	4.1	6.6	61	24
North America	2.7	6.1	10.0	65	44
Oceania	0.4	0.7	1.2	73	36
Japan	0.1	1.1	1.8	61	298
Developed countries	7.2	18.3	32.2	76	50
Latin America	0.2	0.5	1.3	147	12
Far East [3,4]	—	0.5	1.8	273	7
Near East	—	0.2	0.5	129	6
Africa	0.1	0.3	0.6	90	3
Developing countries	0.3	1.5	4.2	172	6
WORLD TOTAL [4]	7.5	19.8	36.4	83	27

[1] In terms of plant nutrients (N, P_2O_5 and K_2O). - [2] 1963/64 fertilizer consumption applied to latest available estimates of arable land and land under permanent crops. - [3] Excluding Japan. - [4] Excluding China (Mainland).

Table VI-1 indicates that world consumption of fertilizers is now almost five times as great as at the end of the second world war. In the decade from 1954/55 to 1963/64 world consumption rose by more than 80 percent. Although the most rapid recent increases have been in the developing countries, these countries accounted in 1963/64 for only 12 percent of the total world consumption, and their fertilizer consumption per hectare was only about one eighth that in the developed countries. The data in the table do not cover organic fertilizer, but the use of this is also generally greater in the developed countries than in the developing ones.

The number of tractors used in agriculture rose by almost 60 percent between 1954 and 1963 (Table VI-2). In both developed and developing countries the increase was less rapid than in fertilizer consumption. As might be expected, the disparity between the two groups of countries is even greater for tractors than for fertilizers. Only about 8 percent of the world's agricultural tractors are in the developing countries, and there are some 15 times as many tractors per unit of arable land in the developed countries as in the developing ones.[3]

Regional and world totals for the use of pesticides are not available. Trends in individual countries are also difficult to establish because of the many different types of pesticide in use and their varying strengths. Such piecemeal data as are available, however, suggest that the use of pesticides in the developing countries may have increased even more rapidly than that of fertilizers and tractors. This is perhaps to be expected, since (as is discussed in Chapter IX) pest control campaigns can often be

[3] It should be noted that direct comparisons of tractor numbers per unit of land may be misleading. For example, while western Europe has more tractors per thousand hectares than eastern Europe and North America, the tractors in the latter two regions are generally larger and more fully utilized, because farms are bigger.

TABLE VI-2. - TRACTORS USED IN AGRICULTURE

	Total numbers		Increase 1954-63	Tractors per 1,000 hectares of arable land, 1963 [1]
	1954	1963		
	.. *Thousands* ..		.. *Percent* ..	.. *Number* ..
Western Europe	1 590	3 872	144	37.1
Eastern Europe and U.S.S.R.	865	2 006	132	7.2
North America	4 827	5 277	9	23.2
Oceania	250	373	49	11.0
Japan [2]	1	17	1 628	2.8
Subtotal	7 533	11 545	53	17.8
Latin America	218	456	109	4.4
Far East [3]	30	176	494	0.5
Near East	55	104	89	1.2
Africa	143	218	52	0.9
Subtotal	446	954	114	1.2
WORLD TOTAL	7 979	12 499	57	8.6

[1] 1963 tractor numbers applied to latest available estimates of arable land and land under permanent crops. - [2] The table excludes garden tractors, which in Japan are the main type used in agriculture and rose from 35,000 in 1954 to 1.8 million in 1962. - [3] Excluding Japan.

carried out largely by government agents and require less active participation by farmers than, for instance, the use of fertilizers.

Regional developments

In North America rapid mechanization began in the late 1930s, and particularly in the United States the shift from animal to mechanical power was already more or less complete by the mid-1950s, although the expansion of other forms of mechanization has continued apace. Thus tractor numbers increased by only 9 percent during the last decade. Fertilizer consumption, however, has continued to increase rapidly, although less so than during the previous decade. Fertilizer has been the major single source of increased crop yields per acre in the United States and is estimated to have been responsible for two thirds of the total increase in yields in the period 1951-52 to 1955.[4] Similar estimates are not available for the last decade, but the continued increase in fertilizer consumption suggests that there will have been little change in the trend.

[4] D.D. DUROST and G.T. BARTON. *Changing sources of farm output*. Washington D.C., United States Department of Agriculture, Production Research Report No. 36, 1960, p.26-27.

Among the developed regions, the most rapid increases in the application of technological improvements during the past decade have been in western Europe. Fertilizer consumption almost doubled in the first postwar decade and again in the second. Tractor numbers are nearly one and a half times more than at the beginning of the decade. There was a corresponding decline in the number of horses from 9.2 million in 1953/54 to 5.9 million in 1962/63. The number of tractors per 1,000 hectares of arable land rose in the Federal Republic of Germany from 17 in 1950 to 120 in 1962, and in Austria from 10 to 98 in the same period. Combine harvesters per 1,000 hectares of grain increased from 5 in 1958 to 17 in 1962 in the Federal Republic of Germany and from 5 to 9 in France. In the Netherlands, 61 percent of all cows were artificially inseminated in 1961. More effective methods for the control of weeds, pests and diseases have reduced the need for rotation of crops.

Australia also provides a good example of rapid technological progress. Fertilizer use rose by 75 percent between 1954/55 and 1963/64, and considerable success has been achieved in developing areas hitherto regarded as unproductive through the addition of trace elements to artificial fertilizers. Sown pastures increased by about 140 percent from 1951/52 to 1962/63 and tractors by almost two thirds between 1953 and 1963. There have been spectacular advances in the mechanization of sugarcane production. The area treated by the aerial spreading of seed, fertilizers and pesticides rose from 800,000 hectares in 1958 to 2.8 million hectares by 1962. Fodder conservation has made rapid strides and the irrigated area almost doubled between 1955/56 and 1961/62. There has been similarly striking technological progress in New Zealand, where aerial topdressing has expanded even more rapidly than in Australia.

The rate of technological progress in Japan, where tractor numbers soared from only 35,000 in 1954 to 1.8 million in 1962, has been even more remarkable. Most of this increase was in small garden tractors, which are the main type used in Japanese agriculture, but in the last few years larger tractors have also increased rapidly. The most rapid growth in fertilizer consumption was in the immediate postwar decade, but the last ten years saw a further increase of some 60 percent.

In eastern Europe and the U.S.S.R. there was a fourfold increase in fertilizer consumption during the first postwar decade and a further increase of about 60 percent in the past decade. Tractor numbers

rose during the last decade only slightly less rapidly than in western Europe, but they remained far fewer per unit of arable land. The most rapid increase in tractors was in Czechoslovakia, where numbers (in terms of tractor units of 15 hp) rose from 31,000 in 1954 to 162,000 in 1963.

The main emphasis in the U.S.S.R. at the beginning of the decade was on the opening up of the virgin lands, chiefly in Kazakhstan, Siberia, the Urals and Volga, which added 32 million hectares to the cultivated area in the three years 1954-56. Subsequently there have been several shifts in emphasis, and in February 1964 a new policy of agricultural intensification was announced, based primarily on fertilizers and irrigation. Fertilizer use has increased steadily, though more slowly than planned, but in 1964, reflecting the new policy, it is reported to have risen by 37 percent compared with the previous year. Cotton, flax and sugar beet have hitherto received about half of the total chemical fertilizer, but its use on grain crops is now to be increased. The irrigated area, used mainly for cotton, has been expanded only slowly, but a rapid increase is envisaged as part of the intensification program. Tractor numbers have almost doubled during the decade, with particularly rapid increases in the former virgin lands.

In the developing countries the use of modern technology has grown rapidly but it remains very limited. Furthermore, modern methods tend to be confined to limited sectors of agriculture such as sugar plantations or the production of crops for export.

Latin America is the most advanced of the developing regions in respect of both fertilizer and tractor use. The biggest users of fertilizers in the region are Brazil, where consumption increased from 123,000 tons in 1954/55 to 292,000 tons in 1963/64, and Mexico, where it rose from 57,000 tons in 1954/55 to 291,000 tons in 1963/64. About a third of the region's tractors are concentrated in Argentina, where they increased from 40,000 in 1954 to 110,000 in 1964. The use of DDT in Argentina increased more than fourfold between 1954 and 1963. Irrigation is of importance chiefly in Mexico, where the area irrigated under government schemes rose from 1.6 million hectares in 1953 to 2.4 million hectares in 1962; private irrigation schemes covered a further 2.6 million hectares in 1962.

Japan, for which data are shown separately in the tables, still accounts for about half of the total fertilizer consumption of the Far East region, excluding China (Mainland). Many countries in the Far East have established domestic fertilizer industries, and there have been spectacular increases in consumption in a number of them, particularly in China (Taiwan) and the Republic of Korea, where consumption per hectare is much higher than in the rest of the region (apart from Japan), and in Ceylon, India, Indonesia and Pakistan. The number of tractors used in agriculture remains very small. Most countries have given considerable emphasis to irrigation, reclamation and flood control projects. The gross irrigated area in India rose from 23 million hectares in 1950/51 to about 30 million hectares in 1962/63, but the increase was far below planned targets, while the utilization of these facilities in 1962/63 fell short of the full potential by 1.5 million hectares, mainly because of inadequate repair and maintenance, and cultivators' indifference. In Pakistan, a major problem has been to stop the spread of salinity and waterlogging through the construction of tube wells and drainage channels.

There has been considerable emphasis in China (Mainland) on domestic fertilizer production, but data on the country's small fertilizer consumption are far from complete. The first big tractor plant went into production in 1959, and tractor numbers (in terms of tractor units of 15 hp) are reported to have increased from 5,000 in 1954 to 110,000 in 1963. The irrigated area rose from 23 million hectares in 1954 to 74 million in 1960, but many of the facilities have been allowed to deteriorate. In 1961 about 20 percent of tractors and 20 to 30 percent of irrigation equipment were in need of repair.

In the Near East, there have been rapid increases in both production and consumption of fertilizers in Turkey and the United Arab Republic. Also, more than half the region's tractors are in these two countries. Tractor numbers in Israel have almost trebled during the past decade. Irrigation is particularly important in this arid region, and major additions to the irrigated area during the decade include 336,000 hectares in the Managil extension and 210,000 hectares in the Khashm-el-Girba in Sudan, 125,000 hectares in the Helmand valley in Afghanistan, and 45,000 hectares in the Ghab valley in Syria. In Iraq, irrigation water is now available for 4 million hectares, but because of the absence of field channels and drainage only about half is cultivated each year, while salinity is also a serious problem. Land reclamation in the Nile valley and desert areas has been especially emphasized in the United Arab Republic, where noteworthy technological improvements have been the consolidation of small holdings for the introduction of proper crop

rotations, and improvements in pest control after the disastrous outbreak of cotton leafworm in 1961/62. The use of DDT in the United Arab Republic was about 60 times as great in 1963 as in 1954.

The increase in fertilizer consumption and tractor use during the last decade has been slower in Africa than in any other developing region. Moreover, most of the increase has been in South Africa, which accounts for half the region's fertilizer consumption and more than half the tractors. An important technological breakthrough has been the successful control of capsid and black pod disease of cocoa in west Africa.

Trends in yields and productivity

Not only are very few indications available of the extent to which technological improvements have been adopted in practice, but it is even more difficult to measure the actual effects of technological progress on agricultural production and on the productivity of the inputs of land, labor and capital used in agriculture. Even in the advanced countries, with a wealth of detailed statistical material, there are many conceptual and practical difficulties concerning such measurements.

For a full discussion of agricultural productivity reference should be made to the 1963 issue of this report.[5] Here it is not possible to go into this complex question in detail, but it is necessary to examine changes in the main inputs and in the output per unit of them, in order to make a rough assessment of the contribution of improved technology to the growth of agricultural production in the developed and developing countries.

Land

Even such a seemingly straightforward measurement as that of yield per unit of land is in fact somewhat complex. The simplest measure is the physical output of a single crop per hectare, which may be raised by means of increased applications of capital (in the form of technological improvements) or of labor. Many data of this kind are available, but they are of limited usefulness for the present purpose because of the wide range of products that constitute a country's agricultural production.

At the other extreme, the productivity of land may be measured in terms of the overall output of agricultural products (livestock as well as crops) per unit of agricultural land. This will reflect not only changes in the yield per hectare of individual crops but also such changes in the intensity of land use as shifting to higher yielding crops, the conversion to crop production of former grazing land, the reduction of fallow, or double-cropping.

A measure of the productivity of land somewhere in between these two extremes is shown in Table VI-3. The table compares, for 12 major crops [6] combined, changes in production, in the amount of land used, and in the average yield per hectare in the main regions from the prewar period to 1953-55 and from 1953-55 to 1962-63. It indicates that higher yields were responsible for about 70 percent and increased area for about 30 percent of the increase during the last decade in the world production of the 12 crops. The contribution of yield increases to the growth of output during the decade was slightly greater than in the earlier period.

In the developed regions taken as a whole there was no increase during the decade in the area under the 12 crops, and the increase in their output thus came entirely from higher yields. The only developed regions to show an expansion in area are Oceania, where the wheat area has been very sharply increased, and eastern Europe and the U.S.S.R., where the plowing up of the virgin lands brought a 24 percent increase in the arable area between 1953 and 1958.

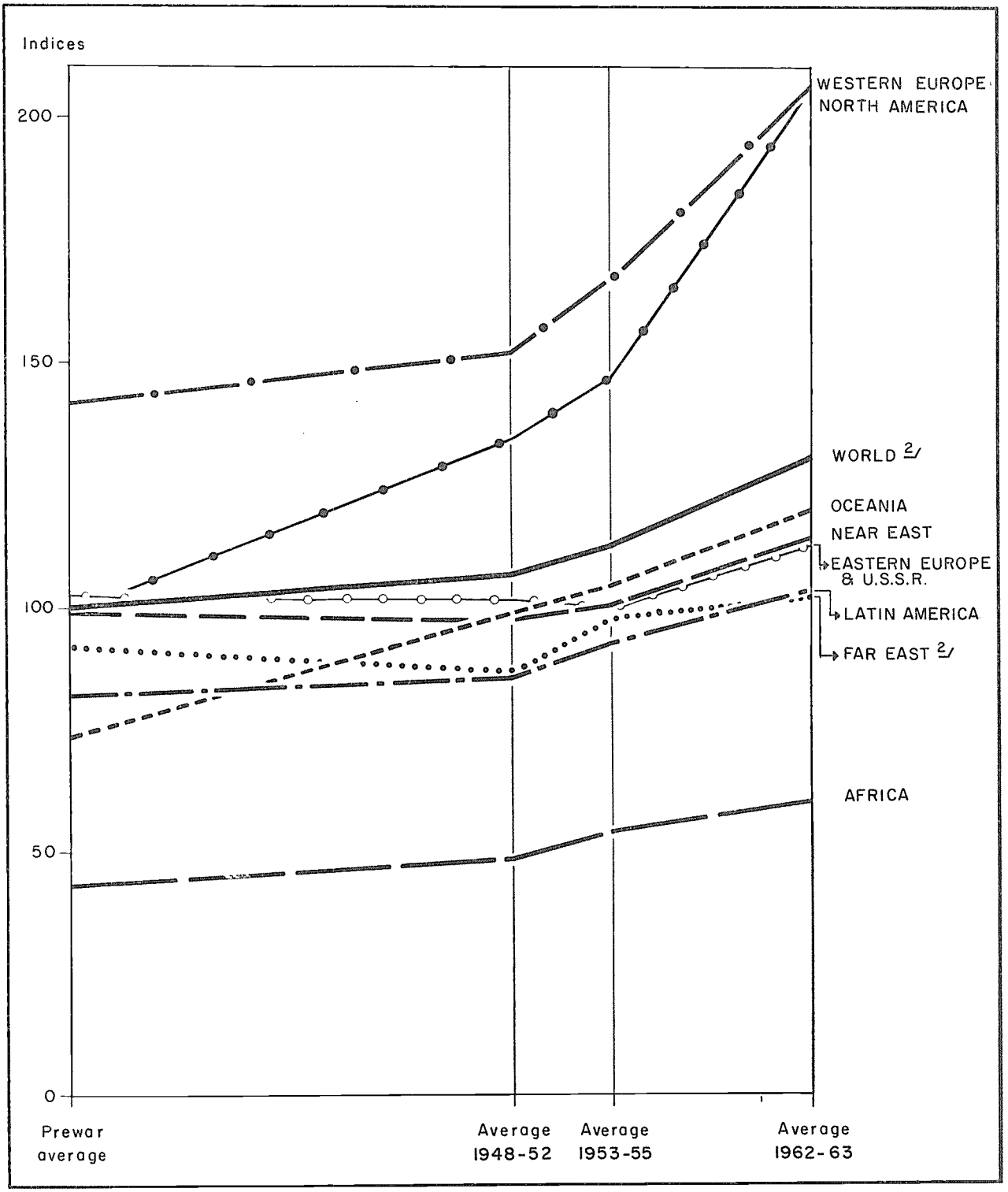
In the developing regions, in contrast, about two thirds of the increase in the production of the 12 crops in the last decade was due to the expansion of area. In each region except the Far East, however, the increase in area was much smaller in the second period than in the first. The contribution of rising yields was particularly small in the Near East during the first period and in the Far East during the second.

Figure VI-1 enables a comparison to be made of the level as well as the trend of yields for the 12 crops, and indicates that the gap in yields between the developed and developing countries has widened in comparison with the prewar period, when only

[5] FAO. *The state of food and agriculture 1963*, Rome, 1963, p.95-134.

[6] The increase in the production of the 12 crops is close to that in world production as a whole, which suggests that they should be fairly representative. The choice of crops is mainly dictated by the availability of area statistics, but they account for 40 to 60 percent of arable land and land under permanent crops in each region except Africa, where they cover only 15 percent of the total. The low coverage for Africa is likely to be partly explained by the high percentage of fallow where shifting cultivation is practiced, as well as the impossibility of including such crops as cassava, millets, and sorghums.

FIGURE VI-1. - CHANGES IN COMBINED AVERAGE YIELD OF TWELVE MAJOR CROPS [1]
(Indices, prewar world average = 100)



[1] Price-weighted average yield of wheat, rye, barley, oats, maize, rice, potatoes, groundnuts, soybeans, tobacco, cotton, jute. - [2] Excluding China (Mainland).

TABLE VI-3. - CHANGES IN PRODUCTION AREA AND AVERAGE YIELD PER HECTARE OF 12 MAJOR CROPS [1]

	Production [2]		Area		Yield [2] per hectare		Contribution of change in yield to change in production [3]	
	I	II	I	II	I	II	I	II
	Percent							
Western Europe	+ 12	+ 20	- 5	- 2	+ 18	+ 23	142	112
Eastern Europe and U.S.S.R.	- 3	+ 23	- 1	+ 9	- 2	+ 13	- 68	60
North America	+ 52	+ 21	+ 3	- 13	+ 48	+ 40	94	163
Oceania	+ 41	+ 64	- 1	+ 45	+ 43	+ 14	103	30
Subtotal	+ 18	+ 23	-	-	+ 18	+ 22	102	99
Latin America	+ 44	+ 29	+ 28	+ 16	+ 12	+ 12	35	46
Far East [4]	+ 19	+ 23	+ 13	+ 17	+ 6	+ 5	32	24
Near East	+ 43	+ 36	+ 42	+ 20	+ 1	+ 14	3	45
Africa	+ 76	+ 28	+ 41	+ 15	+ 25	+ 11	46	47
Subtotal	+ 30	+ 26	+ 22	+ 17	+ 6	+ 8	26	35
WORLD TOTAL [4]	+ 22	+ 24	+ 8	+ 7	+ 13	+ 16	64	70

I. Prewar period to 1953-55. - II. 1953-55 to 1962-63.

[1] Wheat, rye, barley, oats, maize, rice, potatoes, groundnuts, soybeans, tobacco, cotton, jute. - [2] Price weighted. - [3] Percentages over 100 indicate that total production has increased despite a reduction in area. - [4] Excluding China (Mainland).

western Europe was markedly above the world average. However, both the table and the figure show that, except in the Far East, the growth of crop yields in the developing regions during the decade has not lagged far behind either the world average or the trends in Oceania and in eastern Europe and the U.S.S.R. The main contrast is with the very rapid rise in yields in western Europe and North America.

Not all of the increase in the area under the 12 crops can have come from the clearing of new land, and some must be land hitherto used for other crops or fallow or pasture, or the result of an increase in double-cropping. Thus the data in Table VI-3 and Figure VI-1 may somewhat understate the contribution of yield increases to the growth of output, especially in the developing countries, and overstate that of expanded acreage.

LIVESTOCK

As well as higher crop yields, increased productivity of livestock contributes to the total output from each hectare of land. Both conceptually and practically, however, it is even more difficult to measure. One measurable example is the output of milk per milking cow, for which recent trends in a number of countries are shown in Table VI-4. The extremely wide range of milk yields is an indication of the potential growth as improved breeds and methods are adopted. The table shows several instances of dramatic increases in the average yield as modern dairy industries were established in developing countries, though it must be emphasized that dairy products remain a very small part of their overall agricultural production.

LABOR

The difference between the developed and developing countries in the contribution of improved technology to increased production is likely to have been even greater than the difference in the contribution of yields per hectare brought out in Table VI-3 above. In the developing countries labor is by far the most important input combined with land and, as was shown in Chapter IV, the numbers of agricultural workers are still rising, both absolutely and (in many countries) per hectare of agricultural land. Much of the yield increase must therefore be attributed to the greater input of labor per hectare. In the developed countries, on the other hand, the importance of labor in relation to other inputs has been much reduced, and labor is being replaced by

greater and improved inputs of fixed and working capital, to which the increases in yields are thus due.

Data on labor input in man-hours are available for only a small number of developed countries. Of the other possible measures, the most comparable is the number of adult males engaged in agriculture.[7] Data on levels of output per adult male shown in the 1963 issue of this report[8] indicated a very wide range in productivity per man between the developed and developing countries. Table VI-5 assembles data on recent changes in gross output

TABLE VI-4. - AVERAGE ANNUAL MILK YIELDS PER MILKING COW IN SELECTED COUNTRIES [1]

	Prewar average	1953-55	1962-63	Increase 1953-55 to 1962-63
	Kilograms per cow			*Percent*
Israel [2]	...	3 820	4 425	18
Netherlands	3 417	3 890	4 155	7
Belgium	3 195	3 743	3 811	2
United Kingdom	2 528	[3]2 887	[3]3 682	28
Denmark	3 179	3 527	3 617	3
Germany, Fed. Rep. of	2 480	[4]2 900	3 470	20
Luxembourg	...	3 197	3 402	6
United States	1 946	2 577	3 387	31
Switzerland	2 850	3 110	3 325	7
Sweden	2 390	2 817	3 197	13
Finland	1 900	2 523	3 127	24
Iceland	...	2 620	[5]2 870	10
Norway	1 686	2 323	2 854	23
Canada	1 785	2 403	2 843	18
New Zealand	2 553	2 553	2 708	6
Austria [2]	2 000	2 141	2 678	25
France [2]	1 855	2 025	[5]2 423	20
Ireland	1 760	2 106	2 362	12
Hungary	...	1 687	2 243	35
Australia	1 673	1 836	2 121	16
Czechoslovakia	...	[6]1 600	1 794	12
Southern Rhodesia	...	1 133	[5]1 547	37
Yugoslavia	...	1 077	1 188	4
Greece	...	[7]783	[5,7]972	24
Jamaica	...	890	937	5
United Arab Republic	...	610	680	11
Malaysia: Malaya	...	[8]370	[7]470	27
Uganda	...	247	281	14

[1] Excluding milk sucked by calves, but including milk fed to them after milking. - [2] Including milk sucked by young animals. - [3] Average yield of cows in milk and in calf. - [4] Excluding Saar. - [5] 1962. - [6] 1954-55. - [7] Excluding milk fed to animals. - [8] 1952.

TABLE VI-5. - ANNUAL RATES OF CHANGE IN GROSS OUTPUT PER ADULT MALE ENGAGED IN AGRICULTURE, 1953-61 [1]

	Gross output [2]
	Percent
DEVELOPED COUNTRIES	
Austria	7.1
France	6.4
Japan	6.0
Italy	5.9
Germany, Fed. Rep. of	5.6
Netherlands	5.5
Australia	4.8
Canada	4.5
Finland	4.3
United States	4.0
Denmark	3.7
Belgium	3.4
Ireland	3.4
Sweden	3.4
Switzerland	3.4
New Zealand	3.3
Norway	3.0
United Kingdom	2.7
INTERMEDIATE COUNTRIES [3]	
Israel	[4]7.2
Greece	4.2
South Africa	2.7
Spain	1.9
Portugal	0.3
DEVELOPING COUNTRIES	
Malaysia: Malaya	4.5
Turkey	[5]4.0
Venezuela	3.3
Philippines	2.1
Argentina	2.0
Colombia	1.9
Panama	1.6
Chile	1.1
Thailand	0.4
Korea, Rep. of	[4] —

[1] Unless otherwise specified, the period covered begins around 1953 and ends around 1961. - [2] Total output less seed, feed and waste, aggregated by weighting with regional average producers' prices relative to wheat. The data may differ from national estimates based on different indicators of output and labor input. - [3] Countries normally classified as developed, but where the number of adult males engaged in agriculture is still rising. - [4] 1955-61. - [5] 1955-60.

[7] For a discussion of the problems of measuring labor input in agriculture, see FAO. *The state of food and agriculture 1963*. p. 98-99 and 116-117. In the developed countries, comparisons based on the numbers of adult males engaged in agriculture are likely to differ little from those based on man-hours, except insofar as the working week is reduced. In developing countries, however, a varying and only approximately known proportion of the man-hours available for work during the year is not employed. Measures based on numbers of men are therefore likely to underestimate productivity per man-hour in the developing countries, although this will be offset to some extent by the greater participation of women and children in farm work in these countries.

[8] FAO. *op. cit.*, p.116-117.

TABLE VI-6. - ANNUAL RATES OF CHANGE IN LABOR INPUT AND GROSS AGRICULTURAL OUTPUT 1953-61 [1]

	Adult males engaged in agriculture	Gross output	
		Total	Per adult male
	Percent		
Developed countries	— 2.8	2.0	4.8
Intermediate countries	0.6	2.8	2.3
Developing countries	1.4	2.5	1.1

[1] Weighted averages for groups of countries. For definitions and coverage of country groups, see Table VI-5.

per adult male engaged in agriculture in 33 countries, while averages for groups of countries are shown in Table VI-6. The data are given as annual rates of change over a period that varies slightly but runs generally from about 1953 to about 1961.

These estimates must be regarded as only very approximate, especially as in several cases it was necessary to interpolate the data for adult males engaged in agriculture from somewhat earlier census data. They strongly suggest, however, that the output per adult male has grown very much faster in the developed countries than in either the small group of intermediate countries (developed countries where the number of adult males engaged in agriculture is still rising) or the developing countries.

SOURCES OF INCREASED OUTPUT

An examination of the productivity of the main factors of production throws a good deal of light on the manner in which the growth of output has been achieved during the decade. In the developed countries taken as a whole, agricultural production has risen substantially despite reductions in both land and labor inputs. All of the increase in production in these countries has been due to higher yields per hectare and per animal, which in turn have been achieved entirely by means of increased and better technological inputs.

In the developing countries, on the other hand, a large part of the increase in production has been achieved by the use of greater inputs of land and labor, though there is some evidence that the expansion of land area may have made a smaller contribution in the last decade than in the period from just before the war until 1953-55. Higher yields per hectare have also played a part, although much smaller than in the developed countries. Furthermore, a comparison of the available data on the growth of the labor force with those on the expansion of land area suggests that, in many of the developing countries, a large part of such increases as there have been in yields per hectare has come, not from technological improvements or larger non-farm inputs, but from increased inputs of labor per hectare.

FISHERIES

Only very limited indications are available of trends in productivity in fisheries and the contribution of improved technology in this sector. The impressive increase in the total world fish catch over the last decade, however, is almost certainly mainly due to technological improvements. In some cases it may also be due to a natural increase in the abundance of fish stocks, but this is probably a less important factor.

There is also little doubt that, especially in developed countries, technological progress has led to increases in the productivity of labor employed in the fishery industry. Where data are available they generally show an increase in catch per unit effort as new fishing grounds are exploited. Much of the increase in catch over the past decade has resulted from the exploitation of new grounds, for instance when the canoe fisheries of developing countries become mechanized and are able to exploit grounds further offshore, or when the fleets of developed countries move to more distant grounds because of the depletion of their traditional ones.

FORESTRY

Uniform and regular measurement of forest productivity per unit of area and of logging productivity per man year is yet to be established on an international basis, but some examples will illustrate the progress that has been made.

Comparisons between yields of the natural forests and of plantations strikingly illustrate the importance of the technological gains in the field of forest production. For quick-growing pines and *Cupressus* species grown for timber in Africa, typical annual rates of growth lie between 12 and 17 cubic meters per hectare per year, while broadleaved tim-

ber species, such as eucalyptus grown for pulpwood and pole production, average 20 to 30 cubic meters per hectare per year, e.g., in South America. For natural coniferous forests, on the other hand, the figure is likely to be 2 to 5 cubic meters per hectare per year, and for tropical mixed broadleaved forests only 1 to 3 cubic meters per hectare per year.

Striking changes in productivity have also occurred in harvesting and transporting wood to processing centers. The number of man days per cubic meter of roundwood required for these operations dropped from 0.50 to 0.38 in Sweden between 1958/59 and 1961/62 and from 0.46 to 0.28 in eastern Canada from 1949/50 to 1959/60.

PROCESSING AND STORAGE TECHNOLOGY

Scientific progress in such fields as chemistry, biochemistry, nutrition and engineering has led to many improvements in older methods of processing, preserving and storing agricultural products, and to the introduction of new methods. Advances in engineering and in new materials like plastics and alloys have also contributed to the development of improved equipment and packaging materials.

Plant industries

PROCESSING METHODS

Better knowledge of the properties and nutritional value of natural food constituents has led to the improvement of processing methods in order to conserve quality and ensure that nutritionally valuable components are not destroyed or lost, or made indigestible. Examples are the modified techniques used in oilseed crushing to obtain protein concentrates for human nutrition.

In the proccessing of foods the conservation of quantity is almost as important as quality. Reductions in processing losses have been obtained by the improvement of existing methods and equipment, such as the extraction of juice or oil by sugar mills or oil expellers under high pressure or in subsequent stages as in " mill trains " or " duo-expellers. " In other cases, entirely new methods have been introduced, such as the use of solvent extraction instead of mechanical pressure in oil milling, and the introduction of salt removing ion-exchangers in order to reduce the considerable sugar losses in final molasses.

An important aspect of processing is the further refining of foodstuffs. Such refining, which originally aimed at products of greater purity and as such has its merits, can be a danger if valuable food constituents are removed. Whereas in developed countries there is now a strong tendency to become more critical as to the merits of refining, in many developing countries the trend toward further refining still continues.

PROCESSING EQUIPMENT

For most crops the mechanization of processing equipment is already so advanced that the last decade saw only minor improvements. Only some difficult special problems of mechanization were left such as the mechanical cracking and peeling of cashew nuts, the mechanical decortication of particularly fine fibers (for example, edible banana, kenaf or pineapple), the mechanical breaking of cocoa pods, and the spinning of kapok. While progress has been made in respect of these problems, some of them are still not completely solved.

Processing equipment has tended to be increasingly labor-saving and the newer models of almost all modern machines, such as grain mills, oil expellers, canning equipment, sugar and textile mills and many others, have sharply increased output per operator. Closely connected with labor saving is the trend to continuous processing instead of working in batches, wherever the nature of the raw material allows it. In oil extraction, the discontinuous hydraulic press is giving way to the continuous expeller, and solvent extraction in batches to continuous extraction. Intermittent tray driers, kilns or stack-type driers are being replaced by continuous drum driers, tunnel driers, jet driers, etc. Even typical batch processes, such as the separation of solid sugar or starch by centrifugal machines, or the extraction of beet sugar in " diffusors, " are nowadays executed continuously in specially designed equipment. Vegetable oil refining, for decades performed

in separate batches, can now be done continuously by means of centrifugal separators.

A similar trend is the speeding up of all processing. This may be done by "high-speed" machinery, of which spectacular examples are modern high-speed looms for cotton and similar fibers. It may also be done by replacing time-consuming fermentation processes, such as the retting of fibers, by rapid mechanical processes — for example, in the modern processing of coconut husks to coir, the manufacture of unretted "green" flax, or the mechanical decortication of kenaf and other jute substitutes.

The automation not only of isolated processes and machines but of entire plants has begun during the past decade, although it has not yet reached the stage where it can be of much importance to agricultural processing in developing countries. Another new development which is likely to be of much more immediate importance for developing countries is the construction of smaller equipment. This has been made possible by improved construction materials and techniques, and stimulated by developments relating to transistors and space travel. Modern household machinery and mechanized kitchen tools can also be considered as forerunners of small modern processing equipment. Such equipment is already available in the form of small oil expellers, hydraulic presses, sisal decorticators, mills for rice, grains or sugarcane, and equipment for coir manufacture.

Utilization

Advances in processing have made it possible to utilize new or formerly neglected raw materials. Examples are the utilization of doum palm fibers as a result of improved processing methods and equipment, and the extraction of the fibers from the usually wasted stems of edible bananas by a specially designed decorticator.

A new raw material is sometimes introduced not so much because processing has been improved as because modern science has shown its special value, for example as a source of a particular vitamin or other nutrient. Other reasons for developing new agricultural raw materials, and special techniques and equipment for their processing, can be climatic or geographic, as when a locally available substitute for some well-known raw material is sought. For example, a number of jute substitutes, of which the most successful is kenaf, have been developed in various countries.

New raw materials can also be found in waste products. While the utilization of waste products such as molasses and oilcakes has already been known for a long time, more recent developments are the use of rice bran as a source of vegetable oil, of sisal waste for pectin and other chemical products, and of the cashew nut shell liquid for plastics.

Animal industries

Dairy technology and hygiene

Developments in dairy technology during the past ten years include a new technique which makes possible the aseptic filling of containers for presterilized milk. This product can be maintained at ambient temperatures for long periods without deterioration. The technique will undoubtedly be widely applied in the future, although a serious impediment for the developing countries is the fact that relatively costly expendable containers are required at present.

Mechanization has made great strides in cheese manufacture in many advanced countries. The vacuum packaging of milk products, including cheese, has shown notable progress. It has the advantage of ensuring that even soft cheeses remain in good condition for a long period, thereby facilitating distribution and marketing.

The introduction of "toned milk," using imported dried skim milk to produce a standardized milk of low fat content from the high-fat local cow or buffalo milk, has proved valuable in India and some other countries, as it is much cheaper than full-fat milk. Dried skim milk can also be used in reconstituted form with the addition of vegetable fats ("filled milk"). In the last few years a number of dairy exporting countries have set up, in large consuming centers in the Far East and elsewhere, plants for recombining dried skim milk and butter oil.

Problems arising from the use of additives in milk and milk products have received much attention in recent years. The obvious desirability of limiting their use must be balanced against the urgent need to manufacture products which can be transported over long distances and which will survive storage under unfavorable conditions.

The last decade has seen a great and almost universal increase in the administration, either parenterally or as food additives, of various substances intended to improve the appearance or quality of meat or to extend its storage life. These include antibiotics, hormones, tranquilizers, chemotherapeutics, tenderizers, herbicides and pesticides. Their use has created new problems for meat hygiene, because of their importance for public health. The precise significance of the residues has not been clearly established in all cases. While use of some of the additives is probably no more than a passing phase, it appears that many of them are here to stay. The tests necessary to determine the acceptability of meat products for human consumption are therefore undergoing continuous change and improvement, so that they can be integrated into processing operations in such a way as not to interfere with the rapid and efficient handling of the carcasses.

In a number of advanced countries the packing-house system is on the increase. It is particularly applicable to pig meat, since the curing of bacon and ham are factory processes, and these products keep much longer than fresh meat. The prepacking of beef has already become a commercial proposition in a number of countries; the main problems are that frozen consumer cuts are costly to produce, while the appearance of consumer cuts from frozen or chilled meat tends to be unappetizing. Much has still to be learned concerning color and moisture changes which take place when meat is chilled or frozen, and the various causes of deterioration in flavor, color, and texture.

The factory-abattoir system is an interesting development, and it seems probable that it will be greatly extended in the coming years, not only in regard to the relatively simple techniques associated with bacon, ham, sausages, and pies, but also with beef, mutton, and other fresh meats. There are a great many difficulties but some notable advantages, of which one is better hygienic control at all stages of production.

Fishery industries

Advances in fish utilization technology have brought improvements in fishery products and have made it possible to increase the range of both fishing operations and fish distribution with no reduction in the quality of the product.

In countries such as the Federal Republic of Germany, Japan, the United Kingdom and the United States the trend toward the freezing of fish at sea has continued. Greater consideration is being given to the quality requirements of the consumer and to the new possibilities offered by the freezing of fish at sea. Fish product development has become more and more important for fisheries industries in order to guarantee the successful utilization of the rapidly increasing landings.

In the Federal Republic of Germany, advanced techniques are being used by the co-operatives of the inshore fishery (cutter operators). They are following the system satisfactorily operated by the trawler fisheries, installing industrial ice plants and processing machines and using their own refrigerated transport facilities on a co-operative basis in order to facilitate the distribution of the landings of the small fishing vessels. In the trawl fishery, the installations for freezing fish at sea have continued to increase on the vessels fishing distant grounds. Much effort has been directed in the Federal Republic of Germany to the development of new fish products, for example the canning of white fish.

In the United Kingdom also, freeze trawlers are being used which are capable of landing and freezing the total daily catch, so that the amount of frozen fish available for further processing and direct consumption is increasing. However, the bulk of British fish is still landed and distributed in "wet" form, as either fillets or whole fish. There is a steady increase in the use of consumer packs, and new methods are being studied, such as the selling of fish under vacuum in gas-impermeable pouches to increase its keeping quality at 0°C.

The development and introduction of fish sausages and hams in Japan and some other countries has been highly successful, and has created new outlets for fish.

The decade has seen increasing use of ice, freezing, and refrigerated storage in many developing countries. Considerable progress has also been made in improving traditional processing methods such as the drying, salting and smoking of fish.

Forest industries

In forest industries the range of suitable raw materials has continued to expand; new products and new uses for them have been developed at an

increasing rate. New processing methods have made it possible to develop uses for previously unutilized raw materials.

In the developed countries, the advances in forest industries technology during the last ten years have not by any means been revolutionary. There has, however, been continuing, accelerated improvement of processing techniques and efficiency. A significant development has been a rapid increase in the production of wood-based panel and its successful competition with, and substitution for, sawn timber. This has opened up new raw material sources through the use of small-sized timber and waste wood for such products as particle board and fibreboard. A further major development has been the increased use of deciduous wood species for paper and paperboard manufacture, which has not only widened the potential raw material sources but also improved the quality of the products.

In the developing countries there have been noteworthy advances in forest industries technology during the last ten years. An increasing number of technically advanced and economically competitive forest industries have been established.

Probably the two most promising fields for progress in forest industries technology, particularly in the developing countries, are the effective utilization of mixed tropical forest and the development of industries based upon plantation forests. While relatively little has so far been accomplished in the first field, the integrated development of man-made forests and industries has made considerable progress.

Food preservation

Improved drying methods to reduce damage to the flavor, texture, color, and nutritive value of foods have received much attention. New processes include a " no heat " dryer which uses giant towers over 70 meters high in which droplets of the product fall against a stream of very dry air at about 35°C. Other improved spray driers use high temperatures for a very short time or operate under reduced pressure. Fluidized bed drying in which the product is kept floating on a stream of air is now commonly used, at times in combination with other methods. Puff drying and foam drying methods are applied to reduce the extent and duration of heating required.

Freeze drying has been considerably developed during the past decade. Derived from principles developed for the protective drying of biological materials, it is already widely used for foods where the retention of physical characteristics is important. Freeze-dried foods generally taste better than other dried foods, they rehydrate faster, and after rehydration their physical state is about the same as that of thawed frozen food. Freeze drying is still a fairly expensive process but improvements are continually being made. It is already used commercially for meat, poultry, shrimp, crab, and mushrooms.

Improvements in canning during the past decade include the increasing use of vertical retorts and rotary sterilizers. Foods are now canned in large chambers kept at slightly increased air pressure where the increased boiling point of water facilitates the sterilization process. High-speed equipment for filling and closing cans is increasingly used.

There have been steady improvements in the methods of producing frozen foods. A striking example is a continuous process in which the produce (peas, cherries, strawberries, etc.) is moved on a fluidized bed of refrigerated air at −25° to −35°C.

There have also been great advances in food packaging. Significant developments have taken place in reducing the thickness of steel plate required for tin cans, and in the use of aluminum cans and of plastics of various kinds. Collapsible plastic tubes are now extensively used for food products. There have been many improvements in jar closures and in methods of opening containers for canned and bottled food.

FOOD PRESERVATION BY IONIZING RADIATIONS

After almost 20 years of intense study, some methods of food preservation by the use of ionizing radiation are now permitted in several countries, although the use of foods treated or preserved by this process is still very small. Much work is still in progress on this subject, but the safety of foods treated with radiations has been established. Practical procedures have been developed for the sprout-proofing of potatoes and onions, and large-scale experiments are under way on the preservation of marine products by irradiation.

Fresh fruit, fish and meat might under certain conditions be preserved better by ionizing radiation than by the more conventional methods. The de-infestation of grain and of packaged dried fish and dried fruit by ionizing radiations also shows promise of practical application.

Storage pest control

The great advances in plant protection discussed earlier in this chapter have also extended to the specialized field of storage pest control. Knowledge has greatly expanded of the biology and behavior of the pests infesting stored grain and grain products. With the khapra beetle, for example, the greatly improved understanding of its complex life cycle, behavior, and response to insecticides has assisted in its eradication from the United States, and made possible more effective control elsewhere. The discovery of strains of flour beetle and other species resistant to some contact insecticides and fumigants has called attention to the need to re-examine the problem of resistance in storage pests. With the tropical warehouse moth, the discovery that females discharge viable eggs when subject to lethal doses of some insecticides has thrown new light on the persistence of infestations.

Storage microorganisms have long been known as a major source of damage and loss in stored foodstuffs, but it is only recently that their role has begun to be fully appreciated. The recent discovery of aflatoxin, a toxic and carcinogenic substance produced by some strains of the fungus *Aspergillus flavus* (and apparently of other molds as well) growing on groundnuts and other foods, has drawn attention to the entire complex of storage microflora and its possible effects.

The toxic aflatoxins have been isolated and their structure has been established. Tests have been developed for their detection in groundnuts, and improved methods for more speedy analysis are still being perfected. A series of studies have indicated the conditions favoring the production of aflatoxin and the practices required to prevent its formation. Some similar substances that have previously been known to occur in various grains are being re-examined, and new ones have also been found. The role of microorganisms in the production of free fatty acids in stored palm kernels has been studied in Nigeria and the United Kingdom, and it has been ascertained that the oil from fruit on which mold growth has developed has a high free fatty acid content. The effect of fungi on the storability of cereal grains and various seeds has received considerable attention in recent years in the United States, and there is now conclusive evidence that storage fungi play a major role in the loss of germination of stored seeds, and in the production of "sick wheat" and other forms of deterioration. Methods have been developed for the accurate prediction of the safe length for storage of grains without loss in quality or condition and without any treatments to maintain them.

While spectacular advances in the development of new high-potency chemicals for storage pest control have not been made in recent years, some progress may be noted. One of the most effective grain fumigants, phosphine, is gaining world-wide acceptance. An improvement in its production in tablet form retards the release of the fumigant until up to four hours after the tablets come in contact with air, thus increasing the safety of those who handle them.

A great step forward in the protection of stored grain was the discovery that malathion could be mixed with grain under certain conditions as it goes into storage, resulting in adequate protection from infestation for some time and safety to the eventual consumers of treated grains. Considering the low cost of malathion, its availability, and the ease of its application, this development is of considerable importance in the prevention of storage losses in many areas, including the tropics.

The khapra beetle, referred to earlier, resists many of the common insecticides and fumigants, but techniques have been developed for its complete control by fumigating infested buildings with methyl bromide. In addition, it has been found that malathion is among the few insecticides highly toxic to this species, and methods have been developed for its use in conjunction with methyl bromide fumigation for lasting protection.

Among improved rodenticides, the anticoagulants, which are safer than the acute poisons used in rodent control, have gained world-wide acceptance. It has recently been discovered that some rodents show resistance to anticoagulants, but a search for substitutes has shown promise in such compounds as fluoroacetamide and sodium fluoroacetate. There is also a substance known under the trade name of Raticate, which is of particular interest since it is reported as highly toxic to rats at extremely low dosages while practically harmless to most other animals, and humans.

Up to now the biological control of storage pests has not appeared possible, although there is some interest in the employment of insect pathogens. A recent report on the successful control of mites infesting stored grains by a species of predacious mite bred artificially has aroused some interest.

A nonchemical method of insect control used increasingly on a commercial scale is the reduction of the temperature of stored grains to a level too low for insect activity. In Japan, low temperatures in rice warehouses are produced by refrigeration equipment installed permanently in the storage buildings. In cold countries like Sweden and the U.S.S.R., cold air is circulated through the stored grain either by portable equipment or through permanently installed forced ventilation systems. The process has proved highly economical, even under the Japanese method, as it eliminates the use of insecticides or fumigants, prevents the growth of fungi even in grain with a moisture content of 16 to 17 percent, and preserves quality without any further handling or treatment.

The application of various types of radiation has attracted widespread attention. The techniques that have been investigated and show promise involve the use of electrons or gamma rays, applied in dosages that result in the sterilization of adult insects, or the use of high-frequencty electric fields for the destruction of insects through rapid heating during brief exposures which do not damage the grain. Even infrared radiation has given indications of usefulness along these lines. Much progress has been made recently, but two of the main problems involved are cost and the prevention of reinfestation.

Aeration and drying

For drying grain crops, pulses and oilseeds, various improved designs of mechanical driers have been developed. Improvements have been made in the speed of drying and in their total capacity, with a view to obtaining greater automation and efficiency and added protection of quality. Work has also been done on the more efficient use of existing equipment. Together with the development of efficient driers using conventional sources of heat, the possible use of infrared radiation for the drying of grains has been studied.

Equipment and techniques have been developed for mechanical or forced ventilation of grain in order to maintain quality during storage. The previous practice of aeration by turning, which involves the transfer of grain from one bin into another, is costly and inefficient, and is likely to cause some cracking and breakage of kernels. In modern grain elevators and flat storages, forced ventilation has to a great extent replaced the practice of turning.

As the natural drying of grain crops is often difficult in the humid tropics, efforts have been made to develop drying facilities at a cost that the small farmer can afford. While this problem is still far from being solved, some progress has been made. An example is a device, designed in the United Kingdom for use in the tropics, which permits the rapid heaping and covering of grain being dried in the sun when rain threatens or evening approaches, and easy uncovering when the danger of wetting has passed. Another example is a cheap drier for groundnuts, built over a pit in the ground with a flue made of four used tar drums.

Storage facilities

The advances in mechanization of grain handling and processing have been made possible to a considerable degree through the development of storage structures which permit efficient grain handling under all conditions. Storage construction engineering has become a highly developed and specialized science. Many of the problems of structural design created by climatic and ground conditions have been solved.

Small-scale storage has also received attention, and studies have been made in various parts of the world on improved designs for farm storage structures. Of particular importance are some modifications made in traditional types of farm storage facilities, as in Nigeria and Ghana, where improved maize cribs permit continuous aeration and slow natural drying as well as the application of insecticides and grain protectants.

The method of hermetic storage, which was used in ancient times, is again being developed for use on farms. Studies in Nigeria have demonstrated that a grain crop, if properly dried and stored in an airtight metal container, sealed, and placed in the shade, keeps without spoilage or insect damage for long periods. Any size of container may be employed, such as five-gallon kerosene cans or 50-gallon metal drums, so long as they are airtight. The principle of hermetic storage has been utilized recently in the design and construction of low-cost grain storage facilities in the form of inflatable balloons or "airhouses" made of plastic sheets. Another storage bin using the hermetic principle is a dome-shaped structure built over a concrete-lined underground pit, which has been used in Cyprus with encouraging results.

UNCONVENTIONAL SOURCES OF FOOD

During the past decade extensive efforts have been made to provide more food of good quality and satisfactory nutritive value from unconventional sources. These investigations have attracted considerable interest, and research and development work in this field are increasing.

Much work has been done on the development and production of inexpensive protein concentrates from sources up to now insufficiently used for human food. For instance, low-cost protein-rich foods have been developed in a number of countries from such indigenous resources as oilseed meals and presscakes. Fish flour (fish protein concentrate) is potentially another large-scale source of high-grade protein.

Additional attempts to provide good protein from less conventional sources are now involving considerable research and development effort. The carbohydrate-rich by-products of certain industries, such as sugar or the wood pulp and paper industry, could be used to produce large quantities of edible yeast. Although such food yeast is available and is being used as human food on a small scale, the main reason for its inclusion in food mixtures so far is to provide certain vitamins rather than protein or energy.

A more recent development is the production of microorganisms containing a high proportion of protein by culturing them on hydrocarbons obtained in the refining of crude petroleum. Pilot-scale production of such " petroleum protein " is already in progress and the products are being tested on animals. Apart from food yeast, the petroleum proteins appear to give the best hope for a cheap source of protein.

For many years algae, particularly Chlorella, have attracted the attention of research workers as possible sources of food and especially of protein. Work has been greatly stimulated by research on the possible use of Chlorella as food on space craft. Pilot mass-culture of algae has provided encouraging products in satisfactory yields, but Chlorella is so far produced commercially only in Japan and on a small scale. With the recent development of an improved harvesting method and the bleaching of Chlorella grown on sewage effluent, large-scale production appears to be possible, probably for animal feed in the first place.

Protein from green leaves is a further source which has been under investigation for some years, but many obstacles still remain to be overcome before leaf protein can be economically produced on a large scale. Only certain leaves at a certain stage of their growth can serve as suitable raw material.

In general, technology is not a limiting factor in developing food products from unconventional sources. The most critical and difficult aspect in introducing these products for large-scale use in the human diet is acceptability and marketing.

Chapter VII. - Foreign assistance for agricultural development

The plans of the developing countries rely in varying degrees on foreign financial and technical assistance, and many of them are also making increasing use of food aid. All these types of aid have increased considerably during the past decade. Financial and technical assistance to the developing countries have during this period become a familiar feature of international relations. Food aid is a newer concept, but its potentialities are gradually becoming more widely appreciated.

FINANCIAL RESOURCES

Data exactly covering the last decade are not available, but a recent United Nations study,[1] on which much of the following account is based, indicates that the net annual flow to the developing countries of long-term official and private funds (including the cost of technical assistance and of food aid) from the developed market economies and multilateral agencies increased from an annual average of $2,600 million in 1951-55 to $6,000 million annually in 1960-62.[2] This flow increased therefore much faster than the export earnings of the developing countries, which, however, still accounted for about 80 percent of their total foreign exchange receipts in 1960-62. In addition, aid commitments to the developing countries from the centrally-planned economies, which began in 1954, had risen to an average of $750 million in 1960-62; actual disbursements, however, are estimated as only a quarter to a third of these commitments.

Three-quarters of the flow ($4,500 million) from the developed market economies and multilateral agencies in 1960-62 was bilateral loans and grants. About 20 percent ($1,200 million) consisted of private investment. Multilateral agencies provided only 5 percent ($300,000), but multilateral lending had increased substantially with the recent establishment of several new agencies. Of the bilateral loans and grants, 18 percent in 1963 consisted of budgetary assistance and reparations payments, and did not necessarily contribute directly to development; 17 percent stemmed from transfers of agricultural surpluses for sale against local currencies, the proceeds of which were used for development financing; and 7 percent from other transfers of agricultural surpluses.

Little information is available on agriculture's share in the flow of funds. In 1959-60, only 8 percent of the gross outflow of private capital from the United Kingdom for direct investment in the rest of the sterling area was invested in agriculture. Although similar estimates are not available for other countries, it appears that in general only a small share of foreign private capital has gone to agriculture.

For public funds, Table VII-1 indicates that in 1962 agriculture received about 10 percent of the official funds committed for development projects by the four main donor countries [3] and the International Bank for Reconstruction and Development (IBRD) and its affiliate the International Development Association (IDA), which are the largest sources of multilateral lending.

A more detailed breakdown is possible for the loans of IBRD and IDA (Table VII-2). While IBRD

[1] United Nations. 1964. *World economic survey 1963. I. Trade and development: trends, needs and policies.* p. 225-283.

[2] These estimates differ from those of the Organization for Economic Co-operation and Development (OECD) both in geographical coverage and in the financial transactions included.

[3] In 1960-62, the United States accounted for 57 percent of the net flow of official funds from developed market economies and multilateral agencies: France for 16 percent, the United Kingdom, 7 percent: the Federal Republic of Germany, 6 percent: Japan, 3 percent: Italy, 1 percent: other countries, 4 percent: and multilateral agencies, 6 percent.

TABLE VII-1. - DISTRIBUTION OF OFFICIAL FOREIGN AID COMMITTED FOR DEVELOPMENT PROJECTS, [1] ACCORDING TO ECONOMIC SECTORS, 1962

	United States [2]	United Kingdom	France [3]	Germany, Fed. Rep. of	IBRD and IDA [4]	Total [5]
	..... *Percent*					
Food and agriculture [6]	9	18	10	2	16	10
Manufacturing and mining	35	40	4	34	13	25
Power.....	25	15	14	31	16	20
Transport and communications	18	14	13	29	54	30
Social infrastructure	6	12	33	4	–	10
Other	7	–	27	–	1	5-10
TOTAL.....	100	100	100	100	100	100

SOURCE: UNITED NATIONS, 1964. *World economic survey 1963*, p. 242.

[1] Project assistance accounts for only 45-55 percent of bilateral aid contributions of the countries included in the table; IBRD and IDA loans are virtually all on a project basis. - [2] Including U.S. Agency for International Development (US/AID) project loans and grants, and Export-Import Bank project loans; data relate to fiscal year 1962. - [3] Including only development project grants to Algeria, which accounted for over half of total aid contributions; data relate to gross expenditures in 1961. - [4] Loan agreements signed in 1961. - [5] Estimates of general orders of magnitude based on data in preceding columns, which are not strictly comparable with respect to time period and coverage. - [6] Including irrigation and land reclamation.

has been in existence since 1947, IDA was established in 1960 to supplement its activities by granting loans on more advantageous terms, where these are warranted by a country's existing debt burden or its balance of payments. Most of the IDA loans are at the nominal interest rate of 0.75 percent per year, maturing in up to 50 years with an initial ten-year period of grace. Up to mid-1964 the two institutions had loaned $6,348.9 million, of which 7.4 percent was for agriculture. Considering IDA alone, however, 26 percent of the total loans in 1962-63 went to agriculture.

TABLE VII-2. - AGRICULTURAL LOANS OF THE INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT AND THE INTERNATIONAL DEVELOPMENT ASSOCIATION FROM INCEPTION TO 30 JUNE 1964

	Africa	Asia and Near East	Latin America	Total
	..... *Million U.S. dollars*			
Farm mechanization	–	–	29.3	29.3
Irrigation, flood control	48.0	258.6	52.4	359.0
Land clearance, farm improvement, etc.	17.1	15.1	5.5	37.6
Crop processing, storage	0.3	–	1.8	2.1
Livestock improvement	–	1.0	33.2	34.2
Forestry and fisheries	–	7.8	–	7.8
TOTAL AGRICULTURE ..	65.4	282.5	122.2	470.2
ALL PURPOSES	1 036.0	3 235.2	2 077.7	6 348.9

SOURCE: IBRD and IDA, *Annual report 1963-64*, p. 20.

In 1963, the President of the IBRD/IDA announced that more emphasis would in future be put on agricultural development projects. As one result of this new emphasis, a co-operative program was begun in the spring of 1964 under which FAO and the Bank work jointly on the identification and elaboration of agricultural projects for Bank financing.

Apart from IBRD and IDA, the major sources of multilateral funds are the Inter-American Development Bank (IDB) and the European Development Fund (EDF), both of which were established during the last decade. IDB was founded in 1959 and, since the establishment of the Alliance for Progress, it has been one of the main channels for funds under this program. Up to 31 October 1964 it had extended 244 loans totaling $1,073 million to Latin-American countries, of which the relatively high proportion of 28 percent is for agriculture. An agreement between FAO and the IDB has recently been concluded on a similar basis to that with the IBRD.

Through EDF the members of the European Economic Community (EEC) committed $558 million in grants in 1958-63 to assist the economic and social development of the Associated States, which are almost entirely in Africa. It is not possible to distinguish how much of this was for agriculture. Under the second Convention of Association, $730 million are to be provided in the five years from 1 June 1964.

Other sources of multilateral funds are the Asian Development Bank and the African Development Bank. The Kuwait Fund for Arab Economic Development had by July 1964 provided (mostly as loans) $106 million to various Arab countries, of which 16 percent were for agricultural projects.

Even though development plans are now generally used as the basis for the allocation of aid, the bulk of it (45 to 50 percent of bilateral aid and almost all multilateral aid) is still tied to specific projects rather than granted in support of the development plan as a whole. This approach has contributed to the wide fluctuations that occur from year to year in the volume of aid going to an individual country, and has also tended to perpetuate the project approach to planning. In the agricultural sector,

international lending policies must take their share of the responsibility for the tendency discussed in the next chapter to neglect the development of extension and related services, and improvements in the institutional structure, in favor of large-scale projects for irrigation drainage and land reclamation. It is most striking that, of the agricultural loans of IBRD and IDA shown in Table VII-2, more than three quarters were for projects of this kind. There have still been very few IBRD loans in support of a general agricultural program of the type granted in 1960 to the Congo (Leopoldville), Kenya and Southern Rhodesia.

Part of the problem is that much of the essential expenditure for agricultural development involves recurrent costs rather than fixed capital, and the former are not usually regarded as development expenditures by the financing agencies. One solution that has been proposed is to channel part of the financial aid for agriculture through agricultural development banks established in the recipient countries.

TECHNICAL ASSISTANCE

Technical assistance to the developing countries has also increased rapidly during the decade and in 1962 accounted for about a tenth of official bilateral aid contributions. This includes the provision both of experts to advise governments and of training facilities for the nationals of the developing countries. The decade has seen a particularly sharp rise in the need for such assistance because of the exodus of expatriates from most newly independent countries.

It has been estimated by OECD that, in the single year 1962, some 60,000 technicians and experts were supplied to developing countries under bilateral programs, to which must be added over 5,000 supplied under the technical assistance programs of the United Nations and Specialized Agencies. In the field of training the governments of the developed countries gave financial support to about 40,000 students and trainees from developing countries in 1962. The United Nations and Specialized Agencies financed 5,700 fellowships in the same year.

Agriculture's share of the bilateral assistance cannot be determined. For multilateral assistance, however, the growth of FAO's own programs provides a good indication. Although technical assistance in various aspects of agriculture is provided by several other international organizations, including

TABLE VII-3. - TECHNICAL ASSISTANCE ADMINISTERED BY FAO UNDER THE EXPANDED PROGRAM OF TECHNICAL ASSISTANCE AND THE UNITED NATIONS SPECIAL FUND

	1950/51	1955	1959	1960	1961	1962	1963	1964	1965
TOTAL COST	*Million U.S. dollars*								
EPTA	2.0	7.6	8.1	8.4	9.2	11.5	11.5	11.5	12.8
Special Fund [1]	–	–	11.1	24.9	12.7	24.7	26.6	34.1	[2] 46.0
TOTAL	2.0	7.6	19.2	33.3	21.9	36.2	38.1	45.6	58.8
EXPERTS [3]	*Number*								
EPTA	271	665	604	553	587	707	772	756	...
Special Fund	–	–	–	33	128	292	459	723	...
TOTAL	271	665	604	586	715	999	1 231	1 479	...
FELLOWSHIPS									
EPTA	55	274	222	266	227	468	227	453	...

[1] Projects approved at meetings of the Governing Council during the year in question; expenditure is generally spread over several succeeding years. - [2] Estimated. - [3] Experts in the field for more than one year are counted for each year in which they served.

IBRD, the International Labour Organisation (ILO), the United Nations Educational, Scientific and Cultural Organization (Unesco), the United Nations, and the United Nations Children's Fund (UNICEF), the major part is furnished by FAO.

The number of experts and fellowships provided by FAO, through its share of the United Nations Expanded Program of Technical Assistance (EPTA) and of projects under the United Nations Special Fund, are shown in Table VII-3. The major share under both of these programs has been channeled through FAO: 25 percent of EPTA funds for the 1965-66 biennium and 38 percent of the total funds authorized by the Special Fund up to January 1965.

The Expanded Program of Technical Assistance has been in operation since 1951, but the Special Fund was set up only in 1958. The Special Fund is designed to assist governments in surveys, applied research, training, and related preinvestment projects. So far (up to the January 1965 meeting of the Governing Council of the Special Fund) FAO has been designated Executing Agency for 195 such projects, with a total expenditure of $167.8 million. Thus the establishment of the Special Fund has contributed materially to the great increase in recent years in the emphasis of FAO's programs on the provision of technical assistance to developing countries. The total number of experts furnished by FAO in 1964 under EPTA and the Special Fund had reached almost 1,500, or more than twice as many as in 1955. In addition, there were, in 1964, 243 experts furnished under trust funds [4] and 119 assistant experts, for which comparable figures are not available for earlier years.

FOOD AID FOR ECONOMIC DEVELOPMENT

Food aid, based on the use of food surpluses for economic development, has emerged during the last decade as an important part of the total foreign aid effort. Its share in the total aid to developing countries is difficult to measure exactly, not only because of varying definition of aid but also because of problems in the valuation of food aid and in determining how much of the total transfers of agricultural surpluses can be regarded as contributing resources for economic development. As already noted, the total movement of surpluses in 1960-62 was 24 percent of the flow of official bilateral loans and grants, as defined by the United Nations, from the developed market economies. Such transactions averaged 36 percent of net United States economic assistance in 1952-63 and almost half in each of the last few years.

Since the beginning of Lend-Lease in 1942 the United States had been supplying agricultural products on concessional terms under a series of special government programs, but these tailed off sharply with European recovery. Considerable quantities of agricultural products have continued until recently to move under the Mutual Security Acts, and Australia, Canada, the Federal Republic of Germany and France have also provided some food aid. But by far the greatest part of the food aid furnished during the decade has stemmed from the Agricultural Trade Development and Assistance Act, better known as Public Law 480, which was passed by the United States Congress in July 1954.

Under Title I of P.L.480, the United States supplies surplus commodities for payment in the currencies of the recipient countries. The permitted uses in the recipient country of the currency thus obtained include loans to the recipient government for economic development (45 percent of agreements signed up to mid-1963), grants for economic development (19 percent), common defense purposes (7 percent), loans to private United States enterprises operating in the recipient countries (6 percent), and a number of relatively minor United States uses that have been gradually expanded (23 percent). Total disbursements have, however, lagged considerably behind, amounting to only 43 percent of the agreements signed up to mid-1963.

Title II provides for donations of emergency food supplies to foreign governments for distribution to people in disaster areas; in 1960, this title was extended to cover food assistance to supplement children's diets and for the provision of food wages for workers engaged in development projects. Under Title III donations of food are made, both in the United States and abroad, to welfare organizations adminis-

[4] The experts are paid for by funds paid directly to FAO by the recipient country or by a donor, and are recruited and supervised by FAO.

TABLE VII-4. - FINANCIAL AUTHORIZATIONS FOR TITLES I AND II OF UNITED STATES PUBLIC LAW 480

Effective date	Programing period	Authorization [1]	
		Title I	Title II
		Million U.S. dollars	
July 1954	To 30 June 1957	700	300
Aug. 1955	"	800	–
May 1956	"	–	200
Aug. 1956	"	1 500	–
Aug. 1957	1 July 1957 - 30 June 1958	1 000	300
Sept. 1958	1 July 1958 - 31 Dec. 1959	2 250	–
Sept. 1959	1 Jan. 1960 - 31 Dec. 1961	3 000	600
May 1961	To 31 Dec. 1961	2 000	–
Aug. 1961	1 Jan. 1962 - 31 Dec. 1964	[2] 4 500	[3] 900
Sept. 1964	1 Jan. 1965 - 31 Dec. 1966	2 700	800

[1] Dollar limit for appropriation to reimburse Commodity Credit Corporation for cost of agricultural commodities shipped Under Title I, and authorized expenditures under Title II. - [2] Maximum of $2,500 in any one calendar year: no provision for carry-over beyond 31 December 1961. - [3] $300 each calendar year, plus carry-over.

tering aid programs of various kinds; this title also provides for the barter of surplus commodities for strategic goods required for United States stockpiles. Title IV, which was added in 1959, authorizes the export of surplus commodities for repayment in dollars at low interest rates over periods of up to 20 years.

The bulk of the shipments (63 percent in 1955-64) has been under Title I. Authorizations for expenditures under Titles I and II are shown in Table VII-4, but this gives an incomplete picture because of carry-overs. Actual shipments have been well below the authorized rates and for P.L.480 as a whole have run at about $1,500 million in each of the three years 1962-64. The latest appropriations for 1965-66, plus the carry-over of unused resources, bring the amount available for Title I shipments to about $1,800 million per year, which is far more than has been used so far.

Not only has the program increased in size but its scope has also been significantly expanded. Initially official stress tended to be placed on its temporary character, but the addition of Title IV in 1959, allowing recipients to plan their shipments and payments over a long period, implicitly recognized the long-term nature of the program. About the same time the widening of the scope and objectives of the program from mere surplus disposal to the active fostering of economic and social development took further concrete shape with the 1960 amendment providing for a broader use of Title II grants, in addition to local currency sales under Title I, to promote economic and social development.[5] Some Title IV agreements have also been signed providing for such aims, and this aspect of Title I programs has received greater emphasis, especially with an increased proportion of local currencies allocated as loans to governments.

The possible effects of P.L.480 shipments on normal commercial trade have been discussed in Chapter III. In addition, it has come to be increasingly understood during the decade that there can be drawbacks as well as advantages to a recipient country's development, depending on the precise manner in which the surplus food supplies and the counterpart monetary flow are managed, and on the general economic situation of the country. Detailed studies of the effects of P.L.480 aid have been carried out for a number of countries, including Brazil, Colombia, India, Israel, Japan, the Republic of Korea, and Pakistan. There is still insufficient knowledge, however, of the precise effects of the different forms of food aid on the economies of the recipient countries.

Insofar as food aid represents additional resources available for a country's development, there can be no doubt of its advantages. It can have a valuable anti-inflationary role, especially where domestic and commercially imported supplies of food are insufficient to match increases in the demand due to rising incomes resulting from general economic development or from the implementation of specific projects. However, it can have a dangerously inflationary effect if the use of accumulated local counterpart funds is not strictly controlled or if undue expansion of the money supply or of bank credit is permitted.

Concern has also been felt at the possible adverse effects on domestic farm prices and thus on the incentive to domestic farmers to raise their production and productivity. A further fear is that, if consumption of the food surpluses is not a very high proportion of the expenditures generated by a project, then the spill-over of increased demand onto other foods and consumption goods will, because of changes in relative prices, imply a fall in real incomes for the domestic producers of the imported surplus foods.

[5] Programs authorized include "resettlement and land reform projects, livestock and poultry feeding undertakings, and work programs involving land clearing, soil stabilization, reforestation, water impoundment, sanitation, and the construction of roads, bridges, community schools, water spreading dams, and irrigation and drainage ditches."

World Food Program

The feasibility of international action to utilize surpluses of agricultural commodities was much discussed in the early postwar years. Such action formed part of the proposals for a World Food Board presented to the FAO Conference as early as 1946, and again of the International Commodity Clearing House proposed in 1949. Constructive use of surpluses multilaterally was once more the subject of an FAO inquiry in 1954, when the United Nations General Assembly requested the Organization to prepare a factual study of the feasibility of establishing a world food reserve.

The lack of success of these early efforts can be attributed mainly to the reluctance of governments to take multilateral action in operational as distinct from advisory and informational fields. A first formal indication of a changed attitude came with the 1960 United Nations General Assembly Resolution 1714 (XVI) on the Provision of Food Surpluses to Food Deficient Peoples Through the United Nations System. Following further intensive study in the United Nations and FAO, the World Food Program (WFP) was set up on an experimental basis for the three years 1963-65 under the joint auspices of the two organizations.

The Program's main objective is to obtain experience in the implementation of multilateral food aid programs. On request by governments, WFP provides aid for:

1. emergency food needs and emergencies inherent in chronic malnutrition (a provision which could cover the establishment of food reserves);
2. preschool and school feeding;
3. the implementation of pilot projects using food for economic and social development.

Its resources consist of pledged contributions in cash, commodities and services. The original target was set at $100 million for the three years 1963-65 and, by the end of 1964, 70 countries had pledged a total of $93.7 million, of which $68.5 million were in commodities, $5.5 million in services and $19.7 million in cash. Of this total, the United States contributed $50 million, or 53 percent.

The aid that is provided through WFP is exclusively food aid on a grant basis. The program's resources in cash and services are primarily to cover administrative and shipping costs, though cash may be used to purchase additional commodities to permit greater flexibility in programing. Cash contributions are still only some 21 percent of the total pledge, compared with the minimum of one third originally estimated to be necessary for the experimental program, and supplies of some commodities, especially rice, sugar and pulses, which are needed to complete " food baskets " in a number of development projects, are short of requirements.

Up to 25 percent of the available resources have been earmarked for emergency aid by the United Nations/FAO Intergovernmental Committee, which is the governing body of the Program. By the end of 1964, 16 countries had received such emergency assistance.

Formal requests for school lunch and other special feeding projects had been received from 12 countries. More than 130 requests had been submitted by some 57 countries for food aid in projects of economic and social development. These projects cover a wide range of activities, although they are predominantly in agriculture and related fields (Table VII-5). Of the 94 approved projects for special feeding and for economic and social development, 39 were in Asia, 28 in Africa, 14 in Europe, and 13 in Latin America.

All of these operations are being carefully appraised and a series of expert studies has been promoted to assist in the consideration of the future development of multilateral food aid programs. The present experimental program is due to finish at the end of

TABLE VII-5. - WORLD FOOD PROGRAM APPROVED PROJECTS,[1] 1 NOVEMBER 1964

	Share of total cost
	Percent
SPECIAL FEEDING	
Expectant mothers and preschool feeding	1.5
Feeding of students	7.0
Feeding programs for other special groups	3.0
ECONOMIC AND SOCIAL DEVELOPMENT	
Colonization and land settlement	22.0
Land reform	0.5
Land reclamation and development	14.0
Irrigation and drainage	4.5
Afforestation	5.5
Diversification of crops	1.0
Promotion of animal husbandry	10.0
Establishment of stocks for price stabilization	1.0
Community development	6.0
Housing, building, and area planning	4.5
Road construction	4.5
Other public works	5.5
Industrial projects	7.5
Mining projects	2.0

[1] 94 projects (excluding emergency aid).

1965, but before then the governing bodies of the United Nations and FAO will decide how it is to be followed up. At its meeting in April 1965 the Intergovernmental Committee recommended that the program should be continued for as long as food aid is considered necessary, and proposed a target of $275 million for the next three years' operations.

The operations of the World Food Program, and also transactions under Title II of United States P.L.480, are examples of the project approach to food aid. Under this approach, food aid is used as additional capital either for feeding workers engaged on labor-intensive investment projects, or as the basis for structural changes such as land reform and settlement. Local currency sales under Title I of P.L.480, on the other hand, are examples of the program approach, under which food aid is used as a counterinflationary tool and in general support of a development plan. One possible way of widening the scope of multilateral food aid in the future might be to include provision for program aid of this kind.

Concerning the future of food aid in general, a new concept has recently been advanced that goes far beyond the present programs, which are designed mainly as a constructive outlet for existing surpluses. This concept, which is still highly controversial, envisages food aid as a continuing international responsibility requiring the deliberate utilization for economic development in the developing countries of the excess agricultural production capacity of the industrialized countries. Some of the issues involved are discussed in the final chapter of this report.

Chapter VIII. - Planning of agricultural development

Like the rapid technological progress described in Chapter VI, government planning of economic and social development has been one of the characteristic features of the last decade.

Before the second world war such planning was carried out regularly only in the U.S.S.R., where the first five-year plan was begun as long ago as 1928. During the war and the immediate postwar years, various forms of planning and control were used in many countries to help mobilize scarce resources for the war effort and for postwar reconstruction. The subsequent rapid spread of planning stems partly from this experience. Above all, however, it is associated with the postwar drive for accelerated economic development and improved levels of living, particularly in newly independent countries.

By the beginning of the last decade planning had become established practice in most countries of the Far East but was much less widespread in the other developing regions. Subsequently it has taken hold rapidly in the Near East and Africa, especially after the independence of most African countries. In Latin America, however, few countries had prepared plans until the establishment in 1961 of the Alliance for Progress, a basic element of which is the submission of development plans in order to qualify for United States aid. Planning on the Soviet model began around 1950 in the eastern European countries. More recently, a good many countries in western Europe have established development plans.

All of the plans have included some kind of program for the agricultural sector, although the emphasis on agriculture has varied considerably from country to country and from plan to plan. In addition to plans covering all sectors of the economy, there are many instances of plans for agriculture alone, particularly in Latin America before the recent wave of overall planning.

Most of the early development plans were confined to public investment. Generally they consisted of a number of unrelated projects and, particularly in agriculture, they tended to emphasize large-scale projects such as irrigation and settlement schemes. Gradually, however, more and more countries have drawn up comprehensive plans covering estimates of private as well as public investment, and objectives and growth targets for the economy as a whole.

A major defect of most of the early plans was that, while they set production goals, they paid scant attention to the policies and measures required for their implementation, especially in agriculture. During the decade increasing emphasis has been given to the problems of implementation, although this still remains the weakest point of most plans.

These and other main trends in agricultural planning are reviewed below. By way of background, Annex Table 18 brings together data indicating some of the principal features of the postwar development plans in about 100 countries. The data are far from complete, especially in respect of the earliest plans and also some of the most recent ones. Often the only information that has been found on a plan is a bare mention of its existence and of the period it covers, but plans are not included in the table unless at least some details have been found of the level of investment proposed. Similarly, the table does not include the numerous plans that never got beyond the draft stage but only those approved by the government and which had actually begun to be implemented (even if they were shelved or superseded soon afterward).

AGRICULTURAL OBJECTIVES

The agricultural objectives of the development plans are generally derived from such overall objectives as increasing the national income, reducing inequalities in income distribution, improving the balance of payments, or increasing employment opportunities. While there are naturally differences in emphasis from country to country, the agricultural objectives are strikingly similar, at least among the developing

countries on the one hand and the developed countries on the other.

Broadly speaking, the main agricultural objective in the developing countries is simply to increase production as rapidly as possible. This is also the case in the U.S.S.R. and eastern Europe, where agriculture has tended to lag behind the rest of the economy. In most of the developed countries the main aims are to adjust production more closely to demand, to improve the agricultural structure and productivity, and to lessen income disparities between agriculture and the rest of the economy.

Increasing agricultural production for export is an almost universal objective in the developing countries. Many of these countries are also attempting to diversify their production for export, so as to lessen their dependence on a narrow range of commodities. Increased exports in processed form are also a frequent objective in the more recent plans.

A related objective is the saving of foreign exchange through the replacement of imports by domestic production. Generally this applies to certain specific commodities, but some countries are aiming at self-sufficiency in basic foodstuffs. In India, for example, the original target of the third five-year plan for 100 million long tons (101 million metric tons) of food grains by 1965/66 would have made the country self-sufficient, but this objective has since had to be reduced substantially.

Many plans acknowledge the need for nutritional improvement, but in very few of them is this a major objective and even fewer include any specific measures for the achievement of such an objective. Sometimes targets are set for increased production of nutritionally valuable foods such as livestock products, pulses, fruit, and vegetables. In India, for example, the main emphasis in the first five-year plan was of necessity placed on food grains, but in the second plan it was already possible to consider to a limited extent the need for increased production of protective foods. Increased livestock production has been a major objective in Japan, in order to keep up with the rapid rise in demand.

Another frequently neglected objective is the development of industries using agricultural raw materials, which can make an important contribution to the initial stages of industrialization. Similarly, specific reference is rarely made to the need to maximize agriculture's contribution to the national savings required to finance investment both in agriculture itself and in other sectors of the economy.

Structural changes are an important objective in many countries. Land reform measures often figure not only as a means of furthering the objective of increasing agricultural production but also as an objective in their own right, as a desirable transformation of the social structure. Less far-reaching changes in agricultural structure, mainly involving the consolidation of uneconomic holdings and assisting the movement of population out of agriculture, are prominent objectives in many countries of western Europe. In a number of countries, particularly in Africa, stress is laid on the transition from subsistence to market agriculture and the development of the "modern" sector of agriculture.

Employment objectives are important mainly in the developed countries, though they are also stressed in the plans of such developing countries as Ceylon, Chile, India, Jamaica, Jordan, Malaysia, Pakistan, the United Arab Republic, and Venezuela, where problems of rural unemployment have been particularly acute in recent years. The fuller utilization of underemployed rural manpower is a specific objective in some developing countries. Libya is an interesting case where, in contrast to the situation in most developing countries, the employment problem is principally a question of retaining sufficient manpower in agriculture in the face of the competition of the expanding oil industry.

The need to increase agricultural productivity per man is given prominence mainly in the developed countries. In the developing countries, however, there has recently been increased attention to raising the productivity of land through higher yields.

Fisheries and forestry objectives are considered in the separate sections on planning in these sectors at the end of this chapter.

Quantitative targets

Where possible, objectives are increasingly translated into quantitative targets.

Most of the recent plans specify a certain rate of growth of national income as the primary objective. These growth rates are shown in Annex Table 18. In the current plans they range all the way from 3 to 15 percent per year, though most are about 5 to 7 percent, or some 3 to 5 percent on a per caput basis. Where there has been a series of plans, they generally show an acceleration in the planned growth rate – as in India, for example, where it was raised from 2.1 percent a year in the first five-year plan to 4.6 percent in the second and 6.0 percent in the third.

An overall growth rate for agricultural production is specified less often, although it is in some respects implicit in the target for the economy as a whole, and in most of the developing countries is the major component of it. Agricultural production targets in the current plans range from 2 to 13 percent per year.

As would be expected, where there is a target for agricultural production it is generally somewhat lower than that for national income, but there are a few exceptions, chiefly where it is planned to expand agricultural exports or reduce food imports. A somewhat faster increase in agriculture than in the economy as a whole is called for in the current plan of the U.S.S.R., where agricultural production has recently been lagging. Another instance is Jordan, where agriculture at present contributes only a small share of national income.

Many plans, especially the more recent ones, also contain quantitative production targets for individual agricultural commodities. Some comparison of these targets with the levels of production actually achieved is attempted later in this chapter.

PATTERN OF PLANNED INVESTMENT

Agriculture in relation to other sectors

For most of the plans included in Annex Table 18 data are available on the percentage of total public investment that it was planned to devote to agriculture (including fisheries and forestry). In Table VIII-1 those countries for which there is the necessary information are classified according to the percentage of public investment to be devoted to agriculture in their latest plan. There appears to be a very wide variation among countries (from 2 to 51 percent), though in almost three-quarters of them agriculture's share lies between 10 and 29 percent.

The distribution of countries in the table reveals no consistent pattern. The percentage of planned public investment devoted to agriculture is relatively high in those western European countries that have development plans, and low in the U.S.S.R. and in the one eastern European country for which data for public investment are available. Among the developing regions, the African countries are fairly evenly distributed over the whole range, while those in the Far East, with the exception of Japan and China (Mainland), are rather concentrated toward the middle. The countries of the Near East are all in the upper part of the range, and those of Latin America mostly in the lower part.

Too much, in any case, should not be read into these figures. What is included under " agriculture " may differ appreciably from country to country, especially because of the difficulty of determining agriculture's share in multipurpose water development projects. The percentage share of agriculture in public investment is also much influenced by whatever large-scale projects, agricultural or nonagricultural, happen to be under way during the period in question.

Moreover, public investment is only a partial measure even of government emphasis on agricultural development. Much of the expenditure needed for agricultural development – for example, for changes in land tenure or some other part of the institutional structure, or for the expansion of government services – is of a recurrent nature, rather than capital investment. In some cases the payment of higher farm prices (which is likely to bring some increase in the farmer's own investment) may indicate a sharp shift in emphasis that is not necessarily reflected in the pattern of public investment.

Even in the developing countries, the private investment of the farmers themselves is generally a considerable proportion of agricultural investment. Private agricultural investment, however, is very difficult to estimate in these countries, not only because of the usual difficulties involved in the collection of agricultural statistics but also because of special problems, such as changes in the inventory of livestock and nonfinancial investment in the shape of farm improvements made with the farmer's own labor. In some countries, especially in Africa, nonfinancial investment through the mobilization of the rural masses in slack periods for the execution of agricultural and other projects of economic and social development is of considerable importance in planned investment.

Table VIII-2 shows the scanty available information on the share of private investment in total planned investment in agriculture in the developing countries. This share appears to be higher in Latin America than in the other developing regions. Countries

TABLE VIII-1. - SHARE OF PLANNED PUBLIC INVESTMENT DEVOTED TO AGRICULTURE [1]

	Under 10 %	10-14 %	15-19 %	20-29 %	30 and over %
EUROPE	Bulgaria U. S. S. R.		Ireland	France Greece Italy Spain	Portugal
LATIN AMERICA	Argentina Brazil Chile Ecuador Honduras	Bolivia El Salvador	Haiti Mexico Panama Peru Trinidad and Tobago Venezuela	Cuba Guatemala Jamaica	Nicaragua
FAR EAST	Japan China (Mainland) Malaysia: Singapore	Cambodia China (Taiwan) Indonesia Laos Philippines Thailand	Burma Korea, Rep. of Malaysia: Malaya Viet-Nam, Rep. of	Ceylon India Nepal Malaysia: Sarawak Pakistan	
NEAR EAST				Afghanistan Iran Iraq Libya Somalia Sudan United Arab Republic	Cyprus Syria
AFRICA	Congo, Dem. Rep. of Sierra Leone Tanzania: Zanzibar	Algeria Congo (Brazzaville) Gabon Ghana Kenya Malawi Nigeria	Ivory Coast Mauritania Senegal Uganda	Gambia Guinea Mali Mauritius Niger Tanzania: Tanganyika Zambia	Chad Madagascar Morocco Portuguese territories Tunisia

[1] In the latest plan for which data are available.

where it is particularly low include Cameroon, Pakistan, Syria, and Upper Volta.

For most of the countries with comprehensive plans, Annex Table 18 also shows the proportion of total investment, public and private, that it is planned to devote to agriculture. The range is somewhat narrower (5 to 40 percent) than for public investment alone.

CHANGES IN EMPHASIS ON AGRICULTURE

Notwithstanding the reservations made above, it is useful to examine the changes that have occurred in the percentage of public investment devoted to agriculture in the successive plans of some countries. Such comparisons over time are likely to be more valid than comparisons between countries.

Many of the early plans mainly stressed industrialization. Because of the limited share of agriculture in the economies of most of the developed countries, there was a tendency to assume that economic development was more or less synonymous with industrialization. This belief was reinforced by the desire of newly independent countries to achieve a radical break with their colonial past. Moreover, the contribution of agriculture to economic growth was only imperfectly understood.

The centrally-planned economies provide a striking example of an initial allocation of insufficient resources to agriculture which has subsequently necessitated a shift in emphasis. In the U.S.S.R. and eastern Europe, the early plans gave priority to rapid industrialization, but this gave rise to shortages of agricultural products and, since about 1953, the emphasis on agriculture has therefore been greatly increased. In the U.S.S.R., however, although the annual rate of public investment in agriculture has been sharply stepped up, agriculture's share of the total has hardly changed. Much reliance has also been placed on

TABLE VIII-2. - SHARE OF PRIVATE INVESTMENT IN TOTAL PLANNED INVESTMENT IN AGRICULTURE IN DEVELOPING COUNTRIES

	Plan period	Share of private investment in total planned investment in agriculture
		Percent
LATIN AMERICA		
Chile	1961–70	68
Peru	1964–65	57
Venezuela	1963–66	41
FAR EAST		
Burma	1961/62–1964/65	39
Ceylon	1959–68	40
China (Taiwan)	1957–60	58
	1961–64	41
Pakistan	1960/61–1964/65	[1] 15
Philippines	1962/63–1966/67	68
NEAR EAST		
Sudan	1961/62–1970/71	33
Syria	1960/61–1964/65	21
Turkey	1963–67	33
AFRICA		
Cameroon	1961–65	19
Senegal	1961–64	[2] 26
Upper Volta	1963–64	7

[1] Including investment in power development that it is not possible to separate from multipurpose water development schemes. - [2] Including nonfinancial investment.

higher farm prices (see Chapter X); this has enabled the *kolkhozes* (collective farms) to raise their investment, which in the U.S.S.R. is not classified as public investment. Furthermore, the investment involved in the opening up of the virgin lands in 1954-56 was not included in the plan.

In China (Mainland) also, the first five-year plan (1953-57) gave high priority to industry, especially heavy industry. Since the completion of this plan it appears that planning has been on an annual basis, and following the series of crop failures from 1959 there has been a gradual shift in emphasis toward agriculture. A ten-point program for the readjustment of the economy, promulgated in 1962 by the National People's Congress, gave priority to agriculture, relegating light industry to second place and heavy industry to third. This emphasis appears likely to continue in the third five-year plan, which is now due to begin in 1966.

Argentina's first five-year plan (1947-51) devoted only 3 percent, and its second plan (1953-57) 4 percent, of public investment to agriculture. Farm prices were kept artificially low and agricultural production stagnated at around the prewar level. Subsequent attempts to redress the balance have been reflected mainly in increased farm prices and tax exemptions and other incentives for farmers, although these measures were not very successful because of continued inflation. The new plan for 1965-69 lays considerable stress on agricultural development. Although only a small share of public investment is for agriculture, it is expected to receive 24 percent of private investment.

Most of the earlier colonial plans in Africa gave priority to transport and other infrastructure, which of course benefited agriculture as well as the rest of the economy. In some of the more recent plans, agriculture has tended to receive an increased share of public investment.

In most countries of both the Far East and the Near East agriculture had already received a good deal of emphasis in the early plans, and there has subsequently been a gradual reduction in the percentage of public investment devoted to agriculture. Agriculture's share fell in Ceylon from 42 percent in the first six-year plan (1947/48-1952/53) to 28 percent in the short-term implementation program (1961/62-1963/64), and in China (Taiwan) from 27 percent in the first four-year plan (1953-56) to 13 percent in the third (1961-64). In India, the first five-year plan (1951/52-1955/56) devoted 32 percent of public investment to agriculture; the second (1956/57-1960/61) and third plans (1961/62-1965/66) have emphasized industrialization, and agriculture's share fell to 22 percent under both of them. In Pakistan, the share of agriculture fell from 26 percent of public investment in the first five-year plan (1955/56-1959/60) to 24 percent in the second five-year plan (1960/61-1964/65) and 19 percent in the new plan for 1965/66-1969/70. In the Near East, the declining emphasis of public investment in agriculture has been particularly marked in Afghanistan and Iraq, although in Iraq public investment in agriculture is to rise again to 28 percent in the draft plan for 1965/66-1969/70.

Even where agriculture's percentage share of total public investment has declined during the decade, there has almost always been an increase in the planned investment in agriculture in absolute terms. Table VIII-3 shows the trend in planned public investment in agriculture in those few developing countries for which data are available for both the beginning and the end of the decade. Of the 17

TABLE VIII-3. - TRENDS IN PLANNED PUBLIC INVESTMENT IN AGRICUTLURE IN DEVELOPING COUNTRIES

	Currency	1955	1964	Increase 1955-64	
				Current prices	Real terms [1]
LATIN AMERICA		..... *Million*		..... *Percent*	
Guatemala	Quetzales	[2] 8.50	[2,3] 17.24	[4] 103	...
Haiti	Gourdes	[2] 8.40	[2] 44.10	425	475
FAR EAST					
Burma	Kyats	[5] 85 3	78.6	[6] – 8	[6] – 7
Ceylon	Rupees	134	[7] 198	[8] 48	[8] 34
India	Rupees	[2] 1 516	[2] 3 476	129	45
Laos	Piastres	32.8	[7,9] 85.6	[8] 161	[8] – 49
Malaysia: Malaya	M.$	[2,10] 53	[2] 110	[11] 107	[11] 103
NEAR EAST					
Afghanistan	Afghanis	[12] 417	[2] 1 472	[13] 253	...
Iran	Rials	[2] 2 700	[2] 8 300	207	105
Iraq	Dinars	[2] 23	[2] 22	– 4	– 19
Sudan	£.Sd.	[2] 2.4	[2] 18.2	658	494
Syria	£.Syr.	[2] 46	168	265	...
AFRICA					
Ethiopia	Eth$	[2,12] 18.4	[2] 71	[13] 286	...
Ghana	£.G.	[2] 0.86	8.2	854	544
Kenya	£	[2,14] 1.8	2.0	[15] 11	– 1
Portuguese territories	Contos	[2] 0 3	[2] 0.6	100	...
Senegal	CFA francs	[2,16] 1 000	2 346	135	46

[1] Deflated by cost-of-living index. - [2] Annual average for plan period. - [3] 1965. - [4] 1955-65. - [5] 1956/57. - [6] 1956/57-1964/65. - [7] 1963/64. - [8] 1955/56-1963/64. - [9] Kips. - [10] 1956. - [11] 1956-64. - [12] 1957/58. - [13] 1957/58-1964/65. - [14] 1957. - [15] 1957-64. - [16] Actual investment.

countries included in the table, planned public investment in agriculture declined only in Burma and Iraq. In both these countries, however, actual investment in the first year was much lower than planned, so that the funds invested in agriculture probably showed an increase over the period. In the remaining countries there were increases of varying magnitudes which, except in Laos (where there was rapid inflation) and Kenya, substantially exceeded the rise in the cost of living.

As was indicated earlier, although in the U.S.S.R. there has been little change in the percentage of planned public investment devoted to agriculture, in absolute terms there has been a substantial increase. The annual rate of state investment in agriculture rose from 502 million rubles during the fourth five-year plan (1946-50) to 1,280 million in the fifth plan (1951-55) and 2,246 million in the sixth (1956-60). In his report on agriculture of March 1965, Mr. Breznev stated that agriculture's share of total investment (state, kolkhoz and private) had fallen from 11.3 percent of the total in 1954-58 to only 7.5 of the total planned investment under the seven-year plan (1959-65), and that in 1966-70 state and kolkhoz investment in agriculture would be raised to 14,200 million rubles a year, or almost twice the level of 1962.

Pattern of investment in agriculture

Many of the early plans placed heavy emphasis on large-scale projects for such purposes as irrigation, drainage, land reclamation, mechanized farming, and settlement. Planning was conceived primarily in terms of concrete projects of this kind, and less tangible measures, particularly in the institutional field, tended to be neglected. Big projects were usually easier to administer in developing countries than a larger number of smaller ones, and their execution was often handled almost completely by foreign contractors. Foreign aid was easier to ob-

tain for these projects. They were often seen as enabling a major breakthrough in agricultural production.

During the last decade the emphasis on such projects has tended to be reduced in many countries. The results of some large-scale projects have been disappointing. But the main influence has been a growing awareness of the need to influence the production decisions of individual farmers and of the essential role of research, training, extension, and, above all, institutional reforms. (These measures are discussed in detail in the next three chapters of this report.)

It is difficult to make any uniform classification of the distribution of public investment in agriculture in the development plans of the developing countries. For many countries, however, it is possible to separate expenditure on irrigation, drainage and land reclamation, and this is already revealing since it includes the projects for expanding the cultivated area that, as noted in Chapter VI, have been especially stressed in most of the developing countries. In the Near East, where lack of water is the main limitation on agricultural output, projects in this category (mainly for irrigation) account for as much as 70 to 90 percent of total public investment in agriculture in some countries.

Until recently the strategy for water development in most of the Near East was to concentrate on large multipurpose schemes for both irrigation and electric power. Such large schemes involve heavy capital investment, much of it in foreign exchange, and have a long gestation period. In several countries the water resources can be harnessed only by the construction of large storage dams, but in countries with diverse sources of water a more flexible approach is possible, combining major projects with medium and minor ones costing little in foreign exchange and yielding benefits comparatively quickly. Many countries, especially Afghanistan, Iran, Jordan, Syria and Turkey, have recently been trying to spread irrigation expenditures over a larger number of projects, including small diversion dams, watershed projects, and underground water development schemes. This change in strategy has been stimulated in some countries by the establishment of central water authorities and by the necessity for the more widespread development of water resources following agrarian reform measures.

In Iran, the proportion of public investment in agriculture going to irrigation, drainage and land reclamation was reduced from 71 percent in the seven-year plan (1955/56-1961/62) to only 25 percent in the current plan, reflecting the completion of several big irrigation projects, as well as increased expenditures on land reform. In Iraq, there has been a gradual reduction in successive plans in the proportion of investment in this category, and the new plans of Syria and the United Arab Republic are reported to show the same trend.

In the Far East also, the share of planned public investment in agriculture to be devoted to irrigation, drainage and land reclamation projects has been reduced in a number of countries. In Ceylon, for example, the share was reduced from 71 percent in the six-year program of investment (1954/55-1959/60) to 63 percent in the short-term implementation program for 1961/62-1963/64; priority is now given to projects which will obtain quick benefits at low cost by more effective use of existing capital. The proportion was reduced from 45 to 25 percent in successive plans in Indonesia, and from 57 to 46 percent in Pakistan. On the other hand, in India it rose from 53 percent in the first five-year plan to 61 percent in the third, although during the implementation of the third plan there has been some shift in emphasis toward quick-yielding projects such as minor irrigation works. In Malaysia (Malaya), the proportion was increased from 28 percent in 1956-60 to 53 percent in the current plan, reflecting the emphasis on land development and irrigation in connection with the aim of eventual self-sufficiency in rice.

Geographical pattern of investment

A further important aspect of the pattern of investment is its geographical distribution. There is a growing tendency in some countries to concentrate investment in limited areas and provide them with a comprehensive network of services, instead of spreading resources thinly throughout the country. Examples are the so-called package programs in India and Pakistan.

Considerable attention has also been paid in a number of countries to stimulating the development of selected regions within the country in accordance with a regional development plan. In the developed countries, public investment is deliberately allocated to the lagging areas, largely for the establishment of economic and social infrastructure, and incentives are provided to private investment, particularly

for the establishment of growth-promoting industries, in order to narrow regional income and employment disparities. In the developing countries, the areas selected for intensive investment and development may either be such lagging areas or, less often, already developed areas with further potential for rapid growth. Developing countries with such programs include Argentina, Brazil, Colombia, Haiti, Morocco, Tunisia, Turkey, and the United Arab Republic. Where the region selected is large or diverse a few focal zones within the region are usually selected and the development effort concentrated on them. These regional development plans, like the overall national plans, cover all sectors, but particular attention has almost invariably been paid to agricultural development.

PLANNING METHODS AND ORGANIZATION

Annex Table 18 indicates that almost all of the development plans under way a decade ago were confined to public investment. As experience of planning accumulated and the availability of trained planning staff and of basic data improved, more developing countries were able to draw up plans that were comprehensive in scope, covering private as well as public investment. Of the much greater number of current plans, well over half are comprehensive. Some of them, however, are comprehensive only in name, for the lack of basic statistical and other data continue to be major handicaps in the improvement of planning techniques in all the developing countries.

Some 93 countries and territories participated in the 1960 World Census of Agriculture, compared with only 69 in 1950. But very few countries have established programs for statistical improvement based on their needs for planning. Moreover, it is not only statistical data that are lacking. Scientific knowledge of soil and water resources and of the ecological conditions governing crop and livestock production are generally far from adequate in the developing countries. In addition, there is still a great shortage of information on the day-to-day problems and activities of farmers, on which to base an assessment of their likely reaction to proposed policies and measures.

Even so, the scanty published information does suggest that the spread of comprehensive planning has in general been accompanied by the use of more refined planning techniques. Previously, projects and also sectors had tended to be planned in isolation. Now, however, much more attention is paid to the balancing of goals, to identifying and reinforcing the links between agriculture and other sectors, and to the selection of agricultural projects with wider complementary effects. In order to achieve comprehensiveness and ensure internal consistency, many countries now draw up an overall plan frame, which traces the development path for the economy as a whole and for its component sectors. Especially in the Far East, which is probably the developing region where planning techniques are most advanced, a number of countries have made long-term projections of the economy.

The link between the overall plan frame and the sectoral plan for agriculture is provided primarily through the analysis of future levels and patterns of demand and supply for agricultural products. FAO's projections of production, demand and trade for the main agricultural commodities[1] provide a world framework for such studies at the national level, especially for setting foreign trade targets for agricultural products.

Several countries have attempted to project the final consumption demand, especially for the main food products, based primarily on the growth of population and on the growth of income and its effect on food consumption. India's second five-year plan attempted also to take some account of other factors such as the increase in the urban population. The rate of population growth was substantially underestimated, however, necessitating the revision of the food consumption targets. More refined estimates were used in the third plan. The population estimates for 1961 proved to be close to the census figure. The coefficients of income elasticity for various categories of food were derived from consumer expenditure surveys conducted annually in rural and urban areas. Some adjustment was made

[1] FAO. *Agricultural commodities: projections for 1970. FAO Commodity Review 1962*. Special supplement. Rome, 1962. It is planned to bring these studies up to date from time to time.

for changes in income distribution and allowance was also made for likely inflationary pressures.

The lack of data is a serious handicap in the improvement of demand projection techniques in the developing countries. In many countries where income elasticities are not available the increase in demand has had to be projected on an arbitrary basis, though greater use could probably have been made of data for other countries with similar conditions. Another difficulty, especially in Africa, is the large subsistence component in food consumption, which severely limits the application of such concepts as average per caput income and income elasticities.

Some countries have taken nutritional improvements into account in formulating demand targets. However, these targets often appear to have been established on grounds of desirability, without taking fully into account available income for expenditure on food or specific measures to improve nutritional levels.

Primarily because of the variety of factors that affect levels of output, techniques for estimating future agricultural production and supply are much less refined than those for demand projections. A technique now used by most developing countries is the " response coefficient " or " yardstick," which is an estimate of the average production response to a particular development measure, such as fertilizer, improved seed, or irrigation. Since many such measures must be used in combination, however, there is increasing recognition of the limitations of this approach and of the need for more refined and comprehensive production functions, and also for linear programing and input-output techniques.

While the Leontief method of input-output analysis is useful for analyzing the interindustrial relationships within the economy, it has only limited application in agricultural planning in developing countries. This is because so much of agricultural output (except for exports) goes directly into final consumption by households and because the sector uses rather few inputs from other sectors, though this situation of course changes very radically as development takes place. While the construction of such an inter-industry table requires very detailed statistics, it has been attempted in a number of developing countries. A simplified approach in more general use is the construction of commodity balances, although this does not permit as accurate an estimation of the intermediate goods needed for achieving the production targets.

The application of rational criteria in the choice between investment projects and alternative combinations of scarce resources still presents frequent difficulties. The most comprehensive investment criterion is the cost-benefit analysis, which is now widely used, especially for irrigation and similar projects. It has been increasingly recognized, however, that the traditional technique frequently requires modification for use in developing countries. Attempts have been made – for example, in India, Nigeria, and Pakistan – to replace market prices by accounting or shadow prices, which reflect more accurately the real costs of scarce resources in the economy. A practical method of determining such prices has, however, still not been established. Furthermore, it is difficult to apply cost-benefit analysis to certain types of projects, such as infrastructure projects whose benefits are either not directly measured by the market or are spread over extended time periods.

The capital-output ratio is a tool that is employed in the formulation of most plans, but its weaknesses as an investment criterion for project formulation are now widely recognized. Moreover, agricultural production decisions depend on the institutional framework, the influence of which cannot be appraised with precision and which is not reflected in more sophisticated ratios.

Many of the first plans were for a ten-year period, but it was soon found that plans of this duration required too frequent revision. Most countries therefore now formulate plans for some four to six years. In an increasing number of countries, however, these medium-term plans represent successive stages on a long-term growth path which has been mapped out in a " perspective " plan covering 10 to 20 years. In some countries, with each new medium-term plan the perspective plan is " rolled " forward for an additional period. A few countries, especially in Africa, have formulated " interim " plans of two or three years' duration, in order to set the stage for the beginning of full-scale planning by carrying out basic surveys and essential reforms.

The techniques of perspective planning are essentially the same as in medium-term planning, although the content must naturally be less detailed and more uncertain because of the more distant time horizon. A perspective plan is of great value as it indicates the long-range needs of the economy for which some provision has to be made in the current medium-term plan, and also helps to reveal any inconsistencies among the medium-term objectives. The training facilities that are needed can only be assessed over

a long-term perspective. Such a perspective is particularly required in agricultural development because of the long-term nature of many projects and policies, such as tree crop production, irrigation schemes, land-use policies, and programs of nutritional improvement.

In addition to a medium-term plan, and in some cases a perspective plan as well, most countries also have annual operational programs. Very few developing countries, however, have been able to establish a practical system of translating medium-term plans into annual operational programs that can be integrated with annual financial budgets. This is partly due to inadequate attention to problems of phasing in the medium-term plan.

Planning organization

Most developing countries have been able gradually to strengthen their planning organization during the decade. Although actual changes in organization are sometimes difficult to distinguish from mere changes in title, it is possible to discern some general patterns and trends.

Some kind of central planning machinery has now been established in almost every developing country. As a rule the highest planning body, responsible for all the major policy decisions concerning planning, is a committee or council, often a cabinet committee, presided over by the President or Prime Minister. In addition, many countries have set up a subsidiary body, usually under a cabinet minister, which is able to meet more frequently and keep in closer touch with the technical planning work. These and similar committees to deal with particular aspects or sectors consist mainly of ministers and officials, but provision has increasingly been made for the participation of private individuals as well. In countries with a federal structure, such as India and Nigeria, where agriculture is a state or regional subject, an additional problem in agricultural planning organization has been to secure a balance between central and regional interests. Many countries are trying to plan "from below" rather than "from above," but there are rarely sufficient trained personnel to make possible the establishment of a suitable planning organization for this purpose.

A few countries have established machinery to ensure that nutritional considerations are taken into account in agricultural planning. This is included among the functions of, for example, the National Nutrition Institute in Colombia and the Bureau of Studies in Nutrition in the Institute of Agricultural Research of Morocco.

To carry out the technical work involved in planning, most countries now have a central planning secretariat. At the beginning of the decade this was frequently outside the normal machinery of government, but it is now generally located in the President's or Prime Minister's office or, increasingly, in a separate planning ministry.

The functional ministries have tended to participate more and more in both the formulation and implementation of plans. In addition to a unit for the agricultural sector in the central planning secretariat, many countries, especially in the Far East and the Near East, have set up a planning committee and a technical planning unit in the agricultural ministry to prepare proposals for the plan and arrange for their implementation. The implementation of the agricultural plan is now generally in the hands of the various ministries responsible for different parts of the agricultural sector. For individual large-scale projects, however, special bodies are often established, such as the Khuzistan Development Authority in Iran and the East Ghor Authority in Jordan. For the implementation of most aspects of the agricultural plan the extension and other field services of the agricultural and related ministries, discussed in Chapter IX, are of crucial importance.

Organization for the follow-up and evaluation of plans is so far not very advanced in most countries. Periodic follow-up reports on the progress of implementation are essential, so that modifications can be made in the annual plans in the light of changes since the medium-term plan was formulated. In most countries there is provision for such periodic reports, usually on an annual basis but quarterly in a few countries, including Iran and the United Arab Republic. Further work is needed, however, to devise effective methods of reporting that will provide the essential information without involving too cumbersome procedures.

The detailed evaluation of plans is provided for in very few countries, but it is essential if the effectiveness of planning is to be improved in successive plan periods. It depends heavily on the periodic follow-up reports referred to above, and involves the final evaluation of completed projects and programs so as to estimate their impact on the agricultural sector and on the economy as a whole.

In the centrally-planned economies there have been substantial changes in planning organization during

the last decade, most of them aimed at greater flexibility. The main changes in the U.S.S.R. have been the separation of short-term and long-term planning, some decentralization of planning, and a reduction in the number of products whose production is planned at the center. Since 1955, the state has no longer laid down for each kolkhoz the area to be sown and the numbers of livestock to be kept, but only the quantity of products to be sold or delivered to the state. In 1962 the inspector-organizers of the newly-established territorial kolkhoz-sovkhoz boards were given a major role in production plans, but in March 1964 the provisions of 1955 were reaffirmed and the functions of the boards made purely advisory for all except deliveries to the state.

In the eastern European countries, planning methods and organization are very similar to those in the U.S.S.R., the plans often having been drawn up with the participation of U.S.S.R. experts. In these countries also there has been a substantial reduction in the directives given to collective and state farms. The approach to planning has been made much less standardized. The independence of the enterprises has been increased, as well as their responsibility for ensuring that the plan is carried out.

PLAN IMPLEMENTATION

While there have been many improvements in techniques and organization for the formulation of agricultural plans, their implementation still leaves much to be desired in most countries. A significant step forward, however, is that, in contrast to the beginning of the decade, it is now much more generally realized that the policies and measures needed for implementation are an integral part of planning and must be worked out in detail if the plan is to have any chance of success.

Apart from the neglect of such measures, the implementation of plans has suffered from a number of other handicaps during the past decade. As a result of political changes, many plans have been shelved or superseded when their implementation had hardly begun. Sometimes, as is always possible with agriculture, a run of unfavorable seasons has severely disrupted the implementation of the plan. But, in addition to special factors of this kind, all of the developing countries have been faced with difficulties resulting from shortages of trained personnel and of finance, and the absence of an adequate administrative structure. Many plans have consequently had to be revised and scaled down, and the implementation of many others has been delayed or prevented.

An illustration of the manpower difficulties is that in Sudan's current ten-year plan the number of additional trained technicians estimated to be needed for the implementation of the plan is 1,300, while the expected supply is no more than 820. The problem has been particularly acute in some newly-independent countries, where the supply of trained personnel has been depleted by the exodus of expatriate technicians after independence, and it has generally proved quite impossible to replace them as quickly as is necessary by technical assistance personnel or trained nationals.

Financial difficulties have also been frequent. In a number of cases, expectations of foreign financing have failed to be realized, although this has generally had only a limited effect on agricultural development, since most agricultural projects have a fairly small foreign exchange component. Falling world prices for agricultural products and balance of payments problems have reduced the amount of foreign exchange available for investment. Costs have often risen more than expected during the course of implementation of the plan.

Failure to implement the agricultural part of the plan has frequently had serious effects on the success of the plan as a whole. Generally, agricultural exports are relied on to provide a large part of the foreign exchange needed for the import of capital goods. Lagging food production has necessitated the use of scarce foreign exchange for food imports or has contributed to inflationary pressures.

Achievement of planned targets

Very few data are available on the progress of the implementation of plans and the extent to which their agricultural objectives have been achieved. Brief notes follow, region by region, on some of the few countries for which there is a little information,

mainly those that have already completed a series of plans. The information is not detailed enough, however, to reveal very much. Institutional changes and related measures are difficult to quantify. The following notes are therefore confined mainly to comparisons of planned levels of investment and production with those that have actually been achieved, but even here the perspective is still generally too short for satisfactory evaluation. Especially in the agricultural sector, the investment during the plan period may contribute mainly to the achievement of production targets in future plan periods. Short-term comparisons of agricultural production with planned targets often do little more than confirm the overriding influence of the weather.

Latin America

Argentina's second five-year plan (1953-57) set targets for all the main agricultural products. Production had declined below the prewar level, and it was proposed to increase the cultivated area by 45 percent over the 1947-51 average. Livestock numbers were also to be sharply increased. A comparison of actual production in 1957/58 with planned levels indicates, however, that in almost all cases it fell short of the targets. Both cultivated area and livestock numbers actually declined. Production targets were reached only for cotton, beef and pork (at the expense of declines in cattle and pig numbers), although those for rye, barley, oats and sugar were almost attained.

Most of the targets under Chile's plan for agricultural and transport development (1954-61) were more or less reached, the main exceptions being rice and sugar. A progress report on the first two years of the current ten-year plan (1961-70) indicates that the gross domestic product (GDP) has increased roughly as planned. Progress in agriculture, mining and industry has not been satisfactory, however, and most of the increase was in construction and public services. While total investment had reached 94 percent of the planned level, agricultural investment was only 76 percent of the target.

Far East

During Ceylon's first six-year plan (1947/48–1952/53) 40,000 hectares of land were developed, chiefly for paddy production, as compared with a target of 52,000 hectares. Thanks to the improvement in the terms of trade that resulted from the Korean war boom, it was possible to finance two thirds of the total development expenditure from current government revenue, and per caput real income rose by 14 percent between 1948 and 1953. The six-year program of investment (1954/55-1959/60) was suspended on the change of government in 1956, and the ten-year plan (1959-68) was dropped for similar reasons. Under the short-term implementation plan (1961/62–1963/64) progress fell short of targets largely because of financial difficulties. Paddy production was slightly less than planned, and the GDP increased by only 6.5 percent over the three-year period.

India's first five-year plan (1951/52–1955/56) achieved its principal objectives. National income at constant prices increased by 3.4 percent a year, as against the planned annual increase of 2.1 percent. An increase of 20 percent in food-grain production exceeded the planned target, and the production of sugar and oilseeds was also more than planned. Compared with the target of 8 million hectares, some 6 million hectares of land were brought under irrigation. Owing to the optimism derived from the good weather during the first plan and the success of its food program, priority in the second plan (1956/57–1960/61) was given to industrialization. Food-grain production again increased by 20 percent, but this was less than planned. The growth of population was found to be 2.3 percent a year, as against the expected rate of 1.3 percent, and per caput food production increased by only 4 percent during the five years.

During the first three years of India's third plan (1961/62–1965/66) the production of food grains and of several other important crops has remained below planned levels. The immediate reasons for this are unfavorable weather, combined with shortfalls in the main agricultural input programs, including irrigation, fertilizer and seed campaigns. More basic reasons appear to be inadequate economic incentives, insufficient co-operation between the central and state governments, and the shortage of trained personnel. Compared with the original target of 100 million tons of food grains in 1965/66, which would have brought self-sufficiency, no more than 90 to 92 million metric tons are now expected. Sugar-cane production in 1963/64 was insufficient to provide for the manufacture of the target of 3.3 million tons of sugar, and the target for tea production has had to be reduced.

Japan provides an unusual example of consistent overfulfillment of planned targets. Two years after the beginning of the economic self-support five-year plan (1956/57–1960/61) the annual rate of growth of the economy greatly exceeded the 5 percent expected, and many of the plan's targets had already been reached. Similarly, under the new long-range economic plan (1958/59–1961/62) which replaced this plan, most of the targets had already been achieved by the end of 1960. From 1956 to 1960 the annual rate of economic growth was about 10 percent, while agricultural production increased by about 4 percent a year. During the implementation of the current income-doubling plan (1961/62–1970/71), however, imbalances have developed in the economy, including a lag in the rate of growth of agricultural production because of decreasing land and labor.

Although total development expenditures during Pakistan's first five-year plan (1955/56–1959/60) were only 10 percent less than estimated, physical achievements fell considerably short of targets. The main causes included unfavorable weather, deteriorating terms of trade, higher project costs because of increasing world prices, and the arrival of external aid at a rate slower than expected. National income increased by 11 percent instead of the planned 15 percent and, with the population rising faster than had been foreseen, the increase in per caput income was negligible compared with a planned rise of 7 percent. The irrigation and land reclamation program fell behind schedule. Food grain production exceeded the target in the last year of the plan but the average for the five-year period was much less than planned, while except for sugar the output of most other commodities was below target levels.

Implementation of Pakistan's second five-year plan (1960/61–1964/65) has been much more satisfactory. The GNP seems likely to have increased by about 29 percent, which is well ahead of the target of 24 percent. Agricultural production has increased at an average annual rate of about 4 percent during the first four years of the plan. As a result of improved methods of cultivation, fertilizer use and good weather, food-grain production in 1963/64 was 6 percent above the target level. Cotton production also was more than planned in 1963/64, but jute production has declined.

In China (Mainland), food-grain production (including pulses and the grain equivalent of potatoes and sweet potatoes) in 1956 exceeded the target set in the first five-year plan (1953-57), but production of industrial crops was less than planned. For 1957, therefore, targets were raised somewhat for food grains and lowered for cotton. In the final year of the plan, grain output, although 6 million tons short of the revised goal, slightly exceeded the original targets, which were attained for cotton, tea and tobacco but not for other crops. Targets for livestock products in most cases failed to be met by fairly large margins.

The second five-year plan of China (Mainland), (1958-62) appears soon to have been replaced by annual plans. Whereas tentative targets called for 240 million tons of food grains and 2.15 million tons of cotton in 1962, by 1958 production was claimed to have reached 375 million tons of food grains and 3.35 million tons of cotton, with large gains for all other products also. In 1959, however, the figure for 1958 grain production was scaled down to 250 million tons, and the main agricultural targets for 1959 were adjusted to a 10-percent increase over the revised 1958 figure. The 1959 grain crop was officially estimated as 270 million tons, as against the target of 275 million tons, and most major products were reported to have reached or exceeded targets set for 1962, the main exception being chemical fertilizers, vegetable oils, sugar, and livestock. No official figures of agricultural production have been issued for subsequent years, but there have been heavy imports of grains.

Near East

In Afghanistan, the implementation of the first five-year plan (1957/58–1961/62) was reported as satisfactory. Realized expenditures of the Ministry of Agriculture were almost 80 percent of the total budgetary appropriations, although they fell short of the sums originally allocated in the plan. Much of the increase in agricultural production, however, was due to factors other than those generated by the plan, such as favorable weather and better administration of the quota system for cotton acreage. During the first two years of the second five-year plan (1962/63–1966/67) foreign assistance was below expectations, but the increase in government revenue was almost as large as planned. Whereas grain production stagnated, cotton production doubled in two years as a result of price increases and the use of chemical fertilizers and improved seeds.

In Syria, the GDP at constant prices rose by an

average of 10 to 11 percent per year during the initial four years of the first five-year plan (1960/61–1964/65), as compared with the planned rate of 7 percent per year. This appears to have been caused very largely by the good weather and bumper harvests of 1962/63 and 1963/64. Development expenditures were considerably less than planned. Actual expenditures were only 44 percent of budgetary allocations for irrigation and land reclamation, and 29 percent for other agricultural projects, while the budgetary allocations in turn fell short of planned expenditure. Difficulties were also caused by shortage of skilled laborers as well as trained staff, and the lack of coordination and co-operation between government departments.

Between 1959/60 (the base year) and 1963/64, the fourth year of the first five-year plan in the United Arab Republic, the value of agricultural production at constant prices increased by 12.5 percent compared with the target increase of 28 percent by the end of the plan period. Comparing the base year with the final year of the plan, cotton production rose by only 10 percent as against the planned increase of 24 percent. The production of rice in the same period, however, increased by 50 percent, as compared with the target rate of 25 percent. While total development expenditures in the first three years kept pace with planned averages, investment in agriculture appears to have lagged behind. Expenditure on industrial development exceeded the target rates.

Africa

Under Dahomey's four-year plan (1962-65), now reported to be suspended, the production of cotton, groundnuts and palm oil has been less than planned, but forestry production targets mostly appear to have been realized. Private investment has been much lower than expected while, partly because of administrative deficiencies, some of the public investment has failed to produce the expected returns.

For Kenya, details are available of the implementation of the plan to intensify the development of African agriculture, better known as the Swynnerton Plan, which was introduced in 1954. The mission of the International Bank for Reconstruction and Development (IBRD) that visited Kenya in 1961-62 concluded that many aspects of the plan had been remarkably successful, particularly in the more intensive zones suitable for mixed farming. In the purely pastoral zones of lower rainfall, however, progress had been slow. The plan envisaged an increase in "cash crop" production from £3.3 million in 1955 to about £7.4 million in 1960-62, and all the indications are that this has been realized.

The level of investment planned in Mauritania's three-year plan (1960-62) was found to have been overambitious, and resources were insufficient for its full execution. Some of the planned projects were shown to have been premature owing to the lack of educational, administrative and economic infrastructure, and the plan was revised accordingly.

The implementation of Senegal's four-year plan (1961-64) has been hampered by administrative weaknesses, as well as shortage of technicians and insufficient prior study of investment projects. According to the mid-term progress report the available public finance exceeded the target, but actual investment was behind schedule, while there were difficulties in securing private capital. The report envisaged that the growth of GNP would reach only 5 to 6 percent a year instead of the target rate of 8 percent. Sectoral targets, including those for agricultural production, have therefore been lowered.

Eastern Europe and U.S.S.R.

Agricultural production has generally fallen short of planned targets in the eastern European countries and the U.S.S.R. Difficulties have resulted from too rigid and too centralized planning, although steps have been taken, as already noted, to remedy this. Because of the priority given to industrialization, investment in agriculture was insufficient for the fulfillment of agricultural targets. When industrial production lagged behind planned targets, further resources of capital and man power were transferred from agriculture, while agriculture also suffered from shortages of the production requisites that should have been forthcoming from the industrial sector. Farm prices were kept low in order to provide industrial workers with cheap food and to maximize returns from the turnover tax, and the incentive to increase production was consequently reduced. Plans have also been upset by the sharp changes in the organization of farming, including accelerated collectivization in most countries, the return to peasant farming in Poland, and the dissolution of many

TABLE VIII-4. - AGRICULTURAL PRODUCTION IN THE U.S.S.R. COMPARED WITH PLANNED TARGETS

	Actual production			Planned production				
	1950	1955	1960	1955 [1]	1960 [2]	1965 [3]	1970 [4]	1980 [4]
	Million tons							
Grains	81.2	106.8	134.4	113.7–121.8	180.0	160.0–180.0	229.3	294.8–311.2
Cotton	3.5	3.9	4.3	5.4–5.8	6.1	5.7–6.1	8.0	10.0–11.0
Flax	0.25	0.38	0.42	0.35–0.37	0.51	0.58	...	...
Sugar beet	20.8	31.0	57.7	34.3–35.4	47.7	70.0–80.0	86.0	98.0–108.0
Sunflowerseed	1.8	3.8	4.0	2.7–2.9	...	...	...	...
Potatoes	88.6	71.8	84.4	...	132.8	147.0	140.0	156.0
Vegetables	9.3	14.1	16.6	...	30.7	...	47.0	55.0
Meat (carcass weight)	4.9	6.3	8.7	8.8–9.3	12.6	16.0	25.0	30.0–32.0
Milk	35.3	43.0	61.7	51.2–52.9	83.8	100.0–105.0	135.0	170.0–180.0
Eggs (million units)	11.7	18.5	27.4	...	47.0	37.0	68.0	110.0–116.0
Wool	0.18	0.26	0.36	0.36–0.45	0.47	0.55	0.80	1.04–1.16

[1] Fifth five-year plan (1951-55). - [2] Sixth five-year plan (1956-60). - [3] Seven-year plan (1959-65). - [4] Twenty-year plan (1961-80).

collective farms in Hungary followed by renewed collectivization. In the U.S.S.R. the skilled manpower in agriculture has declined more rapidly than planned.

Table VIII-4 compares agricultural production in the U.S.S.R. in 1955 and 1960 with the targets of the fifth and sixth five-year plans (1951-55 and 1956-60). The production targets in the fifth plan were achieved only for flax and sunflowerseed. The minimum 1955 objectives for milk and sugar beet were not reached until 1957, for meat in 1959, wool in 1960 and cotton in 1963. By 1956, however, grain production had exceeded the maximum objective for 1955, as a result of the opening up of the virgin lands, which had been decided on in 1954 when it was seen that the target could not be reached by means of higher yields.

Thus the targets of the fifth plan were realized late and through a substantial modification of the means originally envisaged. Except for sugar beet, however, the targets of the sixth plan were reached neither in 1960 nor in the four subsequent years, and before the end of the plan period it was replaced by the seven-year plan (1959-65). For grains and cotton the seven-year plan retained for 1965 the target previously set for 1960, and for eggs the 1965 target was lower than that for 1960. Even these reduced targets appear unlikely to be realized, in spite of the increased resources devoted to agriculture. In 1964, which was a favorable season, total agricultural production was only 10 percent more than in 1958, whereas the seven-year plan called for an increase of 70 percent between 1959 and 1965. Table VIII-4 also includes the targets for 1970 and 1980 from the twenty-year perspective plan.

FISHERIES PLANNING

In the first postwar decade, significant government intervention in the fishery industry was confined mainly to Europe and a few other countries such as Canada, Japan and South Africa. In most of these countries the primary aim of policy was to restore catches and fishermen's real incomes to their prewar levels, and to modernize fishing fleets.

In the last decade, not only has government planning of fishery development become more widespread, but its objectives have also changed. The main objectives are no longer the recovery of some previous position but the expansion of the industry to new levels. In many cases, also, objectives have been more precisely defined than previously – for example, self-sufficiency in fish production, or even specific production targets.

The methods of implementing fishery objectives have become more varied. In addition to tariff

protection and financial assistance through subsidies and tax privileges, more direct means of encouraging fishery development have often been adopted. These have included the setting up of new fisheries commissions and agencies with more or less comprehensive powers of control.

The planning of fishery development presents a number of special difficulties, in particular because of the lack of knowledge about the size, mobility and reproducibility of the resource base, and the common property characteristic of most marine resources. In an attempt to overcome the first difficulty, fishery development plans often lay considerable stress on marine research. The second difficulty can only be met by the international coordination of national fishery plans and policies.

In the developed countries of western Europe and North America, the fishery industries are facing a slow growth in the demand for their products and a decline in the yield from traditional fishing grounds. In this situation many governments have pursued a dual policy, aimed at the protection as well as the development of the industry. Most developed countries have attempted to maintain the industry's competitiveness and the living standards of the fishermen by such means as price supports, subsidies, and tariff protection. The development of the industry has usually been based on programs for market expansion, increased productivity and the discovery and exploitation of new fishing grounds.

Considerable efforts have been made to overcome the low-income elasticity of demand for fish in developed countries by advertising, and marketing campaigns. The development of "luxury" products, such as shrimps and other crustaceans, has also been encouraged, often with the assistance of government subsidies.

Programs for increasing productivity and reducing costs have generally been directed at the fishing sector of the industry, although sometimes they have also included the processing and marketing sectors, as in some of the Scandinavian countries, where there has recently been much emphasis on quality improvement. The most common aim is the rationalization and modernization of the fishing fleet, and the western European countries and Japan have continued to provide government grants and loans for the purchase of new vessels and equipment, as well as subsidizing technological research.

But despite modernization the fishing fleets of the developed countries have still experienced increasing difficulties in operating profitably on their traditional fishing grounds in the North Atlantic and Pacific oceans. In many cases the catch per unit of fishing effort declined because of the effect of the increased fishing power on the fish stocks. In these conditions, the Scandinavian countries, for example, have taken steps to conserve the stocks of their traditional fishery by extending their territorial limits. Other countries have adapted their vessels and searched for new fishing grounds further from their home bases. The most striking example of this latter policy is Japan, whose fishing fleet now operates in all the oceans of the world. Many developed countries pursue both policies simultaneously; for example, the new ten-year program for fishery development in the United States emphasizes both the conservation of present fish stocks and the discovery and exploitation of new ones.

In addition to that of Japan, the fishing fleets of the U.S.S.R. and (to a smaller extent) Poland roam the oceans. In the centrally-planned countries, production targets are set by a central body and detailed requirements for plan fulfillment are worked out, including programs for oceanographic research and the phased expansion of the fishing fleets.

In the developing countries all types of fishery planning can be found. Many of the fishery programs are based on the overall needs of the economy and economic criteria are decisive, as in most developed countries. In other countries, however, because of the rapidly expanding populations, nutritional requirements are predominant in fishery planning. In some countries, for example, those of west Africa, the fishery development program has an important role to play in the achievement of self-sufficiency in food production to save scarce foreign exchange.

Many developing countries have based their fishery development program on an expanded exploitation of traditional fishing grounds through the mechanization of vessels and the introduction of more efficient gear. Some developing countries, however, have successfully developed a modern industrial fishery. These include Peru, which now has the largest fish catch in the world. A number of other countries are attempting to follow the Peruvian example, including its neighbor, Chile, and also Ghana, the Ivory Coast and Senegal in west Africa, and Ceylon, Hong Kong, India and Pakistan in the Far East.

Some countries, such as Ghana, are attempting to build up their own industrial fishing fleets. In many developing countries, however, lack of capital

and trained manpower makes this impossible at present. Their main efforts are therefore directed at encouraging foreign companies to set up bases in the country, with some sort of local participation in the fishing and marketing arrangements.

In a number of developing countries new machinery for fishery planning has been established during the last decade. Examples include the Executive Council of Brazil's Federal Fisheries Development Authority (SUDEPE), which was set up in 1962 with responsibility for defining the national fishery policy and supervising the implementation of the fishery development plan. In Mexico, a National Advisory Commission on Fisheries was established in 1961 to prepare an annual program for fishery development. An Advisory Committee on Aquatic Resources, including four representatives from the private sector, was set up in the Philippines in 1963 to advise the government on fishery policies and development programs. In Syria, a Higher Council established under the Fisheries Act of 1964 advises the government on fishery planning and development.

FORESTRY PLANNING

During the last decade forest policies in many countries have been more clearly defined and have increasingly been expressed quantitatively in the form of plans and programs. The concept of the forestry sector itself has been considerably enlarged. It has become generally accepted that forest resources and forest industries must be planned and developed in conjunction. It has also been recognized that forestry must be integrated with the other sectors of the economy, with respect both to the role of forests in land use and to that of forestry production, industry and trade in the economy as a whole.

In many countries there have been substantial changes in the objectives of forest policy or in the relative importance accorded to these objectives. This has been due to such factors as the impact of urbanization, industrialization, expanded communications and the increased demand for leisure space in developed countries; the growing pressure on the land and the changing pattern of agricultural land use in the developing countries; and, above all, the sharp rise in demand for forest products.

In the early postwar years the main emphasis was on wood production, and priority was given to the improvement of existing forests, afforestation and transport. When conditions had returned to normal after the immediate postwar period, more attention was devoted to forest conservation problems and to the role of the forest in soil and water conservation. During the last few years there has been growing awareness of the multiple role of the forest, particularly for recreation and leisure.

Especially in the developing countries there has been a shift of emphasis from forest resources conservation to forest resources planning and management. This has resulted from the expanded use of all the products and services provided by the forests and from the growing pressure on forest lands. There is also growing appreciation of the role of forest industries in economic development. A major consequence has been a renewed emphasis on wood production. Plantations of quick-growing species are being expanded rapidly as the basis for forest industries, and efforts made to realize the potentialities of the heterogeneous tropical forests. Transport is coming to be recognized as a key factor in the improvement of the forestry sector in most of the developing countries.

The consideration of regional and world trends in forest products supplies and requirements, with their implications for international trade, has begun to exert a major influence on forestry planning. The study of European timber trends and prospects, published in 1954, has been followed by a new appraisal up to 1975 and by a series of similar studies for the developing regions. These studies have made possible a much more systematic approach to forest policy and development.

The progress achieved in formulating and implementing national forest plans and policies has varied considerably in different parts of the world. In the developed countries, in view of the prospects for a further rise in demand for industrial wood, major emphasis has been placed on increasing forest productivity. In Europe, growing industrialization and urbanization and the changing pattern of agriculture have resulted in a great deal of attention being paid by public authorities to the physical and social roles of the forest. Considerable forest areas have been lost, mainly to housing and industry,

but afforestation has progressed, partly with the abandonment of marginal farm lands. On the whole, timber supply has been the main objective of forest policy in Europe during the decade. The European countries now envisage a fundamental reappraisal of their forest policies in order to raise forest output, but a gap is foreseen which by 1975 may be of the order of 40 to 70 million cubic meters, depending on the rate of economic growth achieved.

In the U.S.S.R., the forests are one of the greatest natural assets, and particularly since the start of the industrialization drive they have played an important role in economic growth. The U.S.S.R.'s forest policy is based on large-scale afforestation in the south and the utilization of untapped forests in the north and east, where big wood-industry combines with mechanical and chemical processing units, including pulp and paper industries, have been established. The sixth five-year plan included provisions for massive forest restoration and expansion operations, including improvement of natural forests, afforestation with fast-growing species, and the establishment of shelterbelts on land belonging to the kolkhozes. During the past few years, attention has been concentrated on the integration of forest operations and forest industries, together with the mechanization and expansion of the forest road network, so as to increase and rationalize the harvesting and processing of wood.

Japan has introduced a national forest plan which is revised periodically on the basis of consumption forecasts. Basic forest legislation has recently been enacted which gives special attention to private forestry and human factors, and lays particular emphasis on forest productivity.

Australia and New Zealand have carried out studies of their long-term wood requirements which form the basis for forest policy decisions. The aim of the Australian forest policy is self-sufficiency in wood, and an expanded planting program is under consideration. The New Zealand forest policy, on the other land, aims at a considerable expansion of the country's steadly increasing exports of forest products.

In the United States, progress in developing outdoor recreation has highlighted the activities connected with the multiple use of the forest during the last few years, but all forest products and services are in greater demand owing to the pressures of an expanding economy and a growing population.

In Canada, the Forest Act has been revised and a central Department of Forestry, headed by a Minister of Forestry, has been established. Forest research institutions have been considerably expanded and federal-provincial co-operation in the field of forestry has been promoted.

Several countries in Africa have introduced new forest policies and legislation during the decade, but many of the measures adopted have not been fully implemented, mainly because of the lack of qualified staff. A related problem is the inadequacy of forestry research; many silvicultural questions concerning the African forests still remain unanswered and only a small percentage of the forest species are used commercially. Paper production has attracted particular attention owing to the heavy imports of paper. The technical problems of the utilization of mixed African woods for paper manufacture have been solved in some countries, but the investment capital required for the establishment of industries on a competitive basis has not yet been forthcoming. Reforestation has continued through the decade, but on too small a scale to meet the future needs of the region, and with few exceptions little attention has been paid to production for the export market. Increased interest has been taken in plantations of fast-growing species, but more attention has been devoted to exotic species than to indigenous ones, the possibilities of which still remain largely unexplored. Wildlife management has also retained the attention of various African governments, and basic laws have been adopted in several countries as regards hunting and the protection of nature.

In the Far East, the past decade has in general been a period of considerable progress in forestry and forest industries development, the major limiting factors being the insufficiency of funds for investment and, to some extent, of qualified personnel. Forest policies have been increasingly integrated with land-use policies, and in many areas the importance of the forests' protective role has been fully recognized. Most countries have put into effect forestry development plans based on national wood consumption and production forecasts, but as yet the plans prepared by many of the wood-surplus countries fail to give sufficient weight to the opportunities for forestry industries development and for increased foreign trade, particularly within the region. Because of the disadvantages of the heterogeneous natural tropical forests as a basis for raw material supply, interest has centered increasingly on the establishment of quick-growing planta-

tions, together with the long-range planning of forest industries development.

In China (Mainland), the first forestry program specifically based on resource assessment was set out in a perspective plan for agriculture covering the years 1956-67 (later revised to 1959-68). The program assumed total existing reserves of 5,400 million cubic meters. Annual requirements (in cubic meters) for industrial wood were estimated to rise from 47 million in 1962 to 75 million in 1967, and 118 million in 1972. Some 105 million hectares were to be afforested within the plan period, to give a forest cover of 20 percent of the total land area. The present policy is to devote about half of the planting area to economic plantations of fast-growing species, concentrated mainly in areas south of the Yangtse river. By 1960 the results of poor establishment practices in the new forests had become apparent, and measures were adopted to raise standards, while much emphasis has also been placed on the maintenance of existing plantations and on the conservation of the remaining natural forest resources.

In Latin America, there has been a growing awareness of the importance of forestry in land use, and the forestry aspects of land settlement and land reform increasingly affect the formulation and implementation of the region's forest policies. Numerous systematic inventories and preinvestment surveys of forest resources have been undertaken during the decade. However, the implementation of forestry development plans, based on a careful assessment of requirements and resources, has still lagged behind. Forest industrialization has progressed considerably, and much interest has centered on the development of projects for pulp, paper and board industries, with the aim of reducing imports. The need for stronger programs of afforestation, geared to forest industries development plans, is widely recognized. In some countries, considerable progress has been achieved in afforestation, particularly for industrial purposes. However, forest administrations are still lacking in personnel and funds, forest clearing still goes unchecked in many countries, and forest industries do not always seem to be planned to offset the continued increase in the region's adverse trade balance in forest products.

In the Near East, there has been a growing awareness of the economic importance of forestry. A noteworthy result has been the acceptance by foresters and agriculturists alike of the need to integrate forestry with general land-use planning and agricultural development. The important role of forestry in protecting the scarce water resources of the region has thus gained wider recognition, particularly in connection with watershed management, erosion control, range management, and the protection of agricultural crops by means of windbreaks and shelterbelts. Combined with the increasing drain on available foreign currency caused by the rising imports of forest products, this has led many governments to introduce or amend forest policies and legislation, and to reorganize their forest services. The measures aimed at increasing production, however, have often not been sufficiently translated into action, owing to lack of funds for the forestry services and lack of technically qualified personnel. There has been a substantial increase in forest plantations, particularly of quick-growing species such as poplar and eucalyptus. Some countries, such as Cyprus, Syria, and the United Arab Republic, have established industries based on these plantations for the production of matches, particle board, parquet flooring, etc. The rate of plantation however, still remains insufficient even to keep up with the increase in population.

INTERNATIONAL CO-ORDINATION OF PLANS

The need for the co-ordination of plans, on a regional or subregional basis, has been much discussed during the past decade. The unco-ordinated growth of production for export has been recognized as a major factor in the weakness of world markets for agricultural products. Co-ordination is also seen as offering the advantages of a larger local market and the division of labor, with consequent beneficial effects on consumption and on the scale of production.

The co-ordination of development plans is a specific objective of a number of the schemes for regional economic integration or co-operation discussed in Chapter III of this report. Apart from the European Economic Community, however, few tangible results have yet been achieved in this field and such progress as has been made has chiefly concerned the co-ordination of broad policies rather than actual plans.

An interesting exception is the perspective plan that has recently been proposed for the member countries of the Central American Integration Scheme. A Joint Planning Commission for Central America, composed of representatives of the Economic Commission for Latin America (ECLA), the Organization of American States (OAS), and the Inter-American Development Bank (IDB), has drawn up a document entitled *Guidelines for a policy of regional development for Central America*, to be used as a framework for the elaboration of specific projects. Total investment over the ten years 1965-74 is envisaged as 8,200 million pesos centroamericanos, of which 3,500 million is in the public sector. The planned rate of growth of GDP is 6.4 percent per year. Within this framework an agricultural program has been drawn up for 1965-69, involving the expenditure of 152 million pesos, of which 84 million is public investment. The agricultural program includes production and export targets for individual commodities, and its main objectives are the improvement of diets, the supply of raw materials for the region's industries, and increasing and diversifying exports.

In eastern Europe a main objective of the Council for Mutual Economic Assistance (CMEA) is the co-ordination of the plans of its Member Countries. Previously these plans covered varying periods, but they are now almost all aligned on the same terminal year. The promotion of greater specialization and division of labor has proved difficult in agriculture, except for a few special products, such as fruits in Bulgaria and Romania.

Examples are more numerous of the co-ordination of plans for the development of a particular resource in which more than one country has an interest. International agreement on the future division of the Nile waters was reached in 1959, and on the Indus waters in 1960. The four riparian countries (Cambodia, Laos, Thailand, and the Republic of Viet-Nam) are collaborating in the development of the Mekong basin. In Africa, the various countries concerned are collaborating in the development of Lake Chad, the Niger river, and the Senegal valley.

In the Near East, the problems encountered in agricultural planning are discussed at sessions of the Near East Commission on Agricultural Planning, which was established by FAO in 1963. This is likely to lead to the better co-ordination of agricultural plans in the region.

A world framework for the co-ordination of agricultural plans will be provided by the Indicative World Plan for Agricultural Development that is at present being prepared by FAO. The role of such a plan is taken up in the final chapter of this report.

Fisheries

The rapid development of high seas fisheries has led to the need for international co-ordination to ensure the conservation and rational utilization of fisheries resources. This is reflected in the existence of a considerable number of international commissions, such as the International Whaling Commission, and bilateral and multilateral fishery agreements, of which many have been concluded during the last decade.

Following the unilateral extension of territorial waters and fishing limits by a number of countries, the United Nations convened the first Conference on the Law of the Sea in 1958 in Geneva. The Convention on Fishing and the Conservation of the Living Resources of the Sea adopted by the conference has not yet been ratified. The second United Nations Conference on the Law of the Sea, held in 1960, was unable to arrive at an agreement on the breadth of the territorial sea and fishing limits. Following the failure of these two conferences to arrive at an agreement, a certain number of countries extended their territorial seas, in which they have exclusive jurisdiction over fisheries. Other countries have extended their fishing limits without increasing the width of the territorial sea. In some cases, arrangements have been made for a transitional period during which fishing by foreign nationals may continue. For example, an agreement was concluded in 1960 between the United Kingdom and Norway, based on British recognition of a Norwegian 12-mile fishing zone, but with the right reserved to British fishermen to continue for 10 years to fish in the outer 6-mile belt of this zone.

The European Fisheries Conference, held in London from December 1963 to March 1964, was attended by 16 European countries. The Conference adopted a draft Fisheries Convention, which provides that the coastal state has the exclusive right to fish and exclusive jurisdiction in fishery matters within a belt of 6 miles measured from the base line of its territorial sea. Between 6 and 12 miles, the right to fish would be exercised only by the coastal state and by such other contracting parties whose fishing vessels had habitually fished in that belt between 1953 and 1962. Fishermen of other contracting parties who have fished in the inner 6-mile belt

would be granted the right to fish there for a transitional period.

Forestry

A main aspect of the international co-ordination of forestry plans and policies has been the regional review of national plans and policies in the light of the regional studies already mentioned of trends and prospects of timber resources and requirements. These reviews have been carried out at sessions of the regional forestry commissions that have been set up under the aegis of FAO. The first world-wide review of wood requirements and supply prospects, based on these regional reviews, is to take place at the Sixth World Forestry Congress in 1966.

Chapter IX. - Research, education, extension and related services

Government activities and services for the promotion of agricultural development have expanded rapidly during the past decade. The growth of government planning of agricultural development was discussed in Chapter VIII. The present chapter is the first of a series of three dealing with the efforts that have been made to assist and encourage producers so that the objectives of agricultural development plans are realized.

Chapters X and XI deal respectively with price policies and other incentives to producers, and with the institutional improvements that are needed if such incentives are to have their full effect. This chapter covers the broad group of services concerned

TABLE IX-1. – CURRENT BUDGET EXPENDITURES DEVOTED TO AGRICULTURE IN DEVELOPING COUNTRIES

	Share of total current budget expenditures devoted to agriculture				Change in current expenditures on agriculture from first to second period	
	First period		Second period		Current prices	Real terms [1]
	Year	*Percent*	*Year*	*Percent*	*Percent*	
LATIN AMERICA						
Brazil	1958	4.2	1963	4.4	+ 624	+ 7
Chile	1958	1.0	1962	3.5	+ 593	+ 265
Colombia	1957	1.7	1964	4.1	+ 602	+ 216
Ecuador	1959	1.1	1963	2.8	+ 266	+ 218
Honduras	1957	7.5	1963	2.5	— 63	— 66
Mexico	1957	7.8	1961	5.1	+ 19	— 2
Peru	1958	1.8	1961	3.7	+ 254	+ 176
Venezuela	1958	7.4	1961	6.7	— 10	— 15
FAR EAST						
Ceylon	1954/55	6.9	1961/62	4.9	+ 32	+ 26
India	1954/55	0.8	1957/58	1.7	+ 262	+ 197
Japan	1956/57	3.8	1963/64	3.9	+ 143	+ 86
Korea, Republic of	1960	2.7	1964	3.3	+ 100	— 12
NEAR EAST						
Iraq	1956/57	3.2	1961/62	2.5	+ 35	+ 34
Lebanon	1957	4.2	1962	1.9	— 13	— 23
Saudi Arabia	1959	1.4	1963	1.8	+ 111	...
Syria	1955	3.0	1961/62	3.2	+ 123	...
Turkey	1955	2.4	1962	3.5	+ 297	+ 91
United Arab Republic	1954/55	4.2	1962/63	7.0	+ 258	+ 241
AFRICA						
Ethiopia	1956/57	1.2	1962/63	2.6	+ 225	...
Niger	1958	5.1	1961	3.7	+ 18	...

[1] Deflated by cost of living index.

with the development of improved methods and getting them over to the producer: namely research, education and extension,[1] together with some direct services closely related to extension, such as plant protection and animal health services. Governments also provide other direct services, for example, in respect of credit and co-operatives, and these are discussed in Chapter XI in connection with institutional improvements. Similarly, although governments are not the sole providers of the services under discussion, they play the major role in almost all countries.

There is little statistical information on the growth of these services and on the funds devoted to them. Some indication ought to be obtainable from the annual budgets of the agricultural and related ministries (Table IX-1). Here too, however, there is little information especially because in many countries the government budget does not make a clear distinction between capital and current expenditures. Moreover, there are wide differences in what is included under agriculture, so that too much significance should not be attached to variations between countries. However, the table is confined to developing countries, where most of the budget of the agricultural ministry is usually devoted to general administration and to the services discussed in this chapter, whereas in the developed countries a large part often consists of expenditure on price and income supports.

In the few developing countries for which data are available, the share of current expenditures devoted to agriculture appears to range from 1 to 8 percent. In most of them there has been some increase in this share in recent years. Even where the percentage share has declined there has nearly always been a rise in actual expenditures on agriculture, although it appears from the final column of Table IX-1 that this has not always been enough to offset the general increase in prices and costs.

The increase in government activities has greatly widened the responsibilities of the agricultural ministries, and not all of them have been able to adapt themselves to their wider functions. In some countries there has been a tendency to set up an autonomous body for each new function, so as to avoid bureaucratic delays. But while this may lead to speedier action in a limited field, such fragmentation of responsibiliy for the agricultural sector has many administrative disadvantages. Many governments have therefore found it necessary to review the overall administrative framework for food and agriculture. Usually the main aims of the reorganization have been to make the ministry responsible for all agricultural work, including animal husbandry, and to ensure close liaison with the bodies dealing with related subjects such as forestry, fisheries, land and water development, co-operatives, credit and marketing if these do not already come under the ministry.

Developments in fisheries and forestry administration, research and education are discussed in separate sections at the end of this chapter.

AGRICULTURAL RESEARCH

Although statistical data are lacking, it is clear that facilities for agricultural research have expanded considerably during the past decade. But while the number of institutions and the personnel engaged in agricultural research have increased, the agricultural research institutes and experiment stations in almost all countries continue to suffer from shortages of funds, staff, and equipment.

Agricultural research is carried out in most countries by governments, by semipublic bodies such as commodity marketing boards, and by private enterprise. There has been increasing recognition of the need for close co-ordination among the various bodies undertaking agricultural research, through a national agricultural research program in which each organization plays its part. But there has been less attention to the need for frequent contacts between research institutions and the bodies engaged in administering agricultural development, so as to ensure that research is directed toward what is most needed.

Many countries have come to recognize the advantages of making agricultural research the responsibility of the Ministry of Agriculture or an Agricultural Research Council. Such an arrangement generally makes it possible to ensure that a uniform research

[1] The postwar development of agricultural extension, education and research in the developing countries was reviewed in the 1961 issue of this report, to which reference should be made for further details.

policy is maintained, that there is close liaison with the field and extension services applying the results of research, and that agricultural research done in universities and agricultural colleges is linked with work done in the ministry. There are generally many advantages in establishing a comprehensive research service or department to cover all disciplines (with the possible exception of veterinary, fishery and forestry research), instead of having a separate research unit in each division of the ministry. Several countries – for example, Brazil, Cyprus, Ecuador, Ethiopia, and Libya – have recently established or are establishing such a comprehensive research service.

Some countries have attempted to obtain better co-ordination of agricultural research with extension and training, by setting up stations covering all three subjects (as in Argentina) or co-ordinating committees (as in Tanzania). Much, however, remains to be done, particularly in the co-ordination of research with farm management, extension, and planning and other economic aspects. In very few countries are the results of agricultural research used as fully as they might be in the planning of agricultural development. Similarly, agricultural research is rarely directed specifically enough to the provision of the basic data needed for agricultural planning purposes.

During the past decade a number of countries have established high-level agricultural research councils as co-ordinating bodies for research, such as the one that has existed for many years in India. The Indian Agricultural Research Council was substantially reorganized in 1954, and similar bodies were set up in Sudan in 1957 and Pakistan in 1964. In Sudan the research council includes several foreign scientists of international repute. The purpose of these councils is to establish a policy and program for research in line with the long-term agricultural development needs of the country, co-ordinate research with work in associated fields, review past research, and ensure that each branch of research plays its allotted part in the general program.

In some developed countries, such agricultural research councils have been given considerable autonomy, in order to obtain greater flexibility and to minimize delays resulting from annual government budgets and bureaucratic procedures. Examples are Australia, Canada, New Zealand, the United Kingdom and the United States.

A feature of recent years has been the increasing interest in research projects in developing countries taken by research organizations in developed countries. This interest may take the form of providing staff, equipment or funds, or the setting up of branch stations. For instance, research organizations in the Federal Republic of Germany and in Israel have supported and adopted research projects in various parts of Africa, following the system used by France for overseas research.

A few developing countries have concentrated their own research on the farmers' immediate problems and the requirements of the national development plan. This concentration on applied research has been made possible by the adaptation for local use of basic research results obtained by more developed countries in similar ecological zones and with similar cropping patterns.

The continuing shortage of qualified and experienced research workers has been a serious problem in developing countries. Many newly independent countries have lost most of their former staff of expatriate research workers. There is a grave danger, not only that research in these countries will suffer a severe setback, but that the results of previous research will be lost. Some countries have appreciated this situation and recalled some of their former expatriate research personnel to continue work until sufficient local personnel are trained. A few countries, such as Sudan, are making efforts to recover, co-ordinate and publish research results that are in danger of being lost in files and station records. In this way a great deal of unnecessary duplication of work and loss of time in the future can be avoided, and it would be advantageous if similar steps could be taken in other countries.

Some indications of the subjects that have been emphasized in agricultural research during the last decade may be obtained from the account of technological progress in Chapter VI. But the research that is needed for effective agricultural development is not confined to technological subjects. In most countries, especially in the developing regions, research into the economic and social aspects of agricultural development is still far from sufficient. Systematic programs of marketing research have been established in very few countries, for example, in India and Pakistan.

Regional co-operation

There has been a trend toward greater regional co-operation in research. In Africa there has already been co-operation of this kind under the aegis

of the Commission for Technical Co-operation in Africa South of the Sahara (CCTA) and its Scientific Council (CSA), working through bodies such as the Inter-African Bureau for Soils and Rural Economy which provide for exchange of information and the organization of technical meetings. This co-operation is expected to continue through the Organization for African Unity (OAU), of which the CCTA has now become part.

There has been a great increase in the past decade in the interchange of research information. So much is written in so many languages that the abstracting, translating and dissemination of research information are becoming more and more essential. Valuable services in this field are rendered by such bodies as the Commonwealth Agricultural Bureaux in the United Kingdom, the Royal Tropical Institute in the Netherlands, and the various French organizations which disseminate research information.

Agricultural research does not fall naturally within political boundaries but rather within ecological zones, where the crop and livestock patterns are fairly uniform. Consideration is now being given to the co-ordination of research within these zones, by the establishment of central co-ordinating councils to determine a general program and allocate it among the individual research stations. This idea has been partly put into practice in some parts of Africa, where for example the east African countries retained their joint central research organization after independence. The west African countries are now actively considering the resuscitation and widening of their former joint commodity research organizations, such as that for cocoa.

A significant example of regional co-operation in research is provided by the Near East Animal Health Institute. A network of laboratories has been established in Iran, Iraq, Lebanon, Sudan, and the United Arab Republic to study the main livestock diseases of the region, and Turkey is also joining in with a comprehensive set of laboratories to deal specifically with sheep diseases.

AGRICULTURAL EDUCATION AND TRAINING

During the last decade there has been increasing recognition that education and training has a crucial role to play in economic and social development. Education conferences organized by the United Nations Educational, Scientific and Cultural Organization (Unesco) in the main developing regions have helped to focus attention on the vast needs for trained manpower of the developing countries. Education planning and manpower planning have emerged as important new disciplines, and pioneer studies have been made of the economic returns from intellectual investment.

Education and training are now generally recognized as a fundamental aspect of social and economic advancement in rural communities. This has led to a rapid expansion of institutions of agricultural education at all levels in most developing countries.

The organization of agricultural education varies widely from country to country, in respect both of the authorities responsible for administration and finance, and of the manner in which the whole system of training is conceived and developed. In broad terms, however, the facilities in most countries fall into three categories: the university level for the training of professional personnel for research and senior administrative positions in the agricultural services; the intermediate level to provide for the very large numbers of skilled technicians required in all branches of agriculture, including the extension services; and the vocational level, at which young people are trained to enter farming and associated occupations, or practicing farmers helped to increase their efficiency.

As a result of FAO's Special Program for African Agricultural Education and Training, established in 1962, fuller information is available for Africa than for the other developing regions on the recent growth of facilities of agricultural education. In this region (excluding South Africa, as well as Libya, Sudan and the United Arab Republic which are included in FAO's Near East region) the number of universities with faculties of agriculture offering degree level courses rose from none in 1952 to 4 in 1955 and 17 in 1965. The annual outturn of agricultural graduates in the region rose from only 3 in 1955 to 249 in 1964 (Table IX-2).

There has been a comparable expansion at the intermediate level, and many new agricultural colleges or technical institutes have been established in Africa. In the training of farmers much emphasis

TABLE IX-2. – ANNUAL OUTTURN OF AGRICULTURAL GRADUATES IN AFRICA [1]

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
	Numbers									
Algeria	–	–	–	–	–	5	6	31	35	48
Cameroon	–	–	–	–	–	–	–	5	10	13
Central Africa	–	–	–	–	–	2	–	2	3	1
Congo, Democratic Republic of	–	–	–	–	–	–	–	–	1	–
East Africa	–	–	–	–	–	–	9	12	11	13
Ethiopia	–	–	11	17	24	23	43	31	36	52
Ghana	–	3	1	9	7	13	11	12	23	6
Liberia	–	–	–	–	–	–	–	–	4	4
Morocco	–	3	6	14	16	21	16	25	22	28
Nigeria	3	4	6	9	10	11	7	20	24	22
Tunisia	–	–	–	–	–	22	27	35	54	62
TOTAL [1]	3	10	24	49	57	97	119	173	223	249

[1] Excluding South Africa. The table also excludes Libya. Sudan and the United Arab Republic. which are included in FAO's Near East region.

was formerly given to farm schools for boys and young men who would, it was hoped, take up farming as a career and influence the more conservative farmers in their home areas. In general, this approach has met with little success. The numbers recruited have been small and the percentage of trainees who have eventually become established in farming quite insignificant.

This lack of success in training young men for farming has led to more emphasis on schemes for the training of farmers already in occupation of land and of others engaged in rural pursuits. This new approach to farmer training has met with marked success. The regular training of significant numbers of farmers, together with effective follow-up by the extension services, have made possible a real and sustained impact on farming development. In Kenya, for example, there were in 1955 10 small vocational training centers for training ex-school pupils in agriculture and animal health, with a total capacity of 290 pupils. By 1965 there were 33 centers for training in farming and related vocational subjects with a total capacity of 1,674, while during 1963 9,510 men and 4,294 women attended short courses.

In Latin America, the number of university faculties of agriculture rose from 34 in 1950 to 42 in 1955 and 54 in 1962; the annual number of students rose from 4,250 in 1950 to 6,707 in 1955, and of graduates from 748 to 1,113 during the same period.[2]

As regards agricultural institutes or short courses in Latin America, there are no statistics to indicate the trend during the decade, but some information is available for 1962.[3] In Bolivia, for example, there were technical or intermediate agricultural schools with about 450 students in 1962. In Chile in the same year, there were about 1,950 students in three-month courses and 160 in six-month courses at the institutes of rural education. There were about 40 schools of technical agriculture in Colombia with 2,873 students, and 41 adult training courses with 5,245 students. In Ecuador, there were four intermediate schools with an annual outturn of

[2] ALVARO CHAPARRO. *Un estudio de la educación agrícola universitaria en América Latina.* FAO. Rome. 1959. p. 8: INTER-AMERICAN COMMITTEE FOR AGRICULTURAL DEVELOPMENT (CIDA). *Inventory of information basic to the planning of agricultural development in Latin America: regional report.* Pan American Union. Washington. D.C.. 1963. p. 87.

[3] CIDA, *op. cit.*, p. 85.

15 to 20 students each, while in Paraguay five schools under the Ministry of Agriculture had about 200 students in nonuniversity courses and there were also three private agricultural schools at an intermediate level. In Venezuela, nine schools had a total of about 1,100 students and about 250 graduates per year.

In the Far East excluding China (Mainland), there were 74 agricultural colleges offering degree courses in 1959, of which 27 were in Japan, 20 in India, and 13 in the Republic of Korea.[4] The only statistics of the outturn of graduates from these colleges are those published by Unesco, which unfortunately do not appear to be comparable with those quoted earlier for Africa and Latin America. According to Unesco, in China (Taiwan) the annual outturn of agricultural graduates rose from 541 in 1957 to 686 in 1960, in China (Mainland) from 10,000 in 1960 to 17,000 in 1962, in India from 2,525 in 1957 to 3,415 in 1959, in Japan from 6,008 in 1957 to 6,862 in 1960, in Pakistan from 375 in 1957 to 416 in 1960, and in the Philippines from 359 to 789 during the same period.[5]

Diploma courses, intermediate between degree and vocational courses, are offered for the training either of government agricultural assistants (for example, in Burma, Ceylon, Malaysia and Pakistan) or of teachers for vocational schools (for example, in Thailand). In India, 116 training centers provide diploma courses for village level workers. In Japan, village level extension workers are trained at the prefectural agricultural experiment stations.

Vocational courses of two to four years' duration were offered in 1960 at over 800 secondary schools of agriculture in the Far East, of which about two thirds were in Japan. As in Africa, however, only a minority of the graduates returned to farming.

In the Near East, there are now 15 faculties of agriculture of which six are in the United Arab Republic, four in Iran, and one each in Afghanistan, Iraq, Lebanon, Sudan and Syria. Detailed information on the annual outturn of agricultural graduates is available for Sudan and the United Arab Republic, which are included under FAO's Special Program for African Agricultural Education and Training, referred to earlier. In Sudan, the outturn increased from 8 in 1955 to 27 in 1961, but fell back again to 5 in 1964. In the United Arab Republic it rose from 394 in 1955 to 1,511 in 1964. Unesco data indicate that between 1957 and 1960 the outturn of agricultural graduates rose from 44 to 124 in Iraq, and from 223 to 505 in Turkey.[6]

Facilities for intermediate and vocational agricultural education in the Near East also tend to be concentrated in the United Arab Republic. The number of higher agricultural institutes in the United Arab Republic increased from 3 in 1957 to 8 in 1963, and their enrollment from 270 to 7,160. Agricultural secondary schools increased from 16 in 1959 to 24 in 1963, their enrollment from 9,000 to 12,500

TABLE IX-3. – CHANGES IN THE PERCENTAGE OF ILLITERACY IN THE POPULATION OVER 15 YEARS OF AGE IN DEVELOPING COUNTRIES [1]

	Percentage of illiteracy			
	First period		Second period	
LATIN AMERICA	*Year*	*Percent*	*Year*	*Percent*
Chile	1952	20	1960	16
Dominican Republic	1950	57	1956	40
El Salvador	1950	60	1961	[2] 52
Honduras	1950	[2] 65	1961	55
Jamaica	1953	23	1960	18
Mexico	1950	[3] 43	1960	35
Panama	1950	30	1960	[2] 22
Puerto Rico	1950	27	1960	19
Venezuela	1950	48	1961	34
FAR EAST				
Ceylon	1946	37	1953	32
China: Taiwan	1950	[3] 50	1956	46
India	1951	81	1961	[4] 76
Korea, Republic of	1955	23	1960	[4] 18
Malaysia: Malaya	1947	62	1957	53
Singapore	1947	54	1957	50
Philippines	1948	40	1958	25
Thailand	1947	48	1960	32
NEAR EAST				
Cyprus	1946	40	1960	24
Turkey	1950	68	1955	61
United Arab Republic	1947	80	1960	80
AFRICA				
Algeria [5]	1948	94	1954	92
Seychelles	1947	[4] 74	1960	54
Swaziland	1946	[4] 95	1956	[4] 77

SOURCE: UNESCO, *Statistical yearbook 1963*, Paris, 1964, p. 27-38.
[1] Last two censuses or surveys since 1945. – [2] Population over 10 years of age. – [3] Population over 6 years of age. – [4] All ages. – [5] Moslem population.

[4] C. W. CHANG, *The present status of agricultural education development in Asia and the Far East*, FAO, Bangkok, 1960, p. 9.
[5] UNESCO, *Statistical yearbook 1963*, Paris, 1964, p. 272-274.
[6] *Idem*, p. 272-274.

during the same period, and graduates from 2,300 in 1959 to 3,400 in 1963. There are also 32 agricultural preparatory schools, with 9,300 pupils, providing vocational training for agricultural workers.

The need for trained manpower in the developing countries has been so great that many of them have been obliged to avail themselves increasingly of facilities offered overseas, especially in Europe and North America, while they build up their own local training institutions. In agricultural faculties in some of the northwest European countries, for example, foreign students account for up to 15 percent of the enrollment. In many countries, such as the Federal Republic of Germany, there is special provision not only for foreign students but also for the training of people for work in the developing countries.

In the developed countries themselves, the number of students enrolled in agricultural faculties of universities has increased, in some cases very substantially. In Canada, for instance, in the two years between 1961/62 and 1963/64 undergraduate enrollment increased by 20 percent and postgraduate enrollment by 30 percent.

Even less information is available on the development of education in more specialized branches of agriculture. While facilities for veterinary education appear to have grown fairly rapidly, it seems that education in the various aspects of animal production continues to be neglected in many instances. Many agricultural faculties lack facilities for education in agricultural economics. In the field of agricultural marketing there is a need especially for practical training for the staff of marketing enterprises. Another neglected field in most developing countries is education in nutritional science for the personnel needed to staff government nutrition and home economics services.

General education

Agricultural development also depends heavily on the level of general education. Table IX-3 indicates, for those developing countries for which estimates for two periods are available, the slow decline in recent years in the percentage of the population that is illiterate. In rural areas, however, the percentage of illiteracy is generally much higher than the national averages quoted in the table.

Agriculture still tends to be neglected in the primary and secondary schools of most of the developing countries. This is one of the principal causes, as well as a result, of the low regard in which agricultural work is held in these countries.

EXTENSION SERVICES

Agricultural extension services have been rapidly expanded during the past decade. In most of the developed countries they have long been in existence, but in the developing countries most of them date from the postwar period and a good many from the last decade.

Even for the developed countries too few data are available for an adequate evaluation of the growth of extension services. For a number of years the Organization for Economic Co-operation and Development (OECD) has collected information on the personnel engaged in agricultural advisory services (government and nongovernment) in its member countries, and this is summarized in Table IX-4. Changes in coverage make it difficult to draw any firm conclusions from the data; for instance, the apparent decline in numbers of full-time advisory personnel in Italy and Turkey in 1962 reflects the exclusion in that year of members of the agricultural departments concerned only with administrative and statutory duties. There appears, however, to have been a rapid increase in the size of the advisory services in some countries, notably France, the Federal Republic of Germany, and Yugoslavia.

In Japan, there were 12,415 field extension agents in 1959, or one for every 600 farm households.[7]

It seems probable that the expansion has also been rapid in the more recently established services of the developing countries, but there is very little systematic information. It is clear from Figure IX-1, however, that in very few developing countries does the number of field agents even approach the density of one for each 600 to 1,000 small farmers generally regarded as necessary for effective work.

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[7] C. W. CHANG. *The present status of agricultural extension development in Asia and the Far East*. FAO. Bangkok. 1960. p. 26.

TABLE IX-4. – NUMBERS EMPLOYED IN AGRICULTURAL ADVISORY SERVICES [1] IN OECD MEMBER COUNTRIES

	Full-time			Part-time		
	1957	1959	1962	1957	1959	1962
WESTERN EUROPE						
Austria	...	726	...	–	–	...
Belgium	348	345	304	–	–	188
Denmark	682	742	788	–	–	–
France	1 140	1 770	3 668	1 160	1 380	...
Germany, Federal Republic of	1 966	2 195	3 243	1 497	1 483	2 423
Greece	439	469	643	68	67	–
Iceland	35	40	39	4	3	4
Ireland	507	527	497	–	–	–
Italy	...	2 000	[2] 1 117	...	...	1 770
Luxembourg	...	...	7	...	...	14
Netherlands	1 286	1 219	1 554	38	17	86-89
Norway	637	664	669	3	3	17
Portugal	...	...	590	...	...	119
Spain	456	494	415	41	73	174
Sweden	630	695	758	85	90	97
Switzerland	16	17	85	252	306	2 021
United Kingdom	1 720	1 539	1 632	84	97	122
Yugoslavia	2 365	3 076	3 731	–	–	–
NORTH AMERICA						
Canada	...	...	1 483	...	...	129
United States	...	...	14 275	...	...	745
NEAR EAST						
Turkey	1 424	2 043	[2] 1 481	–	–	107

SOURCE: OECD, *Agricultural advisory services in Europe and North America 1963*, OECD Documentation in Agriculture and Food, No. 62, Paris, 1964, p. 73.

[1] Government and nongovernment. – [2] Excluding members of agricultural departments concerned entirely with administrative and statutory duties.

Especially in the developing countries, the extension services continue to be severely handicapped by shortage of funds and of trained personnel. Their effectiveness is further limited by lack of vehicles and travel funds, by the frequent need to work in difficult terrain, and by the fact that so many of the farmers with whom they are dealing are illiterate. Salaries of extension workers often remain too low to attract and retain suitably qualified personnel. Not only because of inadequate salaries but also because of the low prestige of farming and the lack of amenities in the rural areas, there is a reluctance to work in the field with the farmers.

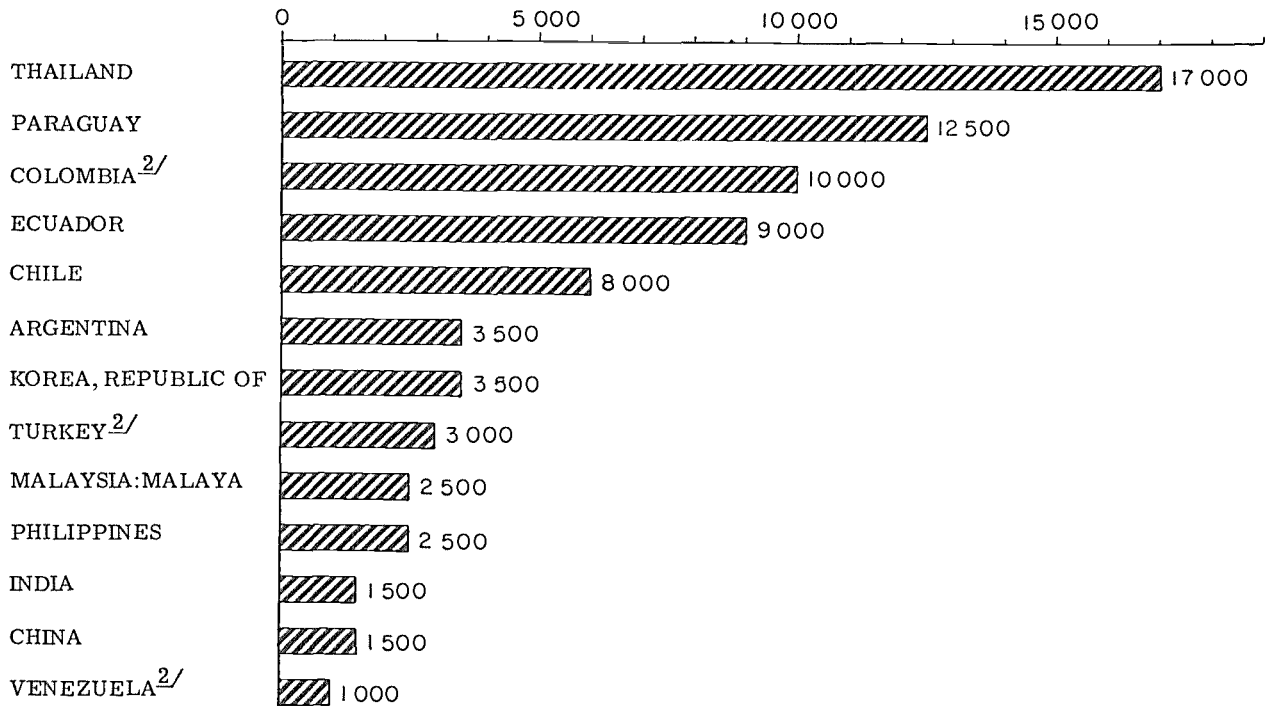
Scope and organization of extension services

In the earlier part of the postwar period there was still considerable disagreement about the concept and role of agricultural extension. It was often taken to cover the actual carrying out of services for farm people (rather than teaching them to do things for themselves) and also such activities as regulatory work. During the last decade, however, it has generally come to be recognized that the extension service should provide an out-of-school system of education, aimed at teaching farmers and their families how to improve their levels of living. Its association with regulatory duties has been found to hamper extension workers in their main functions by creating distrust of their intentions.

Home economics and rural youth work are now recognized as essential functions of the agricultural extension service. Rural youth organizations, assisted by the agricultural extension field workers, have been rapidly built up in many developing countries since the war. The development of home economics extension, however, has been relatively slow.

In many countries agricultural extension work is

FIGURE IX-1 - NUMBER OF ADULT MALES ENGAGED IN AGRICULTURE PER FIELD EXTENSION AGENT IN 13 DEVELOPING COUNTRIES [1]



SOURCES: FAO. *Informe del Centro sudamericano de extensión agrícola 1959*. Rome. 1960: CIDA. *Inventory of information basic to the planning of agricultural development in Latin America*. regional report and country report on Chile. Washington. D.C.. 1963: C.W. Chang. *The present status of agricultural extension development in Asia and the Far East*. FAO. Bangkok. 1960: OECD. *Agricultural advisory services in Europe and North America 1963*. OECD Documentation in Agriculture and Food. No. 62. Paris. 1964. p. 73.

[1] Adult males in agriculture sometimes refer to slightly different periods from numbers of field extension agents. - [2] 1962.

carried out by a number of different organizations, some governmental and some not. In some cases this has added to administrative difficulties, and also caused confusion among farmers. A unified agricultural extension service under the Ministry of Agriculture has therefore come increasingly to be preferred.

An important recent development has been the growing recognition of the role of the extension worker not only in the implementation but also in the formulation of agricultural development plans. In his capacity as a link between the farmer and the central government the extension worker can help to ensure that plans are realistic and that farmers' needs are fully taken into account.

But although there have been considerable advances in defining the concept and role of agricultural extension, the extension services in most countries are still far from measuring up to the standards that have been set for them. A recent survey of these services in 18 countries of east, central and southern Africa, for example, indicates that only four of them had unified extension services, and only nine carried out extension work with women while, in four countries, one half or more of the time of the extension agents was devoted to direct services and regulatory work. [8]

In the extension services of developing countries there is still generally an inadequate number of subject-matter specialists dealing with extension problems of specific crops or animals to back up the work of the field agents. Such specialists have an important part to play in the training of the field staff and also provide a useful link between the extension and research services.

Farm management and other economic aspects frequently tend to be neglected in agricultural extension work in developing countries. An encourag-

[8] FAO/CCTA. *Report on the agricultural extension development center for east. central and southern Africa*. FAO-EPTA Report No. 1566. Rome. 1962, Appendix C.

ing development has been the introduction of systematic farm planning in some of these countries in recent years, although in most cases this is confined to limited areas of the country. Agricultural marketing extension is another neglected aspect. The usefulness of such work has been demonstrated in Kenya, where field officers attended rural markets and advised farmers on grading and quality control, and in bargaining for fair prices. A marketing extension department has recently been established in India.

The lack of facilities for research and training in extension techniques is still a major obstacle in many countries. Systematic training and investigations in extension were begun in the United States before the war and there has been a substantial expansion in the postwar period. Training in extension education has started in Europe and Japan only since the war. In the last few years, however, a number of agricultural faculties in the developing countries have made provision for research and training in this new field.

The importance of in-service training for extension workers is increasingly recognized. During the last decade, in-service training has become a regular feature in Europe, North America and Latin America, and has also been started in many countries in other regions. This training now usually includes extension techniques as well as technical subject matter.

The need for the systematic evaluation of extension work, so as to increase its future effectiveness, is gradually being realized. Outside Europe and North America, however, such evaluation is carried out in India and Japan, but in very few other countries.

Extension methods

Because of the shortage of extension workers, especially in the developing countries, there is an increasing tendency to concentrate them in limited areas, for instance, on land reform projects and in pilot demonstration villages, rather than spread them thinly over the whole country. Examples are the so-called package programs launched in 1960 in India and Pakistan, under which not only extension work but all the other services and facilities needed for increased production are concentrated in selected areas of high potential.

Methods of training illiterate and semiliterate farmers have received much attention during the decade. The revival of systems of part-time training and short courses for farmers, especially in Africa, was discussed earlier, in the section on education.

A particularly interesting approach to agricultural extension is that being tried out experimentally at the Academy for Village Development, which was started in 1959 at Comilla, East Pakistan. Instead of sending extension workers to the villages, farmers elected to represent their villages are sent to the center for training. On returning to their villages, these newly-trained farmers pass on their knowledge to other villagers.

With the rapid spread of cheap transistor radios, many developing countries have been taking increasing interest in the use of radio for agricultural extension work. Particularly in countries with a high rate of illiteracy and a shortage of extension workers, farm broadcasting can be a most useful medium for the provision of agricultural extension information to farmers.

DIRECT SERVICES TO FARMERS

Plant protection services

Quarantine enforcement has always been one of the main functions of a well-organized plant protection service. The increased international traffic in plant material in recent years has brought home to many countries the need to re-examine their quarantine legislation and to expand facilities to meet rising demands. There has generally been an expansion of staff and of facilities for the inspection and treatment of plants and plant products.

Another regulatory function which has been undertaken only recently is control of the marketing and use of pesticides. Following increased public concern at the possible harmful effects of pesticides, most governments have now established a system requiring proper labeling and precautions. In countries where there is legislation specifying residue tolerances, the plant protection authorities share with those concerned with the purity of food the responsibility for establishing tolerance limits.

In order to fill the gap between research and the practical aspects of plant protection, the plant protection services in many countries have undertaken an

increasing amount of investigation and experimental work concerning pest control and quarantine enforcement. In addition, there has been a growing tendency for plant protection services to undertake regular pest and disease surveys in order to follow closely the distribution and spread of pests and diseases of economic importance.

Many governments have not been content only to provide advice to farmers, but have increasingly undertaken the organization of pest control operations in order to gain quick results, for example, by mobile control forces, stationed at strategic points and provided with the necessary vehicles, equipment and supplies of pesticides. There are also certain cases in which control measures cannot be undertaken by individual farmers. For instance, to combat widely-distributed and fast-moving pests, efficient and timely measures have to be carried out over large areas. The antilocust campaigns have therefore always been a government task, often as part of a regional organization. In other instances, control measures, such as those involving the multiplication of parasites or other biotic agents and the use of radiation in insect sterilization, require resources and techniques that are beyond the capacity of individual farmers.

Extension has also always been one of the main functions of the government plant protection services. The need to provide farmers with timely information and competent advice on all aspects of plant protection is more important than ever, because of the number of pesticides available and the complexity of most modern pest control measures. The plant protection services are now able in many cases to forecast outbreaks and give the farmers precise instructions on the methods and timing of treatments required. A warning and forecasting system through radio broadcasts and other means has been organized in some countries. Pest control calendars have been established, incorporating spraying schedules and other information for controlling common diseases and pests of economic importance.

Veterinary services

Although government veterinary services have expanded rapidly in most countries during the last decade, their expansion is severely handicapped in both developed and developing countries by the shortage of specialists trained in veterinary science.

This shortage is specially marked in Africa. Most African countries have endeavored to recruit expatriate staffs on a temporary basis, and in this manner some of the most pressing needs are being alleviated.

In the Near and Far East, the veterinary services of most countries have expanded, especially during the last three or four years. In the absence of such establishments, the success scored in the epizootic campaigns against African horse sickness and SAT 1 foot-and-mouth disease would have been impossible. Although the numbers of veterinarians in these regions are now sufficient to meet the more urgent needs, considerable increases in the budgets of veterinary departments are necessary to enable them to begin to deal adequately with the enormous problems with which they are confronted.

The government veterinary services in most countries of Latin America have increased in both size and efficiency during the last decade. Laboratory units with provision for diagnosis, research, training and vaccine production have been developed or improved in most countries. They have helped to define the nature and extent of disease problems and have made available the biological means for dealing with them. Field services have been strengthened substantially so that many countries now possess the basic essentials for intensive disease control compaigns. Some regional organizations have been established, and bodies such as the Central American Plant and Animal Protection Organization (OIRSA) and the Pan-American Foot-and-Mouth Disease Center have become capable of taking cooperative action for the control and eradication of diseases by means of campaigns which can operate freely across national boundaries.

FISHERY SERVICES

The functions of fishery administrations have been widened during the last decade to cover a much broader range of activities, including technical and financial assistance, the promotion of research and training and even direct intervention in production and marketing.

In the developed countries, some form of government administrative machinery for fisheries has long

been in existence. In a few cases, such as Canada, Denmark, Iceland, and Norway, there is a separate ministry, but fisheries generally come under the Ministry of Agriculture. The increased demand for fishery services to assist the modernization and adjustment of the industry has made it necessary for many administrations to be strengthened. For example, in Japan, the Fisheries Agency, established under the Ministry of Agriculture and Forestry, has been reorganized several times, and its functions now cover almost all aspects of the fishery industry, including planning, resource protection, and research and development work regarding harbors, boats, gear, processing and marketing. In the United States, the present Fish and Wildlife Service was established in the Department of the Interior in 1956. Its activities have since been strengthened and the service concerned with commercial fisheries has been expanded by setting up divisions for biological research, industrial research, resource development, and economics. In Canada, the federal expenditure for fisheries, including the Fisheries Research Board, increased from $9.6 million in 1952/53 to $23.3 million in 1962/63.

In the developing countries, responsibilities for fisheries have been dispersed in some cases among a number of ministries and departments, while in others fisheries are dealt with by a small section of a ministry, which is generally understaffed and isolated. Although greatly handicapped by the lack of qualified personnel, those developing countries where fisheries are particularly important have increasingly recognized the need for adequate fishery administration. Efforts have been made in many cases to ensure co-ordination with other government departments concerned with aspects of fisheries, and to provide machinery for consultation with the industry. A few examples are cited below.

In Latin America, the Federal Fisheries Development Authority (SUDEPE) was established in Brazil in 1962. This is located in the Ministry of Agriculture but is to a great extent autonomous. In Chile, the Fish and Game Department was organized under the Ministry of Agriculture and Fisheries in 1957.

In the Philippines, a Fisheries Commission was established in 1963, replacing the former Bureau of Fisheries. The purpose of the reorganization was to elevate and strengthen the status of the fishery administration and expand its activities regarding research, training and technical advice. A fishery service was set up in the Republic of Viet-Nam in 1957.

A national office for fisheries was set up in 1963 in Algeria. In Dahomey, the Fisheries Department was reorganized in 1962 under the Ministry of Agriculture and Co-operation. In Ethiopia, a Fisheries Division was set up under the Department of Marine in 1956. A new Ministry of Fisheries was constituted in Ghana in 1965 to deal with all matters concerning fisheries. New fishery services have also been established in many other African countries during the last decade.

Some governments have directly intervened in fishing, processing or marketing activities by establishing special organizations, for instance, the Fish Marketing Organization in Thailand, the East Pakistan Fisheries Corporation and the Egyptian General Organization for Aquatic Resources. Efforts have been made in many countries to build fishing harbors and terminals, and to provide ice plants, cold storage, processing plants or refrigerated vans.

Fishery research

Research in the ecology and biology of marine and fresh water fishery resources has increased considerably during the decade. The main concern has been to provide the elements for a rational utilization of the resources on a sustained yield basis, and to gain knowledge of potential fishery resources. Stock assessment and exploratory fishing have been two major fields of work. There has also been an increase in research into the cultivation of marine and inland fishes.

Research has been fostered and co-ordinated by regional fisheries councils and commissions. The International Indian Ocean Expedition, the International Co-operative Investigation of the Tropical Atlantic, and the Guinean Trawling Survey are examples of co-operation among countries for the study of fishery resources.

Fishery technology research has been supported by the general progress of technology, particularly in naval architecture, mechanical, electronic and chemical engineering and food science. Work has been intensified in the fields of boat design, fishing gear and methods, fish processing and new product development. In the Federal Republic of Germany, Japan, the Netherlands, Poland, the United Kingdom and the U.S.S.R., there has been much research on fishing boats. Research on fishing gear and methods has been carried out particularly in Japan and the U.S.S.R., in such fields as acoustic instruments for

fish finding, the use of new synthetic fibers, gear design, and the automation of midwater trawling. The study of fish behavior in relation to fishing has been intensified.

Research on fish processing and product development has been expanded. The emphasis has been on securing better utilization of fish by minimizing waste and improving preservation, and on the development of new products to meet the increased demand for fish and changing tastes of consumers.

Economic and social research on fisheries has lagged behind scientific and technological research. The last decade, however, has seen a growth of interest in these fields of investigation.

In the developing countries, fishery research, especially the investigation of ocean resources, is in most instances beyond the capacity of existing institutions from the standpoint both of the necessary vessels, laboratories and equipment and of trained personnel. International assistance has therefore been a major factor in initiating and strengthening research activities in these countries.

Fishery education

The two main factors affecting fishery education and training are the importance of fisheries in a country's economy and the general level of education in the country. This applies both to the vocational training of fishermen and skippers and to the more advanced training needed for fisheries administrators, industrial managers and research workers.

In developed countries with substantial fisheries, facilities for the vocational training of fishermen have long been established. In the past, such courses have tended to concentrate on navigation and seamanship. Now, however, as their fishing operations have grown in complexity, advanced fishing countries such as Japan and the U.S.S.R. have initiated courses in such additional techniques as fish searching and fish catching.

In developing countries, the need for vocational training is also being recognized, and schools or courses have been established in Brazil, Ghana, Hong Kong, India, Israel, Ivory Coast, Republic of Korea, Malaysia, Pakistan, the Philippines and Sierra Leone. As in the developed countries, the training standards tend to depend on the state of development of the country's fisheries. In many cases, however, fishery training is hampered by the low level of general education in the country.

For more advanced levels of fishery training, this problem becomes even more acute in developing countries, and there is a great shortage of fisheries administrators and research workers. In developed countries, the recruitment of such personnel is possible because of the advanced level of education in related scientific fields, and the existence of facilities for in-service training. Most developed countries with substantial fisheries, however, also provide for the teaching of specific subjects such as fishery biology, oceanography and fish processing at universities and research institutes, while in Japan and the U.S.S.R. several institutions have been established at university level dealing exclusively with fishery subjects.

FOREST SERVICES

Owing to certain characteristics peculiar to the forest resource, the nature and evolution of government services to forestry differ considerably from those of government services to agriculture. The social values of the forests, their conservation role, their long production cycle, the difficulty of separating forest output from forest capital, and the large areas upon which forestry is practiced often give rise to conflicts between long-term public interest and short-term private interest. This confers special responsibilities on the government services to forestry and explains why the greater part of the world's forest lands are either maintained under public ownership or, if privately owned, are subject to certain controls by the state.

During the period under review, national forest services have been primarily concerned with the basic functions required by these special features of the forest resource: firstly, the direct administration of public forest lands and related activities including, in certain countries, the harvesting and primary processing of forest products; secondly, control over private forest lands to ensure the realization of public aims.

Almost all countries with substantial forest resources have introduced improvements in forest

legislation. The considerable number of countries which have enacted basic forest laws during the period include Canada, Dominican Republic, France, Honduras, Hungary, Iraq, Japan, Mexico, Peru, Romania, Spain, Turkey, Venezuela, and Yugoslavia. Most of the new laws provide for greatly increased participation by the state in the development of both public and private forests. Restrictions such as control of burning, deforestation and grazing now tend to be accompanied by positive obligations on the part of forest owners, particularly as regards reforestation and forest utilization, and these obligations are in turn linked with more active technical and financial assistance from the administration. The Romanian and Mexican laws emphasize the economic organization of the forests and their integration with forest industries. The new forest laws in France and Japan give much attention to private forestry and lay particular emphasis on increased forest production. The Hungarian and Spanish forest laws aim at modernizing the management of existing forests and developing forest plantations. The laws of Honduras and Ivory Coast have been improved in order to harmonize the legitimate interests of large forest industries with those of the state. New legislation pays much attention to wildlife management and underlines the increasing importance of forests for recreation. Whereas forestry used to be dealt with almost exclusively by forest laws, recent land reform and land settlement laws, for example, those of Bolivia. Chile, Cuba, Ecuador, El Salvador, and Panama, affect forest as well as agricultural lands, showing a trend toward better integration of various forms of land use.

Forest services usually form part of ministries of agriculture or of natural resources, but during the last few years some countries, including Canada and Madagascar, have raised their forest administrations to ministerial rank. Other recent organizational changes show the increasing emphasis being put on the integration of forestry with wood-based industries and on the co-ordination of the forestry sector with the other sectors of the economy. In China (Mainland), Poland, and Romania, for example, responsibility for the entire forestry and forest industries sector has been entrusted to single ministries. In other countries, forest services have been attached to bodies directly responsible for economic development: in Ecuador and the Central African Republic, the forest services are now part of the Ministry of of Development and, in Australia, the Commonwealth Forestry and Timber Bureau has been transferred to the Ministry of National Development.

Numerous countries which cover an extensive land area or have a federal system of government have reorganized the territorial structure of their forest services. In some cases, as in India, Indonesia, and the U.S.S.R., this reorganization has aimed at greater administrative efficiency by decentralizing certain executive functions; in others, the main objective has been to co-ordinate various aspects of forest policy implementation.

The worldwide concern with land-use problems has resulted in efforts to ensure better co-ordination between forest services and other government services concerned with agriculture. In Latin America, the forest services of several countries have increasingly participated in agrarian reform schemes. In the Far East, co-operation has been mainly centered on watershed management, and in the Near East on plantations and other forestry works connected with large-scale agricultural settlement projects. In Europe, attention has been paid to administrative arrangements for adjusting different forms of land use: in France, for example, steps have been taken to integrate, at the level of the administrative regions, all government services connected with agriculture and forestry.

The tasks assigned to forest services have tended to cover increasingly wide objectives: raising production and improving the infrastructure in existing forests, building up the forest capital, especially through forest plantations, and making better use of the indirect benefits of the forests. Viewed in this light, increases in public expenditure on forestry and in the administrative machinery of forest services have been insufficient in most countries.

Forestry research

The progress achieved in forest and forest products research has been considerable and has engaged not only government research institutes but also forest industries and other private enterprises, often in close co-operation with forestry faculties. In the developed countries, facilities and staff for forestry research have been greatly expanded. In the United States, funds for this purpose have more than doubled during the decade, reaching $94 million in 1962. In the U.S.S.R., the number of research workers employed in the wide network of forestry research institutes and experimental stations has risen considerably. Canada also has greatly increased its forestry research

personnel and added a modern research laboratory to those already existing. Australia has established a forestry research institute attached to its Forestry and Timber Bureau, and many European countries as well as New Zealand and Japan have also made considerable progress in this field.

The developing countries have been increasingly interested in research work connected with man-made plantations and in silvicultural and technological research aimed at the fuller utilization of their natural forests. Progress has been particularly encouraging in many countries of the Far East, including China (Mainland), India, Indonesia, Pakistan, and the Philippines. In the Near East, attention has been focused on research connected with plantations, and several countries such as Iran, Sudan, Syria and Turkey have improved their forestry research facilities. In Latin America, forestry research institutions have been established or strengthened in Argentina, Brazil, Chile, Costa Rica, Mexico, and Venezuela. The Latin-American Forestry Institute for Research and Training has been active in making research findings known in the whole region. In Africa, the Institut national pour l'étude agronomique du Congo (INEAC), which included a strong forestry research department, has ceased to function effectively, and this loss has not been compensated by the relatively modest progress attained in other countries in tropical Africa.

The advances that have been made in forest science and forest industry technology and the swifter translation of research findings into field practice have been facilitated by better co-ordination of efforts through the International Union of Forest Research Organizations, through bodies such as the teak and poplar commissions, and through regional groupings such as the Committee on Co-ordination of Mediterranean Forestry Research, and similar bodies in the Near East, the Far East, and Latin America.

Forestry education

Increasing importance has been attached to forestry education and training during the decade.

The establishment of forestry faculties in the framework of existing universities seems to be the system best suited to conditions in developing countries and has been generally adopted. In Latin America, Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, and Venezuela now have centers for higher forestry education. In the Near East, a new forestry faculty has been established in Iran, and others are under consideration in Iraq and Sudan. In the Far East, higher forestry education has been vigorously expanded in Indonesia, the Republic of Korea, and China (Mainland), and university level schools have also been established in several other countries. Progress has been slower in the African region, but forestry faculties have been established in Liberia and Nigeria, and current plans provide for the establishment of others in east and west Africa.

The number of institutions in developing countries offering postgraduate training in forestry is still limited, and such training is normally obtained in developed countries. Such institutions as the Inter-American Institute of Agricultural Sciences at Turrialba, Costa Rica, and the Latin-American Forestry Institute for Research and Training at Mérida, Venezuela, indicate that there is also a growing co-operation between the developing countries themselves in this field.

In the advanced countries there has been a considerable increase in higher forestry education. In the United States, for example, the number of forestry university students rose from 5,357 in 1954 to 8,612 in 1961; in Japan, the number of universities providing forestry training has increased to more than 20. Many developed countries have trained large numbers of forestry undergraduates and graduates from the developing countries, and have helped these countries to establish their own forestry education institutions. In the United States alone, more than 700 foreign foresters received training in 1961-63.

In a number of developed countries such as the Federal Republic of Germany, Poland and Romania, and also in some developing countries, educational institutions for forest products technology and industries have been established or strengthened.

Medium-level forestry training has received less attention, especially considering that the requirements for forest technicians are several times greater than those for university-trained foresters. However, the important technical and executive role of intermediate forestry personnel has been widely recognized and new forest ranger schools have been opened during the period in more than 20 countries.

Chapter X. - Price policies and incentives

That farmers will not increase production for the market unless they find it profitable to do so is a fact which governments and planners in many countries, especially developing countries, have been slow to recognize. In consequence, production targets have been set, and in some cases technical advice and production requisites provided, with scant response. However, the need to establish a favorable economic and social environment, if production is to expand in line with the growing requirements of developing countries, has gradually been recognized during the past decade. It has been found that the success or failure of a national plan depends ultimately on the extent to which it is possible to influence the decisions of thousands of individual farmers. The provision of extension services and the teaching of improved methods will be of no avail if the farmer has insufficient incentive to make use of them. He will not take the arduous and sometimes costly steps needed to increase his output unless it is manifestly to his own advantage to do so. If, as is still the case in many developing countries, the benefit from improved methods is in danger of being wiped out by a sudden drop in prices, or if it is likely to go principally to landlords, middlemen, moneylenders or the government, the producer's incentive is greatly reduced.

Government policies for price and income support are the principal means of providing incentives and removing disincentives. Together with such related measures as the provision of grants and subsidies, and crop and livestock insurance, these policies and their implementation are the main theme of the present chapter. The improvement of land tenure systems and of marketing and credit facilities, in many countries equally crucial for the provision of an incentive for increased production, are discussed in Chapter XI.

For all of these essential policies the word "implementation" should be stressed. Even when the need for adequate production incentives has been recognized, the legislation passed and the funds to carry it out appropriated, the necessary measures are often extremely difficult to implement effectively. One reason is the difficulty in developing countries of setting up an adequate organization to carry them out. This applies especially to the field staff at the farm or village level, since personnel with the necessary training and integrity are woefully scarce. Measures to implement agricultural price policies should therefore be as simple administratively as it is possible to make them. Moreover, as discussed in Chapter XI, there is much virtue in enlisting the participation of the farmers themselves through co-operatives or other farmers' organizations. A second reason for the difficulty of implementing agricultural price policies is that the new measures often conflict directly with traditional patterns of marketing, credit, or land tenure, and run into open opposition or at best lack of co-operation from established interests, whether of merchant, moneylender or landlord. Not infrequently all three are the same person. The weaker the administrative organization the more difficult it is to overcome such opposition.

In the developed countries the situation is very different. Policies for price and income support have during the postwar period become the main instrument of government agricultural policy. Thus a discussion of the evolution of these policies during the past decade must range beyond the question of producers' incentives and must touch on all aspects of agricultural policy in these countries. The main aim has been to raise or maintain farm incomes in comparison with those in other occupations, and the incentive effect of these policies has been incidental. It has, however, been so great as to prove an embarrassment in the United States and a number of other countries, where support prices have contributed to surplus production. In fact, this incentive effect has tended to set a limit to the extent to which incomes can be influenced by means of price policies.

Policies for price and income support in the developed countries have become very powerful tools, which can all too easily get out of hand. Because of the special problems of the agricultural sector

in these countries, they are often of considerable political significance. The lengthy negotiations involved in the elaboration of the common agricultural policy of the European Economic Community (EEC) have largely concerned questions of price levels. In the United States it has proved difficult to make the necessary adjustments in price policies to bring production more closely in line with demand.

During the last decade many of the developed countries have tried to limit the mounting cost of their agricultural price and income supports. In developing countries the small size of the nonfarm sector means that it is not possible for agriculture to be subsidized, even indirectly, by the rest of the economy. The aim of agricultural price policies in these countries has been rather to stabilize prices, particularly to consumers, and to put a floor, even at a low level, under farm prices so as to give some safeguard against a steep fall in prices, especially in the postharvest period.

Special stress should be laid on the influence of seasonal variations in price. A majority of farmers in developing countries have to sell the bulk of their output immediately after the harvest when prices are lowest, because they are in debt, or in any case lack the resources to hold the crop until prices have recovered from the post-harvest glut. Seasonal fluctuations in price can be extremely wide, and price differentials of as much as five or six times have been reported from countries as separated as Colombia, Iran and Somalia. While these are doubtless extreme cases, these annual fluctuations in price do much to increase the average spread between consumer and producer prices, seriously reducing the farmer's share of the consumer price, and hence his incentive to increase production for the market. A further disincentive is the lower level of prices in years of good crops, which may more than offset the larger supply available for sale and thus reduce total returns to farmers.

It has increasingly been realized that producers need assurance that prices will not be permitted to fall below a certain minimum, and that the relatively low level at which, in the interest of the consumer, prices had hitherto been held in many of these countries is incompatible with the incentive needed for a steady increase in production. Systems of guaranteed prices for basic food crops are therefore increasingly being adopted in developing countries, in addition to the national stabilization schemes for export products that were already in operation in earlier years. But rather few of these countries have yet reached the stage where measures for stabilizing domestic farm prices are fully effective, mainly because of the administrative weaknesses already discussed.

Incentives have also proved a crucial problem in the centrally-planned countries. In the U.S.S.R. and the eastern European countries the system of state deliveries and agricultural prices have been substantially adjusted in recent years in order to provide greater incentives to increase production.

PRICE POLICIES IN DEVELOPED COUNTRIES

Agricultural price policies in the developed countries mainly aim at raising farm incomes and narrowing the income gap between agriculture and other sectors. These general objectives have not altered during the last decade, although there have been some minor shifts of emphasis, and in many countries attempts have been made to increase the effectiveness of the measures through changes in methods of implementation. In many cases guarantees to farmers have been strengthened and, in consequence, although this was seldom the primary intention, protective measures appear to have become more widespread and restrictive. At the same time, however, a number of countries have attempted to limit guarantees for fiscal reasons and in order to avoid surplus production.

Although price policies have continued to be the main instrument for raising farm incomes in the developed countries, increasing stress has been laid on measures to improve the farming structure. As price measures are usually administered without distinction between producers, the main beneficiary is often the more efficient farmer who is least in need of assistance, while the inefficient producer is encouraged by high price supports to continue in production. More importance has therefore been attached during the decade to measures designed to make farming more efficient. More attention has also been given to facilitating the movement of the less efficient farmers out of agriculture or, where this is not possible, assuring them some minimum

level of income, essentially as a social measure. But in general the treatment of farm incomes as a social problem is still in the realm of discussion rather than of legislation.

During the decade, a number of countries have passed new basic laws which consolidate and amend existing legislation and provide for a co-ordinated approach to income support and structural improvements. The basic laws in a number of European countries require the presentation of annual reports on the development of agricultural incomes and on measures taken or proposed to reduce the disparity with other sectors of the economy.

In several countries where income parity is an objective, adjustments in favor of the farmer have been made in methods of calculating farm costs and incomes. The six-year agreement adopted in Sweden in 1959 provides that, after every new wage agreement, the amount of protection through import duties should be adjusted so as to bring the same percentage change in total farm income as in industrial workers' wages; farm prices are also adjusted in line with cost increases and changes in world market prices. In Finland, the Agricultural Prices Act passed in 1958 and subsequently amended changed the basis of calculation so that the farm family's own labor earnings follow the trend of the general level of earnings. The method of calculating supported or stabilized prices was also altered in Japan so that higher farm prices would contribute to narrowing the income gap.

In countries where parity calculations are not required, some additional guarantees against too rapid reductions in prices or for compensation for increasing costs have been provided. In the United Kingdom (where the basic act of 1947 provided income support for the farm sector) new long-term assurances were introduced in 1956 and reaffirmed in 1960; prices may not be reduced by more than 4 percent in a given year (in the case of livestock products, also not more than 9 percent in a three-year period), and the total value of the guarantees may not be lowered by more than 2½ percent annually. In 1958, Canada adopted a permanent price support scheme for basic products (those not already supported by the Wheat Board in western Canada) in place of the previous *ad hoc* support. For nine commodities for which support is mandatory (representing almost half of average receipts from farm marketings) the guaranteed minimum price in any period may not be less than 80 percent of the average in the previous ten years, and the guarantee once established holds for the duration of the marketing year.

Basic legislation has also been amended, as in Norway and Switzerland, to provide higher price supports in order to avoid a widening of the gap between farm and nonfarm incomes. Usually such increases have not been intended to act as an incentive to increase production, and in fact they have rarely been large enough to offset the general rise in prices. In Australia, where successive wheat stabilization plans have provided producers with guarantees based on costs of production, the volume of export wheat covered by the guarantee was increased in 1963 from 100 to 150 million bushels. In Greece, the list of supported commodities has been extended.

Denmark provides the main example of a developed country where price and income supports were introduced for the first time during the period under review. Hitherto farm incomes had depended to a large extent on market prices, especially world market prices, but the adverse movements in international markets, coupled with rising costs in agriculture, led to a reconsideration of policies. A scheme to stabilize grain prices was introduced in 1958, and provision was made for government intervention to maintain the domestic prices of other products at a remunerative level, making it possible to put a floor under domestic market prices in case of a price slump in export markets. In 1961 the butter factories were allowed to fix domestic butter prices separately from export prices, and in 1962 authority was given to the Minister of Agriculture to impose levies on domestic sales of agricultural products in order to raise farm incomes.

Common agricultural policy of European Economic Community

Since the signing of the Treaty of Rome in 1957 establishing EEC, the common agricultural policy of the six countries of the Community has gradually been elaborated. The negotiations, particularly those concerning grain prices, provide a striking illustration of the wide ramifications of decisions on agricultural price levels. Many of the provisions of the common agricultural policy go beyond previous national measures, and a wide range of elaborate tools is employed for the implementation of the policy.

The principles of the common agricultural policy were outlined in Article 39 of the Treaty of Rome: to increase agricultural productivity by encouraging

technical progress and by ensuring the rational development of agricultural production and the optimum utilization of the factors of production, particularly labor; to ensure thereby a fair standard of living for the agricultural population, particularly by increasing individual earnings of persons engaged in agriculture; to stabilize markets; to guarantee regular supplies; and to ensure reasonable prices for the consumer.

Common procedures for implementing these objectives have been gradually worked out. Most emphasis has so far been on trade aspects, and work on structural and social policies has consisted largely of studies and exchanges of views. The common trade policy is designed to create progressively by 1970 [1] a unified market and uniform price system for domestic agricultural products, and a common method of protection to maintain this price level through variable levies, external tariffs and other safeguards. It is thus in the realm of agricultural price and trade policies and levels of supported prices where adjustments have been and continue to be made in the individual countries in their efforts to achieve a unified market during the transition period before 1970.

Common market regulations for grains, live and slaughtered pigs, eggs, poultry meat, fruit and vegetables, grapes and wine were agreed in January 1962, and for milk and dairy products, beef and veal, and rice in December 1963. Including fats and oils, for which the broad lines of the regulations were also agreed, common regulations now cover 85 percent of the Community's agricultural production and 37 percent of its agricultural imports. The regulations have still to be completed for fats and oils, and agreed for sugar and some other products.

For grains and milk products the regulations provide for the annual establishment of "target" prices and variable levies on imports from third countries which are adjusted so as to ensure that imports sell at these target prices; the producer's guarantee (less transport and incidental costs) is the "intervention" price established for the various producing centers at which national marketing agencies must purchase any quantities offered. For pigmeat, poultry, and eggs the levies are designed to compensate for feed price differentials inside and outside the Community, and for differences in other conditions of production, supplemented by a fixed amount to give the advantage to EEC producers. For beef and veal "guide" prices are fixed and an external tariff on imports from third countries is the principal means of protection; if the import price plus the common external tariff is less than the guide price, a levy will be imposed, depending on the relation between actual market prices and guide prices. For fruits and vegetables a common external tariff affords protection against outside producers, while it has recently been agreed that an additional compensatory duty may be applied to prevent the disruption of markets.

During the transition period prices still vary from country to country, and may therefore be maintained close to the guaranteed levels in force prior to the establishment of EEC. The continuation of direct national aids to milk producers is also permitted. These aids must be gradually reduced and the national prices brought closer together until in 1970 a single community-wide price comes into force for each commodity. For grains, however, agreement was finally reached in December 1964 on single target prices which would go into effect from July 1967. The intervention prices at which support purchases are made on local markets, and which are related to the target prices, are to be determined at a later date for each area.

Grains, either for human food or animal feed, are so large a part of the agricultural production of the Community that their prices are a dominant influence on agricultural incomes, and lengthy negotiations were therefore necessary before agreement could be reached. The wide range in grain prices among the countries of the Community suggests that if prices were fixed at a high level there would be a tendency to surplus production in some of them, while in others a low level of prices would seriously reduce farm incomes. Where the common grain price means a substantial reduction in existing levels (in the Federal Republic of Germany and in Italy) special financial compensation will therefore be provided until 1970 from the common fund. Furthermore, grain prices have a powerful effect on livestock production and prices, and Italy has therefore been permitted temporarily to impose reduced levies on imports of feed grains, in order to prevent higher feed prices from hampering the expansion of livestock production. On the other hand, concern has been expressed that prices may have been fixed too low for maize, for which the Community relies largely on imports.

For beef and veal, and for milk the establishment

[1] For grains, pigmeat, eggs and poultry, the date has been advanced to 1967, and the same may be done for other products.

of price levels has also proved difficult. These products are at the same time competitive and complementary, and the aim has been to establish a price relationship between them which will encourage meat production and slow down the expansion of milk production.

From 1967 all the expenses resulting from the application of the common policy for grains, pigmeat, eggs, and poultry will be covered by the Agricultural Guidance and Guarantee Fund.

Policy adjustments in developed countries

Many countries have attempted to minimize the growing burden that measures of price and income support have imposed on government budgets. Shifting at least part of the burden of support to the consumer in the form of higher prices has obvious limitations, although it has been possible in certain instances where the price increases involved have been moderate and not out of line with the general increase in consumer purchasing power. Consumer subsidies on wheat flour have gradually been lifted in most countries, while support to producers has in many instances been increased at the same time. The proposals for 1965 legislation in the United States, discussed in the next section, would reduce the government's share of direct support to wheat farmers and increase the consumer's share. Consumer prices of milk and milk products in several European countries have been raised to support part of the increases in prices to producers. In Japan, the price of rationed rice was raised twice during the last decade, though less than the price increases given to farmers.

More widespread has been the limitation of guarantees to quantities matching market requirements, so as to restrain surplus output or shift production to qualities preferred by consumers. In the United Kingdom, growing concern over the rising level and unpredictability of the cost of deficiency payments to farmers (the principal method of support, whereby the level of support payments depends on the level of market prices) has led to a series of changes designed to make the system more flexible, to reduce the risk that the government's financial commitment is inflated by excessively low market prices, and to make possible more effective regulation of production and marketing. Since 1961 the guaranteed price for pigs has been adjusted automatically every quarter according to forecasts of expected supplies, in order to limit the fluctuations of recurring "pig cycles." The retail price of liquid milk has since 1962 covered the full cost of the milk price gauarantee, instead of only that on the quantity for liquid consumption. From 1963 the deficiency payment for eggs has been made on the difference between the guaranteed price and an "indicator price" (the expected price in a reasonably balanced market) or the actual selling price, whichever is higher.

The United Kingdom had become virtually the only open market for shipments of some commodities, and the heavy price falls when imports increased added greatly to the cost of deficiency payments. A system of market sharing between overseas suppliers and domestic producers was therefore developed, in an effort to limit the heavy supplies reaching the United Kingdom market. Import quotas for butter were introduced in 1961. In 1963 a market sharing understanding was reached with the major foreign suppliers of bacon. Early in 1964 agreement was reached with the farming organizations to introduce certain limitations to the guarantees on wheat and barley. According to this, the level of support is reduced when production is near or above a specified standard quantity and market prices are below a target indicator price; it is increased when production is below the standard quantity and market prices are above the target indicator prices. In 1964 authority was given to introduce minimum import prices and import levies on certain agricultural commodities, and agreement was reached with the main suppliers of grains (Australia, Argentina, Canada and the United States) on sharing the market and introducing minimum import prices from July 1964.

In some other European countries, and also in Canada, Australia and New Zealand, there have been some shifts in emphasis with respect to key products, in order to set limits to farm guarantees and avoid surplus output. Canada changed in 1959 from direct government purchases to deficiency payments for a number of supported commodities, because previous support levels had proved to be an incentive to production, and because it was desired to align support programs more closely with relative costs of production. For eggs and hogs a limit was set on the payments to each producer. In Ireland, in order to confine wheat production to domestic requirements, the guaranteed price was related to 75 percent of estimated flour milling requirements, and excess production of millable

wheat was made subject to a levy on producers. In Finland, a limit was set in 1962 to the quantity qualifying for the target price, the remainder of production being subject to current market prices. In Switzerland, the method adopted to restrain expansion in the dairy and pigmeat industries has been to impose penalties on excess milk production and to increase the price of feed grains. Feed-grain prices were also increased in Austria to restrict the further growth of milk production. Price policies for feed grains, however, have raised difficult problems in many countries because both producers and users are in agriculture. Greece and Italy have discouraged further increases in the production of soft wheat so as to avoid surpluses, and have shifted emphasis to the development of feed grains and livestock production.

In Australia and New Zealand, more flexible policies have been adopted for the dairy industry. In Australia, producers had formerly been guaranteed returns related to the assessed cost of production for 120 percent of the quantity of factory butter and cheese produced for domestic consumption; wholesale prices had been fixed each year by the government. Under the five-year dairy stabilization scheme begun in 1962 the dairy industry was given responsibility for domestic price policy. The government, however, provides a fixed annual subsidy to the industry, which in fact leaves the amount of support largely unchanged. In New Zealand, the estimated cost of production, which had been the criterion since 1936, is no longer taken into account in fixing dairy prices. Since 1961 the main determinants have been the course of market prices, market prospects, and the state of the stabilization account. To build up this account it was stipulated that, when it is in debit, not more than 25 percent of the trading profits of any one season can be paid out to producers, although in 1963/64 larger payments were authorized in order to raise dairy producers' incomes.

United States agricultural policy

The United States provides the outstanding example of the problem of reconciling the conflicting objectives of curbing excessive output and restraining the cost of support on the one hand, and improving farm incomes and lessening the disparity with nonfarm incomes on the other. Thus programs to take cultivated land under surplus commodities out of production have gone hand in hand with adjustments in price supports and other payments in order to raise farm incomes. During the decade the Secretary of Agriculture has been given more flexible authority in determining the actual level of support and in setting national acreage limitations in relation to needs, and in the last two years there has been a shift from mandatory to voluntary programs to control output. At the same time, efforts have been made under the provisions of Public Law 480 (see Chapter III) to stimulate domestic consumption and promote exports of surplus commodities, both on a commercial basis and on concessional terms, and under rural rehabilitation programs to tackle the problem of areas of chronic rural poverty.

The Agricultural Act of 1956 established the Soil Bank, which provided two means for the voluntary withdrawal of land from cultivation against compensation by the government. The Acreage Reserve provided for the retirement for three years of land under six basic crops (wheat, cotton, maize, rice, groundnuts and tobacco) against compensation in kind from Commodity Credit Corporation (CCC) stocks or (in the case of wheat) in cash. This program was discontinued after 1958 because it proved too costly and failed to reduce production, since the least productive land was withdrawn while the best was made more productive. The Conservation Reserve, the second program under the Soil Bank, provided for the application of conservation practices for three to ten years on retired cultivated land, against the reimbursement of up to 80 percent of their cost and the payment of an annual rental by the government.

From 1961 policy has shifted to "supply management," and most of the new measures since then have attempted to link price support not only to a particular level of acreage but also the "normal" production from that acreage, so as to discourage the more intensive cultivation of the reduced area. The first example of this new approach was the Emergency Feed Grain Program introduced in 1961. Support for feed grains was made contingent upon the withdrawal, against compensation, of 20 to 40 percent of the average 1959-60 acreage. However, in order not to give further stimulation to increasing production on the reduced acreage, the support price was to be paid not on actual production, but on the basis of the 1959-60 average yield per acre.

The main features of the successful Emergency Feed Grain Program were continued in 1962 and subsequent years. Under the 1962 Wheat Program

price support at the same level as in 1961 was made contingent on the diversion of at least 20 percent of the farm's wheat allotment, compensated by a payment at the support rate for 50 percent of the normal production of the diverted acreage. Farmers had the option of complying only with the acreage allotments without diversion and receiving a lower support price. Provisions for wheat programs for 1964 and subsequent years were made subject to a national referendum in 1963, but were rejected. They would have authorized the Secretary of Agriculture to determine an allotment for each year, in place of the fixed national acreage allotment, and established a two-price system with a support price of 65 to 90 percent of parity on wheat for domestic consumption and a share of exports, while all additional wheat produced would have received a lower price in line with world prices and the feed value of wheat. The 1962 legislation also provided additional scope and incentives for converting cropland to alternative income-producing uses, such as pasture, forestry, recreational facilities or wildlife conservation.

Subsequently there has been a trend toward production control based on voluntary rather than mandatory programs. The wheat program introduced in 1964 was voluntary, and no marketing quotas or penalties were in effect for 1964 and 1965. Compliance with acreage allotments, however, was made a condition of receiving price support, diversion payments, and also negotiable marketing certificates which were introduced to supplement the support price. The certificate program (domestic marketing certificates for purchase by millers and export marketing certificates for purchase by exporters) was intended to reduce budgetary costs and to permit price support for wheat to be related to its use. Compensation payments (based on previous production) were provided for growers who wished to divert additional acreage of up to 20 percent of their allocated area. The Agricultural Act of 1964 also introduced a voluntary two-year program for cotton, maintaining the acreage allotment for domestic use and a price incentive to growers staying within their acreage allotment; for export cotton acreage is permitted only to the extent that it will not interfere with the reduction of the carryover by at least a million bales a year, and no price support is provided. New legislation on tobacco, approved by farmers in a referendum in May 1965, continues acreage restrictions and introduces limitations on marketings.

The successive policy adjustments are indicative of the difficulty of finding solutions that are politically and socially acceptable to all groups. It has been officially estimated [2] that about four fifths of government support goes to efficient farmers, numbering less than a third of the total, who operate their farms as business enterprises and could supply all that is needed for domestic consumption and export. No support program could help the remaining two thirds of the farm population to become commercial enterprises and achieve a decent level of living from farming, and the solution would appear to lie in assisting their movement into other occupations. Because of the resistance of farm organizations to any basic changes that might diminish or remove the emphasis on price supports or might imply a large-scale movement of population out of farming, no radical changes were proposed in the legislation introduced in the spring of 1965. However, a Commission on Food and Fiber has been appointed to undertake a detailed examination of agricultural policy.

Pending its recommendations, the legislation proposed for the next two years makes some adjustments in price policies affecting major commodities. For wheat it is proposed to increase the value of the domestic certificates which millers must purchase (thus increasing the price to domestic consumers) and to reduce or eliminate the export subsidy. It is also proposed to extend the duration of acreage diversion programs to ten years to permit the withdrawal of some 40 million or more acres from production, and to strengthen rural rehabilitation programs.

The very limited success of the earlier programs in curbing the expansion of production and reducing stocks is apparent from the discussion of surplus stocks in Chapter II of this report. Although the main reason has been higher yields resulting from technological improvements, there have also been some factors inherent in the programs themselves. The restriction of acreage instead of physical output caused farmers not only to select their least productive land for withdrawal but also to intensify cultivation on the remainder. On land laid idle under the Acreage Reserve farmers were encouraged to plant soil-building crops, which increased output once the fields were returned to the cultivation of the original crop. The high price supports for cotton have also stimulated production outside the United States and facilitated the competition of man-made fibers.

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[2] Speech of Mr. Kermit Gordon, Director of the Bureau of the Budget, before the Committee for Economic Development, Washington, D.C., 19 November 1964.

TABLE X-1. - SUPPORTED OR STABILIZED PRODUCER PRICES OF WHEAT IN DEVELOPED COUNTRIES: 1964/65 IN COMPARISON WITH 1958/59

	Price in 1964/65	Price in 1964/65 in relation to 1958/59	
		At current prices	Deflated by cost of living index
	U.S. $ per 100 kg	*Indices, 1958/59 = 100*	
Canada [1]	5.11	107	99
Australia	5.93	101	91
New Zealand	6.90	117	102
Denmark	7.10	102	82
United Kingdom	7.30	96	83
United States	7.35	110	103
Ireland [2]	8.20	102	93
Yugoslavia	8.26	172	110
France	8.76	120	94
Austria	9.50	99	83
Belgium [2]	9.52	101	95
Italy	9.87	92	74
Netherlands	9.90	122	102
Greece [3]	10.00	128	122
Portugal	10.47	100	87
Sweden	10.63	134	113
Germany, Federal Republic of	10.66	103	90
Spain	11.10	132	96
Japan	12.50	123	94
Poland [3]	13.96	108	99
Norway	14.42	114	95
Switzerland	16.45	109	96
Finland	18.63	123	98

[1] Initial payment. - [2] 1963/64 price. - [3] 1959/60 = 100.

Levels of supported or stabilized prices in developed countries

Trends in farm prices in developed countries were discussed in Chapter IV on the basis of overall indices of prices received by farmers. In most countries the level of support prices is a major influence on the movement of these indices.

The most comprehensive information available on the level of price supports relates to wheat and is summarized in Table X-1, where the developed countries are arranged in order of the dollar equivalent of their supported or stabilized price levels in 1964/65. The price level in the countries at the foot of the table is some 2½ to 3 times as much as in those where prices are lowest.

Unfortunately the data in the table go back only to 1958/59, when systematic government returns to FAO were begun, and therefore cover little more than half of the period under review. Between 1958/59 and 1964/65 only three of the 23 countries included in the table have made a small reduction in the support price of wheat, while the price remained unchanged in one country. Prices have been increased in the remaining 19 countries, in 11 of them (half of the total included in the table) by 10 percent or more.

A very different picture is revealed, however, by the final column of the table, where the change in the support price has been deflated by the change in the cost of living index, in order to obtain some indication of how changes in the support price for wheat have compared with changes in the general price level. This shows that in only six countries has the increase exceeded the rise in the cost of living.

In general there appears to have been relatively little change in support prices for wheat in "real" terms. The reduction in support prices in "real" terms was 10 percent or more in only six countries (Austria, Denmark, the Federal Republic of Germany, Italy, Portugal and the United Kingdom), and the only increases of 10 percent or more were in Sweden and Yugoslavia.

Data for other commodities are shown in Annex Table 19. In general they show a roughly similar pattern to that for wheat, with support prices being increased in most cases, but only rarely as fast as the cost of living index.[3]

PRICE POLICIES IN DEVELOPING COUNTRIES

Products mainly for domestic consumption

In considering price policies in the developing countries it is necessary to distinguish between policies for staple foods and other products destined mainly for the domestic market and policies for export products. For products mainly for domestic consumption the main aim of agricultural price policies in these countries has been the stabilization of prices, so as to reduce the large fluctuations which are harmful to both the producer and consumer.

[3] For more detailed information on the level of supported or stabilized prices in recent years, see *Developments in agricultural price stabilization and support policies 1959-64*. (Working Document CCP 65/5 for the Thirty-Eighth Session of the FAO Committee on Commodity Problems.)

After the extreme food scarcities of the immediate postwar years had abated, it was possible for many of the restrictive controls on retail prices and internal trade to be gradually lifted. In view of the low level of consumer incomes, however, broad control to protect consumers had to be maintained, though avoiding undue interference with the normal functioning of the market. Thus it is probable that the main emphasis in most developing countries is still on the stabilization of consumer prices, although greater recognition has gradually been given to the need to stimulate production through effective measures to support producer prices and improve marketing organization.

The regulation of food supplies during the war and immediate postwar years was generally entrusted to statutory bodies with authority to buy and sell, to import and export, and to operate buffer stocks. During the last decade many of these bodies have been reorganized or replaced by new bodies with wider functions to implement measures for price stabilization, not only at the consumer level but also measures affecting producers, providing price incentives and other supports to stimulate production.

Examples of statutory bodies with these wider powers include the Compañía Nacional de Subsistencias Populares (CONASUPO) in Mexico, which purchases at guaranteed prices from producers, maintains stocks of food staples and provides rural consumers with various necessities at low prices. In India, state trading in food grains was adopted in 1958, but the experience proved unsatisfactory and state purchases were discontinued after a few years; in 1965 a Food Corporation was established with extensive responsibilities to purchase, store, distribute and sell food grains (especially rice), to implement measures to encourage production, to provide farmers with price assurances, credit and farm requisites, and to improve the marketing and distribution of food at the retail level. In the Philippines, paddy and maize purchasing from producers and selling to consumers had been handled by a statutory body whose functions were reorganized in 1962 to implement a new policy including fixed prices to producers and, when necessary, the subsidization of consumer prices. In Iraq, a government purchasing board has been set up which, with the Grains Board, buys and sells in order to stabilize internal prices. Ghana has established a Food Marketing Board with responsibility for the purchase and distribution of foodstuffs; initially grain crops only have been handled, but activities are to be gradually expanded to cover other crops. In other African countries where marketing boards or stabilization funds have for some time operated in respect of export crops, new agencies have been established, or existing ones reorganized to handle the purchase of crops for domestic consumption and the regulation of market supplies.

During the decade under review there has been a fairly widespread move in the developing countries toward minimum price supports to stimulate production. In some countries the introduction of minimum guarantees immediately followed the lifting of various restrictive controls previously in effect, such as ceilings on retail prices, compulsory sales by farmers to the government at low fixed prices, and various restrictions on domestic trade. Pakistan, for instance, removed controls on retail prices and restrictions on internal trade in food grains in 1961; monopoly procurement of wheat and rice was abolished, minimum prices were introduced for voluntary sales to the government, and buffer stocks were built up. India began to relax zonal bans on the movement of food grains in 1960 and to build up large government stocks, but the food crisis in 1964 has necessitated a temporary return to some of the restrictive measures of earlier years in order to protect consumers. In the third five-year plan (1961-65) the principle was established that minimum guaranteed prices should be announced prior to the growing season; such prices were announced in 1962 for wheat and paddy and subsequently for other crops. In 1965 an Agricultural Price Commission was established in India to advise on price policy and levels of prices, including price relationships between various agricultural commodities, and to evolve a balanced price structure in relation to the needs of the economy and the interests of both producers and consumers.

In the Republic of Korea, the Law of Agricultural Products Price Support, passed in 1961, broadened the government's authority to purchase and dispose of agricultural commodities, extend loans against stocks of agricultural products and, when necessary, promote and subsidize exports in order to bolster domestic prices. It also provided for a price review committee to advise on price levels, loans and financial appropriations necessary to implement government policies.

In many countries, price guarantees for one or two basic crops had already been in effect since the early 1950s, and during the last decade the guarantees have been extended in some of them

to other crops. For example, several countries which had introduced price schemes for wheat in earlier years expanded them to include other crops: for instance, Brazil for a number of crops, Guatemala for rice and maize, and Nicaragua for rice. Other countries have introduced guaranteed prices for the first time: for instance, Libya for wheat, barley and olive oil, Paraguay for wheat, Peru for rice, Senegal for millets and rice, Syria for wheat, and Tanzania for rice and maize.

In most cases the purpose of price guarantees in the developing countries has been not so much to protect a given level of income as to shield the producer against sudden price drops caused by manipulation of the market by intermediaries, or by an excess of marketed supplies just after the harvest. Thus guarantees have usually taken the form of minimum intake prices set at a level in line with prevailing average market prices throughout the season, leaving producers free to sell either on the open market or to the official body at the minimum price. In some countries, however, the guarantee is a fixed price linked to monopoly purchases by the government.

While many new measures have been introduced during the period under review, there is unfortunately too little information on the prices actually received by farmers (as opposed to the level of the guarantees) to determine the extent to which these measures have been effective in securing more stable and remunerative prices to producers and in providing the necessary incentive to increase production. It seems, however, that the many difficulties in the way of successfully implementing price policies in developing countries, stressed at the outset of this chapter, apply particularly to the basic food crops. Price support schemes for " cash crops " for domestic consumption have often met with greater success.[4] Thus the rapid development of sugarcane production in India and Pakistan in recent years is in part due to the high prices offered to producers.

Price stabilization for exports

Price policies for export crops have aimed both to maximize export earnings and to minimize fluctuations in producers' returns. During the decade there has been some reorientation of policies to adjust to changing market conditions or provide greater incentives for the expansion of production.

In most of the developing countries, where one or more agricultural products are the chief foreign exchange earners, the principal means of implementing price stabilization policies for such crops has been the organization of markets through marketing boards, stabilization funds, or other regulatory agencies. In many instances, especially in Africa and also in some Far Eastern countries, such forms of marketing organization originated in the interwar period when markets were depressed or during the war years when normal marketing channels were disrupted, and were a means of protecting producers against price fluctuations and keeping alive the specialized industries. Their demonstrated usefulness in the particular conditions in developing countries, where producers are in a weak bargaining position and have little means of knowing the value of their produce in the changing market situation, led to their continuation after the war. In a number of other countries, entirely new bodies have been established along these lines to regulate the marketing of export crops.

Some of the boards have only an advisory capacity (for example, in Ethiopia for coffee), but usually they have a much wider role in regulating marketing through centralized purchases by co-operatives or licensed agents and controlling the flow of exports (as in most cases), while sometimes (as in Burma for rice) they may have monopoly control over marketing and exports. In many cases they implement minimum price schemes, influence production by announcing prices in advance of the sowing season, encourage the improvement of quality by fixing a sliding scale of minimum prices or offering premiums for superior qualities, and provide other aids to producers such as the supply of planting material and other production requisites.

In the former British territories of west Africa, where the West African Produce Control Board was organized in 1942, various separate marketing boards were established in the early postwar period to take over and in some cases expand its operations. Most of the boards initially fixed producer prices well below world market prices in order to build up reserves that were used, *inter alia*, for price support in years of falling prices. Export taxes levied on the boards have usually been for general revenue though also for research and development purposes.

During the last decade no basic alterations have been introduced in the structure of these boards, though

[4] FAO. *Implementing price stabilization policies in Asia and the Far East*. Rome, 1963, p. 6.

there have been further efforts to introduce quality standards and improve the competitiveness of their products on world markets. To prevent or reduce trading losses in case of sharply falling prices during the marketing season, the Uganda Coffee Board was given authority in 1955 to alter prices to growers after the marketing season had begun. For coffee, further controls have been introduced in some countries, mainly in order to facilitate the observation of the export quotas of the International Coffee Agreement. In Tanzania, for example, the Coffee Board became solely responsible in 1961/62 for coffee export marketing, which had previously also been handled by co-operatives, while in 1963 the Uganda Coffee Board became the sole buyer of dry Robusta coffee for export and sales to private traders were abolished.

In the former French African territories, stabilization funds (*caisses de stabilisation*) were established from 1955 as statutory agencies to stabilize prices to producers for various export crops. These bodies controlled private or contract sales, administered a system of fiscal charges and occasionally also operated buffer stocks and extended various aids to producers. Their role in price stabilization was aided by the support fund established in France for purchases of groundnuts, coffee and cotton at higher than world prices.

In their initial operations the caisses differed from many marketing boards in that they were not marketing monopolies, but regulated marketing by controlling private trade through licensing or approval of contracts in order to assure stable producer prices. Recent developments, however, point to increasing organization and functioning along the lines of the marketing boards and more direct intervention in the marketing and disposal of export commodities. The changes began with independence, when some of the caisses were abolished and others transformed (for example, in Guinea, where wholesale and export trade were made a government monopoly) and new bodies created. Adjustments have also been made in price support policies following the signing in 1963 of the Second Convention of Association with EEC, under which prices will no longer be supported at the high level previously guaranteed by France (though the countries will benefit from assurances in EEC of higher returns than in other markets).

An example of the new type of organization is the Office de commerce agricole (OCA) of Senegal, which was set up in 1960 with wide powers to intervene in the marketing of agricultural produce, and was authorized in 1962 to undertake the purchasing of groundnuts. Eventually government-organized co-operatives will take over groundnut purchases in order to eliminate private traders and protect producers against usurious practices.

In other developing regions also, stabilization policies have been adjusted or new policies introduced to liberalize trade and thus act as an incentive to production for export. Argentina, for example, began in 1955 to introduce extensive changes in agricultural policy and to promote agriculture as the main foreign exchange earner. Minimum price guarantees were introduced to replace fixed prices, various restrictive measures on domestic trade in agricultural products were removed, a National Grains Board was established to regulate the grain trade and implement minimum prices and, in order to facilitate export transactions, multiple exchange rates were replaced by a single freely fluctuating rate.

In some countries, somewhat greater protection of producers' incomes against sharp declines in export prices has been afforded by changes in the method of price support. For example, in Pakistan various efforts have been made to stabilize the jute price, including control of acreage through a system of licensing, and the introduction in 1958 of minimum export prices. In periods of sharp price falls, however, these controls could not be implemented and had to be temporarily suspended. In 1962 the government authorized the Jute Board to form a buffer stock, and minimum prices to producers were introduced for the first time since 1953; in 1964, minimum export prices were abolished, but the continuation of minimum prices to growers was authorized, together with the operation of buffer stocks and a quota system for exports.

In 1955, Thailand established a Public Warehouse Organization which is authorized to establish minimum prices and make support purchases of rice, maize and jute when market prices fall too low. The implementation of these measures for jute and maize has so far not been considered necessary, although in some years floor prices have been established for rice and purchases made for buffer stocks.

In Burma and the United Arab Republic, the basic marketing structure for export crops has been altered by the elimination of private intermediaries. In Burma, the gradual nationalization of private trade was begun in 1963, when the government assumed monopoly control over the internal disposal and processing of crops as well as over exports. In the United Arab Republic, the Egyptian Cotton

Commission was established in 1961 to purchase raw cotton from producers and rural intermediaries at fixed prices and to sell to processors and export firms at prices based on world market quotations; cotton export firms were reorganized into semi-public corporations.

Levels of supported or stabilized prices in developing countries

The stabilization of prices of food crops at high levels relative to the prices at which they can be imported is not common in developing countries, where consumer incomes are low and governments cannot afford heavy subsidies. In several countries, however, high guaranteed prices have been the principal means of encouraging production for import substitution and raising producers' incomes, as for example in Ceylon for paddy and other food crops (subsidized by the agricultural export sector), and in Guatemala for wheat. Where such domestic price guarantees have been fixed higher than import prices, governments have usually set a quota that millers or processors must purchase from domestic production, as in Venezuela in order to qualify for duty-free imports of oilseeds, cotton and milk products, and in a number of other countries in Latin America with respect to wheat.

It appears from Annex Table 19 that in most of the developing countries officially established prices for the main crops, especially those produced for the home market, have on the whole been maintained without much change during the period under review, particularly if they are considered in relation to changes in the general level of prices. Apart from countries with runaway inflation, exceptions include, on the one hand, a number of countries where agricultural price levels had previously been rather low, and on the other hand a number of countries where prices of some export crops had to be lowered significantly during the decade.

Some of the larger price increases between 1958/59 and 1963/64 include increases of about a third in prices of barley in Morocco, maize and paddy in Colombia, and paddy in the Philippines. Sugarcane prices in India were raised by over 10 percent. In such countries as Argentina, the Republic of Korea and Indonesia, prices have been repeatedly raised to keep pace with runaway inflation and there have recently been substantial increases in Congo (Brazzaville) for the same reason. In Argentina, guaranteed prices of grains and oilseeds have been brought closer to the levels prevailing in world markets and, in Indonesia, procurement prices of rice were raised significantly to approximate the domestic free market prices.

Difficulties experienced in export markets have led to some reductions in guaranteed prices, especially in the many African countries that operate price stabilization schemes for various export crops. Cocoa prices have frequently been adjusted during the decade; in 1964 they were more than a third lower than at the beginning of the decade in Nigeria, and a quarter lower in Ghana, where they have remained stable for the last five years. In the Ivory Coast and Togo, cocoa prices were increased during the first half of the decade, but have been reduced in the last six years. Coffee prices were reduced substantially in most countries. Nigeria has substantially reduced the producer price for groundnuts in recent years, and also the price for palm kernels after having raised it in 1960. The supported market in France for exports of groundnuts and cotton from the Franc Zone has lent somewhat more stability to producer prices, and in some cases they were raised in the former French territories in the second half of the decade.

PRICE POLICIES IN CENTRALLY-PLANNED ECONOMIES

U.S.S.R.

From about 1953 onward there has been considerable preoccupation in the U.S.S.R. with the enlistment of the " material interests " of the peasants (in respect of the production both of the *kolkhozes* and of private plots), primarily by means of higher prices. In the period 1946-53, retail food prices were reduced almost every year, and although the prices paid by the state remained the same, the reduction in retail prices meant a fall in free market prices. Since then, however, there have been successive increases in purchase prices and various changes in the system of state deliveries, designed to overcome the lag

in production, especially of livestock products.

At the beginning of the decade under review there were several different forms of procurement: compulsory deliveries to the state at low prices (often below the cost of production); payments in kind for the services of the Machinery and Tractor Stations (MTS); sales to the state at much higher prices (often three times those for compulsory deliveries) of quantities remaining after fulfillment of these obligations; and contract sales of industrial raw materials. Finally, sales could be made at advantageous prices on the free market, both by the kolkhoz itself and by its individual members (from the production of their private plots and also from the payments in kind they received from the kolkhoz).

Table X-2 shows the official indices of prices paid by the state for agricultural products. These indices are weighted averages of the prices for compulsory deliveries and for sales. They thus reflect not only the sharp increases in prices made in almost every year between 1953 and 1959, but also the reductions in the quantities subject to compulsory delivery, which have automatically increased the proportion of sales at higher prices.

In 1957 compulsory deliveries from the production of private plots were abolished, and in 1958 there were radical changes in the whole system. The MTS having been abolished and payments in kind for their services having disappeared, the three remaining forms of procurement (compulsory deliveries, sales, and contract sales) were replaced by a single form of sale. For crops the prices paid by the state for this new form of sale were rather above the average of the former prices for sales and deliveries, while for some livestock products they were above the former sales prices.

In spite of this substantial increase in prices, aimed at assisting the kolkhozes to purchase the machinery of the MTS, the prices of some products remained below their cost of production. As a result, in June 1962 prices for livestock were increased by 35 percent and for butter by 10 percent, and cotton and sugar beet prices were also raised subsequently. Delivery contracts for two to five years were reintroduced in February 1961, on which the kolkhozes were able to obtain cash advances.

The low level of agricultural prices was one of the main themes of Mr. Brezhnev's report on agriculture of March 1965. He stated that, in many areas and for many products, prices were still below the cost of production. It has therefore been decided

TABLE X-2. - U. S. S. R.: INDICES OF PRICES PAID BY THE STATE FOR AGRICULTURAL PRODUCTS [1]

	1953	1954	1955	1956	1957	1958	1959
	..... *Indices, 1952 = 100*						
ALL AGRICULTURAL PRODUCTS	154	207	209	251	266	296	302
CROPS	132	171	169	207	209	203	206
Wheat	245	752	524	647	603	621	656
Rye	169	730	668	625	622	1 047	1 114
Oats	119	617	561	550	642	783	862
Barley	152	601	592	458	598	888	926
Maize	207	564	685	572	738	819	1 008
Cotton	105	102	96	114	115	106	107
Flax	139	166	215	213	216	239	218
Sugar beet	144	111	130	229	243	219	217
Sunflowerseed	528	626	987	928	947	774	881
Potatoes	316	369	368	814	859	789	834
Fruit and grapes	119	135	138	192	188	179	169
LIVESTOCK PRODUCTS	214	307	319	371	420	546	561
Cattle	338	476	464	508	604	1 147	1 226
Sheep and goats	474	608	675	717	839	1 382	1 468
Pigs	453	786	806	976	1 151	1 156	1 181
Milk	202	289	303	334	362	404	404
Eggs	126	135	152	155	169	297	310
Wool	107	146	158	246	285	352	353

[1] Weighted averages of prices for compulsory deliveries and for sales.

to raise prices for grains by 50 to 100 percent, for cattle by 20 to 50 percent, for pigs by 30 to 70 percent, and for sheep by 10 to 70 percent. Compulsory sales of grains to the state have been reduced from 65 to 56 million tons annually, but the kolkhozes are to be encouraged to sell their surplus to the state at prices 50 percent higher than for the compulsory sales. The level of compulsory sales is to be determined for several years in advance, and prices will remain fixed irrespective of the size of the harvest.

The earlier increases in prices had raised the incomes of the kolkhozes [5] and enabled them to increase cash payments to members, which account for about 35 percent of kolkhoz cash income. At the same time, however, there has been a reduction in payments in kind, and consequently in the opportunity to make sales at high prices on the free market.

[5] The average gross kolkhoz income per 100 member families almost trebled in money terms between 1953 and 1958. From 1958 to 1962 it increased by a further 34 percent, but there has been a similar increase in expenses because of the cost of maintaining the machines purchased from the MTS.

Monthly advances on the year's cash payments have been introduced, and some kolkhozes have established minimum payments or even a money salary supplemented by production bonuses. Whereas in 1959 it seemed that such improvements were likely to be rapidly extended, there has since been comparatively little progress, principally because of the insufficient financial resources of many kolkhozes. However, the speech of Mr. Brezhnev referred to above announced that the debts of the kolkhozes to the state would be abolished and that taxes on the kolkhozes will in future be calculated on net rather than gross income. He also promised improvements in the payments to kolkhoz members and measures to ensure that each kolkhoz has sufficient funds to make guaranteed minimum payments.

Eastern Europe

In the eastern European countries the system of state deliveries and agricultural prices was closely modeled on that used in the U.S.S.R. In these countries also there have been substantial modifications since 1953, designed to provide greater incentives for expanding production.

Generally the proportion of compulsory deliveries to other forms of sale has been reduced, and the gap has been narrowed between prices for different types of delivery to the state and between prices for such deliveries and for sales on the free market. In Czechoslovakia, for example, sales in excess of compulsory deliveries amounted to only 5 percent of marketable production in 1953, but by 1955 they had increased to a third for many products. In Romania, the proportion rose from a third in 1953 to half in 1955 and two thirds in 1958. The number of products included in the compulsory delivery system was also reduced, so that in Poland, for instance, grains, milk and meat were the only products covered from 1955. At the same time, prices for state purchases were substantially increased.

Further changes were introduced in the late 1950s. In Hungary, compulsory deliveries were abolished in 1956 and the various purchase prices replaced by a single price for each product based on contracts between the state and each enterprise. The new prices were set much higher than before and were determined on the basis of production costs. Compulsory deliveries were also abolished for many products from 1957 in Bulgaria, Czechoslovakia and Romania, and for other products the share of compulsory deliveries was reduced and that of contractual deliveries increased.

Prices were raised substantially, in order to cover production costs, which had increased after the equipment of the MTS was transferred to the collective farms. From 1962, prices for livestock products were increased further in order to encourage production.

In some countries the costs of production of only the most efficient farms were taken into consideration when determining prices. Some products therefore became unprofitable for most collective farms and prices had to be adjusted. Major price increases took place in Bulgaria in 1961, in Romania in 1963, and in Eastern Germany in 1964. There were smaller changes in Czechoslovakia, Hungary and Poland, where various shortcomings in regional and seasonal prices were rectified and price incentives introduced for certain products.

In recent years a premium system has also been built up in some countries. Czechoslovakia has introduced premiums for milk marketing above the average of the previous three years, and the system is to be extended to grains and sugar beet. In Eastern Germany premiums for increases in the annual deliveries to the state of milk and slaughter pigs came into force at the beginning of 1965.

China (Mainland)

Little information is available about agricultural price policies in China (Mainland). It is reported, however, that the state's purchasing prices for agricultural products were raised by an average of 57 percent and those of food grains by 61 percent between 1951 and 1963, while retail prices were kept relatively stable.

As in the U.S.S.R., there have been substantial reforms in the method of payment of commune members, in order to increase labor incentives. Up to 1960, wages continued to be paid on a day-rate basis, and there was much discontent as they were the same for efficient or inefficient work, for light or heavy jobs. From late 1960, wage points have been calculated on a piece-rate basis, taking into account the quantity and quality of the work. Taxes and other deductions were reduced and the share of wages paid in cash generally raised to 70 percent.

" Small freedoms " introduced at the same time to " activate the rural economy " included the handing back to each family of a plot of about 0.2 hectare

for kitchen gardening and the raising of small animals. Free markets were re-established in rural areas (though not in large villages or towns) and villagers given permission to keep or sell their subsidiary products. With the exception of grains, cotton and oilseeds, major farm products could also be sold at rural trade fairs, provided contracts for their sale to the state had been fulfilled.

OTHER ECONOMIC INCENTIVES

Grants and subsidies

In addition to price supports, many developed countries also make cash payments, not tied to output, to sustain the incomes of small farmers. These are often in conjunction with regional programs for agricultural improvement. In most European countries special grants are paid to small farms in less favored parts of the country (for example, sandy soils in the Netherlands, mountain regions in other European countries) and also grants for the first few cattle owned. In Switzerland, a cattle grant was introduced in 1959 and a distinction was made on the basis of three different mountain zones, with larger grants for the least favored zones. Denmark established a rationalization fund in 1961, from which direct payments are made for certain categories of holding (covering about 75 percent of all farms) and on the number of cows.

During the last decade more emphasis has been placed in the developed countries on measures to improve the productivity of agriculture and to reduce costs, as a means of lessening the gap between farm and nonfarm incomes. In nearly all developed countries increasing amounts have been spent on programs to reduce interest rates on loans for farm improvements. In addition, farmers have benefited from government grants for improving agricultural land and subsidies to cover in part the cost of farm equipment, feedstuffs, fertilizers, and the transport of agricultural requisites.

The United Kingdom is stressing the need to make further improvements in the operation of farms as business enterprises, and has begun several new schemes to assist farmers. Ireland has introduced subsidies to reduce the cost of fertilizers. Fertilizer subsidies were introduced in the Federal Republic of Germany in 1956 and increased during the next few years but reduced thereafter and abolished at the end of 1962/63, while subsidies on farm fuel were raised. The fertilizer subsidy has also been systematically reduced in the United Kingdom. In 1958, Austria began a program to reduce the cost of transport of feedstuffs to mountain areas. Australia began a three-year scheme in 1963 to subsidize phosphate fertilizers.

Many developed countries also provide grants for the improvement of farm equipment and buildings. Norway established a Farm House Fund in 1956 to assist the modernization and reconstruction of farm buildings and (from 1958) the construction of new silos. Grants for silo construction have also been introduced in Ireland. In Greece, a program for horticultural development begun in 1960 called for subsidies of up to 50 percent of the cost of purchasing equipment and further subsidies to reduce the interest on loans for this purpose. In Italy, subsidies are provided for purchasing farm machinery.

Grants and subsidies are also available in many developed countries for structural improvements to farm units, such as farm consolidation. These are described with other land-tenure measures in Chapter XI.

In some of the eastern European countries the prices of certain production inputs (especially fertilizers) have been reduced to the basic cost of producing them. For machinery and building materials, price differentials involving higher prices for collective farms than for the state sector that existed in some countries (for example, Bulgaria) have been abolished. Subsidies have been introduced for the purchase of machinery and for construction and improvement works on certain co-operatives. In a few cases co-operatives are able to obtain some inputs (such as pesticides for tobacco in Bulgaria) free of charge.

In almost all of the developing countries the cost of fertilizers, and in most cases also of planting materials and other farm requisites, is partly subsidized. In some countries such programs cover only specific crops, especially export crops, while in other countries they are limited to certain regions. India has attempted in recent years to facilitate the more widespread use of fertilizers by subsidizing the cost of transport to the more inaccessible regions so that

they can be sold there at the same price as in the plains. To encourage the timely availability of fertilizers when they are needed, a rebate was given to distributors who procure fertilizers in advance. In Malaysia, the lime subsidy for acid paddy lands has been raised, while a reduction has been made in the general fertilizer subsidy, which had achieved its aim of encouraging the more widespread use of fertilizers. Many of the statutory marketing boards and similar bodies in African countries have provided small but increasing subsidies on fertilizers and planting materials for the development of export crops. In many countries, especially those of Latin America where there were high tariff duties or other measures restricting imports of materials used in agriculture, legislation has been passed to liberalize trade, provide greater foreign exchange allocations for materials and equipment, and exempt them from import duties.

Crop and livestock insurance

Since farm incomes depend not only on prices but also on the effects of the weather, crop and livestock insurance is an important aspect of the provision of incentives. Comprehensive insurance schemes to give further protection to farm incomes have been in force for a long time in Japan, Mexico, and the United States, and have been introduced in several other countries during the last decade.

In 1959, Canada introduced a crop insurance act which permits agreements between the federal and provincial governments for the institution of crop insurance programs; the scope of these programs was widened in 1964. In Sweden, a crop insurance scheme was introduced in 1961 providing compensation for crop damage when output falls short of the "standard crop" (determined by average yields over a long period in each of the crop evaluation areas) by more than 15.5 percent. A fund of Kr. 30 million was established, of which farmers and their organizations provide about two thirds and the government the rest. Legislation was passed in Greece in 1961 to provide insurance against hail and frost damage, and in France in 1964 against various calamities.

Crop insurance schemes are costly and difficult to implement, especially in the conditions of developing countries, but they have been attempted in a few of them. Ceylon introduced paddy crop insurance in a few pilot areas in 1958, and in 1961 enacted legislation to bring a larger extent of paddy land under the scheme. Since 1956, Cyprus has operated an Agricultural Provident Fund Scheme offering limited insurance cover for some of the major crops. In India, the Punjab Government introduced a pilot project of crop insurance in six districts in 1960; the scheme is to be gradually extended to other districts and made compulsory.

The National Institute of Crop Insurance in Brazil was reorganized in 1965 and a closer link established between crop insurance and agricultural credit granted by public institutions. In Mexico, a national corporation was established in 1963 to administer crop and livestock insurance, which had previously been in the hands of the federation of co-operatives and the state-subsidized association of private insurance companies. In Puerto Rico, crop insurance was formerly limited to coffee but has recently been extended to bananas.

In the absence of crop insurance schemes, many governments provide assistance on an *ad hoc* basis for crop losses, as, for example, in Uruguay against hail damage. Many countries also provide various aids during periods of extended drought, such as emergency fodder supplies, credit to avoid the disposal of breeding stock or to purchase agricultural requisites, and rebates on the transport of feed, agricultural requisites and livestock.

PRICE POLICIES FOR FISHERY AND FOREST PRODUCTS

Fisheries

The use of price support measures for fish and fish products has expanded during the last decade, though mainly in the developed countries. The most common type of scheme is the setting of minimum prices, as for example in Belgium, the Federal Republic of Germany, Sweden and the United Kingdom for herring and cod landings. Other schemes include guaranteed prices to fishermen irrespective of the level of market prices, and orientation prices below which intervention in the market

takes place, such as the suspension of landings (as in the Japanese saury industry) or the control of distribution by a special body (as in Spain).

Fixed prices are common in the Scandinavian countries, particularly Norway and Iceland, and fishermen are compelled to sell all their catch at certain prices stipulated in advance. In some cases the destination of the catch is also prescribed.

In certain countries the schemes are operated by the fishery industry itself, through producers' organizations or co-operatives. In Iceland, for instance, landed prices are fixed by a board on which vessel owners, buyers and fishermen's trade unions are represented. Often the government role is limited to establishing the organizational framework and providing statutory protection.

The need for price support schemes in the fishery industry has increased in recent years because of the trend toward the processing of fish on board the catching vessel while still at sea and toward the integration of catching, processing and marketing operations. Fish processed at sea is sold almost exclusively by private contract and not by auction, while the landings of integrated companies also often bypass the auction market. The smaller the proportion of the total catch that is auctioned, the more unstable are auction prices likely to become, and the greater the need for price support.

In many countries, however, especially the developing countries, landed prices are still fixed by direct bargaining between buyer and seller. It is often not possible to adopt an auction or contract system because of the scattered and irregular landings and the small number of buyers. For the same reasons it is not possible for the government to administer minimum or fixed price schemes.

In addition to measures directly affecting prices, many fisheries receive other forms of indirect support. These include subsidies based on the amounts landed, grants and loans for new vessels and equipment, and restrictions on imports and landings of foreign fish.

Forestry

Government price support policies are practically nonexistent in the field of forestry. To a great extent, this is because of the high proportion of forests that are publicly owned, so that governments are primarily concerned with the direct administration of the forests. Various aspects of the provision of incentives to private forestry are, however, discussed in the next chapter.

Chapter XI. - Institutional improvements

The importance of institutional obstacles to agricultural development has increasingly been realized during the past decade. Indeed, unsuitable systems of land tenure, inadequate marketing facilities, and the lack of credit on reasonable terms have come to be recognized as perhaps the key factors holding up agricultural development in the developing countries.

Progress has been made in each of these fields during the decade, although in most countries it is still only a beginning and much remains to be done, especially to ensure the effective implementation of the measures that have been worked out. Experience during the decade has sharply brought out the interdependence of measures in such fields as land tenure, credit, marketing, price policy and extension. This emphasizes the crucial role of multipurpose organizations, co-operative or otherwise, capable of providing the vehicle for improvements in all these related fields.

The present chapter discusses developments concerning land tenure, credit, marketing and farmers' organizations. Separate sections deal with the substantial institutional changes that have occurred in the centrally-planned economies, and also with fishery and forestry institutions.

LAND TENURE

It is now widely accepted that land-tenure institutions cannot be allowed to take care of themselves. The way the land is owned and used is generally recognized to have a great bearing on the efficiency of agriculture as well as on levels of rural well-being. The way in which problems are perceived and the measures found appropriate to deal with them vary greatly from country to country, but the situation can most conveniently be summarized in the framework of a threefold classification of agrarian types. There are: firstly, the developed industrial countries where, as noted in Chapter IV, the rural population is declining; secondly, those developing countries where there is private ownership of land; and thirdly, developing countries in which much of the land is still held in communal tenure. These three categories will be considered in turn. There are also the agricultural institutions of the centrally-planned countries but, as already noted, these are considered later in a separate section of the chapter.

Developed countries

Nearly every industrialized economy has been growing at least fast enough over the last decade for the agricultural population to decline. In countries with large-scale agriculture this poses no great problems. Both on large capitalist farms and on collectives, the reduction in the labor force has been accompanied by more intensive capitalization, a tendency toward larger farm units, and an overall reduction in costs per unit product.

There is a greater need for institutional adjustments in countries where many family farms are too small to be economically viable. When family farmers leave the countryside, they may prefer to keep their farms as a security for retirement, or from sentiment. If they do try to sell, the land market may not be active enough to absorb large quantities of land in small lots, because it is often those with the least capital and initiative who stay in farming. Hence land is likely to remain idle.

This is not in itself serious in countries where food production is ample. In fact it provides an opportunity to narrow the income disparities between industry and agriculture. If the remaining farmers could, without excessive cost, be given the extra land made available by those leaving it, they would have a better chance of earning incomes comparable with those in the towns.

Institutional devices to accelerate the transfer of land do not, however, fully solve the problem. Many countries have recognized a need for measures

not only to speed the transfer of such land as naturally becomes available, but also to induce the least progressive farmers to leave agriculture in order to provide more land to be transferred.

Financial inducements of various kinds can be used to further these policies. Pensions have been offered to older farmers, either to all older farmers with holdings of a certain size, as in the Federal Republic of Germany, or to those who actually give up their holdings, as in France and the Netherlands. Special vocational retraining schemes have been started in Belgium and Sweden; in the United States, a similar scheme includes specific subsidies for training members of farm families whose income falls below a certain level. Generous credit terms have been offered in a number of countries to those who wish to buy land in order to expand their holdings. Alternatively, there have been special tax exemptions (as in Italy) for those who buy land to enlarge small holdings.

More direct tenure measures have also been required. Sometimes they have been extensions or adaptations of systems designed for land consolidation schemes, sometimes they have been entirely new. In France, for instance, the long-established land consolidation committees may designate " land reorganization areas " in which they have powers to acquire uncultivated land for sale, and to block up vacant lands by exchanges into useful holdings which they then provide with buildings and equipment before selling or leasing. These committees have been practically superseded, however, by a new system of public bodies which have been given the right of preemption whenever land is offered for sale within the area of their competence. Such rights of preemption have also been given to public bodies in Denmark, Finland, the Federal Republic of Germany, Norway, Poland and Sweden. Bodies which may purchase land for the same purpose, though without preemptive rights, exist in Ireland and the Netherlands. Powers of compulsory purchase (that is, even if the land is not being offered for sale) have been given to public bodies in Finland and Ireland, though only if the land is inefficiently cultivated.

In addition to such positive measures, the same policy objectives have sometimes required the amendment of restrictions earlier imposed to deal with economically quite different situations. Denmark and Japan, for example, have recently relaxed egalitarian measures imposing ceilings on land holdings designed to protect the family farming system and prevent the concentration of ownership and the growth of tenancy..

Developing countries with private ownership of land

The second group of countries comprises the developing countries with established forms of individual landownership. These are the countries where land reform in the sense of a large-scale reallocation of rights to land has recently become a dominant issue.

In respect of land reform there has been a perceptible shift in thinking in the last decade. Ten years ago land reform was thought of primarily as the kind of fundamental change which takes place after revolution or in the aftermath of war, the redistribution of land representing both the result and the consolidation of a shift in the locus of political power. Examples were the wave of land reforms in eastern Europe after each of the two world wars, the postwar reforms in Japan, both Chinas and both Koreas, the land reform which followed the Egyptian revolution, and in Latin America the reforms in Mexico and Bolivia.

More and more, however, land reform has come to be seen as a means of ensuring political and social stability – a preventive against revolution rather than a reason for it. There has also been growing recognition that the existing forms of land tenure frequently inhibit agricultural development: that insecure tenants are unlikely to invest in improvements; that tenants caught in a vicious circle of poverty and indebtedness have no resources to invest in improvements; that overcrowded populations continually subdividing and fragmenting tiny holdings are likely to destroy the soil; that social structures conditioned by great inequalities of landed wealth are likely to inhibit all initiative and effort toward self-improvement on the part of subordinate classes. Debates in international bodies and such declarations of policy as the Punta del Este Charter of the Alliance for Progress have helped to propagate this conception of a planned land reform as a prerequisite for political and social stability and economic advance.

The stress on economic purposes has also served to develop broader conceptions of what an ideal land reform should do. Reforms which simply redistribute land, putting it in the hands of men who lack the resources or the experience to farm it properly, have on occasion led to falls in production.

Where a major objective is to improve the performance of agriculture this becomes inadmissible. Hence the emphasis on co-ordinated programs which, simultaneously with the grant of land, provide the beneficiaries with credit, technical advice and marketing services, help them to form co-operatives, build roads to link them to the towns, and so on.

Partly as a consequence, there has often seemed to be a greater gap than before between the apparent intentions of land reform laws and their actual execution. Now that there is such a substantial body of opinion in favor, in principle, of the deliberate readjustment of land tenure systems, it has become easier to pass land reform legislation. But the consensus in principle can soon break down in practice when the private interests of politically powerful groups are directly threatened. Loophole amendments are likely to be introduced, or the executing agencies of land reform are likely to be so starved of administrative and financial resources that their operations have only a limited impact.

The emphasis on the all-embracing approach has also sometimes had negative results. Where high standards of credit, technical and infrastructural services are planned for the land reform beneficiaries, the highly elaborate administrative structures required may be so difficult to co-ordinate that effective action is inhibited (especially if a variety of autonomous agencies are involved), while the high costs of these supporting services may consume such a large proportion of the funds available that the area affected has to be strictly limited, and the original intention to make a far-reaching change in the structure of landownership is lost sight of.

Tenancy systems

Problems of tenancy systems predominate in the more densely populated countries of the Near East and Far East. The greater the density of population, the higher is the consequent level of rents, and the greater the disparities of wealth and the poorer the tenants. The degree of security of tenure may vary greatly; even where land is very scarce and competition for tenancies acute, village custom may afford reasonably good protection. Tenants may, on the other hand, be liable to the total loss of their right to cultivate at a moment's notice. Usually, however, what keeps production at a low level is less insecurity than poverty and the accompanying illiteracy, malnutrition and lethargy, as well as sheer inability to buy agricultural materials. Sharecropping, as compared with tenancy based on fixed rents, also tends to limit the incentive to increase production.

Among the countries which have sought to remedy the situation by the redistribution of land during the last decade are India, Iran, Iraq, Pakistan, the Philippines, Syria, and the Republic of Viet-Nam, while the reforms of China (Taiwan) and the United Arab Republic begun in the previous decade were completed during the period.

The Indian reforms represented a second wave after the elimination of the largest holdings: those of the Zamindars and Jagirdars (" intermediaries, " who were as much tax collectors as landlords). The second wave imposed acreage ceilings on " substantial holdings. " By the early 1960s every major state had enacted legislation of this kind, the lowest ceilings ranging usually from 25 to 30 acres for the best irrigated land (15 acres for double-cropped paddy land in Kerala) to several times that amount for land of lesser quality. In some states a good deal of land has been distributed, but generally speaking the impact of the reform has been limited by such factors as the difficulty of grading land in order to decide which ceiling level to apply, and the difficulty of fixing compensation levels and financing the purchase of land, but above all by fictitious transfers whereby landlords have nominally split their holdings into smaller units.

In China (Taiwan), the land reforms which began in 1949 were carried further during the decade. Land redistribution has gone through three stages: firstly, the sale of state lands (about 10 percent of the total cultivated area); secondly, the imposition of ceilings on private rented ownership units (3 hectares of irrigated and 6 hectares of dry land, with no limit on the size of operated holdings), and the sale to cultivators of the land thereby released (amounting to about 16 percent of the total area); and, finally, further measures (chiefly land-purchase grants and loans to tenants) beginning in the late 1950s to encourage the sale by landlords of the leased-out land they retained, which had resulted by 1963 in the transfer of a further 4 percent of the total area. An unusual feature of the legislation is the payment of 30 percent of landlords' compensation in the stock of enterprises which were formerly government owned but thereby transferred to private ownership. Some of the landlords have thus been induced to turn themselves into successful business men.

There seems no doubt that the redistribution of land in China (Taiwan) has been accompanied by,

and has been in part responsible for, a marked increase in rural productivity and levels of living. Average rice yields, for instance, have risen from 2.2 tons per hectare in 1948/49-1952/53 to 3.2 tons per hectare in 1960/61-1962/63. Many factors have contributed to this result. Levels of literacy were higher than in almost any other country where land reforms have been carried out since the war except Japan, and there was a long tradition of local organization for rural co-operation and guidance. The transfer of ownership rights involved little disturbance of the pattern of cultivation (the same men tilled the same fields but as owners rather than as tenants). Further factors were the concentration in China (Taiwan) of large numbers of skilled technicians and administrators from China (Mainland), and the very generous provision, with foreign assistance, of grants and subsidies to provide equipment and materials for the cultivators, carry through consolidation and land improvement schemes, and build welfare facilities.

In both Iraq and Syria, where land reforms were enacted in 1958, the problems were similar to those in India but were further complicated by the lack of adequate land records and because much of the land expropriated was uncultivated or only roughly and extensively cultivated, so that a good deal of settlement, involving the provision of expensive facilities, would have been necessary to assist the prospective beneficiaries. By March 1963 the Government of Iraq had expropriated more than 3 million acres of private land (out of some 5 million acres it was intended to acquire), but because of the lack of administrative resources and uncertainty about the types of tenure ultimately desired, 85 percent of this remained in the hands of the state, leased to farmers under collective tenancy agreements. The measure succeeded in destroying the power of the former landowners, but it has as yet done little to improve agricultural production. The core of the reorganization program was to be the establishment of co-operatives, but it has so far not been possible to set up more than a small proportion of the 2,000 estimated to be necessary. The most recent figures show some recovery of production, however, and it may well be that Iraq will prove, like Mexico, to be one of these countries where the beneficial results of land reform become apparent only after a long and difficult period of incubation.

Syrian land reform has had to face similar obstacles. Both expropriation and, even more, the distribution of land were kept well behind schedule by the shortage of administrators. A particularly difficult problem was posed by the need to find some replacement for the management functions of the landlords in the cotton producing areas of the Jezireh and Euphrates districts. In both Iraq and Syria the uncertainties inevitable in a land reform that has still to be completed and in a situation where rapid changes in policy can be expected have also inhibited investment by landlords, even on holdings which they might reasonably expect to retain.

The more certain benefits of land reform in the United Arab Republic may be attributed in part to the much more developed land registration system and more highly trained administration. The total area involved was also of more manageable proportions. Some 13 percent of the total cultivated area was affected by the Egyptian reform of 1952 (of which 8 percent was expropriated private land), compared with 56 percent of the cultivated area (of which about half was to be taken from private owners) in Syria. Since the ceilings imposed were similar, the difference lies in the much smaller amount of land in the United Arab Republic that was originally in large holdings.[1]

On the completion of the first stage of the reform in the United Arab Republic, a second phase began in 1961 with the halving of the ceiling maximum to approximately 40 hectares. This was expected to redistribute another 6 to 7 percent of the total cultivated area. In order to make efficient farmers out of former landless laborers, joint land-use co-operatives have been established which pool individual holdings for cropping purposes in order to put large continuous areas under a single crop, rotated as necessary and cultivated under skilled direction. Various systems of pooled marketing or of crop exchange have been tried and, where the technical management has been skilled enough, good results have been obtained. The system is being extended as fast as administrators become available.

In Iran, the first effective land reform measures came in 1962, after a decade in which a good deal of state and crown land had been distributed and more than one attempt to redistribute private land had failed. The major difference between the 1962 measures and the previous law of 1960 was that they were framed in such a way as to be enforceable despite the absence of reliable land registers. Instead

[1] SALAH M. DABBAGH. Agrarian reform in Syria. *Middle East economic papers 1962*. American University of Beirut, 1962, p. 10.

of an acreage ceiling being fixed, landlords were required as a first step to give up all land except one village, which in Iran represents a reasonably indisputable social and territorial unit. The effectiveness was blunted, however, by the provision that they could alternatively keep a number of parts of villages amounting in total to average village size, which opened up a variety of possibilities for evasion. There was a good deal of opposition and attempted evasion, and considerable regional differences in the degree to which the laws were effectively applied.

By the end of 1963, about a sixth of the total number of villages in Iran had been taken from landlords and the lands distributed among more than a quarter of a million farm families. In 1964, there began the second phase, an administratively more taxing one which required landlords to dispose of their remaining excess holdings by entering into long-lease, fixed-rent (written) contracts with their tenants, by voluntarily selling to their tenants (special credit facilities being offered to help in this) or by dividing the land between themselves and their tenants in the proportions in which they were accustomed to share the crop.

Again the major problem has been to replace the functions of the landlords (or more exactly of their agents) in supervising the often complex irrigation systems and supplying seed and marketing services. All beneficiaries of the land reform have to belong to co-operatives as a condition of receiving land, but few of these co-operatives yet have the organizational skills or the resources to function effectively. The regional development organizations which have grown out of the land reform executive agencies are hampered by lack of funds as well as of personnel. Part of the funds were expected to be drawn from a 10 percent development levy to be paid by the beneficiaries on the purchase price of their land, but this levy cannot always be collected, and it is not always certain that the farmers could pay it without going into debt.

The land reform law of 1962 in the Philippines was the first to apply to a landlord-tenant system the piecemeal approach typical of the reforms in large-estate systems such as those carried out in Italy and Latin America. Its provisions are not to be applied to every area of the country but to designated project areas which are to be processed seriatim. In each area the reform will go through two stages. In the first stage, tenancy relations are to be reformed, contracts put into writing, rents fixed in cash or kind (as opposed to harvest shares) and the tenants freed as far as possible from dependence on the landlord for supplies, credit and marketing services. Thereafter leaseholders may apply for ownership of their land, and if they are on a large estate (the landlord is to retain up to 75 hectares) and not in one of the exempt categories (permanent crop land, sugar land, etc.) it will be transferred.

It is intended to accompany these processes with an intensive program of agricultural and community development involving large teams of project workers. Chiefly because of the difficulty of recruiting the necessary staff, of setting up special training and evaluation centers for them, and of working out administrative procedures for co-ordinating the activities of the many agencies involved, work was not begun on the first project area until the autumn of 1964, about a year behind schedule.

As in China (Taiwan), the system of compensation is designed to stimulate landlords to play a creative role in economic development. The bonds in which 90 percent of their compensation will be paid may be used for the purchase of virgin land or of stocks in government corporations.

An alternative approach to the problems of landlord-tenant systems is, instead of redistributing land, to reform the tenancy system itself. Legislation is used in order to alter the relative bargaining positions of landlord and tenant, by strengthening the tenant's security of tenure, and by requiring a clear written definition of contractual obligations so that the tenant is freed from dependence on the landlord and the level of rents is controlled.

Tenancy regulation, as a substitute for land reform, has the attraction that it arouses less political opposition, does not disrupt the production process where landlords still retain managerial functions, and does not pose the same fiscal problems of compensation. It has the major disadvantage that enforcement is immensely difficult. Where land is really scarce and the competition for tenancies high, the size and zeal of the inspectorate required to enforce a low level of controlled rents is beyond the capacity of most countries. Equally, since few governments are prepared to go so far as to give tenants almost absolute security of tenure and most permit the landlord to resume his land for personal cultivation, the judgment of the disputes which inevitably arise over the interpretation of these provisions represents another serious administrative problem.

Even in France it was found that the tenancy regulations often operated so much to the tenant's

disadvantage in this respect that an amending law to prevent landlord evasion had to be passed in 1963. In the developing countries, where the reason for preferring tenancy reform to land redistribution is the political power of landlords, there is even less likelihood either that an adequate enforcement staff will be provided or that, if provided, it would operate impartially.

These difficulties have been frankly documented by the Indian Planning Commission in respect of the tenancy control legislation which had been passed in every major Indian state by the early 1960s. Most states fixed the rent ceiling at about 25 to 30 percent of gross yields (but some at as little as 15 percent or less if the tenant had made substantial improvements), compared with current levels of around 50 percent. Enforcement, however, was entrusted to the revenue administration, which was ill equipped to do the job, and the third plan survey reported that " in many ways, despite the legislation, the scales are weighted in favor of the continuance of existing terms and conditions. " [2]

Various measures can be adopted to strengthen tenancy legislation besides the stimulation of the tenants' will to protect themselves. Concerning the landlord's right to resume his land for personal cultivation, some Indian states have refined their laws so as to discriminate between different size categories of landowner, with retrospective provisions to prevent them from changing to a more favorable " small owner " category by fictitious subdivision.[3] A notable feature of Ceylon's Paddy Land Act of 1958 was the establishment of cultivation committees of farmers, which were officially charged with the enforcement of the tenancy control measures, thus providing a potentially effective means of mobilizing the forces of village opinion behind the law.

Tenancy regulation has also been introduced as preparatory or ancillary to land redistribution rather than as a substitute for it. In the Philippines, for instance, leasehold reform is explicitly looked on as a transitional phase, in which tenants are to get experience of contractual independence and managerial autonomy, in order to prepare them later to set out on their own as independent farmers. Land reform in China (Taiwan) was similarly preceded by tenancy control. The advantages of such a first step lie not only in the preparation of the future beneficiaries of redistribution. It also brings down the price of land and so eases the compensation problem.

Where tenancy control is introduced as an ancillary measure, it is usually looked on as a matter of elementary justice. Some tenancy is usually permitted after land redistribution in all small-farming systems, if only to ensure flexibility and efficiency of land use. If landlords retain part of their holdings, some of their tenants are likely to remain so while others become owners. Tenancy regulations therefore help to spread the benefits of land reform. In these circumstances, where the countryside has already been galvanized by land redistribution, tenancy regulation is likely to be much more effective than where it is introduced as an isolated measure. In the United Arab Republic, for instance, it is estimated that rents have been reduced by as much as a third.[4]

Large-estate systems

The problems are rather different in those countries where the ownership of land is just as unequally distributed but where the big estates, instead of being worked by tenants, are directly farmed by their owners with the help of dependent laborers.

Where these estates are efficiently run plantations, using modern methods, no problem of productive efficiency is involved. In such cases, too, it is likely that the management will require a skilled permanent labor force, which will in turn be able to organize itself to bargain for better conditions, as has been shown, for example in the last decade in Brazil.[5] One of the main problems in such situations, however, is the inequalities of wealth and income which remain where workers are not strong enough to secure better working conditions or are insufficiently protected by law. Something can be done about this by legislation setting minimum wages and prescribing employers' obligations to provide housing and other services. Such legislation has been passed in a number of countries in the last decade, including Brazil, El Salvador, Guatemala, Haiti, and Pakistan. Not all the legislation contains legal protection of the workers' right to bargain collectively, however, and, in Guate-

[2] Quoted in Government of India Planning Commission. *Progress of land reform*, 1963, p. 263. -

[3] Idem, p. 267.

[4] Charles Issawi, *Egypt in revolution*, 1963, p. 162.

[5] W. W. Hutchinson. The transformation of Brazilian plantation society. *Journal of Inter-American Studies*, Vol. 3 (2), April 1961.

mala at least, agricultural workers have been specifically excluded from the right to bargain given to industrial workers.

A further problem is that a good many of the plantations in the tropical developing countries are foreign owned, which gives rise to a sense of hostility to foreign domination. Even where this problem has not helped to precipitate its own solution in the form of a revolution followed by expropriation, a number of governments (for example, Ghana) have been gradually acquiring foreign concerns. In some countries, such as Guatemala and Malaysia, foreign firms have taken the initiative in selling off plantations to local companies.

The need for more drastic land reform measures arises in those countries where the large-estate system supports a traditional extensive and highly inefficient agriculture. There are many countries of Latin America where the best land is held in large estates traditionally farmed by a seigneurial owner using serf-like laborers paid wholly or in part by the right to use small holdings on the estate in order to grow their own food crops. Meanwhile the growing population of those who cannot find accommodation on the big estates is forced into the less fertile hill land where holdings grow smaller and smaller, the cropping grows more intensive and erosion proceeds apace. The problem is a triple one: firstly, of low production because the estate owners, fully satisfied by low unit yields from large areas and by the social amenities of their dominant position, have no incentive to improve their farming practices, and poor and illiterate minifundists have neither the skill nor resources to do so; secondly, of great inequalities of wealth and income; and thirdly, of a social system which preserves ties of total dependence and subordination.

When land reforms in such systems are designed to establish a family small-holding system they are much more complex and expensive than reforms in a landlord-tenant system, where a change in the jural relations might have little or no effect on farming organization. It is not enough merely to divide estates into small holdings; the new owners will probably need houses and community facilities. Similarly, the reform can only succeed if the beneficiaries are helped to use the land in radically more intensive ways than the previous owners. The need for a very heavy investment in supporting services is the reason why most land reforms in these situations are of the piecemeal variety, affecting individual projects zones one at a time.

The most extensive reform of this type has been in a developed country, Italy, and was completed during the decade. Altogether, the 630,000 hectares expropriated amounted to about 4 percent of the total cultivated area, although the percentage was much higher in the south which was the region most affected. It was distributed to some 90,000 families. Half of them – mostly landless agricultural workers – received complete holdings and the others extensions of existing holdings. The provision of houses and community facilities was on a scale (approximately $10,000 per family) which could perhaps only be afforded in an industrial country; houses, roads, schools, community centers, and communications were provided, together with a good deal of credit and technical assistance. There were difficulties: not all the former village dwellers liked to live in isolated farms; some former laborers did not have the savings habit nor the tradition of self-directed work needed by family farmers; the co-operatives sometimes hovered uneasily between democratic control and official direction.[6] Moreover, the rapid industrial development of Italy has already made the holdings (9 hectares on average, though with wide regional variation) seem too small. The income they yielded seemed perfectly acceptable for an average family a decade ago but by current standards this is no longer the case.

Nevertheless the effects on production have been considerable. The generous endowment of the beneficiaries has made them more efficient farmers than those with comparable holdings not affected by the reform, while provisions that the landlords (who retained differing maximum holdings according to size and degree of cultivation) could cash their compensation bonds at face value for agricultural investment has stimulated a number of them to make substantial improvements in their productive performance.

The greatest legislative activity concerning land reforms of this type has been in Latin America. In the last decade land reform laws have been enacted in Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, and Venezuela. Some of the most important common features of these laws are:

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[6] MANLIO ROSSI-DORIA. *Dieci anni di politica agraria nel Mezzogiorno*. Bari, 1958, p. 135-146; R. L. LANGWORTHY. Some problems of community development in Italy. *American Journal of Economics and Sociology*, Vol. 23 (1), 1964.

1. They all establish a land reform institute with general powers to embark on projects to settle selected areas, though the degree of its autonomy varies.
2. The institute also operates to settle landless farmers on state lands (and to regulate the rights of squatters), and in some cases private land is to be expropriated only when public land is not available.
3. They all provide for discrimination between landlords according to the degree to which they have utilized their land, uncultivated or ill-cultivated land being expropriated first.
4. The same principles are often applied in compensation procedures, uncultivated land receiving a lower proportion of cash, or bonds of longer term and lower interest.
5. Landlords are usually allowed to retain at least 100 hectares of land.
6. Nearly all laws require that beneficiaries' holdings should be big enough to provide an average family with leeway for savings and investment, and small enough not to require more than occasional hired help. Most define a category of protected homesteads, registration as which offers tax privileges and freedom from distraint while imposing restrictions on subdivision.
7. Many laws contain provisions banning the kinds of labor-tenancy traditional on Latin-American haciendas.

The degree to which these land reform institutes can be effective depends in part on the political pressures to which they are subject (and there has been a notable increase in the pressure exerted by organizations of discontented peasants in a number of countries) and in part on the funds made available to them, itself dependent again on political factors. The best-endowed institute, that of Venezuela, was also the first in the field (the act was passed in 1960), and it had succeeded by the end of 1963 in settling 67,000 families, half on former private land and half on public land. Since a survey in 1956 revealed only 100,000 owners of land in Venezuela this made a substantial difference to the ownership structure. Colombia, less richly endowed with oil revenues, has created the second largest administrative structure, and at the end of 1963 had under way projects which were expected to accommodate some 6,000 families.

In two other countries with large-estate systems change has been more sudden and in a different direction. In Cuba, two waves of expropriation imposed ceilings first of 400 hectares and subsequently of 67 hectares, and acquired the excess land for the state for incorporation into co-operatives, collectives and state farms. In Algeria, the farms abandoned by the French settlers or subsequently acquired from them, together with other farms in the modernized sector of Algerian agriculture owned by Algerians accused of colonial collaboration, have similarly been acquired for the establishment of collective farms.

These experiments are the first occasions on which systems of collective or state agriculture have been established, not by the amalgamation of family farms, but by taking over estates which were already large and often efficiently operated by modern methods. Some of the problems they have encountered have been those common to collective systems everywhere: how to reconcile the conflicting needs of central planning and local managerial autonomy; how to strike a balance between individual material incentives, group incentives and a spirit of social service; how far to centralize marketing, minimizing overheads without creating waste, etc. They have also had special problems: in both coumtries the shortage of capable accountants, and in Algeria especially, where the farms often retained the same skilled supervisory structure of the colonial period, the need to choose between keeping effective control in the hands of the former submanagers and foremen or encouraging fully democratic elections.

Algeria also has the special problem of a dual structure. The eroded minifundia of the overcrowded areas of traditional agriculture compete powerfully, by reason of their poverty rather than of their productive potential, for the investment funds which the modern collectivized sector needs. The problem of social justice, both in terms of a land reform within the traditional sector and of the equalization of incomes between the two sectors, remains a pressing one. In Cuba the monoculture of sugar led to ill-prepared and hasty attempts to diversify production, which added to the country's difficulties. Both countries have suffered from the frequent trial-and-error reorganizations which are inevitable in the early years. At present Algeria is tending more toward a system with wage payments and bonuses geared to individual skills and hours of labor, and Cuba toward a system of state farms which refrains from the use of individual incentives.

Some years must pass, however, before it will be possible to assess by means of production statistics the relative success of these different experiments.

Communal tenures

The third group of countries consists of those where much of the land is still communally owned.

Such communal tenures are found in many parts of the world. Frequently they affect only a minority of the population, often referred to as the "indigenous" or "aboriginal" or "tribal" peoples, and where they receive legislative attention in such countries it is usually to protect these peoples against the incursion of members of the majority among whom private property rights are well established. Legislation of this kind has been passed in the last decade in China (Taiwan) and in a number of Indian states. In Latin America, the land reforms of the last few years have sometimes followed the example of Mexico earlier in the century in providing for grants of land to be made not only to individuals but alternatively to communities (of the non-Spanish-speaking population). Such provisions are to be found in the laws of Chile, Colombia, Costa Rica, Ecuador, Paraguay, Peru, and Venezuela. They are justified in part by the saving of scarce administrative resources if local communities are left to divide their land themselves, in part by a belief that it is unjust to force people accustomed to communal use of, or at least communal controls over, land into a system of private ownership, and sometimes by the belief that the strengthening of traditional communal bonds is more positively desirable since they can provide the basis for co-operative organization conducive to agricultural development.

Most of the discussion of communal tenures, however, and most of the important legislation of the last decade, concerns the countries of Africa south of the Sahara (together with some Pacific territories), in most of which communal tenures remain the dominant form of landholding. The nature of these tenures and the forms of land use accompanying them vary greatly. Farming may be entirely individual and the right to use certain pieces of land undisputed and inheritable. At the very least, however, the sale or pledging of land requires the consent of a community group, or of a chief of that group.

Some of the disadvantages of this situation lie in the fact not that the tenure form is communal but that it is customary and so suffers from the imprecision of any other system of unwritten customary rights. As these societies industrialize, and as the population becomes more mobile and more involved in impersonal contractual relations, customary systems which depend on personal trust may lose their authority and give rise to disputes and uncertainty.

The imprecision is of particular importance with regard to land not currently used. Neighboring tribal groups may, if sufficiently powerful politically, claim ownership over large tracts of territory and prevent other groups with growing populations and a greater need for land from acquiring it. Equally the settlement schemes of west African governments have recently been seriously hindered by the problem of compensating tribal groups who have disputable claims to the land required.

Some form of registration seems therefore to be required. Hitherto, because colonial governments usually introduced their own legal systems, the only form of registration known was individual registration, but there is no reason why this should be so. Among the new registration laws of the last decade, those of Eastern Cameroon, Dahomey, Papua-New Guinea, and Tunisia provide for the delimitation and registration of communal as well as individual tenures. Whether or not this is done, the legislative and administrative systems may be designed either to hasten the process of dividing communal into registered individual tenures or not, by the way the services of surveyors and registrars are allocated, or by systems of differential charges.

There is a variety of arguments in favor of individualization, ranging from the desire of new governments to weaken the power of traditionally-minded chiefs, to the wish to make land mortgageable and to stimulate individualism generally as a means to economic development. Equally there are strong arguments against hastening the process, ranging from the view that the traditional landholding communities foster desirable ideals of mutual help, provide social security and can even offer a foundation for modern co-operative agriculture (the laws of both Dahomey and Tunisia have recently offered favorable terms for communities wishing to create modern co-operatives), to the fear that alienable individual tenures will rapidly lead, through indebtedness, mortgage and foreclosure, to the inequalities of landownership which plague other countries.

Consequently, most of the registration legislation enacted in the last decade has been only permissive, so that those who want individual titles, can prove

their right to them, and are prepared to pay for them can get them on application. Sometimes, as in Northern Nigeria and in Eastern Cameroon, there are safeguards against speculation and the engrossing of land, such as restrictions on alienation or resolutory conditions for the lapse of title if the land is not cultivated. There are, however, great advantages of cheapness, if individual titles are to be granted, in proceeding block by block issuing titles to everyone in a given area, rather than dealing with scattered applicants wherever they may be. This also has the advantage that it is easier thereby to establish a cheap and efficient registry. However, this approach has in practice been adopted only in the Kikuyu areas of Kenya, where tenure was already customarily individualized to a high degree, and where the registration of title was used to induce the consolidation of already fragmented individual holdings. Here the law provides for restrictions on subdivision but not on mortgage or sale.

AGRICULTURAL CREDIT

During the last decade the need for agricultural credit on reasonable terms has been steadily increasing. In the developing countries there has been a rapid increase in the demand for agricultural credit to finance the adoption of improved methods of production, especially in areas where land reform and other institutional changes have been carried out. In these countries many new sources of institutional agricultural credit have been established during the decade, but the supply still remains quite inadequate in relation to needs.

In the developed countries agriculture has increasingly become a capital-intensive industry. The greater capital resources needed in these countries have been provided by a rapidly expanding network of financial and commercial institutions catering to agriculture.

Supply of funds

INSTITUTIONAL AND NONINSTITUTIONAL SOURCES

There is no comprehensive quantitative information either on the demand for or the supply of funds for agricultural credit. The scarcity of information is particularly marked as regards noninstitutional sources of agricultural credit. For institutional agricultural credit also, however, there is a great shortage of consistent and reliable data. Information derived from FAO's biennial questionnaire on institutional agricultural credit is summarized in Annex Table 20, but for many countries it is incomplete and not very reliable.

Information on commercial bank loans to the agricultural sector is particularly hard to obtain. It is also difficult to avoid the double counting of loans as they pass from institution to institution, for example, from the government to co-operative banks and finally to the co-operative societies themselves. Even when reasonable estimates can be made for single years, the continuing disappearance of old institutions and the appearance of new ones makes it difficult to ensure that the data are consistent from year to year.

It is clear, however, that in most countries for which data are available there has been a rapid increase in the supply of institutional agricultural credit during the last decade. Table XI-1 classifies those few countries for which there are data for a recent period of approximately ten years, and indicates that in a large number of them the rate of increase has been more than 10 percent per year, even allowing for the rise in the cost of living. In general the most rapid increases have been in developing countries. The main exception is the Federal Republic of Germany, where there has been particularly heavy investment in agriculture during the past decade and where, in 1961/62 and 1962/63, 96 percent of the net investment was financed with borrowed capital.

Where possible, Table XI-1 and Annex Table 20 show data both for loans advanced and loans outstanding. Figures of loans advanced give equal weight to short- and long-term loans, but those of loans outstanding tend to underestimate the total amount of credit made available, since they are not affected by short-term loans granted and repaid during the year in question. Broadly speaking, data of loans outstanding provide the more useful indicator for the developed countries, where long-term credit predominates, while data of loans advanced are the more appropriate for the developing countries, where

TABLE XI-1. - ANNUAL INCREASE IN REAL TERMS [1] IN INSTITUTIONAL AGRICULTURAL CREDIT ADVANCED AND OUTSTANDING, 1953-63

Annual percentage increase	Loans advanced	Loans outstanding
Up to 10	Burma [2] Ceylon [4] Ecuador Italy Madagascar [1] Portugal [3] Tunisia	Australia [3] Belgium Canada Finland Israel [3] New Zealand [3] Norway Sweden United Kingdom United States
11-20	Belgium Cambodia Ethiopia Germany, Federal Republic of Malaysia: Malaya [2] Philippines United Arab Republic	Austria Guatemala Italy Japan Philippines
Over 20	Nigeria Viet-Nam, Republic of	Cambodia Ethiopia Germany, Federal Republic of Nigeria

SOURCE: FAO. Biennial questionnaire on institutional agricultural credit (original data are shown in Annex Table 20).

[1] Deflated by cost of living index. - [2] 1953-61. - [3] 1955-63. - [4] 1952-63.

the majority of loans are on a short-term basis.

In spite of the rapid increases in institutional agricultural credit in many developing countries, its actual level remains a small fraction of that in the developed countries (Table XI-2). For example, the recent level of institutional credit outstanding per adult male engaged in agriculture may be estimated as the equivalent of U.S.$0.04 in Ecuador and $0.8 in El Salvador, in comparison with more than $5,000 in Israel and New Zealand.

Very little information is available on the relative importance of institutional and noninstitutional sources of agricultural credit. In the developed countries a good part of such current inputs as fertilizer, seeds, and pesticides is bought with suppliers' credit, and most of the machines, implements and vehicles are bought on hire-purchase. Transfer of property often involves credit granted by the seller to the buyer. Suppliers of inputs such as feedstuffs or large-scale buyers of agricultural products such as meat packers, canning industries or food retailing chains are increasingly financing agricultural producers. This "vertical integration," which is discussed in Chapter IV, is of long standing in respect of beet sugar production, and is now of considerable importance for a number of other products as well.

In the United States, short-term farm debts held by nonreporting creditors (that is, noninstitutional sources) amounted to $6,720 million in 1963 and were higher than those held by all operating banks, while long-term credit extended by individual and miscellaneous lenders was almost three times as much as similar credit by banks. In the Federal Republic of Germany, loans by credit institutions of DM3,080 million in 1955 compare with suppliers' credit of DM1,830 million and other credits of DM2,300 million. In 1960, the corresponding figures were DM6,720, DM2,700 and DM2,540. In Japan, which has a highly developed agricultural credit system, the share of agricultural borrowings from individuals was estimated in 1961 at about 15 percent.

Noninstitutional sources of agricultual credit are very important in the developing countries, where merchants, produce brokers, professional moneylenders and friends and relations are still the main sources of finance for agriculture. Even where institutional sources of credit are available, the private moneylender often enjoys considerable advantages.

TABLE XI-2. - INSTITUTIONAL AGRICULTURAL CREDIT OUTSTANDING PER ADULT MALE ENGAGED IN AGRICULTURE [1]

U.S.$ per head	Country
Over 5 000	Israel New Zealand
1 500 to 5 000	Australia Canada Denmark Germany, Federal Republic of Sweden United States
500 to 1 499	Austria Belgium Cyprus Finland Norway United Kingdom
10 to 499	Chile Italy Japan Mauritius Philippines Portugal United Arab Republic
Below 10	Ecuador El Salvador

[1] Figures refer to the latest years for which both population and credit data are available.

He grants credit to farmers who would hardly qualify for credit from an institutional source, and he can dispense with formalities. If he is a merchant, he can easily deal with defaulters by cutting them off from all farm and household supplies for which they are usually dependent on him, and has no need to engage in lengthy and costly litigation with them.

As far as can be ascertained, the importance of noninstitutional credit in the developing countries has not declined during the decade. Although the amount of institutional credit has grown rapidly, this does not appear to have significantly reduced the share of noninstitutional credit in the total. Estimates of the relative shares of institutional and noninstitutional agricultural credit are, however, available for very few developing countries. In Ceylon, institutional credit is estimated to have amounted in recent years to only 8 percent of total agricultural credit; in Nepal and Thailand, 10 percent; and in the Philippines, 20 percent. The most recent Indian rural credit follow-up survey states that, in the nine districts where sample surveys were made, the "bulk of the credit requirements was met by recourse to moneylenders in all districts except one."[7] Government efforts to reduce the dependence of agricultural producers on noninstitutional credit sources (apart from establishing or strengthening competing institutions) by outlawing or regulating the activities of private moneylenders appear to have had little success in India. Legislation has been enacted to license moneylenders, regulate their activities and prescribe maximum rates of interest but, in the absence of an alternative source of credit, the moneylender is able to evade these laws.

China (Taiwan) is one country where the share of institutional agricultural credit has been substantially increased. In 1949, before the land reform was started, 82 percent of farmers' borrowing came from private sources, particularly landlords. Land reform broke the tie between the landlords and their tenants, and a co-ordinated effort was made to strengthen institutional farm credit. As a result, the share of noninstitutional credit was reduced to 43 percent by 1960.

Rural savings

The loanable funds available to agricultural credit institutions have increased, partly from deposits of farmers' savings as their income rose, and partly from funds put at their disposal by governments, central banks, international financing institutions and bilateral aid programs. The objective of promoting rural savings is explicitly emphasized in a few countries, including Algeria, Guinea, Niger, Pakistan, and Tunisia, while in Ghana a scheme for compulsory rural saving from cocoa proceeds was introduced in 1961. In most developing countries, however, the agricultural banks are not credit institutions in the sense of an intermediary between lenders and borrowers but merely government lending agencies, and rural savings, which should be the ultimate source of capital for the agricultural banks, are very small.

Foreign financial assistance

Some countries have obtained foreign financial assistance to expand the loanable resources of agricultural credit institutions. Ten IBRD/IDA loans (two each to Colombia and Peru and one each to British Guiana, Costa Rica, Iceland, Jordan, Nicaragua, and Paraguay), amounting to $33.4 million, are identifiable as mainly destined to augment the supply of agricultural credit. Financial assistance authorized by the United States Government between September 1951 and June 1963 included $195.3 million to 18 agricultural credit institutions in 17 countries. France, the United Kingdom and the Interamerican Development Bank (IDB) have also granted a number of loans for agricultural credit purposes.

Such loans are almost entirely for medium-term and long-term lending, which generally constitutes only a minor part of agricultural borrowing. They usually finance foreign exchange needs for the import of agricultural machinery and other goods, which are then turned over by the government to various credit institutions.

Public institutions for agricultural credit

The direct activities of governments in the field of agricultural credit have greatly expanded. Many new institutions for the supply of such credit have been set up, while existing institutions have been strengthened and their funds increased.

In the developed countries, commercial banks have increasingly discovered the potentialities of the agricultural market, and are competing more and more with the specialized institutions such as co-

[7] Government of India, Reserve Bank. *Rural credit follow-up survey 1959-60: General review report*. Bombay, 1962, p. 49.

operatives, mortgage banks and rural savings banks, which previously had almost a monopoly in financing all except the very biggest agricultural producers. In the developing countries, on the other hand, most of the institutions engaged in the supply of agricultural credit are public rather than private. For a variety of reasons, agricultural credit is more risky and more expensive to administer than loans granted to other sectors of the economy. One reason is the natural hazards to which agricultural production is exposed. Others are the prevalence of small holdings and of tenancy, the often complete absence of tangible assets which could serve as collateral, the multitude of small borrowers, and the unfamiliarity of many agricultural producers with the monetary economy and with credit procedures. Many of these factors not only increase risks but also account for the relatively high cost of administering, controlling the use of, and collecting credits when due, which can hardly be covered by a commensurate interest charge. Hence, unless extensively financed and heavily subsidized by governments, private financing institutions have tended to extend very little agricultural credit in the developing countries except to large estates or to a few well-to-do farmers.

Increasing emphasis has therefore been placed in many developing countries on the organization and strengthening of farmers' co-operatives, very often combining marketing and credit functions. In India, the co-operative movement has received strong financial and technical support from the Reserve Bank, and the whole agricultural credit system of the country is based on the co-operative movement; rather few of the co-operatives, however, are multipurpose. In the United Arab Republic, almost all agricultural credit is now distributed through co-operatives.

In some countries, the central bank has played an important part in the expansion of agricultural credit facilities. The central bank can be an efficient source of resources which are unobtainable from the private sector. In addition to providing funds, mainly through rediscount facilities (often at concessional rates) it is likely to have the experience necessary to give sound guidance to the agencies that are set up to channel the funds to farmers. China (Taiwan), India, Pakistan and the Philippines are examples of countries where the central bank has played a major role in the expansion of rural credit. In India, the Reserve Bank not only provides funds, but handles much of the research work, supervises many of the institutions, and sponsors large-scale training programs. In other countries, the central bank plays a more limited role and its participation is purely financial.

Whereas the participation of central banks in government-sponsored lending activities is comparatively limited, direct government action through the provision of both funds and technical assistance is becoming more and more common. The form of the credit agency varies considerably. It may be a general development bank, or it may limit its loans strictly to the agricultural sector or, more specifically, to agricultural co-operatives or to producers of specific crops.

Often there is a considerable diversity of public agencies providing agricultural credit in a single country, and a recent survey [8] has emphasized the need for improved co-ordination among these agencies. In a number of countries, in fact, there has recently been a tendency toward the unification of the various sources of agricultural credit. In Indonesia, for example, the Bank for Co-operatives, Farmers and Fishermen, founded in 1960 by merging two existing banks, is eventually to absorb all existing government credit agencies. In Jordan, the three agencies which supplied agricultural credit have been amalgamated into a single Agricultural Credit Corporation. In Morocco, the Banque nationale agricole was established in 1961 to replace all the previous sources of institutional agricultural credit.

Although the number of agricultural credit agencies and their loanable resources have been expanded, many shortcomings remain, especially in the developing countries. Often the available facilities reach only a small part of the farm population. However, a noteworthy feature of the recent impressive progress made in the United Arab Republic in expanding credit to farmers is that, between 1956 and 1962 while the funds loaned rose from £E 14 million to £E 61 million, the number of beneficiaries (mostly small farmers and tenants) rose from 325,000 to 950,000, and the area served by credit facilities was expanded from 1.36 million to 4.77 million feddans.

There are severe deficiencies in loan recovery in some countries. In Iran, for example, the annual recovery rate is estimated to be less than half the annual loans extended by the Agricultural Bank.

Another shortcoming is that an extremely large proportion of the institutional credit in de-

[8] FAO. *Agricultural credit through co-operatives and other institutions*. FAO Agricultural Studies No. 68. Rome, 1965.

veloping countries is made up of short-term loans. Medium-term and long-term loans raise special problems, for example the need for a relatively high degree of competence in assessing this type of credit, greater risks of nonrepayment, and the need for more capital.

Many of the credit agencies are very inefficiently organized and administered. As with all rural institutions, well-trained staff is essential for the efficient operation of an agricultural credit agency, and the lack of such staff has been one of the greatest obstacles to the strengthening and expansion of these institutions in developing countries.

Supervised credit

Experience has shown that the most efficient method of distributing agricultural credit and collecting loan repayments is to combine it with related services, particularly with extension, marketing and the provision of farm requisites. A form of this combination is "supervised credit," which was originally developed in the United States in connection with efforts to help marginal farmers, but has in the last few years spread to many developing countries. Supervised credit tries to deal through one single agency with all the requirements of the farmer as producer and consumer.

Supervised credit programs have expanded considerably in the last ten years in Brazil. Having started in one state only, the program is now firmly established in most states of the south, central and northeast parts of the country. Since 1961, the Brazilian Association for Credit and Rural Assistance (ABCAR) has expanded its services from year to year according to the availability of funds and trained staff. Today there are 15 affiliated organizations working in 15 states and employing about 1,500 technicians, including home economists, with 559 local offices directly serving 167,500 farms. These farms are strategically located to serve as demonstration farms for group education and guidance to all farmers in the adjacent areas. Close collaboration is maintained with the co-operative service for the promotion of co-operatives in marketing, credit and farm supplies. The objective is not only to help the farmers to market their produce and to supply their needs (implements, fertilizers, seeds, etc.) co-operatively, but also to give a better structure and more stability to the ABCAR program itself.

In Mexico, the supervised credit program established in 1956 at Patzcuaro for the benefit of poor farmers in the Tarascan communities has been such a success that the Banco Nacional de Comercio Exterior which is financing the program, decided to extend it to other parts of the country, and four other states have already established supervised credit schemes along the same lines. The Patzcuaro project was established for the promotion of poultry farms to increase the production of eggs, and more recently has been expanded to include the production of honey. Since the second half of 1963 the central bank has also carried out a program of supervised credit on a nationwide basis in collaboration with private commercial banks.

Other developing countries that have embarked in recent years on supervised credit programs include China (Taiwan), India, Iran, the Republic of Korea, Pakistan, and Thailand. In India, pilot projects of supervised credit were organized and implemented in selected villages near New Delhi at the end of 1956 by the Indian Co-operative Union. The projects are being strengthened and expanded through the promotion of co-operatives in each village served by the program. The supervised credit approach also plays a major role in the intensive agricultural district program (package program).

While supervised credit has been highly successful in a number of areas, it must be recognized, however, that the opportunities for its wider use are likely to be limited. It requires large numbers of skilled staff in close contact with farmers and is very expensive.

AGRICULTURAL MARKETING

Agricultural marketing systems in developed countries have continued to adapt to the complex needs of more affluent urban societies. In the developing countries, there have been considerable improvements in marketing facilities during the decade, but in many areas they remain antiquated, have failed to expand with rapid urbanization, and are a brake on the development of production in line with demand.

TABLE XI-3. - NUMBER OF SELF-SERVICE FOOD SHOPS IN SELECTED EUROPEAN COUNTRIES

	1956	1961	1964
Denmark	541	1 592	2 300
France	603	2 000	5 000
Germany, Federal Republic of	1 379	22 000	46 800
Netherlands	512	2 650	4 200
Sweden	3 005	5 426	7 600
Switzerland	900	1 800	2 800
United Kingdom	3 000	9 420	13 000

SOURCE: *Selbstbedienung und Supermarkt;* Economist Intelligence Unit, *Marketing in Europe.*

Developed countries

In the developed countries, the methods and structure of food marketing have changed considerably during the last ten years. The main developments have included self-service marketing, one-stop shopping, prepackaged food in units of convenient size, and the use of canning and freezing to make previously perishable foods continuously available. These new methods have led to changes in the structure of retail and wholesale marketing and have also had important implications at the farm level.

While self-service shops were already widespread in North America before the second world war, it is only in the 1950s that they were introduced in European countries. Table XI-3 indicates how rapidly they have spread in a number of western European countries in recent years. The advantages of self-service retailing are greatest where the time of both customer and retail shop employee is highly valued, and its growth has therefore been especially rapid in countries with high labor costs. In many European countries, a considerable proportion of total food sales are now made by self-service, while in the United States the figure is as high as three-quarters (Table XI-4).

TABLE XI-4. - SELF-SERVICE FOOD SALES AS PERCENTAGE OF TOTAL, BY RETAIL VALUE

	Year	Percent
United States	1964	75
Sweden	1962	50
Germany, Federal Republic of	1960	33
Netherlands	1959	25
Switzerland	1958	22
United Kingdom	1963	20
France	1962	5

SOURCE: *Selbstbedienung und Supermarkt;* Economist Intelligence Unit, *Marketing in Europe.*

Supermarkets offering a wide range of products in one shop have become a familiar feature in many European countries. There are now estimated to be 720 in the Federal Republic of Germany, 320 in France, 160 in Italy, 200 in the Netherlands, 105 in Switzerland and 1,400 in the United Kingdom.

The development of new packaging material has made possible the use of containers that simplify and speed up handling through wholesale and retail distribution, and the final transaction with the consumer. The volume of canned meat, fruit juices, vegetables and soups offered in self-service retail shops has increased considerably. The expansion of frozen food distribution has been even more rapid, and it is expected that the recent European output of 300,000 tons per year will reach 1.7 million tons by 1970. Work on the building up of an uninterrupted cold chain from processor to consumer has continued in all developed countries. A more recent development in European countries is the sale of "convenience" foods, such as complete frozen or dehydrated meals, which already represent a large share of the total value of foods sold in the United States.

The changes in retailing methods have brought changes in marketing structure, both at the retail level and in the form and scale of the wholesale supply system. For self-service selling, large quantities of consumer packaged units of uniform size and quality are needed. It is difficult to obtain these conveniently from a large number of small suppliers, or from purchases on a wholesale market of traditional type. In order to obtain regular supplies of large standardized lots, conveniently and economically packaged, the identity of which is well known to the consumer, wholesale purchasing and supply have therefore had to be concentrated. This increased scale of operation has also brought substantial economies. Retail buying groups and voluntary chains have been formed which have enabled independent retailers to take advantage of discounts on wholesale purchases in quantity. In the Netherlands, for instance, 70 percent of the independent grocers now belong to such chains and buy three-quarters of their stock from them. In the Federal Republic of Germany in 1961, the EDEKA buying group had 40,000 associated retailers, and REWE 13,000. This development has led to a considerable fall in the number of independent food wholesalers, especially in some of the newer

food lines involving elaborate processing and special equipment and handling through to the consumer.

All these developments have had important implications at the farm level. The need for regular and large supplies of well-defined products has induced many wholesalers to look for a closer integration of agricultural production with the requirements of wholesalers or food processing industries. Thus wholesale buyers now advise farmers on varieties of plants to be grown and on production and harvesting dates and methods; they supply credit and contract to buy the crop at certain dates and at fixed prices.

Such "vertical integration," which has already been discussed in Chapter IV, offers many advantages. The producer's risks are reduced, which permits him to become more specialized and thus lower his production costs. Credit is obtainable easily and cheaply. The introduction of technical improvements is assisted through the specialized advisory services furnished under contract. Supply and price fluctuations, both seasonal and cyclical, are likely to be reduced. Wholesale and retailing enterprises benefit from the assurance of regular supplies of large and standardized lots, and are thus able to reduce processing and distribution costs. Their close relation with the producer facilitates the rapid adjustment of production to demand. Particularly for perishables, marketing costs are reduced by the concentration of production in areas determined by their convenience for the wholesaler or processor. Collection, transport, storage, and processing can all be undertaken more cheaply.

The governments of most developed countries have recognized the need to assist farmers in adapting their marketing methods to the new requirements. Legislation has had to be reviewed in the light of these changes. Marketing advisory and information services have had to be extended and adapted. Advice has had to be provided to producers on the type of contract suitable for their situation. More emphasis has been placed on education in marketing, and appropriate institutions established to carry out the necessary research to guide governments, farmers and marketing and advisory services. One of the main issues at present is how the bargaining power of the farmers can be strengthened against the growing concentration in the wholesale sector. In several European countries plans are now under consideration to concentrate the assembly of farm produce by encouraging the organization of producer marketing groups.

In general, the efficiency of the agricultural marketing system in the developed countries has greatly increased during the last decade. A great variety of high quality foods in convenient form are now abundant in all seasons. Labor productivity in agricultural marketing has increased considerably, as a result of the application of new methods and improvements in organization. In spite of substantial increases in labor costs, the marketing margins of the larger self-service shops appear not to have increased.

Developing countries

While in the developed countries progress in agricultural marketing has been facilitated by the availability of satisfactory transport and related facilities, skilled personnel and capital, in the developing countries their lack has made marketing improvement much more difficult. Progress has been made in the provision of storage, processing and transport facilities and in the reorganization of the marketing structure, but much still remains to be done.

During the last decade, government action in the marketing field has become more and more common in the developing countries, but the extent of this intervention has varied widely. In some countries, it has been confined to passing some basic legislation (for example, weights and measures laws) aimed at facilitating the introduction of orderly marketing. At the other extreme, some governments have taken over all or part of the marketing process for one or more commodities, often through the establishment of a public or semi-public marketing agency.

In Africa and Asia before independence most of the marketing of export crops was often in the hands of expatriate firms prepared and able to invest heavily in marketing facilities and equipment; the domestic trade, on the other hand, was generally carried out by small, local enterprises. With the spread of political independence, the inflow of private capital for investment in export marketing facilities slowed down considerably in many of these countries. Political uncertainty and increasing government control over the export trade made such investment less attractive; in some cases, limitations were set on the profits of foreign firms, while currency exchange restrictions and the threat of nationalization constituted further disincentives. Hence, many governments were faced with the need to provide and oper-

ate the required export marketing facilities themselves. Simultaneously there appeared an increasing need for improvements in the marketing of domestic crops.

Governments have offered various incentives to encourage the investment of private capital in marketing. In the last few years guaranteed markets and a trading monopoly have been offered in some countries to private enterprises willing to undertake joint ventures with the government. Public control is ensured by the government's taking up 51 percent or more of the issued shares, while the private investors benefit from a guaranteed volume of throughput and protected investment. This approach has been used in certain African countries, for example, in securing the establishment of meat processing plants for export.

Public and semipublic marketing agencies

Marketing boards have been established in many countries with the object of introducing standardized grades and packaging material, stabilizing prices, reducing the spread between farmer and consumer prices, and improving the whole marketing structure. These statutory marketing agencies have functions varying from a purely advisory role to monopoly handling.

Regulatory boards, such as the sisal and tea boards in Kenya, the meat board in Argentina, and the export control offices in north African countries were established primarily to develop and apply uniform quality standards to export products that were facing increasing competition. Similar functions were carried out by special government inspection departments in many west African countries and in India. In Latin America and in the Near and Far East, the existing marketing structure has generally been maintained, although often under increasingly strict government or statutory control. In Africa, on the other hand, the tendency has been to rely more upon the creation of statutory monopoly export agencies. In many cases, as observed in Chapter X, a principal aim has been the stabilization of producer prices.

Partly as a result of the incentives provided to producers under government marketing schemes, production for export has increased substantially in many countries, while the production of staple food crops under free market conditions has often risen only slowly. In certain cases, for instance in Senegal, the production of grains decreased owing to competition from the export crop (groundnuts in Senegal) for land and labor. In consequence, and because of the rapid increase in the urban demand for staple foods and the desire to keep down consumer prices and reduce dependence on imports, a number of governments have introduced statutory marketing schemes for staple food crops as well. Nevertheless it remains true that in most developing countries marketing improvements have been made mainly for exports.

In many developing countries, government controlled marketing agencies have been organized with the object of maintaining buffer stocks of basic foods such as grains and beans, and stabilizing internal prices for the benefit of producers and consumers. Through these buffer stock schemes additional incentives have been given to producers to expand their production by offering minimum intake prices to farmers at harvest. At the same time, lower income consumers have been protected against excessive prices. In other countries, such as Mali, Guinea, and Tanzania, preference has been given to the establishment of monopoly marketing agencies to deal specifically with the main domestic crops or, as in Senegal, such functions have been integrated into those of existing export boards.

Well-planned and efficiently operated statutory marketing agencies have contributed substantially to the improvement of agricultural marketing during the last decade. However, in some cases trained staff and financial reserves have been inadequate for efficient functioning, while some agencies have also been hampered in the elaboration and implementation of price and marketing policies by political or sectional pressure groups. A further major difficulty is that it has rarely been possible to set up an adequate network of buying points, equipped with warehousing facilities, to give all producers the opportunity to sell to the stabilizing authorities or their agents.

The promotion of co-operative marketing as a means of securing better returns to small farmers has also been a main concern of governments in developing countries. Although there are successful schemes which have led to higher returns to farmers, better marketing services and lower marketing margins, many co-operative schemes have faced considerable difficulties. Among the principal problems have been the absence of the co-operative spirit in small farmers, the lack of qualified managers and experienced personnel to operate co-operatives, insufficient financial resources, and the difficulty of competing successfully with wel -established private traders, who, as already noted, are also often the

main source of credit for small farmers. Difficulties experienced with production, credit and supply co-operatives in many countries have also indicated the need to tie the granting of credit or the supply of production requisites and main consumer goods on credit terms to the marketing of the crops as a guarantee for recovery of the loan. Production co-operatives have also been found to need efficient intervention on the marketing side and ready access to major outlets if they are to secure full benefits for their members.

To help overcome these difficulties, in some countries where there are trading marketing boards or government agencies for various crops, co-operatives or farmers' associations have been appointed as their buying agents. Countries where this approach has been adopted include Ceylon, China (Taiwan), Japan, and the Republic of Korea. This has made it possible for marketing co-operatives to engage in commercial activities with little or no financial risk and without outlet problems, as they purchase at prices fixed by the agency and in its name. At the same time, the complexity of their operations has been considerably reduced, with their intervention limited to the assembly of members' crops and delivery to official buying points. The central organizations may also advance the necessary funds to carry out the purchasing programs and provide transport and storage facilities until the co-operatives are in a position to supply these services themselves.

In this way, co-operative marketing has received a new impetus in some countries. In Ceylon, for instance, government purchase through co-operatives under the Guaranteed Rice Price Scheme rose from 5 percent of total rice production in 1951 to 57 percent in 1962. In Senegal, before the establishment of the groundnut marketing board, co-operatives handled only about 5 percent of the crop whereas, in 1962, 45 percent, or about 400,000 tons, was bought up by some 1,300 co-operative agents of the board. However, the replacement of private buying agents by co-operatives before trained and sufficiently experienced staff was available has in some cases substantially reduced the efficiency of operation of the boards and government agencies.

Government marketing services

In most of the developing countries, government marketing services or departments, covering a wide range of activities and responsibilities, have been established or strengthened. Much still remains to be done, however, and the lack of qualified and experienced personnel is often a serious obstacle.

Government produce inspection services controlling the strict application of grade and packing standards for the main export products have now been set up in many countries. In most African countries, for instance, the quality control of exports is exercised through a government service even for commodities handled by monopoly marketing boards.

During the last decade many governments have also designed programs to facilitate transactions and improve market practices by introducing standard weights and measures, and minimum health and sanitation standards.

Another field in which some governments have contributed to improving marketing operations is the regular provision of information on stocks, prospective supplies, movements of produce, consumption and prices. Market information and news services, at least for some products, have been set up in several developing countries. A few governments have recently also initiated market investigations to promote exports.

Storage facilities

The organization of marketing boards or co-operatives, the gradual withdrawal of private firms (especially in some countries in Africa and the Far East), the opening of new production areas and the expansion of production have induced the responsible agencies to furnish additional storage and processing plants, together with other facilities for weighing, grading, and packing.

At the beginning of the 1950s, particular emphasis was placed in many countries on the provision of adequate storage facilities for staple food crops such as grains, pulses and beans, in order to reduce the high losses caused by insect damage and excessive moisture content. While investment in storage facilities for export crops has often been undertaken by private firms without direct government assistance, considerable help has been required from governments for the establishment of stores for grain for local consumption. The form of government action has varied from the provision of technical advice and credit to the organization of state-controlled buffer stock schemes or elaborate monopoly grain handling boards. In Morocco, for instance, the construction of modern grain silos has been encour-

aged through government loans, which had resulted by 1961 in the availability of storage facilities for nearly 1.5 million tons of grain.

Another approach has been taken in India, where a National Co-operative Development Warehousing Board was established and made responsible for the financing and organization of an extensive warehousing system. By 1961, 36 warehouses had been set up for the central co-operatives, 223 for the state co-operatives, and 4,480 go-downs for local co-operative societies. In some Latin-American and African countries, the main impetus toward the creation of a network of storage facilities has been given by the organization of buffer stock schemes to stabilize grain prices.

Although improvements in storage have been supported in many developing countries by government action and assistance, private investment in the construction of small storage facilities, particularly in villages and wholesale markets, has also contributed to the reduction of losses.

In spite of this progress, however, large quantities of grain are still lost every year because of the lack of adequate stores. A number of storage projects have also proved unsuccessful. Grain silos have been unsuitably placed, so that they have lain idle for several years.

Processing facilities

In addition to the expansion of storage facilities, there has been considerable investment in the establishment of new agricultural processing industries. Among primary processing facilities, good progress has been made in some countries in the construction of new livestock slaughtering facilities and modern milk processing plants. In Africa, for instance, at least 50 large slaughterhouses were constructed between 1950 and 1960, and nearly all the capital cities are now equipped with modern slaughtering facilities, permitting efficient meat handling under hygienic conditions. In many cases cold stores have been added, which has contributed to greater stability of prices. Plants for by-products have been established in several places. In some areas where there was the possibility of developing an export meat trade, such as in east Africa, the Sahelian zone of west Africa, and central Latin America, marketing channels, including slaughterhouses and transport facilities, have been established. In addition to the construction of larger slaughterhouses for export and for the supply of meat to large urban areas, in many countries smaller rural abattoirs have been established in villages and small towns. Nevertheless, substantial losses of meat occur in many areas where, because of the lack of adequate slaughtering and refrigerated transport facilities, cattle have to be driven over hundreds of kilometers.

Modern milk processing and milk marketing methods have until quite recently been largely restricted to countries with a temperate climate. Tropical and subtropical areas were considered unsuitable for modern dairying and, in consequence, hardly any milk processing facilities existed in these regions before the war, while even as late as 1950 regulated milk marketing was found only in Europe, North America and Oceania.

During the last decade a number of international organizations, particularly FAO, UNICEF and the Colombo Plan, as well as various bilateral programs, have provided substantial assistance for the establishment of adequate milk processing and milk marketing facilities in developing countries. Between 1951 and 1964, UNICEF assistance to the value of US$22.8 million has been provided to some fifty milk conservation projects in developing countries.

The organization of milk conservation projects has given considerable incentive to farmers to expand their production and has also encouraged milk consumption, as consumers have been supplied with good quality milk, properly handled and processed. Achievements, however, remain small. For example, the milk plants operating in India at present handle approximately 550,000 tons of milk per year, which is only about 2.5 percent of the total milk production in the country. Many areas favorable for milk production are underutilized because there are no facilities for the assembly, transport, and processing of milk. In other areas, dairy plants have encountered considerable economic difficulties because their capacity was far in excess of available supplies, or they produced the wrong type of product.

The development of processing facilities for many other products has been particularly emphasized in the developing countries in recent years. Processing industries using agricultural raw materials are seen as making an important contribution to the early stages of industrialization.

As indicated in Chapter III, many developing countries are attempting to change from the export of the raw material to the export of processed or semiprocessed products, and thereby increase their foreign

exchange earnings. Sometimes also, the establishment of a domestic processing industry makes possible the saving of foreign exchange hitherto spent on imports.

The canning of such products as meat, fruit, and vegetables has expanded rapidly in some developing countries. However, the high import content of the industry due to the lack of domestic production of tinplate and cans is generally a major disadvantage. Meat canning is important in a number of countries, including Argentina, Brazil, Kenya, Madagascar, Paraguay, Somalia, Southern Rhodesia, Tanzania and Uruguay. Especially in Africa, canned meat exports often account for as much as 40 to 50 percent of total exports of meat and meat products because of the low quality and poor sanitary conditions of the livestock which prevent the shipment of fresh meat into the major importing countries. Fruit canning and pressing has also expanded rapidly in several developing countries, including China (Taiwan), Cuba, Israel, Kenya, Malaysia, Morocco and the Philippines.

There appears to be considerable scope for expanding the processing of vegetable oilseeds in developing countries. The value added through processing has been estimated at about 15 percent, and can thus amount to a considerable amount of export income. In addition, such processing makes available for domestic use valuable by-products that were hitherto exported. However, the relationship between the exports of oils and oilseeds reflects substantial differences in government policies, especially in the importing countries. Trade barriers, combined with technical and economic considerations, limit the possibility of significant increases in the oilseed crushing industries in most developing countries except where they are encouraged by special arrangements (for instance, in EEC).

Fiber manufacturing has perhaps offered the best possibilities because of the low import content and the generally low level of the skills required. The manufacture of cordage and other hard fiber products has been expanding rapidly in Latin America since the war, particularly in Cuba and Mexico, and more recently in Brazil, the Dominican Republic, and Haiti. Despite a shortage of modern machinery, the abundance of cheap fiber and the low cost of labor make Latin-American cordage mills competitive. For the same reason, jute manufacturing capacity has expanded sharply in India and Pakistan during the last decade. Cotton manufacturing, too, has increased rapidly throughout the developing regions.

The need for efficient management and for skilled workers has often been overlooked in establishing processing industries in the developing countries. There have also been errors in planning, in particular the failure to carry out a detailed market survey of present and future raw material supply, demand and consumer tastes. The difficulty of competing in price and quality on highly competitive export markets has all too frequently been underestimated.

TRANSPORT

The availability of regular and economic transport is a decisive factor for general economic development and, in particular, for agriculture. The marketing of perishables such as fruit, vegetables, milk or livestock often requires special temperature controlled facilities (particularly under tropical temperatures), high speed and efficient organization if losses are to be kept to a minimum. The importance of improving transport facilities has been recognized by the governments of most developing countries and expenditures for this purpose have figured prominently in development plans.

Railways are still an important means of transport for durable agricultural products. While in many developing countries it has been considered doubtful whether major investments for extending rail facilities were justified, there is little doubt that in most countries sufficient attention has not been given to improving existing services.

The progress made in the transport sector is mainly due to the considerable expansion of motor truck services. In many developing countries the number of commercial vehicles has doubled during the past decade. Most of this investment has been by private enterprise and is one of the main contributions of the private sector to the improvement of marketing. Because of its flexibility, the expansion of road transport is of particular importance in the improvement of agricultural marketing in developing countries. The road network has been extended in nearly all of these countries and has opened up many new areas for agricultural production. Trunk roads have been supplemented by feeder roads, which has led to a considerable reduction of transport costs, particularly for perishables.

The expansion of the air transport network, too, has greatly facilitated communication between surplus and deficit areas and has consequently assisted

indirectly in the improvement of agricultural marketing. Although air transport is in general too expensive for agricultural products (except for certain luxury items), there are some isolated areas where it has been an economically viable undertaking. The export of fresh meat by air was developed successfully from Chad to the west African coastal towns. There are several other places, particularly in mountainous areas, where the organization of air transport has opened up new production zones.

FARMERS' ORGANIZATIONS

It has been increasingly recognized that suitable organizations of farmers are needed if there is to be effective implementation of the development measures discussed in this and the previous two chapters, especially in the field of extension, price policy, land tenure, credit, and marketing. In all these cases, it is easier to deal with a coherent group than with scattered individual farmers. Group action also enhances the bargaining power of farmers and makes possible the use of equipment that is uneconomic for the individual small farmer.

In many countries, some form of co-operative has been found to be an appropriate organization, and the co-operative movement has often been assigned a major role in national development. In adapting co-operatives to the needs of the developing countries, however, it has sometimes been necessary to go rather far from the strict traditional concept of co-operation. Many of the existing organizations are insufficiently strong, active and efficient. Government guidance, supervision, technical assistance and finance are likely to be indispensable for a long time to come.

The importance has also come to be realized of strengthening village councils and other forms of local self-government as a means of actively involving the farming population in the process of economic development. Because of the limited results that can be achieved by official action alone, governments are placing more emphasis on the development of constructive local leadership and institutional arrangements for initiating change.

Co-operatives and farmers' associations

During the last decade, there has been a remarkably rapid development of co-operatives almost all over the world. In the developed countries, an interesting example is France, where there have been established groups of farmers known as *Groupements agricoles d'exploitation en commun*, which bring together up to ten farmers who enjoy considerable benefits from government credit policies.

Agricultural co-operatives have been directly encouraged by governments in the developing countries, especially in those where land reform has been carried out. In a number of countries, such as Iran and the United Arab Republic, the beneficiaries of land reform are obliged to become members of co-operatives.

Figures for a number of Far Eastern countries well illustrate the rapid growth of agricultural co-operatives in the developing regions in recent years. In Ceylon, where it was decided in 1957 to replace the various types of co-operative by a single multipurpose co-operative in each village or group of villages, the number of multipurpose societies rose from 68 in 1957 to over 4,800 in 1962. In India, the number of primary agricultural credit and multipurpose co-operatives rose from 127,000 in 1953/54, with a total membership of 5.8 million, to 215,000 in 1961/62, with a membership of 19.6 million. However, co-operatives still cover only about a third of the rural population of India and, as already mentioned, few of them are multipurpose. The number of co-operatives of all types in Indonesia increased from 6,180 in 1952, with a membership of 1.0 million, to 38,802 in 1961, with a membership of 6.9 million; at present they are used mainly for obtaining production requisites from the government at concessional prices. In Malaysia (Malaya) numbers rose from 1,716 in 1954, with a membership of 212,400, to 2,912 in 1962, with a membership of 394,500.

In contrast to the rapid development of the co-operative movement in most countries, the numbers and membership of agricultural co-operative credit societies in Pakistan declined by more than half between 1947/48 and 1956/57, partly perhaps because of the failure of an authentic rural leadership to emerge as a replacement for the official elements in

the movement. Subsequently, considerable emphasis has been laid on the need to rehabilitate and develop the co-operative movement, and satisfactory progress is reported.

Co-operatives may be set up for a great variety of purposes. Generally, however, a three-way link-up, combining the supply of production requisites with credit and marketing, has been found to be the most suitable approach, especially in the developing countries. Multipurpose co-operatives or farmers' associations have the major advantage that they can provide their members with a range of facilities competitive with those provided by merchants. The combination of credit with marketing is particularly important, for often the future crop is all that can be pledged in return for a loan. The combination of marketing with the supply of production requisites makes possible considerable economies, especially in respect of transport.

Co-operatives or other farmers' organizations have an important role to play in the developing countries in the supply of production requisites, such as seeds and other planting material, fertilizers, pesticides, and implements. In a number of countries their part is already considerable. In India, for example, in 1961/62 the co-operatives sold $31.5 million worth of fertilizers, $3.3 million of seeds, and $3.5 million of implements. In Ceylon, the distribution of fertilizers is now almost entirely through co-operatives. Many co-operatives also supply consumer goods and thus assist in the commercialization of subsistence agriculture.

In a number of countries, interest is now being taken in group farming schemes. Co-operative farming societies of various types were functioning in India even before the first five-year plan. A detailed program for the development of co-operative farming, however, was formulated for the first time in the third plan, which provides for 318 pilot projects, comprising 3,180 co-operative farming societies. In Japan, farmers have formed various types of co-operative farming society since about 1958; by 1962/63 there were 3,950 such units, most of them operating in specialized fields such as stock raising or fruit production. The second five-year plan of Pakistan advocated co-operative land management on the lines of an experiment carried out in the Punjab, and during the third plan there is to be an extension of co-operative farming with farmers retaining their individual holdings. The development of co-operative farming has also been emphasized in Tunisia. In the United Arab Republic the beneficiaries of land reform are obliged to participate in a limited form of co-operative farming by pooling their plots for unified crop rotation.

Crop and livestock insurance is also being undertaken through co-operatives in a number of countries. Other services carried out co-operatively include machinery pools, livestock breeding, drainage and irrigation, rural electrification, accountancy, the manufacture of containers, and the sharing of deep freeze lockers. In Norway and Poland there are now co-operative arrangements to make possible weekend holidays for farm labor. Artificial drying equipment is available co-operatively in many countries. In a number of countries, farmers' associations are an integral part of the agricultural extension system and share in its cost. The co-operative sugar factories set up in India provide a striking example of successful co-operative processing.

In many countries, new legislation relating to co-operatives has been passed. In the former French territories in Africa, for example, the original model has been taken from France and molded to local conditions. Co-operative legislation in a number of countries has been amended where experience has shown it to be faulty, imprecise, or no longer applicable. In several countries a basic co-operative law has been enacted during the decade for the first time. But certain countries, such as Denmark, Norway, and New Zealand, continue to find no necessity for special legislation.

In Japan, where multipurpose organizations have been outstandingly successful, a number of laws have recently been enacted providing for various measures of financial and other assistance to co-operatives to improve their efficiency; under the Agricultural Co-operative Associations Amalgamation Promotion Law of 1961, 2,430 associations had been amalgamated into 560 new ones by September 1963. Amalgamation of the smaller societies is also provided for in the Republic of Korea.

The extension of co-operatives in the developing countries has been hampered particularly by the lack of trained personnel to administer them. In Iran it had been possible by mid-1964 to establish only 1,200 of the 15,000 to 18,000 village co-operatives estimated to be needed for the implementation of the land reform law, mainly because of the shortage of trained and experienced co-operative officers. A number of countries are paying special attention to the training of co-operative personnel. In China (Taiwan) the efficiency of the farmers' associations was greatly increased after the government had

organized a series of training courses for managers and accountants, as well as for chairmen of boards of directors.

Local government organization and community development

The strengthening of local self-governing bodies is recognized in many countries as a basic condition for people's participation in economic and social development. In India, earlier postwar attempts to revive the *panchayat* system of elected village councils, while falling short of expectations, exposed weaknesses which have since been corrected. In Pakistan, the system of basic democracies was established in 1959-60, providing, like the panchayat, for tiers of representative participation in the planning and execution of development activities. They have taken over many of the activities of the former Village Agricultural and Industrial Development (V-AID) Program, which was abolished in 1962, and it is hoped that, as a result of the discussion of local problems in the village councils with government officials explaining the extent to which funds and equipment are available, the preparation and implementation of development plans will be more effective.

Such local government organizations are of particular importance for agriculture because of their close link with community development which, in a number of countries, has built much of the infrastructure without which agricultural development cannot take place: roads, terraces, wells, afforestation, irrigation, drainage, schools, libraries, meeting halls, etc. The Comilla Pilot Works Program, directed by the Academy for Village Development at Comilla in East Pakistan, for example, has made dramatic changes through the adoption of community development techniques directed to public works activities. The pilot program was prepared and approved by committees of farmers' representatives, and the confidence of the farmers was thereby more readily gained. As a result of the success of the pilot program, works programs of the same kind are now being carried out throughout the country. In the United Arab Republic, "combined units" make a five-pronged approach, covering secondary schooling, health services, adult education, economic co-operation, and social activities.

The community development program has expanded particularly rapidly in India, where by June 1963 5,183 blocks, of about 100 villages each, covered almost the entire rural area. Because of the rapid expansion of the program, however, many blocks and villages were only minimally staffed by inadequately trained personnel. Plans were formulated at the upper administrative levels rather than by the people whose interest was to be served, and in 1959 it was therefore decided to delegate responsibility to the people's institutions. By the middle of 1960, all states had assigned the management of the local works program to the elected panchayats and, where elected assemblies had been established at the block level, control of the community development program had been fully transferred to them. During the last few years, community development programs have placed increasing stress on agricultural development, in contrast to the earlier emphasis on welfare work. Funds provided for agriculture are to be used for schemes benefiting large numbers of people jointly, including the excavation and maintenance of field channels, village tanks, and soil conservation.

The difficulties of implementing effective community development programs have come to be better appreciated during the decade. A major problem in most countries is to provide the skilled assistance needed for many types of project. It has also been found that, if they are to be fully effective, community development projects, especially those concerning agriculture, need to be carefully integrated with related projects carried out by government departments.

INSTITUTIONAL CHANGES IN CENTRALLY-PLANNED ECONOMIES

U.S.S.R.

The institutional framework of agriculture has undergone many far-reaching changes in the U.S.S.R. during the period under review. But the biggest postwar change, which was the decision to amalgamate the smaller *kolkhozes*, dates from 1950. Whereas there were previously 250,000 kolkhozes, their numbers had fallen to 91,200 in 1953 and only 38,800 in 1963 (Table XI-5).

TABLE XI-5. - U.S.S.R.: MAIN CHARACTERISTICS OF COLLECTIVE FARMS AND STATE FARMS

	Agricultural land [1]		Collective farms (kolkhozes)			State farms (sovkhozes)		
				Average per kolkhoz			Average per sovkhoz	
	Kolkhozes	State farms [2]	Number	Sown area	Families	Number	Sown area	Workers [3]
	Million hectares		*Thousands*	*Hectares*	*Number*	*Thousands*	*Hectares*	*Number*
1953	[4] 387.7	[4] 88.7	91.2	1 407	220	4.9	3 100	380
1955	387.9	91.3	85.6	1 702	231	5.0	5 000	...
1956	...	...	83.0	1 800	238	5.1	6 200	...
1957	...	...	76.5	1 696	245	5.9	8 400	...
1958	315.2	178.0	67.7	1 881	276	6.0	8 700	639
1959	310.2	185.4	53.4	2 316	343	6.5	8 300	645
1960	290.4	217.6	44.0	2.745	383	7.4	9 000	745
1961	256.2	258.4	40.5	2 665	399	8.3	9 700	794
1962	253.8	266.9	39.7	2 837	404	8.6	10 100	825
1963	241.9	283.1	38.8	2 896	411	9.2	9 800	775

[1] Excluding land in the personal use of kolkhoz and sovkhoz workers (family plots), which covered 7.5 million hectares in 1963. - [2] Includes the sovkhozes and also some other types of state enterprise. - [3] Annual average. - [4] 1954.

After the war there was a shortage of labor in some rural areas, the efficiency of the kolkhozes had deteriorated, and machinery and equipment were in short supply; it was thought that this could be remedied by amalgamating the kolkhozes into larger units. At the same time the population was to be regrouped in large semiurban units, but this never took place and in fact a completely new rural structure has grown up. Only 16 percent of the total number of kolkhozes in 1963 were of the traditional type covering a single population center; 48 percent included two to five population centers, 20 percent six to ten, and the remaining 16 percent more than ten centers. Nearly 1,000 contained more than 50 population centers each.

While before the war the average kolkhoz contained 81 families and had 492 hectares of cropland and 85 cattle, by 1963 these figures had risen to 411 families, 2,896 hectares and 944 cattle.

After 1953, the process of amalgamation appears to have slowed down. In 1958, however, the Machinery and Tractor Stations (MTS) were abolished and their equipment purchased by the kolkhozes. This caused considerable financial difficulties for the smaller and poorer kolkhozes, and there was therefore a renewed wave of amalgamations in the years 1959-61.

Amalgamation is not the only reason for the reduction in numbers of kolkhozes. Many of them have been turned into *sovkhozes* (state farms). Table XI-5 indicates that, in contrast to the kolkhozes, the number of sovkhozes has grown rapidly. At first this was mainly because of the establishment of sovkhozes in the virgin lands and later because of the preference accorded them over the kolkhozes and the desire of the weaker kolkhozes to be changed into sovkhozes or amalgamated with them. The average size of the sovkhozes has also more than trebled during the last decade.

By 1963 the state farms (mainly sovkhozes) held nearly 50 percent of the total agricultural land (80 percent in Kazakhstan), as against 12 percent in 1954. Their share of the sown area rose from 12 percent in 1953 to 45 percent in 1963, and of total cattle numbers from 8 percent in 1954 to 28 percent in 1963.

In 1963 there were 3,055 interkolkhoz associations, grouping 44,311 kolkhozes. A kolkhoz may be a member of several such associations, each of them having a specific purpose such as construction, repairs, processing, and hatching.

There have also been many changes during the decade in the methods used to control the activities of the kolkhozes and in the extent of this control. Up to 1958 control was exercised by both the district authorities and the Machinery and Tractor Stations (MTS). While the former were only concerned in supervision, the latter participated in planning the production of the kolkhozes, and therefore had a much more direct influence. With the disappearance of the MTS in 1958, there was thus some increase in the autonomy of the kolkhozes. In 1961 it was decided that in each district model enterprises would be designated, to serve as an example for all the kolkhozes and sovkhozes in the area. For each model enterprise a technical council was set up,

composed of the district officials as well as the specialists of the kolkhozes and sovkhozes. At the same time, an inspectorate was established to supervise the fulfillment of state deliveries and contract sales.

The control system was modified and further strengthened in 1962 by the establishment of regional kolkhoz-sovkhoz offices. These offices, directed by a committee of sovkhoz directors, kolkhoz chairmen and various representatives of the state and the party, are concerned with the common problems of the sovkhozes and kolkhozes in the area. In place of the inspectorate mentioned above, a new category of " inspector-organizers " was introduced, with the task of supervising all the activities of the sovkhozes and kolkhozes and advising them on necessary improvements.

At the end of 1962, the party organizations dealing with agriculture and the rural population were separated from those concerned with industry, and party offices (*partkoms*) were attached to each of the regional kolkhoz-sovkhoz offices. The partkoms were also given their own inspector-organizers. Thus, while the regional office exercised control over the kolkhozes and sovkhozes through their officials and technicians, the partkom worked through the party members. This system gave rise to frequent conflicts, and in March 1964 the provisions of the decree of 1955 were reasserted, whereby in the event of disagreement on planning between a kolkhoz and the regional office the former was to prevail. Furthermore, in November 1964 the division of the party into industrial and agricultural branches was abolished and the partkoms once again detached from the regional kolkhoz-sovkhoz offices. Further amalgamations of kolkhozes also now appear to be out of favor.

Eastern Europe

The last decade has been marked by the almost complete socialization of agriculture in all of the eastern European countries except Poland (Table XI-6). The speed and intensity of the process of socialization has varied from country to country. In Bulgaria, for example, well over half of the land had already been socialized by the beginning of the decade, while in Eastern Germany and Romania 1960-62 was the period of most rapid change.

In 1956 about 80 percent of the co-operatives were disbanded in Poland and nearly half in Hungary. This development was only temporary in Hungary but has led to lasting changes in Poland. In some countries, such as Eastern Germany and Romania, socialization was based for a time mainly on " inferior " types of co-operative, in which collectivization is only partial and the members continue to receive rent from the co-operative for their land. More recently the proportion of inferior co-operatives has been reduced, and Bulgaria has reached the last stage of collectivization with the complete abolition of the rent payment.

Table XI-6 indicates that the average size of the collective farms in eastern Europe has grown sharply during the last decade, but except in Bulgaria they are much smaller than the kolkhozes of the U.S.S.R. As in the U.S.S.R., the policy has been to amalgamate the smaller farms. The number of state farms has also increased, but less rapidly than in the U.S.S.R. The country where they are of most importance is Czechoslovakia, where they account for about a quarter of the arable land.

A further parallel with the U.S.S.R. has been the abolition of the MTS and the transfer of their equip-

TABLE XI-6. - EASTERN EUROPE: GROWTH OF SOCIALIZED AGRICULTURE

	Share of agricultural land				Average area			
	Socialized sector [1]		Of which, co-operatives		State farms		Co-operatives	
	1954	1963	1954	1963	1954	1963	1954	1963
	Percent				*Hectares*			
Albania [2, 3]	[4] 21	[5] 88	[4] 13	[5] 73	...	...	...	...
Bulgaria	59	[5] 98	53	[5] 91	1 386	4 384	[2] 858	[2] 3 832
Czechoslovakia	42	90	31	64	...	3 891	293	597
Germany, Eastern	24	94	12	86	555	663	215	331
Hungary [3]	35	97	18	80	2 038	3 092	201	1 059
Poland	21	14	8	2	403	394	[4] 194	154
Romania	[4] 32	91	6	61	3 316	3 022	419	1 848

[1] Co-operatives and state farms. - [2] Excluding family plots. - [3] Arable land. - [4] 1955. - [5] 1962.

TABLE XI-7. - EASTERN EUROPE: SHARE OF TOTAL NUMBER OF LIVESTOCK IN THE SOCIALIZED SECTOR

	Cattle		Pigs		Sheep		Poultry	
	1954	1963	1954	1963	1954	1963	1954	1963
Bulgaria	28	78	37	78	36	67	18	42
Czechoslovakia	33	84	43	76	54	69	14	48
Germany, Eastern	15	60	20	58	22	64	5	30
Hungary	17	53	37	57	49	39	...	...
Poland	15	14	23	12	21	...	...	...
Romania	...	[1] 53	...	[1] 51	...	[1] 54	...	...

[1] 1964.

ment and personnel to the collective farms. This policy has been followed in Bulgaria, Czechoslovakia and Hungary, but the MTS have been retained in Eastern Germany and Romania, probably because of the prevalence of the inferior types of co-operatives.

The share of livestock in the socialized sector remains a good deal less than the share of total land (Table XI-7). In addition to being able to retain a private plot (initially 0.5 to 1.0 hectare), each co-operative member was allowed to keep a certain number of livestock, generally of the order of one or two cows plus calves, one or two sows plus piglets, five ewes plus lambs, 10 beehives, and unlimited numbers of other animals such as goats, rabbits, and poultry. Thus a significant proportion of the livestock is still owned privately by the peasants. Difficulties in expanding livestock numbers in the socialized sector have included the slow rate of construction of farm buildings.

In Poland the large-scale dissolution of co-operative farms in 1956 and 1957 was accompanied by the abolition of many MTS. Since then "agricultural circles" have multiplied rapidly, their numbers growing from 11,600 in 1957 to 30,000 in 1963, when they had more than a million members and covered about two thirds of all villages. Their main purpose is to operate machinery and tractor pools, various services and processing enterprises, and to produce building materials. In a few cases they also own land on a co-operative basis, but in 1963 this amounted to only 120,000 hectares.

China (Mainland)

In China (Mainland), teams of neighboring families (so-called "mutual aid teams") working jointly on each others' holdings and sharing the use of farm animals and implements had developed in the border regions during the long periods of fighting up to 1949. The establishment of new mutual aid teams was encouraged in the following years, and in 1953 their transformation into agricultural producers' co-operatives of the semisocialist type was started. A large number of villagers now joined the co-operatives directly, without passing through the aid team stage. This primary type of co-operative retained a nominal ownership of land, while management was collective and compensation was paid for both land and labor contributed. A reorganization carried out in 1955 resulted in an acceleration of the drive for new co-operatives and a change-over to larger and fully socialized co-operatives, in which remuneration was based almost entirely on labor and no longer on land, which became the property of the collective. While it had been estimated orginally that by the end of the first plan in 1957 about a third of all peasant households would be members of the lower-stage co-operatives, some 90 percent were reported to have joined the higher stage co-operatives early in 1957.

The movement for the complete socialization of farming was officially launched in August 1958. Four months later some 750,000 high-stage co-operatives, comprising about 99 percent of peasant households, were reported merged into 26,500 communes. In 1959, further amalgamation reportedly brought down their number to 24,000, each averaging 64,000 *mou* (4,270 hectares) of farmland, 4,000 peasant households, and 10,000 able-bodied laborers. Means of production and products were "collectively owned by the communes under a system of centralized leadership with management organs at various levels." The Wuhan Resolution on Communes of 1958 distinguished three levels of management: at the apex, the commune's administrative committee, corresponding to the district council of the precommune era; on the next level, the production brigades, correspond-

ing to the former agricultural producers' co-operatives; these, on the third level, were subdivided into production teams, roughly corresponding to former villages. Final decision on the organization of production rested with the commune's administrative committee which in turn was closely linked with the higher planning bodies.

After the disastrous harvests of 1959 and 1960 new efforts were made to provide labor incentives and to decentralize the management of communes. Hitherto the pooling of all gains and losses had forced efficient brigades to support poor ones. Reforms included the calculation of wage points on a piece-rate basis, taking into account the quantity and quality of the work performed, and the restoration of private plots of about 0.2 hectare to each family for kitchen gardening and the raising of small animals. The commune's central administrative functions were limited to the direction of industrial production and public services. The brigade, usually consisting of some 30 teams, was still considered the distributor of wages, but allocated the means of production to the teams, each consisting of some 40 households. The brigade was to make production plans based on those of the teams, with each team being responsible for a certain output and the labor force and the costs involved. After a third summer of crop disasters in 1961, it was announced in early 1962 that the team would replace the brigade as the " basic accounting unit. "

FISHERY INSTITUTIONS

Improvements in fishery institutions, especially in respect of credit and marketing facilities, have to a large extent been based on the co-operative movement. Traditionally, co-operation in fisheries is most widespread in the sector of the fishery industry which is carried on in small units with little capital investment. This is still the case in the developing countries. In the developed countries, however, there is a definite trend toward big, highly capitalized co-operatives capable of rendering a wide range of services to their members and engaging efficiently in all stages of processing and marketing.

In the developed countries there is also a tendency for federations of fishermen's co-operatives to control all aspects of the production and processing activities carried out by their members. Where the bulk of production is exported, as in Canada, Denmark and Iceland, these federations establish production plans for the primary co-operatives and maintain strict quality control. They also supply a wide variety of fishery equipment, and assist members in obtaining capital to modernize and expand processing facilities. The benefits of modern production and distribution methods are thus made available to the inshore fishermen who still constitute the majority of members in this type of co-operative. The co-operatives also provide, often at a loss, services in marginal areas that are frequently overlooked or abandoned by other commercial enterprises.

While the output of fishermen's co-operatives in Europe, North America and Japan is growing, the number of co-operatives appears to be increasing only slowly. This is firstly because of the amalgamation of smaller co-operatives and, secondly, because the launching of a comprehensive fishery enterprise has now become a very costly undertaking requiring far more capital for investment in buildings and equipment than the fishermen can possibly produce. Furthermore, although government funds may be available for this purpose, there is a tendency for governments to put the main emphasis on high-sea fisheries, a field which fishermen's co-operatives have hardly entered so far.

In addition to fishermen's co-operatives, sales organizations of fishermen play an important role in some developed countries. In Norway, almost the whole of the annual catch is now sold " first hand " through fishermen's sales organizations with statutory rights. In Sweden, such organizations are closely associated with the system of price regulation, and in Iceland fishermen's unions sponsored a law establishing a fund to guarantee a minimum income to fishermen.

Over 5,000 primary fishermen's co-operatives existed in Japan in 1963 with an estimated membership of over 900,000. The fishery co-operative movement in Japan has recently launched a unique scheme for the provision of insurance for fishermen against catch failure and loss of fishing gear and equipment.

In many developing countries, governments have placed considerable emphasis on the development of

fishery co-operatives. Besides using them for extension work, governments channel loans to fishermen through co-operatives for the acquisition of new boats and fishing gear, and finance the construction of a variety of fish processing plants operated on a co-operative basis. In India, co-operatives have been assisted in establishing net-making factories, boat-building yards, and workshops for the maintenance and repair of engines. Considerable efforts have also been made in many countries to organize co-operatives for fish marketing and for the supply of fishery requisites. These activities, combined with the granting of short-term credit, used to be the virtual monopoly of strong groups of middlemen (usually traders-cum-moneylenders).

Co-operation in fisheries in developing countries has progressed most rapidly in the Far East. In India, the number of fishermen's co-operatives rose from 1,599 in 1958 with 71,358 members to 2,538 in 1962 with 267,854 members. While some of these societies are mainly active in the fields of thrift and credit, an increasing number is engaged in the marketing and processing of fish, including quick freezing, and the provision of production requisites. Co-operation in fisheries has a fairly long history in several other Far Eastern countries, including Burma, Ceylon, Hong Kong, Indonesia, Malaysia and the Republic of Korea. In the Republic of Korea, co-operatives are closely associated with efforts to develop the coastal fisheries. In Hong Kong, close collaboration has been established between the Fish Marketing Organization and the co-operatives.

Fishermen's co-operatives exist in a number of Latin-American countries, but there is very little information on their activities. An exception is Mexico, where there is the unique situation that the co-operatives have by law been granted exclusive property rights in some of the most important aquatic animals, including shrimp which in 1963 was the fourth biggest export item of the country. Until recently the co-operatives were not in a position to utilize this right fully, but since the establishment of the Co-operative Development Bank their participation in the shrimp industry has increased rapidly.

The development of fishermen's co-operatives in Africa is still in the embryonic stage, and more failures than successes have been registered.

FORESTRY INSTITUTIONS

Forestry development policies are both conditioned by and reflected in the institutional factors which affect forest land use. For example, the fact that three-quarters of the world's accessible forests are publicly owned is in part a relic of traditional tenure systems and in part the result of deliberate government policies.

During the past ten years and particularly in the developing countries, there has been a tendency to confirm and extend public ownership of forest lands. A recent example is Iran, where the forests were nationalized in 1963. Experience has shown, however, that public ownership if not supported by adequate services is no guarantee of efficient management.

In fact, in countries which have attained a sufficient level of economic and social development, private ownership of a considerable part of the forest area has proved perfectly compatible with the public interest. This is the case, for example, in western Europe, Japan, Australia, New Zealand and North America, where the proportion of privately-owned forests is high and has continued to increase slightly during the last ten years. There has, however, been a tendency in most of these countries to restrict the exercise of private forest ownership, mainly in order to ensure the realization of public objectives related to the protective role of the forests.

Economic objectives have been pursued more frequently in the developed countries through such indirect means as technical assistance to private forestry, support to forest co-operatives, consolidation of forest holdings, and inducements such as credit, subsidies, and tax exemption. In Finland, Norway and Sweden, where most of the forest area consists of privately-owned farm woodlots, an important feature has been the development of private associations or co-operatives for timber marketing and for assisting members in technical matters. In Norway, the basis of the development of these associations is the forest law prescribing that 2 percent of the gross income from forest products sales is to be deposited in a forest regeneration account and 10 percent in a forest investment account. Most district

forest owners' associations now employ forest officers and other technical staff as well as trained workers. These associations are increasingly co-operating with farm associations in establishing integrated forest-agriculture management plans for entire farms.

In Finland, the private forest owners' associations have greatly improved forest management through extension work and direct technical and financial assistance to forest owners. A nation-wide private association now handles the marketing of forest products. In Sweden, the forest owners' associations also own important forest industries, including pulp mills. The rapid development of mechanization and transport has led the members of forest owners' associations to form co-operatives for the joint management of their forests. In 1963, there were over 200 such co-operative units, grouping over 12,000 forest owners and covering a total forest area of 808,000 hectares, each unit employing a forest officer or other technical staff.

In Japan, the forest owners' associations have been assisted by the government particularly by subsidies for reforestation and forest road construction, and by credits to provide short-term working capital. The forest insurance system was reorganized in 1961 and now, beside forest fires, it also covers any damage arising from climatic causes. In New Zealand, the number and membership of farm forestry associations have increased considerably; the forest service offers technical advice to these associations and to farmers generally, and plantation programs are promoted through the Farm Forestry Incentive Loan Scheme. In Canada, taxation policies have been devised under the Agricultural Rehabilitation and Development Act to improve the economy of farm woodlands which account for more than 20 million hectares. In the United States, extensive forest areas belong to industrial companies, but considerable assistance is also given to owners of small forest holdings, particularly for the reforestation of marginal crop lands.

In the developing countries, institutional changes affecting forest lands have usually taken place as part of general agrarian policies. Two typical situations can be distinguished in this context: firstly, countries where population pressure on the forest is relatively low and forest lands are not associated to any great extent with food production; and secondly, countries whose forest lands play an important role in the food production cycle through shifting cultivation, grazing, hunting, food gathering, etc.

Examples of countries in the former class are found in Latin America. Except for a few countries such as El Salvador and Haiti, the amount of forest land per head of the population is comparatively high. During most of the period under consideration, agrarian policies in many Latin-American countries have given priority, as noted earlier in this chapter, to the distribution of uncultivated land to agricultural settlers. Institutional changes have affected only the areas earmarked for settlement programs and, as far as forestry is concerned, have been almost entirely limited to the appropriation of public forest lands for colonization schemes and for the legalization of squatters' settlements. However, there is now a trend toward a wider institutional approach intended to transform the agrarian structure as a whole. Most recent agrarian laws include provisions aimed at increasing the direct contribution of the forests to the well-being of rural populations and at integrating the forests into land reform programs, not merely as a land reserve but as a necessary element in achieving better utilization of the factors of production. The 1962 agrarian code of Panama, with its extensive coverage of forestry aspects, is among the best examples of this trend.

Unlike the rest of the developing world, Latin America shows a predominance of private ownership of accessible forest lands. Recent forest laws have tended to increase state intervention in private forests. There is evidence of a more flexible and functional concept of forest ownership, for example in the separation between ownership rights and management arrangements established by the Mexican forest law for small woodlots and communal forests. Considerable attention is being paid in some countries to the systematic establishment of public ownership over remote forest areas belonging nominally to the state, but over which it had no effective control or established title.

An interesting system for putting unused land and manpower to work has been developed in Ecuador in the form of co-operative associations for afforestation; the members of the co-operatives provide the manpower, landowners provide the land, and the forest service provides technical and managerial assistance, tools, seeds and plants. In Mexico, the 1960 forest law has promoted a considerable development of forest owners' associations and of co-operatives grouping owners of small forests and users of communal forests for the purpose of applying modern forest management methods, rationalizing harvesting operations and improving the living levels of the rural population. In Argentina and Chile new

credit and tax exemption schemes have proved to be a great incentive to private reforestation work.

Most of the countries of tropical Africa and Asia are in the second class, where the forest lands play an important part in food production. In these countries the need to reconcile the rural population's traditional rights over forest areas with the role that the forest must play in the welfare of the nation as a whole poses a major land-use problem with complex institutional implications. In many countries the growing demand for agricultural land imposes increasing pressure on the forests and there is a danger that governments will find it more and more difficult to apply the forest reservation and development policies required by the increasing demand for forest products, and by soil and water conservation needs.

In Asia, institutional measures have been applied whereby the people living near the forests and depending on them for their livelihood are given a stake in their preservation and management. In Burma, India and Indonesia, for example, forest areas have been transferred to communities which are responsible for their management under government supervision. In several countries, methods such as the taungya system have been applied successfully to associate agricultural and forest crops.

Among the developing countries, the Republic of Korea has been most active in providing assistance to owners of small forest holdings. Contractual systems have been developed for the distribution of benefits between private owners and village forest associations, and extension work has been developed to spread knowledge of forestry techniques among the rural population. In other countries in the Far East and Near East, government services have been active in promoting the establishment of farm woodlots within the framework of village development schemes, particularly with the aim of providing fuelwood and timber for local use. Efforts have been made to increase public awareness of the benefits derived from the forests through such measures as tree festivals and tree plantation weeks, and many forest services have supplied forest plants at low cost to farmers.

In Africa, the transition from traditional forms of common land tenure to freehold rights or state ownership is taking place in certain areas. In other areas, however, customary law is maintained, together with the rights of usage in the forests based on it, although the government usually acts as a trustee of the lands for the benefit of rural communities. This combination of government control and communal ownership is no substitute for the establishment and maintenance of a sufficient state-owned forest reserve, but it could facilitate the abolition of occupancy and other harmful rights of usage over certain forest areas while maintaining rights and practices compatible with the objectives of the forest policy. In Togo, authority is given for underplanting selected forest areas with appropriate agricultural crops. The new forest law in Senegal encourages private and communal forest plantations on public land. In Uganda, local forest reserves amount to 18 percent of the total forest reserves. In Kenya, rural communities have established highly productive forest plantations under the taungya system which at the same time enables them to produce more than their own requirements in food.

Chapter XII. - Outlook

The chief value of a review of past trends in world agriculture is in the guidance it can provide for the future. In this final chapter it may therefore be useful to try to single out what seem likely, in the light of the experience of the decade reviewed here, to be some of the main problems of food and agriculture in the next decade and beyond.

The last ten years have been dominated by an unprecedentedly rapid increase in the number of people for whom the world's agriculture, fisheries and forestry must provide food, clothing and shelter. It is indeed a considerable achievement that it has been possible to cope with this population explosion without widespread starvation. But the rapid growth of population has meant that the impressive gains in agricultural production achieved in the developing countries have brought little or no improvement in their diets and levels of living.

For the same reason it may be even more difficult in the future to achieve the steady improvement in diets and living levels in the developing countries that are essential if they are to begin to catch up with those current in developed countries. For some time to come population growth is likely to accelerate even further. The United Nations projections quoted in Chapter I indicate a population almost double the present level by the end of the century.

The pace of population growth will undoubtedly remain the dominant factor in the world food and agriculture situation during the coming decade. While it is encouraging to see the increasingly serious attention that is being paid to the need for a world population policy, this is hardly likely to affect the size of agriculture's task for some time. It is therefore against the background of a continuing acceleration in population growth that all measures for agricultural and economic development must be viewed during the next decade and probably a good deal longer.

The crucial area is likely to remain the agricultures of the developing countries themselves, for at least the major part of the increased food consumption needed in these countries must come from the development of their own production. Thus a first major problem for the next decade is how to stimulate agricultural development in the developing countries sufficiently to overcome the stagnation in their per caput production and make possible the improved levels of nutrition that are so urgently needed. The experience of the last decade has brought out clearly the key role in this respect of economic and institutional measures to increase farmers' incentives to adopt improved methods and expand their production. But while there is now widespread conviction of the need for such measures, their implementation on a wide enough scale to pave the way for a technological revolution in agriculture remains a primary task of the coming decade. Many measures of this kind require a comparatively long time to come to fruition, and it is therefore urgent that action should be begun without further delay. Furthermore, if rising per caput production is actually to lead to improved levels of nutrition, it is likely that greater attention will have to be paid to measures to promote the production and consumption of livestock products and other nutritionally desirable foods.

A second main problem, closely related to the first, is how to make agriculture a more dynamic sector in the economic development of the developing countries. In countries where two thirds or more of the population are engaged in agriculture, it is clear that no significant increase in per caput income is possible without an increase in agricultural productivity. Moreover, it has come to be better appreciated during the period under review that agriculture's contributions to economic development are far wider than the mere supply of food and raw materials. For example, the processing of agricultural products has great importance as a first stage of industrialization, while in most developing countries the agricultural population must provide much of the market for the products of industrialization. Potentially, therefore, a prosperous agricultural sector can contribute greatly to the overall economic development of the developing countries. This po-

tential, however, is as yet far from being realized in most of these countries.

Thirdly, agriculture remains a problem sector in many developed countries as well. How are they to maintain the incomes of their farm populations relative to those in other sectors, and at the same time keep production from outrunning the growth of demand? So far their attempts to pursue these often conflicting aims have led to increasingly costly programs of farm support, and have not succeeded in preventing the accumulation of surplus stocks.

A fourth main group of problems concerns international trade in agricultural products. Following a period of stagnation, there has been during the past decade a considerable expansion in the volume of world agricultural trade; but just as the production gains have been all but nullified by the growth of population, the rise in the volume of trade has been to a great extent offset by the continuing decline in prices, so that the effort to expand exports has brought only a limited increase in foreign exchange earnings. How can earnings from agricultural exports, the main source of foreign exchange of developing countries, be stepped up to a level more commensurate with their development needs? Another question relating to international trade is how far the present policies of increased self-sufficiency in the developing countries are in the interests of the countries themselves or of the world economy.

These four groups of problems are among the key issues likely to arise in world agriculture in the years ahead. Each of them is considered more fully below. In addition, a final section discusses the role of international planning in food and agriculture, in particular the Indicative World Plan for Agricultural Development that is at present in preparation by FAO.

AGRICULTURAL PRODUCTION IN DEVELOPING COUNTRIES

Spectacular as have been the achievements of agricultural technology in the last decade, they have as yet had little impact in the developing countries. This is partly because of the inadequacy of the government services engaged in transmitting to farmers the necessary knowledge of improved methods. In the coming years, much will depend on the speed at which trained staff can be provided for the research, education, extension and related agricultural services in these countries. Assistance in training personnel for such services will continue to be one of FAO's most important activities.

Probably the main need in planning the expansion of the agricultural services will be to organize them in such a way as to make the fullest and most economical use possible of the limited numbers of trained personnel available. In agricultural research, which in many developing countries is not yet sufficiently oriented to the practical needs of farmers, there should be considerable scope for the pooling of resources between countries in the same ecological zone. In many countries it is also believed that fuller practical use could be made of the results of research undertaken earlier and now lying in the archives of research stations.

In extension, it may often be advisable to concentrate limited resources on the more advanced or more promising areas, rather than to spread them thinly over the whole country. The effectiveness of extension services could often be enhanced by freeing extension workers from administrative and related duties so as to give them more time for productive work among farmers. More effort could also be made to enlist the help of the better farmers in extension work, as was done, for example, in the early stages of development in Japan.

Systems of agricultural education in developing countries are frequently modeled closely on those traditional in developed countries, and are often not well adapted to local circumstances. General education in these countries usually shows little recognition of the fact that their economies are preponderantly agricultural and that for a long time to come most of the population will be employed in some branch of agriculture.

Important as it is, however, to provide farmers with knowledge of how to improve their production, this will be largely wasted effort unless they have adequate means and incentives for the adoption of improved methods. Much of the present report has been devoted to an account of the measures that have been tried in order to provide these essentials, especially in respect of land tenure, price policies, credit, and marketing.

The implementation of such measures in developing countries has so far proved very difficult, not

only because of political pressures and established interests but also because of the weakness of the administrative structures available to carry them out. In many countries little seems likely to be achieved without a much greater sense of urgency than is apparent at present. As Professor Gunnar Myrdal stated at the World Food Congress:

"... with very few exceptions there has been an exceedingly slow realization of land tenure reforms even in countries that have adopted sweeping legislations on these matters... in most underdeveloped countries there is a serious lag in the will and ability of those in power to adjust their systems of landownership and tenancy to the needs of raising agricultural productivity. These needs are clearly conceived by the rich countries who now press for land reform in the underdeveloped countries. The latter are quite eager to join in general resolutions to that effect and sometimes enact legislations about land reform. But the new laws are often full of loopholes and the enforcement of them is generally lax." [1]

Again, agrarian reform measures have too often gone no further than dismantling the traditional institutional framework, without giving the necessary attention to the new framework needed to replace it. Some of the more productive functions carried out by landlords for their former tenants have been particularly difficult to replace. A few governments have laid considerable stress on the establishment of co-operatives for this purpose, and their example is well worth studying by other governments contemplating land reform measures or trying to make earlier measures more effective.

An important lesson of the past decade is the close interdependence of measures in such fields as price stabilization, credit, marketing, and the provision of farm requisites. More and more countries have come to recognize the need for suitable multipurpose farmers' organizations, frequently but not necessarily co-operative in form, as a vehicle for improvements in all these related fields. This has been emphasized by a recent survey mission organized under the Freedom from Hunger Campaign.[2] Here too, a few countries (for example, Japan) have been outstandingly successful, and the organizations they have evolved merit careful study to determine their applicability elsewhere. Too many such organizations in developing countries, however, have been copied directly from institutions in developed countries and are too restricted in scope, too complicated administratively or otherwise unsuitable for the conditions in developing countries.

Improvements of the kind discussed above, both in agricultural services and in institutions, have also suffered from shortage of finance. There has been a strong tendency, on the part both of governments and of aid-giving agencies, to make finance more readily available for capital investment projects than for the recurrent expenditures needed for the expansion of government services or for institutional improvements. Although the foreign exchange component of such expenditure is generally small, it might give a very valuable lead if foreign financing agencies were more ready to provide funds for such purposes.

In many countries, especially in areas where the monetary economy is but little developed, it will be necessary to pay more attention to the need to promote the transition from subsistence to market agriculture. Because of migration to the towns, the urban population, dependent on purchased supplies of food, is increasing many times more rapidly even than the overall population in developing countries. Many of the new arrivals in the towns fail to find full-time employment, thus adding to the food problem while contributing very little to development.

In spite of rapid urbanization, however, the proportion of the population in the developing countries whose food consumption depends almost entirely on what they produce themselves will remain very large for a long time to come. It will be essential, therefore, to spare some share of available resources to teach these people, who will continue to be largely uninfluenced by economic development, how to produce and consume more nutritious foods and thus improve both their health and their meager levels of living.

Nutritional measures should be seen in their proper perspective in relation to measures for economic development. Improved nutrition is not only a welfare measure contributing to better health, it can also make a positive contribution to economic development, for better diets are often essential if the labor force is to be capable of the sustained work that is needed. Clearly the economic development of the developing countries is in itself the surest way to the permanent improvement of the diets of their

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[1] FAO, *Report of the World Food Congress*, Volume 2, p. 19, 21. Rome, 1965.

[2] FAO, *Agricultural credit through co-operatives and other institutions*. FAO Agricultural Studies No. 68. Rome, 1965.

populations, and fortunately the changes in food consumption that have been found to occur with rising incomes are for the most part (though by no means entirely) nutritionally desirable. But in the short run such special nutritional measures as can be afforded must be used to supplement the effects of rising incomes on dietary levels. These measures, which were discussed in Chapter V, include nutrition education, home economics, and supplementary feeding programs for vulnerable groups. The production and consumption of livestock products and other nutritionally desirable foods may also be encouraged by suitable price policies, as well as through marketing improvements to reduce the cost of such foods to the consumer and increase demand at the farm level.

AGRICULTURE IN ECONOMIC DEVELOPMENT

In the developing regions as a whole, the increase in agricultural production has been barely faster than the growth of population, and in many individual developing countries per caput production has actually declined during the decade. In these countries the sluggish growth of the agricultural sector has acted as a brake on their overall economic development.

The first essential is of course to step up the increase in agricultural production to a rate well ahead of population growth, by such means as those discussed in the preceding section. It is also necessary to forge stronger links between agriculture and the rest of the economy.

Inevitably, the economies of most of the developing countries will remain predominantly agricultural for many years to come. Any improvement in the living levels of their populations will for a long time be impossible without improved agricultural productivity. Because their initial industrial base is so small, even rapid industrialization will bring only a slow alteration in the structure of the economy, the more so since developing countries tend (for reasons of competitiveness) to select industrial processes which are capital intensive and which consequently absorb little labor from agriculture.

In the first stages of industrialization the processing of agricultural products is of major importance. Such processing industries can have many advantages, including the ready availability of raw materials, additional employment (in rural areas, if the industries are suitably sited), import saving, the creation of a new domestic market, and enhanced export earnings. Forest industries offer particularly good prospects in the many developing countries, well endowed with forest resources, that at present import large quantities of processed forest products while sometimes themselves exporting wood in the round.

For the successful establishment of agricultural processing industries, however, careful planning is essential, especially to assess the optimum size of plant in relation to the raw material supply and the potential market. International technical assistance can be particularly useful in training efficient management and skilled workers, and FAO is devoting increased attention to assisting countries in this and other ways in the establishment of industries within its field of competence.

Agriculture in the developing countries is beginning to use larger supplies of fertilizers, pesticides and other inputs from other sectors. As agriculture is progressively modernized this can provide the basis for a whole complex of industries manufacturing agricultural requisites.

In countries where the population is largely agricultural, the agricultural sector must also provide the main market for domestic industries manufacturing consumer goods. This again underlines the interdependence of agriculture and other sectors. An increasingly prosperous agriculture can provide a growing market for domestically produced consumer goods. Conversely, the greater availability of these goods increases the incentive for primarily subsistence producers to raise their production for the market.

Agriculture's contribution to economic development could also be enhanced by the more effective mobilization of rural savings, both to finance agricultural credit and to supply funds for investment in other sectors of the economy. Agricultural taxation policies require careful study in order to balance the need for incentives to increase agricultural production with the need of the rest of the economy for development capital. They cannot, however, be considered in isolation but should be coupled with improvements in marketing and credit facilities. If,

in addition to paying increased taxes for development, the farmer continues to receive only a small share of the consumer price and to pay high rates of interest for credit from merchants and moneylenders, agriculture will become too unprofitable to encourage the necessary expansion of production.

Agriculture also has considerable potential for nonfinancial investment, using underemployed manpower for such tasks as the construction of minor irrigation works, drainage, storage facilities, roads and buildings, and reforestation work. Many countries have attempted to mobilize this underutilized resource, and FAO is at present conducting a survey to draw the lessons from their experience. The main problems in the execution of such projects appear to be the need for effective local organization and administration, the provision of limited funds for cement, tools and other necessary equipment, and the need to avoid inflationary tendencies during the period between the initiation of the project and the availability on the market of the additional production to which it directly or indirectly gives rise. In the latter connection, food aid has an important role both in reducing financial outlays and in minimizing the danger, when the economy is already extended, that the payment of wages will increase inflationary pressures on food prices.

If agriculture is to play its full part in economic development, it is important to maximize the impact on farm productivity of the rapidly growing demand of the towns and nonagricultural sectors. It is the growing demand in domestic and export markets that enables farmers to increase their market production and consequently their incomes and levels of living. A main benefit of marketing improvements is to reduce unnecessary costs and leakages, and to increase the proportion of the consumer's price which goes to the farm. It is similarly important that imports, including those on concessional terms, do not absorb a large part of the market demand for farm produce which could economically be produced within the country, or reduce prices to domestic producers in a way that removes much of the incentive to increase their production for the market.

Because of these complex interrelationships between agriculture and the rest of the economy, it is particularly important that agricultural development should be planned in an integrated way in the framework of the development of the economy as a whole. Many developing countries have already made an impressive start in this respect, and as better basic data and more trained staff become available, and as methods of planning are evolved which are better adapted to the conditions of the developing countries, further improvements in planning may be expected. However, as has already been emphasized, present weaknesses lie less in the formulation of plans than in their implementation.

AGRICULTURAL PROBLEMS OF DEVELOPED COUNTRIES

The agricultural problems of the developed countries are very different from those of the developing countries. With rapidly improving technology and often with the stimulus of assured prices and outlets, their farmers (in spite of declining numbers) have found it possible and profitable to increase production, sometimes beyond the level of effective demand. The result has been surplus stocks, together with special measures to promote exports, including noncommercial exports, as a means of maintaining prices on domestic markets.

Thus governments in the developed countries (unlike those in the centrally-planned economies as well as the developing countries) have more often had to take measures to restrict the expansion of production than to stimulate a more rapid increase. Yet they have been reluctant to reduce farm prices, in order to avoid still wider disparities between farm incomes and those in the rest of the economy, even though these prices encouraged further increases in production.

This problem is seen in its most acute form in the United States, where several different policy approaches have been tried, so far with limited success. It is coming increasingly to be felt that, whereas the more efficient farmers have no need of price support, no amount of support can turn the inefficient ones with uneconomic holdings into efficient producers. A growing body of opinion is therefore beginning to consider that farm supports should be regarded primarily as social welfare measures to be directed specifically at those in need of them, although this

attitude is not yet reflected in price legislation. It is maintained that supports mainly aimed at the marginal farms for social purposes would be much less costly than the present comprehensive programs of price support embracing all producers, and be less likely to encourage unwanted surpluses.

Also in a number of western European countries there has been much discussion of the treatment of farm incomes as a social problem, and it may well be that this will be one of the central features of agricultural policies in developed countries during the coming decade. While the development of the common agricultural policy of the European Economic Community has so far mainly concerned trade questions, it also includes a common social policy for agriculture as one of the objectives.

In the long run it seems likely that the agricultural problems of the developed countries can be solved only by further reductions in the farm population, making possible larger and more viable farms. Several countries in western Europe are taking steps to encourage and assist this development, by facilitating the movement of the less efficient farmers out of agriculture and promoting the amalgation of small holdings into units of economic size. This is another direction in which considerable activity may be expected in the next few years.

This is not to say that there may not still be a limited place for small farms, such as those devoted to specialized production with a high labor input not readily adapted to mechanization. Nevertheless, rapid mechanization and the growth of vertical integration and contract farming have recently brought about a substantial transformation in the agricultural structure of many of the developed countries. In the countries where this transformation has gone farthest, the family farm, which in many countries has long been the basis of rural life, may be unable to continue as the main type of enterprise in anything like its present form, unless special measures, again largely of a social nature, are taken to preserve it. This is a controversial matter which may lie at the heart of policy decisions during the next decade.

PROBLEMS OF INTERNATIONAL TRADE IN AGRICULTURAL PRODUCTS

The agricultural problems of the developed and developing countries, discussed separately above, interact in the sphere of international trade. For instance, the tariff and other barriers in many developed countries, which are among the difficulties faced by the developing countries in expanding their export earnings, stem very largely from the problems of the agricultural sector in the former group of countries. Furthermore, the developed countries are potential suppliers of the increased quantities of food that are needed for improving the nutritional levels of people in developing countries.

Food supplies in developing countries

The present policies of almost all of the developing countries are aiming at increased self-sufficiency in basic food supplies. How far is this desirable?

According to FAO's Third World Food Survey, quoted in Chapter I, food supplies in the developing countries will need to be increased to four times their recent level by the end of the century. The very magnitude of these requirements suggests that the main effort should be in the developing countries themselves. Moreover, domestic production adds to their national income in a way that imports from the developed countries cannot, even though imports of surplus food can be used to support development.

This does not necessarily imply, however, that developing countries should aim at self-sufficiency. There is scope for increased agricultural trade between the developing countries themselves, for example agricultural exports to the oil-producing countries and trade between the temperate and tropical parts of Africa and Latin America. An expansion in such trade would do more to raise incomes in the developing countries than would increased imports from the developed countries, even on special terms. On the other hand, exports to other developing countries may be less useful than those to developed countries in enabling them to import capital goods, unless some system of triangular trade can be devised.

Both policies of self-sufficiency in developing

countries and increased agricultural trade between these countries would, if effective, tend to limit imports of agricultural products from the developed countries, both commercial and under special terms. Nevertheless, there is certain to be a need for a long time to come for surpluses as a basis for food aid for nutritional reasons and to combat inflation. How long and on what scale will evidently depend on the relative rates of growth of demand and production in the developing countries.

There is little doubt that agricultural production in the developed countries could be stepped up relatively easily so as to play a much larger part than at present in improving nutritional levels in developing countries. But a vital question is how this can be done without limiting the incentive and the opportunity for producers in developing countries to increase their market production and thus their incomes and levels of living. Such problems are analyzed in detail in the series of expert studies recently commissioned by the World Food Program.

The effects of surplus disposal operations on the economies of the developed countries themselves also raise problems. For example, how far have such operations, as well as farm supports, delayed needed changes in the structure of agriculture in the surplus-producing countries that will in the long run prove inevitable? How far, by holding an umbrella over world prices, have they benefited exporters at the expense of countries dependent on the world market for a large part of their food supplies?

Up to now, programs of food aid have been based on surpluses which were unplanned in the sense that they were a result of policies adopted mainly for domestic reasons in the surplus-producing countries. A number of proposals have recently been made for the planned production of surpluses in the developed countries, largely in order to aid in the economic development of the developing countries. These proposals are obviously controversial, both in respect of their objectives and their financing. In present circumstances, however, the choice may be not so much between no surpluses and planned surpluses as between planned and unplanned surpluses. From that point of view, planned food aid may be preferable, provided that is is additional to (and not an alternative to) the still more valuable financial aid which developing countries can use for whatever they find to have highest priority. It seems important that planned food aid, if adopted as a policy, should not reduce the resources that would otherwise have been available for financial aid.

Export earnings of developing countries

But the most pressing problem of international trade in agricultural products is to raise the export earnings of the developing countries so that they can obtain the foreign exchange they need for their economic development. Such questions have received much prominence lately. They were discussed in Chapter III, and there is no need to go into them again in detail. However, there is no doubt that a very important part of FAO's future work will be concerned with international trade in agricultural commodities, and in particular the contribution that it is able to make within the framework of the new machinery established by the United Nations Conference on Trade and Development.

At the end of the second postwar decade, the prospects for any marked or lasting improvement in agricultural prices on world markets do not appear very bright. Much of the benefit of the increased volume of trade has been wiped out by lower prices. The big rise in commodity prices in 1962-63 proved only temporary. Nevertheless, if even a little progress could be realized in each of the many fields discussed at the United Nations Conference on Trade and Development and other recent international meetings, the total effect might be quite substantial.

Among the many fields in which action is needed, not the least important is that of international trade arrangements. Here FAO will continue to be active through the Committee on Commodity Problems and its study groups for specific commodities. Much emphasis has been laid on the problem of obtaining better access to markets in developed countries for the agricultural exports of the developing countries, at present frequently hampered by tariffs, consumption taxes and other barriers, and this is one of the major topics in the current Kennedy Round of negotiations in the General Agreement on Tariffs and Trade (GATT). As already noted, one hopeful approach to the trade problems of the developing countries is by increasing their exports of processed commodities. Here too, however, progress depends on the lowering of trade barriers in developed countries, which often discriminate against processed products.

In spite of the many possibilities for improvement, FAO projections suggest that export earnings are unlikely to provide the developing countries with foreign exchange on the scale they need to build up their economies. Aid is essential as well as trade, and the two need to be integrated as closely as possible.

INTERNATIONAL PLANNING

The second postwar decade could with some justice be characterized as the decade of national planning, when almost all developing countries and many developed countries as well embarked on planning their economic and social development. As such, it has amply demonstrated not only the usefulness of such planning but also the pitfalls of unco-ordinated planning at the national level, with insufficient attention to the plans and problems of other countries.

A major need during the coming years will be for much greater international consultation and co-ordination in agricultural development and indeed in economic matters in general. This is essential in order to avoid mutually incompatible and even conflicting policies.

The need for international co-ordination applies particularly to world trade in agricultural products, where the unco-ordinated expansion of production for export, with inadequate consideration of the capacity of import markets, has been one of the principal causes of the long decline in prices.

Another sphere in which better international co-ordination is urgently needed concerns fisheries. The world's fisheries are capable of making a much greater contribution than at present to protein supplies, but the problem of reaching international agreement on policies for the conservation and rational exploitation of aquatic resources remains to be solved.

International co-ordination is likely to be facilitated by the further development of regional and subregional economic integration. Except for the European Economic Community, these schemes have so far been rather little concerned with agricultural products but, as was noted in Chapter III, in the future they seem increasingly likely to affect agriculture. Even such schemes, however, bring with them a risk of interregional conflict. Since the world is now in effect a single trading area, consultations and co-ordination must ultimately be on a global basis.

This should be one of the main uses of the Indicative World Plan for Agricultural Development on which work is now being started in FAO. This plan sets out to indicate the levels of production, consumption and trade in agricultural products that should be attained by the developing countries by 1975 (and in a broader way by 1985) if their economic and social objectives are to be realized.

The plan will provide a quantitative picture of the food supplies that are needed and will recommend a pattern of agricultural production geared to the achievement of this target, and also a set of appropriate development policies and measures. Similarly it will try to outline a sound long-term program for agricultural exports.

In the light of the plan, it should be possible to view more clearly most of the issues discussed in this chapter. The plan should act as an international frame of reference for developing countries in their national planning, and should also make possible the more precise assessment of priorities in bilateral and multilateral aid to agriculture.

Such an analysis of future requirements may be expected to bring out even more clearly the urgency of immediate action in the fields discussed above if, in the face of mounting population growth, a widespread deterioration in the food situation is to be avoided.

ANNEX TABLES

EXPLANATORY NOTE

FAO index numbers of agricultural, fishery, and forest production and trade

Production index numbers

In addition to the usual FAO world and regional index numbers of agricultural production, provisional indices of world fishery and forest production are shown for the first time in the present report, as well as a combined index of agricultural, fishery and forest production.

The indices of agricultural production have been calculated by applying regional weights, based on 1952/53-1956/57 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 coffee, tea, tobacco, inedible oilseeds, animal and vegetable fibers, and rubber.

For fishery production, quantities are weighted by the average unit values of fishermen's landings in 1957-59. For forest production, roundwood production is weighted by 1952-56 prices.

Under the split year notation, agricultural production statistics for the Northern Hemisphere pertain generally to the harvests of the spring, summer and autumn of the first year stated, but for the more southerly parts of this hemisphere they represent harvests continuing into the early months of the following year; for the Southern Hemisphere they relate to the crops generally harvested in the latter half of the first year stated and the first half of the following year. Statistics of fishery and forest production are on a calendar year basis.

For agricultural production, the prewar averages generally refer to 1934/35-1938/39 or 1935/36-1939/40. Prewar data of fishery production refer to 1938.

Trade index numbers

Provisional index numbers of the volume, value, and average unit value of world trade in fishery and forest products are also shown for the first time in this report, together with combined indices for agricultural, fishery, and forest products trade. In addition, a number of revisions have been made to the usual FAO world and regional index numbers of agricultural trade.

In calculating the indices of the volume of exports and imports of agricultural products, the volume figures for individual products were formerly weighted by average unit values in 1952-53. In the revised indices shown this year, 1957-59 unit values have been applied to 1957 and subsequent years, and the two series linked at the 1957-58 average.

Average unit values in the revised indices for agricultural products are calculated on a regional basis, using quantity and value data covering a minimum of 75 percent of the region's total trade in each product. The unit values for individual products are weighted by the average volume of trade in 1957-59 (for 1957 and subsequent years) and 1952-53 (for earlier years).

As far as possible, the provisional indices for the trade in fishery and forest products are calculated in the same way as the revised indices for agricultural products. The indices of average unit values of forest products, however, are obtained by dividing the indices of total value by the indices of volume.

Regional coverage

The coverage of most of the regional groupings is self-explanatory. It should be noted, however, 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 Libya, Sudan, and the United Arab Republic. For China (Mainland), no estimates are included until more complete data are available.

Indices of the agricultural trade of eastern Europe and the U.S.S.R. are shown for the first time. They are so far available only for the period 1955 to 1963. Because of difficulties concerning exchange rates and the pricing of barter transactions, the trade of these countries has been priced at the world average export unit values.

ANNEX TABLE 1A. - TOTAL AGRICULTURAL PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES

	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64 (Preliminary)
	Indices, average 1952/53-1956/57 = 100											
WESTERN EUROPE	94	101	101	102	103	107	109	113	118	117	124	126
Northwestern Europe	95	100	102	101	102	105	107	109	119	116	124	126
Austria	91	103	96	102	107	112	116	108	122	126	129	134
Belgium-Luxembourg	93	96	104	107	100	107	111	103	113	111	121	122
Denmark	100	101	101	97	101	111	110	110	116	121	125	118
Finland	98	105	100	97	100	107	110	112	127	125	119	130
France	91	99	104	103	102	102	104	112	123	117	129	126
Germany, Federal Republic of	95	101	101	100	102	105	110	107	121	109	123	127
Ireland	95	97	105	99	104	113	104	96	108	122	119	122
Netherlands	100	99	100	104	98	105	115	117	118	118	121	118
Norway	97	99	99	97	108	101	101	98	102	104	100	105
Sweden	104	104	101	90	101	99	95	98	100	104	100	99
Switzerland	101	100	103	99	98	99	108	106	110	110	110	107
United Kingdom	97	98	100	99	106	105	101	110	118	123	130	132
Southern Europe	90	103	98	105	104	112	114	122	115	120	123	128
Greece	79	102	99	109	112	128	122	125	117	138	134	146
Italy	93	104	96	105	103	101	116	116	107	116	115	118
Portugal	87	106	104	102	102	105	99	101	102	102	111	108
Spain	100	95	102	99	104	109	110	117	119	121	128	134
Yugoslavia	70	114	92	120	104	147	119	161	143	126	139	152
EASTERN EUROPE AND U.S.S.R.	89	94	96	104	116	118	129	132	132	136	139	134
NORTH AMERICA	99	99	97	101	103	98	106	108	109	108	112	118
Canada	111	103	79	99	108	92	98	100	108	91	114	126
United States	98	98	99	101	103	99	106	109	110	110	112	118
OCEANIA	97	97	98	103	105	102	117	119	123	126	132	136
Australia	97	97	97	104	105	99	119	119	123	127	133	138
New Zealand	96	95	100	103	105	109	116	120	122	125	128	130
LATIN AMERICA	95	96	100	103	107	113	117	121	121	125	127	130
Central America	89	92	100	106	113	124	132	131	139	134	138	138
Cuba	99	97	94	99	111	114	114	115	127	101	87	82
Guatemala	93	97	100	102	109	115	119	130	133	141	164	171
Honduras	99	104	95	97	105	111	118	116	117	125	132	135
Mexico	83	88	103	111	115	130	143	139	146	149	160	162
Panama	91	99	99	107	104	113	119	123	118	127	127	135
South America	96	97	100	102	106	110	114	119	116	123	124	128
Argentina	100	96	100	97	107	109	112	105	100	109	108	119
Brazil	93	96	99	106	107	114	124	142	135	144	142	141
Chile	101	95	103	102	99	112	108	110	114	114	121	124
Colombia	98	101	98	101	102	109	112	118	118	119	122	121
Peru	97	98	103	103	99	100	107	113	116	121	125	127
Uruguay	97	108	101	97	96	99	86	77	92	94	100	95
Venezuela	93	99	98	106	103	109	113	116	130	134	143	150

ANNEX TABLE 1A. - TOTAL AGRICULTURAL PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES (*concluded*)

	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64 (Preliminary)
	Indices, average 1952/53-1956/57 = 100											
FAR EAST [1]	91	98	100	104	108	107	112	116	120	123	125	127
Burma	102	98	96	97	107	93	107	112	113	113	124	120
Ceylon	95	95	102	108	101	105	109	111	117	123	127	129
China (Taiwan)	88	94	101	104	112	119	126	123	130	132	138	136
India	89	100	101	103	107	105	110	114	119	121	120	123
Indonesia	92	101	105	101	102	104	107	109	110	107	113	111
Japan	97	86	95	113	110	113	118	117	119	120	130	124
Korea, Republic of	71	98	112	114	106	117	121	122	121	132	119	132
Malaysia: Malaya	95	93	99	105	108	108	110	119	126	132	135	142
Pakistan	100	98	102	97	103	102	102	108	112	114	113	120
Philippines	93	98	99	101	109	113	114	115	122	125	131	137
Thailand	89	105	86	105	115	94	108	112	130	140	146	155
NEAR EAST	94	99	97	101	109	112	118	122	122	124	132	135
Iran	90	96	99	104	111	118	121	124	118	132	131	137
Iraq	84	104	118	89	105	122	104	101	102	108	118	99
Israel	81	93	97	107	121	131	148	168	165	189	219	225
Syria	88	98	115	80	120	137	96	99	100	116	149	142
Turkey	100	108	86	99	107	108	124	126	130	123	129	142
United Arab Republic	96	92	102	103	107	114	116	122	126	112	136	141
AFRICA	94	98	101	101	106	105	109	112	118	115	122	125
Northwest Africa	91	103	107	94	105	93	108	102	108	84	103	110
Algeria	91	100	106	96	106	98	93	100	102	84	95	99
Morocco	[2] 91	[2] 103	[2] 109	[2] 96	[2] 100	[2] 83	117	102	108	83	116	119
Tunisia	94	109	103	81	112	101	134	109	130	87	100	124
South of Sahara [3]	94	97	100	103	106	107	110	114	120	122	126	129
Ethiopia [4]	96	100	100	101	103	102	102	114	116	122	125	128
South Africa	90	99	100	102	109	106	110	114	122	135	136	127
WORLD [1]	94	98	98	103	107	107	114	117	119	120	124	127

NOTE: Country indices are calculated by FAO on a uniform basis. They may differ from national indices produced by the countries themselves because of differences in concepts of production, coverage, weights, and methods of calculation. They are not yet available for 1964/65.

[1] Excluding China (Mainland). - [2] Former French zone only. - [3] Derived by subtraction of subtotal for northwest Africa from regional total. - [4] Excluding Eritrea.

ANNEX TABLE 1B. - PER CAPUT AGRICULTURAL PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES

	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64 (Preliminary)
	Indices, average 1952/53-1956/57 = 100											
WESTERN EUROPE ...	95	102	101	101	101	104	106	109	112	110	116	117
Northwestern Europe	96	101	102	100	101	102	103	105	113	109	115	116
Austria	91	103	96	102	107	111	114	107	121	124	126	130
Belgium-Luxembourg	94	96	104	107	99	105	108	100	109	107	116	116
Denmark	101	102	101	96	100	109	108	106	112	115	118	111
Finland	100	106	100	96	98	104	106	107	120	118	110	120
France	93	100	104	102	100	99	100	106	116	108	117	113
Germany, Federal Republic of	97	102	102	99	100	101	105	101	113	100	111	114
Ireland	94	97	105	99	105	115	106	99	112	127	123	125
Netherlands	102	100	100	102	95	101	109	109	109	108	109	105
Norway	99	100	99	96	106	98	98	94	97	98	93	97
Sweden	105	104	101	89	100	97	93	95	96	100	95	94
Switzerland	103	102	103	98	95	95	102	99	100	98	95	90
United Kingdom	97	99	100	99	105	104	100	107	114	118	124	125
Southern Europe	92	104	98	104	102	109	111	117	110	113	116	120
Greece	81	103	99	108	110	125	118	119	111	130	125	136
Italy	94	105	96	104	102	99	114	112	104	112	110	112
Portugal	87	106	104	101	101	104	98	98	99	98	106	102
Spain	101	96	102	98	102	106	107	112	113	114	120	125
Yugoslavia	72	116	92	118	102	143	114	153	134	118	128	137
EASTERN EUROPE AND U.S.S.R.	92	96	96	103	113	113	122	123	121	123	124	119
NORTH AMERICA	103	101	97	99	100	93	98	98	98	96	97	102
Canada	117	106	79	96	102	84	87	88	92	76	94	103
United States	102	100	99	100	99	94	99	100	99	98	98	102
OCEANIA	102	99	97	101	100	95	107	106	107	107	110	112
Australia	101	100	97	102	100	93	109	106	108	109	112	114
New Zealand	101	97	100	101	101	102	106	108	108	108	108	107
LATIN AMERICA	100	98	100	100	102	104	106	106	103	104	103	102
Central America	94	95	100	104	107	114	118	113	117	109	109	106
Cuba	103	100	94	97	106	107	105	104	112	87	74	69
Guatemala	99	100	100	99	103	105	106	113	112	115	129	131
Honduras	105	107	95	94	99	102	105	100	98	101	104	103
Mexico	89	92	103	108	109	119	127	120	122	121	126	123
Panama	95	102	99	105	99	105	108	108	100	103	101	104
South America	101	99	100	99	100	102	103	105	100	103	101	102
Argentina	104	98	100	96	103	103	104	96	90	96	94	102
Brazil	98	99	99	103	101	105	110	123	113	117	112	108
Chile	106	97	103	99	94	104	98	97	98	96	100	100
Colombia	102	103	98	99	98	102	102	105	103	102	103	99
Peru	101	101	103	101	94	93	96	99	98	100	100	98
Uruguay	101	110	101	96	92	93	80	71	84	84	89	83
Venezuela	101	103	98	102	96	97	97	97	105	105	108	111

ANNEX TABLE 1B. - PER CAPUT AGRICULTURAL PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES (*concluded*)

	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64 (Preliminary)
	Indices, average 1952/53-1956/57 = 100											
FAR EAST [1]	95	100	100	102	103	100	103	105	106	106	106	105
Burma	105	99	96	96	104	90	103	107	105	98	103	98
Ceylon	100	97	102	105	96	98	99	98	100	103	104	103
China (Taiwan)	95	98	101	101	105	108	109	104	106	104	105	100
India	92	102	101	102	103	100	102	103	106	105	101	102
Indonesia	96	103	105	99	98	98	98	98	96	92	95	91
Japan	99	87	95	112	107	110	113	111	112	113	120	114
Korea, Republic of	73	98	112	114	103	111	112	109	105	110	96	104
Malaysia: Malaya	101	96	99	102	102	99	98	103	105	106	106	108
Pakistan	105	100	102	95	99	95	93	97	98	98	95	99
Philippines	99	101	99	98	103	104	101	99	102	101	103	103
Thailand	95	108	86	102	108	87	96	97	109	114	115	119
NEAR EAST	99	102	97	98	104	104	107	108	106	104	108	108
Iran	94	99	99	102	106	110	111	113	105	115	110	110
Iraq	89	107	118	86	100	116	98	93	93	97	105	87
Israel	87	98	99	105	112	116	127	140	134	148	164	162
Syria	94	101	115	77	113	127	86	85	83	92	115	106
Turkey	105	111	86	97	101	99	111	110	110	101	102	110
United Arab Republic	101	94	102	101	102	107	106	108	110	95	113	113
AFRICA	98	100	101	99	101	97	99	99	101	96	99	99
Northwest Africa	96	105	107	92	100	87	93	85	88	67	81	84
Algeria	95	103	106	94	102	92	84	88	88	72	80	81
Morocco	[2] 96	[2] 106	[2] 109	[2] 93	[2] 95	[2] 76	91	77	80	60	81	80
Tunisia	98	111	103	80	109	97	126	101	117	77	86	105
South of Sahara [3]	99	99	100	101	101	99	100	101	103	102	103	102
Ethiopia [4]	101	102	100	99	98	95	93	103	101	105	105	105
South Africa	95	101	100	100	104	98	100	100	105	114	112	103
WORLD [1]	98	100	99	101	103	101	105	106	106	105	107	106

NOTE: See explanatory note to Annex Table 1A.

[1] Excluding China (Mainland). - [2] Former French zone only. - [3] Derived by subtraction of subtotal for northwest Africa from regional total. - [4] Excluding Eritrea.

ANNEX TABLE 2A. - TOTAL FOOD PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES

	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64 (Preliminary)
	Indices, average 1952/53-1956/57 = 100											
WESTERN EUROPE	94	101	101	102	103	107	109	113	118	117	124	127
Northwestern Europe	95	100	102	101	102	105	107	109	119	116	124	126
Austria	91	102	96	103	108	112	116	109	123	127	130	134
Belgium-Luxembourg	94	96	104	107	100	108	112	105	114	112	122	123
Denmark	100	101	101	97	101	111	110	110	116	121	125	118
Finland	98	105	100	97	100	107	110	112	127	126	119	131
France	91	100	104	103	102	102	105	112	124	117	129	126
Germany, Federal Republic of	95	101	101	100	102	105	110	107	121	110	123	128
Ireland	95	97	105	99	104	113	103	96	108	122	118	122
Netherlands	99	99	101	103	98	106	117	119	119	119	122	119
Norway	97	99	99	96	108	101	101	97	102	104	99	104
Sweden	104	104	101	90	101	99	95	98	100	104	100	99
Switzerland	101	100	103	99	97	99	108	106	110	110	110	107
United Kingdom	97	98	100	100	106	105	101	110	118	123	131	133
Southern Europe	90	103	98	105	104	111	115	122	116	120	123	128
Greece	82	105	99	104	111	125	121	126	118	137	129	137
Italy	92	104	96	105	103	102	117	117	108	118	117	119
Portugal	87	106	104	102	102	105	99	101	102	102	111	108
Spain	100	96	102	98	103	109	110	117	118	119	126	134
Yugoslavia	70	115	91	119	105	147	120	164	146	129	141	153
EASTERN EUROPE AND U.S.S.R.	90	95	96	104	116	119	131	133	134	138	141	135
NORTH AMERICA	99	98	97	101	104	101	109	110	111	110	113	120
Canada	112	105	78	99	106	91	96	100	106	90	114	127
United States	98	97	99	102	104	102	111	111	112	113	113	120
OCEANIA	99	99	98	103	100	99	117	115	122	124	133	137
Australia	98	100	99	104	99	95	120	114	124	127	138	142
New Zealand	98	96	100	103	103	109	113	115	118	122	123	126
LATIN AMERICA	93	96	100	102	109	112	116	116	118	121	123	128
Central America	91	94	99	102	114	123	132	134	140	134	134	137
Cuba	100	97	94	98	111	114	115	115	127	100	86	82
Guatemala	97	98	100	99	106	107	110	114	117	123	130	132
Honduras	101	104	94	95	105	107	114	115	116	123	125	126
Mexico	84	91	103	106	116	131	146	148	151	156	163	171
Panama	91	98	98	108	106	114	119	123	117	125	127	134
South America	94	96	100	102	108	109	113	112	113	117	121	126
Argentina	99	95	100	99	107	108	113	104	99	108	107	120
Brazil	88	96	101	103	112	115	122	127	132	135	141	140
Chile	101	95	103	102	99	112	108	109	114	114	122	125
Colombia	97	98	97	104	103	103	107	109	111	111	116	113
Peru	99	100	103	102	97	100	106	113	112	118	118	120
Uruguay	94	109	101	99	97	100	82	77	91	91	99	92
Venezuela	92	96	99	108	105	110	112	117	133	137	148	156

ANNEX TABLE 2A. - TOTAL FOOD PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES (*concluded*)

	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64 (Preliminary)
	Indices, average 1952/53-1956/57 = 100											
FAR EAST [1]	91	98	100	104	108	107	112	118	122	124	126	128
Burma	102	98	96	97	107	93	109	114	114	114	126	122
Ceylon	98	90	102	112	97	100	105	113	117	126	130	130
China (Taiwan)	88	95	101	104	112	118	125	122	130	131	137	135
India	89	101	101	103	106	105	109	115	119	120	119	121
Indonesia	89	102	105	101	103	104	109	111	114	108	116	116
Japan	97	85	94	113	110	113	118	118	120	121	132	125
Korea, Republic of	70	99	112	114	106	119	124	125	125	135	121	136
Malaysia: Malaya	91	89	101	103	115	113	110	127	143	152	156	167
Pakistan	97	101	103	95	103	101	101	108	113	113	112	120
Philippines	94	98	99	101	108	112	113	113	120	122	128	134
Thailand	89	107	84	105	115	91	105	108	124	132	143	153
NEAR EAST	93	101	97	100	109	113	118	120	120	122	130	133
Iran	91	96	98	104	111	119	121	124	114	128	130	133
Iraq	84	106	119	87	105	121	104	99	100	108	119	98
Israel	82	94	97	107	121	129	146	164	157	179	208	218
Syria	93	106	117	68	117	133	85	87	85	102	136	132
Turkey	100	110	85	99	107	109	126	126	131	123	129	142
United Arab Republic	86	93	103	106	113	115	113	119	124	117	138	146
AFRICA	94	98	101	100	106	103	107	110	116	114	119	121
Northwest Africa	91	102	107	93	107	93	109	103	109	85	105	111
Algeria	91	99	106	96	109	98	95	101	103	86	97	101
Morocco	[2] 90	[2] 104	[2] 110	[2] 95	[2] 101	[2] 82	118	102	109	83	117	120
Tunisia	95	109	103	79	113	101	135	109	131	86	100	124
South of Sahara [3]	95	98	100	102	105	105	107	111	117	120	123	124
Ethiopia [4]	97	100	100	100	102	101	101	114	115	121	124	126
South Africa	89	100	100	102	109	106	110	115	125	140	141	130
WORLD [1]	94	98	99	102	107	108	115	117	120	121	125	127

NOTE: See explanatory note to Annex Table 1A.

[1] Excluding China (Mainland). - [2] Former French zone only. - [3] Derived by subtraction of subtotal for northwest Africa from regional total. - [4] Excluding Eritrea.

ANNEX TABLE 2B. - PER CAPUT FOOD PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES

	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64 (Preliminary)
	Indices, average 1952/53-1956/57 = 100											
WESTERN EUROPE ...	95	102	101	101	101	104	106	109	113	111	116	117
Northwestern Europe	96	101	102	100	101	102	103	105	113	109	116	116
Austria	91	103	96	103	107	112	115	107	121	124	126	130
Belgium-Luxembourg	95	97	104	106	99	106	109	102	110	108	116	116
Denmark	101	102	101	96	100	109	108	106	112	115	119	111
Finland	100	106	100	96	98	104	106	107	120	118	111	121
France	93	100	104	102	100	99	101	107	117	109	118	113
Germany, Federal Republic of	97	102	102	99	100	101	105	101	113	101	112	115
Ireland	94	97	105	99	105	116	106	99	112	127	122	125
Netherlands	102	101	101	102	95	102	111	111	110	109	110	105
Norway	99	100	99	96	106	98	98	93	97	98	93	97
Sweden	105	104	101	89	100	97	93	95	96	100	95	94
Switzerland	103	102	103	98	95	95	102	99	100	98	95	90
United Kingdom	97	99	100	99	105	104	100	107	115	118	125	126
Southern Europe	92	104	98	104	102	109	112	118	117	114	116	120
Greece	83	106	99	103	109	122	117	121	112	129	121	128
Italy	93	104	96	104	102	100	115	113	104	114	112	113
Portugal	87	106	104	101	101	104	98	98	99	98	106	102
Spain	102	97	102	97	102	106	107	112	112	112	118	124
Yugoslavia	72	117	91	118	102	143	115	156	138	120	130	139
EASTERN EUROPE AND U.S.S.R.	93	96	96	103	112	114	123	124	123	124	126	119
NORTH AMERICA	103	100	97	100	100	96	101	100	100	98	99	103
Canada	118	107	78	96	100	83	86	87	91	75	94	103
United States	101	99	100	100	100	97	103	102	101	100	99	103
OCEANIA	104	102	98	101	96	92	106	103	106	106	111	112
Australia	102	103	99	102	94	89	110	103	109	109	116	117
New Zealand	102	98	100	101	99	102	103	103	104	105	103	104
LATIN AMERICA	99	98	100	99	103	103	105	102	101	100	100	101
Central America	96	97	99	100	107	113	118	116	118	110	107	106
Cuba	104	100	94	96	107	107	106	104	113	86	73	68
Guatemala	103	101	100	96	100	98	98	98	98	100	102	101
Honduras	107	108	94	92	99	98	101	99	97	100	98	96
Mexico	90	94	103	103	110	120	129	128	126	127	128	130
Panama	95	100	98	106	101	106	108	108	99	102	101	104
South America	99	99	101	99	102	101	102	99	97	98	99	100
Argentina	103	97	100	97	104	102	105	95	89	96	93	103
Brazil	94	99	102	100	106	105	109	110	110	110	111	107
Chile	106	98	103	99	94	104	98	96	98	96	100	101
Colombia	102	101	97	102	99	97	98	98	98	95	97	93
Peru	103	102	103	100	92	92	95	98	95	97	94	93
Uruguay	98	111	101	97	93	95	77	71	83	82	88	80
Venezuela	100	100	99	103	97	98	96	98	107	107	112	115

ANNEX TABLE 2B. - PER CAPUT FOOD PRODUCTION: COUNTRY, SUBREGIONAL AND REGIONAL INDICES (*concluded*)

	1952/53	1953/54	1954/55	1955/56	1956/57	1957/58	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64 (Preliminary)
	Indices, average 1952/53-1956/57 = 100											
FAR EAST [1]	94	101	100	102	103	100	103	106	107	107	106	105
Burma	104	99	96	96	105	90	105	108	106	100	105	100
Ceylon	103	93	102	109	92	93	95	100	101	106	106	104
China (Taiwan)	95	99	101	100	105	107	109	103	105	103	104	100
India	92	102	101	102	102	99	101	104	106	105	100	100
Indonesia	93	104	105	99	99	98	100	99	100	93	97	95
Japan	100	87	94	112	107	109	114	112	113	114	123	115
Korea, Republic of	71	100	112	114	103	113	114	112	108	113	98	107
Malaysia: Malaya	97	92	101	101	109	104	98	109	119	123	122	127
Pakistan	102	103	103	93	99	95	93	98	100	97	94	99
Philippines	100	101	99	98	102	103	100	97	100	99	100	101
Thailand	95	110	84	102	108	83	94	93	104	108	113	118
NEAR EAST	98	103	97	98	104	105	107	107	104	103	107	107
Iran	95	99	98	102	106	111	111	113	101	111	108	107
Iraq	89	109	118	84	100	115	98	92	91	97	106	86
Israel	87	98	99	104	112	115	125	137	127	140	155	157
Syria	99	110	116	65	110	123	75	75	70	80	104	98
Turkey	106	113	85	96	101	100	112	110	111	101	103	110
United Arab Republic	90	95	103	104	108	107	104	107	108	100	115	118
AFRICA	99	101	101	98	101	96	97	97	99	95	97	96
Northwest Africa	95	104	107	91	102	87	94	86	89	68	82	85
Algeria	95	101	107	94	104	92	86	89	89	74	81	83
Morocco	[2] 95	[2] 107	[2] 110	[2] 93	[2] 95	[2] 76	92	77	80	59	81	81
Tunisia	99	111	102	78	110	97	128	101	118	77	87	106
South of Sahara [3]	100	100	100	100	101	98	98	99	101	101	100	98
Ethiopia [4]	101	102	100	98	98	94	93	102	101	103	104	103
South Africa	94	103	100	100	104	98	100	101	108	118	116	150
WORLD [1]	98	100	99	101	103	102	106	106	107	105	107	107

NOTE: See explanatory note to Annex Table 1A.

[1] Excluding China (Mainland). - [2] Former French zone only. - [3] Derived by subtraction of subtotal for northwest Africa from regional total. - [4] Excluding Eritrea.

ANNEX TABLE 3A. - WORLD [1] PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES

	Prewar average	Average 1948-52	Average 1953-57	Average 1958-62	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65 (Preliminary)
	Million metric tons										
Wheat	144.78	155.33	187.88	222.82	228.38	219.18	220.03	210.39	236.15	216.06	247.93
Barley	44.07	46.69	62.02	73.32	69.64	67.75	76.78	69.08	83.34	85.00	86.14
Oats	64.10	60.51	59.27	54.15	60.93	54.83	57.20	49.14	48.63	45.51	42.68
Maize	106.44	124.04	141.55	186.15	167.16	182.01	194.81	192.68	194.09	196.14	196.69
Rice (milled equivalent) [2]	65.68	71.05	82.87	99.17	91.53	96.97	101.94	102.31	103.08	109.54	111.03
Sugar (centrifugal)	24.90	31.88	39.93	50.21	48.82	48.59	53.69	50.66	49.27	52.53	60.63
Apples [3]	6.80	9.44	10.49	14.23	15.59	12.26	15.53	13.04	14.76	16.01	15.86
Citrus fruit	11.10	15.15	17.98	21.13	20.19	20.43	20.82	22.97	21.25	22.13	23.86
Bananas	8.10	13.81	15.90	18.92	17.15	18.45	19.27	19.62	20.10	22.56	22.10
Olive oil	0.94	1.00	1.12	1.25	1.12	1.24	1.41	1.47	0.99	1.91	0.98
Soybeans	2.32	8.67	11.94	18.49	17.67	16.49	17.15	20.74	20.39	21.06	21.29
Groundnuts	6.41	7.49	9.58	11.83	11.51	10.80	11.72	12.24	12.90	13.13	14.27
Cottonseed	11.38	12.33	14.71	16.20	14.66	15.55	16.34	16.60	17.85	18.58	18.87
Copra	2.27	2.64	3.17	3.09	2.93	2.73	3.35	3.37	3.06	3.27	3.26
Total vegetable oils and oilseeds (oil equivalent)	10.40	12.99	15.67	18.40	17.70	16.99	18.37	19.62	19.31	20.32	20.55
Coffee	2.41	2.24	2.69	4.07	3.51	4.62	3.96	4.25	4.00	4.02	3.03
Cocoa	0.74	0.76	0.82	1.08	0.90	1.04	1.16	1.13	1.16	1.22	1.54
Tea	0.47	0.58	0.71	0.84	0.79	0.81	0.83	0.89	0.90	0.90	0.96
Wine	20.26	18.86	21.55	24.72	23.94	24.57	24.40	22.41	28.30	25.64	27.72
Tobacco	2.29	2.73	3.15	3.25	3.12	3.28	3.24	3.15	3.45	3.77	3.82
Cotton (lint)	5.99	6.78	7.99	8.79	7.90	8.52	8.91	8.95	9.69	10.09	10.15
Jute [4]	2.15	2.11	2.04	2.56	2.54	2.20	2.10	3.22	2.72	2.83	2.80
Sisal	0.25	0.32	0.46	0.59	0.53	0.58	0.61	0.60	0.65	0.66	0.69
Wool (greasy)	1.61	1.79	2.11	2.45	2.34	2.47	2.46	2.50	2.50	2.56	2.55
Rubber	1.00	1.74	1.89	2.07	1.97	2.07	2.02	2.12	2.16	2.09	2.27
Milk (total)	221.00	261.41	301.60	344.20	331.46	337.86	345.72	350.91	355.04	352.90	355.39
Meat [5]	32.25	40.77	50.49	59.33	55.73	57.69	58.42	61.26	63.57	65.33	64.82
Eggs	6.32	8.77	10.64	12.59	11.77	12.24	12.53	13.07	13.34	13.40	13.53

[1] Excluding China (Mainland). - [2] Paddy converted at 65 percent. - [3] Excluding U.S.S.R. as well as China (Mainland). - [4] Including allied fibers. - [5] Beef and veal, mutton and lamb, pork, poultry meat.

ANNEX TABLE 3B. - REGIONAL PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES

	Prewar average	Average 1948-52	Average 1953-57	Average 1958-62	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65 (Preliminary)
WESTERN EUROPE	*Million metric tons*										
Wheat	31.07	30.32	36.23	41.38	39.09	42.66	39.62	37.67	47.88	41.46	46.42
Barley	9.08	10.93	15.77	21.76	17.73	20.35	22.14	22.60	25.98	28.61	29.14
Oats	16.44	14.84	14.85	12.85	12.91	12.58	13.30	12.93	12.54	12.65	11.82
Rye	7.49	6.65	7.10	6.54	7.01	7.17	7.04	5.43	6.04	5.86	6.32
Maize	9.73	7.18	10.04	13.16	11.08	14.32	14.83	13.17	12.43	15.21	15.08
Sugar (centrifugal)	4.02	5.13	6.81	8.11	8.19	7.32	9.93	7.80	7.34	8.56	9.76
Potatoes	69.87	76.38	79.13	74.43	72.45	72.80	79.99	73.11	73.80	80.39	68.47
Apples	3.16	4.68	4.95	7.06	7.97	5.57	8.21	6.16	7.38	8.14	7.66
Citrus fruit	1.99	2.10	2.43	3.30	2.91	3.28	3.26	3.90	3.14	4.12	4.28
Olive oil	0.81	0.83	0.90	0.99	0.80	1.07	1.10	1.20	0.80	1.63	0.65
Rapeseed	0.07	0.46	0.33	0.41	0.46	0.45	0.27	0.37	0.52	0.41	0.63
Total vegetable oils and oilseeds (oil equivalent)	0.88	1.10	1.13	1.27	1.06	1.35	1.32	1.48	1.15	1.96	1.06
Wine	14.13	13.09	14.87	16.68	16.02	16.66	16.63	14.21	19.89	16.68	18.66
Tobacco	0.19	0.25	0.31	0.27	0.30	0.32	0.26	0.20	0.26	0.33	0.35
Cotton (lint)	0.02	0.04	0.09	0.16	0.11	0.14	0.14	0.20	0.21	0.20	0.16
Milk (total)	77.02	76 64	91.30	102.10	97.29	97.33	102.96	105.68	107.21	106.73	107.04
Meat [1]	9.32	8.06	11.22	13.64	12.30	12.82	13.56	14.38	15.14	15.35	15.00
Eggs	1.95	2.13	2.73	3.35	3.11	3.27	3.33	3.45	3.58	3.73	3.83
EASTERN EUROPE											
Wheat	11.6	[2] 11.5	11.7	13.2	11.8	13.8	12.9	13.5	13.8	13.3	13.2
Rye	11.6	[2] 11.3	10.5	11.1	11.2	11.9	11.4	11.3	9.7	10.0	9.8
Barley	5.3	[2] 4.2	4.9	5.8	4.8	5.6	6.3	5.9	6.4	6.1	5.5
Oats	6.6	[2] 7.9	5.2	5.3	5.3	5.2	5.5	5.4	5.1	4.8	4.1
Maize	7.6	[2] 5.5	9.1	10.2	7.9	11.3	11.1	10.4	10.2	11.9	12.1
Sugar beet	14.3	[2] 20.2	23.2	28.1	27.0	23.2	33.9	29.8	26.8	31.1	34.0
Potatoes	65.6	[2] 55.0	61.3	61.5	58.5	60.2	63.9	63.9	60.9	69.4	74.3
Eggs [3]	...	[2] 9.4	11.8	16.4	14.3	15.4	16.8	18.0	17.3	17.1	...
Meat, total [4]	2.9	...	[5] 4.0	4.7	4.5	4.5	4.7	4.9	4.9	...	...
Milk, total	27.4	19.7	23.4	28.1	27.1	27.9	28.4	28.8	28.1	28.2	27.5
U.S.S.R.											
Wheat	[6] 31.8	[2] 32.8	51.3	69.5	76.6	69.1	64.3	66.5	70.8	49.7	74.2
Rye	[6] 21.0	[2] 17.8	15.0	16.5	15.7	16.9	16.3	16.7	17.0	11.9	13.5
Barley	[6] 12.1	[2] 6.9	9.5	14.4	13.0	10.2	16.0	13.3	19.5	19.8	28.5
Oats	[6] 16.8	[2] 12.0	11.7	10.7	13.4	13.5	12.0	8.9	5.7	4.0	5.5
Millet	[6] 4.4	[2] 1.8	3.0	2.6	2.9	1.3	3.2	2.9	2.8	1.8	3.5
Maize	[6] 5.1	[2] 5.8	9.4	19.0	16.7	12.0	18.7	24.3	23.5	14.3	19.7
Pulses	[6] 2.5	[2] 1.7	1.1	3.7	1.8	2.1	2.7	4.0	7.6	8.0	11.1
Cotton, raw	[6] 2.2	[2] 3.4	4.1	4.4	4.3	4.7	4.3	4.5	4.3	5.2	5.3
Flax - fiber	[6] 0.4	[2] 0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3
Sugar beet	[6] 18.0	[2] 20.6	29.3	50.9	54.4	43.9	57.7	50.9	47.4	44.1	80.3
Total oilseeds	[6] 3.2	[2] 2.4	[7] 3.1	4.8	5.2	3.4	4.3	5.3	5.5	4.9	6.5
Sunflowerseed	[6] 2.6	[2] 1.9	3.0	4.2	4.6	3.0	4.0	4.8	4.8	4.3	6.0
Potatoes	[6] 75.9	[2] 76.5	80.6	82.3	86.5	86.6	84.4	84.3	69.7	71.8	93.0
Milk, total	[6] 33.6	[2] 35.5	44.3	61.7	58.7	61.7	61.7	62.6	63.9	61.3	63.1
Meat, total [4]	[6] 4.7	[2] 4.7	6.5	8.7	7.7	8.9	8.7	8.7	9.5	10.2	8.2
Wool, greasy	[6] 0.2	[2] 0.2	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4
Eggs [3]	[6] 12.2	[2] 12.1	18.7	27.1	23.0	25.6	27.5	29.3	30.1	28.5	26.7
NORTH AMERICA											
Wheat	26.65	44.51	40.86	46.13	50.50	42.63	51.05	41.32	45.16	50.77	51.46
Barley	6.26	10.09	13.16	13.45	15.57	13.89	13.60	11.07	13.12	13.64	12.41
Oats	18.99	25.19	24.74	22.13	25.68	20.58	22.91	19.06	22.42	21.21	18.31
Maize	53.20	74.70	74.76	93.99	86.01	97.93	99.93	92.83	93.22	104.85	91.48
Sorghum	1.24	3.90	6.94	13.95	14.76	14.10	15.75	12.19	12.95	14.93	12.45
Rice (milled equivalent) [8]	0.62	1.25	1.56	1.61	1.32	1.58	1.61	1.60	1.95	2.07	2.16
Sugar (centrifugal)	2.76	2.96	3.36	3.91	3.57	3.67	3.93	4.10	4.26	5.11	5.24
Potatoes	11.94	12.49	12.41	13.98	13.92	12.78	13.63	15.34	14.23	14.42	13.14
Apples	2.91	2.71	2.71	3.02	3.12	3.08	2.67	3.09	3.14	3.20	3.45
Citrus fruit	3.62	6.41	7.24	7.02	7.35	7.20	6.85	7.80	5.88	5.67	6.89

ANNEX TABLE 3B. - REGIONAL PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES (*continued*)

	Prewar average	Average 1948-52	Average 1953-57	Average 1958-62	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65 (Preliminary)
	Million metric tons										
Soybeans	1.17	7.40	10.78	16.60	15.97	14.69	15.25	18.68	18.39	19.17	19.24
Cottonseed	4.93	5.28	5.17	5.22	4.35	5.43	5.34	5.42	5.57	5.62	5.65
Total vegetable oils and oilseeds (oil equivalent)	1.19	2.70	3.22	4.19	4.07	3.78	4.07	4.48	4.53	4.75	4.74
Tobacco	0.62	1.02	1.01	0.98	0.88	0.89	0.98	1.03	1.14	1.15	1.08
Cotton (lint)	2.81	3.11	3.01	3.03	2.51	3.17	3.11	3.12	3.24	3.34	3.31
Milk (total)	54.44	59.55	63.44	64.39	63.98	63.39	63.83	65.23	65.51	65.06	65.82
Meat [1]	9.34	13.22	15.99	17.95	16.61	17.63	17.97	18.74	18.80	19.75	20.95
Eggs	2.42	3.93	4.09	4.13	4.16	4.24	4.09	4.06	4.10	0.06	4.12
OCEANIA											
Wheat	4.38	5.30	4.42	6.98	6.02	5.64	7.70	6.94	8.60	9.20	10.72
Sugar (centrifugal)	0.94	1.04	1.44	1.69	1.64	1.60	1.55	1.55	2.13	2.06	2.49
Wool (greasy)	0.59	0.69	0.84	1.01	0.97	1.02	1.00	1.04	1.04	1.09	1.10
Milk (total)	10.17	10.24	11.22	11.79	11.37	11.83	11.94	11.66	12.16	12.37	12.75
Meat [1]	1.44	1.65	1.92	2.29	2.26	2.22	2.13	2.32	2.51	2.55	2.61
LATIN AMERICA											
Wheat	8.62	7.98	10.47	9.25	10.58	9.44	7.86	8.97	9.43	12.27	13.79
Maize	18.00	15.05	18.86	23.59	22.00	22.43	23.62	24.56	25.31	23.86	26.82
Rice (milled equivalent) [6]	1.33	3.07	3.84	5.08	4.22	4.85	5.30	5.43	5.58	5.86	5.75
Sugar (centrifugal)	6.89	12.52	13.78	16.69	16.78	17.17	18.05	16.14	15.31	15.61	18.06
Citrus fruit	3.28	3.73	4.20	5.17	4.72	4.76	5.21	5.18	6.00	5.64	5.60
Bananas	4.20	8.14	10.57	12.61	11.63	12.48	12.92	12.83	13.21	15.39	15.00
Groundnuts	0.16	0.37	0.59	1.00	0.78	0.81	1.05	1.27	1.11	0.95	1.02
Cottonseed	1.24	1.57	2.11	2.64	2.34	2.18	2.59	2.78	3.30	3.12	3.24
Sunflowerseed	0.16	0.93	0.69	0.74	0.49	0.93	0.68	0.97	0.62	0.57	0.86
Copra	0.06	0.09	0.17	0.24	0.23	0.23	0.24	0.25	0.25	0.25	0.26
Palm kernel	—	0.10	0.12	0.16	0.15	0.14	0.16	0.18	0.20	0.20	0.20
Total vegetable oils and oilseeds (oil equivalent)	1.03	1.11	1.25	1.72	1.44	1.63	1.66	1.96	1.93	1.84	2.00
Coffee	2.11	1.88	2.11	3.13	2.75	3.78	2.94	3.33	2.86	2.78	1.80
Cocoa	0.24	0.26	0.30	0.30	0.32	0.36	0.28	0.28	0.28	0.29	0.31
Tobacco	0.21	0.31	0.37	0.43	0.40	0.41	0.44	0.45	0.48	0.51	0.53
Cotton (lint)	0.59	0.86	1.16	1.45	1.27	1.21	1.44	1.54	1.78	1.71	1.80
Sisal	0.01	0.08	0.12	0.19	0.15	0.18	0.20	0.20	0.23	0.23	0.23
Wool (greasy)	0.27	0.33	0.33	0.34	0.34	0.34	0.34	0.34	0.33	0.34	0.36
Milk	12.22	14.48	18.41	21.70	20.51	21.46	22.23	21.22	22.37	22.88	22.48
Meat [1]	5.27	6.27	6.92	7.59	7.96	7.29	7.19	7.60	7.89	7.98	7.67
Eggs	0.48	0.58	0.78	0.96	0.94	0.90	0.94	1.02	1.00	1.00	1.00
FAR EAST [7]											
Wheat	12.13	11.34	13.47	15.96	13.13	15.60	16.09	16.93	18.04	15.97	15.47
Maize	6.11	5.71	7.51	10.36	9.29	9.73	10.26	10.56	11.94	11.33	12.82
Millet and sorghum	14.94	13.36	16.92	17.71	18.35	17.41	17.52	16.56	18.71	18.21	18.20
Rice (millet equivalent) [8]	60.61	62.74	72.92	87.36	81.27	85.47	89.97	90.40	89.69	95.73	96.94
Sugar (centrifugal)	4.18	3.14	4.90	6.30	5.71	6.29	6.83	6.52	6.17	6.85	7.54
Sugar (noncentrifugal)	3.67	4.03	4.60	6.06	5.95	5.57	5.95	6.27	6.59	6.50	6.51
Pulses [10]	6.78	7.18	8.77	10.38	8.75	11.47	10.13	10.99	10.57	10.06	8.70
Soybeans	1.12	1.01	1.22	1.27	1.26	1.29	1.30	1.29	1.20	1.13	1.13
Groundnuts	3.77	3.80	4.97	5.95	6.24	5.66	5.71	5.94	6.18	6.49	7.25
Copra	1.90	2.23	2.61	2.47	2.33	2.13	2.75	2.73	2.43	2.63	2.60
Total vegetable oils and oilseeds (oil equivalent)	3.96	4.05	5.00	5.34	5.31	4.87	5.46	5.55	5.52	5.54	5.85
Tea	0.46	0.54	0.64	0.73	0.70	0.71	0.72	0.77	0.77	0.77	0.81
Tobacco	0.79	0.60	0.78	0.85	0.77	0.87	0.84	0.84	0.91	0.95	0.98
Cotton (lint)	1.22	0.90	1.25	1.28	1.23	1.07	1.36	1.27	1.49	1.60	1.48
Jute [11]	1.94	1.99	1.94	2.45	2.44	2.10	1.99	3.11	2.61	2.72	2.69
Rubber (natural)	0.97	1.65	1.76	1.90	1.82	1.90	1.84	1.95	1.98	1.91	2.07
Milk (total)	23.23	25.23	27.61	29.93	28.64	29.73	30.04	30.45	30.79	31.17	31.35
Meat [1]	1.87	2.02	2.48	2.89	2.76	2.85	2.81	2.89	3.13	3.13	3.14
Eggs	0.44	0.43	0.73	1.01	0.83	0.88	0.95	1.14	1.25	1.30	1.35

ANNEX TABLE 3B. - REGIONAL PRODUCTION OF MAJOR AGRICULTURAL COMMODITIES (*concluded*)

	Prewar average	Average 1948-52	Average 1953-57	Average 1958-62	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64	1964/65 (Preliminary)
	Million metric tons										
NEAR EAST											
Wheat	9.50	10.95	15.30	16.65	16.69	16.37	16.40	15.74	18.06	18.69	17.33
Barley	4.24	4.77	6.34	6.37	6.47	6.01	6.13	6.02	7.23	7.71	6.28
Maize	2.40	2.58	3.10	3.47	3.44	3.32	3.58	3.41	3.59	3.48	3.37
Rice (milled) [8]	1.09	1.34	1.47	1.71	1.37	1.72	1.72	1.52	2.24	2.24	2.49
Sugar (centrifugal)	0.22	0.42	0.66	1.01	0.86	1.02	1.16	0.99	1.00	1.13	1.38
Pulses [10]	0.70	0.78	0.84	0.87	0.86	0.84	0.90	0.76	1.01	0.92	0.97
Citrus fruit	0.79	0.86	1.20	1.55	1.45	1.49	1.36	1.62	1.85	2.11	2.10
Dates	0.87	0.86	1.07	1.26	1.22	1.01	1.16	1.43	1.46	1.44	1.45
Olive oil	0.06	0.08	0.10	0.12	0.13	0.08	0.11	0.18	0.09	0.15	0.15
Cottonseed	1.09	1.23	1.44	1.93	1.76	1.82	1.91	2.00	2.16	2.11	2.35
Total vegetable oils and oilseeds (oil equivalent)	0.32	0.41	0.53	0.67	0.63	0.64	0.65	0.75	0.67	0.75	0.80
Tobacco	0.09	0.12	0.15	0.15	0.14	0.16	0.17	0.14	0.11	0.16	0.21
Cotton (lint)	0.56	0.66	0.76	1.03	0.95	0.99	1.02	1.05	1.16	1.12	1.27
Wool (greasy)	0.07	0.08	0.10	0.12	0.11	0.12	0.12	0.12	0.12	0.12	0.13
Milk (total)	2.70	10.52	10.96	12.57	12.38	12.81	12.67	12.49	12.52	12.96	12.97
Meat [1]	1.13	0.83	1.07	1.30	1.19	1.22	1.32	1.38	1.41	1.42	1.42
AFRICA											
Wheat	2.66	3.16	4.01	3.78	3.94	3.79	4.07	2.79	4.30	4.59	4.44
Barley	2.60	3.19	3.31	2.75	3.39	2.77	3.15	1.52	2.90	3.19	3.14
Maize	4.62	7.24	9.46	12.01	10.37	10.58	12.42	13.11	13.58	11.99	12.50
Millet and sorghum	2.31	2.94	2.82	3.72	3.47	3.48	3.85	3.66	4.16	4.43	4.40
Rice (milled equivalent) [8]	1.11	1.61	1.84	2.12	2.05	2.00	2.16	2.04	2.33	2.39	2.32
Sugar (centrifugal)	0.95	1.36	1.84	2.36	2.23	2.34	2.04	2.52	2.67	2.99	2.94
Pulses [10]	1.02	1.51	1.51	1.53	1.48	1.59	1.58	1.43	1.57	1.66	1.64
Citrus fruit	0.38	0.80	1.09	1.44	1.32	1.35	1.48	1.56	1.52	1.69	1.72
Bananas	0.30	0.67	0.87	0.95	0.88	0.94	0.95	0.97	1.00	1.07	1.10
Olive oil	0.07	0.08	0.11	0.12	0.18	0.08	0.19	0.08	0.09	0.12	0.17
Groundnuts	1.86	2.40	3.17	3.77	3.38	3.28	3.82	3.98	4.40	4.34	4.58
Total vegetable oils and oilseeds (oil equivalent)	1.73	2.20	2.61	2.82	2.83	2.65	2.91	2.83	2.90	2.99	3.12
Coffee	0.14	0.28	0.46	0.74	0.61	0.66	0.81	0.71	0.91	1.00	0.97
Cocoa	0.49	0.50	0.51	0.76	0.57	0.66	0.87	0.83	0.85	0.90	1.19
Wine	2.14	1.72	2.30	2.22	2.04	2.61	2.26	2.25	1.95	2.04	2.04
Tobacco	0.06	0.14	0.16	0.20	0.20	0.20	0.21	0.20	0.18	0.23	0.23
Cotton (lint)	0.14	0.23	0.28	0.30	0.31	0.32	0.33	0.23	0.31	0.33	0.34
Sisal	0.16	0.23	0.30	0.37	0.35	0.36	0.38	0.37	0.40	0.41	0.44
Rubber (natural)	0.01	0.06	0.10	0.14	0.13	0.14	0.15	0.14	0.15	0.15	0.16
Wool (greasy)	0.15	0.13	0.17	0.17	0.17	0.17	0.17	0.18	0.18	0.17	0.17
Milk (total)	6.82	9.96	10.99	11.95	11.52	11.66	12.00	12.17	12.37	12.38	12.38
Meat [1]	1.21	2.09	2.27	2.52	2.37	2.41	2.48	2.67	2.67	2.67	2.67
Eggs	0.14	0.22	0.24	0.27	0.26	0.27	0.27	0.27	0.28	0.28	0.28

[1] Beef and veal, mutton and lamb, pork, poultry meat. - [2] 1949-52. - [3] Thousand million units. - [4] Slaughtered weight. - [5] Average 1955-57. - [6] 1940. - [7] 1953. - [8] Paddy converted at 65 percent. - [9] Excluding China (Mainland). - [10] Dry beans, dry peas, broad beans, chick-peas, lentils. - [11] Including allied fibers.

ANNEX TABLE 4. - WORLD [1] AND REGIONAL LIVESTOCK NUMBERS

	Average 1947-51	Average 1952-56	Average 1957-61	1958/59	1959/60	1960/61	1961/62	1962/63	1963/64 (Preliminary)
	Millions								
WORLD [1]									
Cattle	763.3	805.8	920.6	908.7	935.4	948.7	972.2	980.3	992.1
Pigs	227.7	278.9	343.1	331.6	344.6	352.9	371.2	374.9	353.5
Sheep	749.4	832.7	924.8	920.8	933.1	936.5	944.2	944.9	948.5
Goats	262.6	280.3	293.9	291.0	296.0	299.9	298.3	298.3	301.9
WESTERN EUROPE									
Cattle	77.4	81.1	86.8	85.4	87.5	85.8	92.1	90.6	89.6
Pigs	46.7	59.1	67.1	65.1	66.5	69.2	71.0	71.6	74.5
Sheep	94.7	94.6	102.1	103.0	102.0	104.1	102.0	100.9	101.6
Goats	18.9	14.5	12.8	13.3	12.9	12.7	11.6	11.4	10.9
EASTERN EUROPE AND U.S.S.R.									
Cattle	78.0	82.6	100.6	95.7	99.8	107.1	109.4	114.3	112.3
Pigs	42.5	69.1	93.1	85.1	92.0	99.3	108.6	107.7	81.5
Sheep	102.6	129.7	161.9	159.7	166.6	164.2	170.1	172.0	166.3
Goats	20.9	18.5	11.8	12.8	11.3	10.4	10.4	10.0	9.1
NORTH AMERICA									
Cattle	88.5	104.9	106.2	103.6	106.8	108.2	110.9	115.0	118.3
Pigs	63.7	55.6	61.8	64.7	65.1	60.5	62.1	63.9	61.5
Sheep	32.8	32.5	33.4	33.7	34.3	34.1	32.3	30.7	28.9
Goats	2.6	2.7	3.3	3.2	3.4	3.5	3.7	3.7	3.9
OCEANIA									
Cattle	19.7	22.1	23.5	22.5	22.8	24.1	25.0	25.6	26.1
Pigs	1.86	2.07	2.37	2.22	2.34	2.45	2.56	2.44	2.47
Sheep	145.4	173.2	201.0	199.6	202.3	201.2	206.7	208.8	216.3
Goats	0.16	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
LATIN AMERICA									
Cattle	162.9	178.1	204.0	195.9	207.9	209.4	216.5	212.3	213.8
Pigs	47.6	62.2	77.0	75.1	76.7	78.1	81.0	85.2	88.3
Sheep	128.0	128.2	127.8	127.2	128.3	129.6	129.0	129.4	130.9
Goats	28.8	33.2	35.6	35.1	35.9	37.1	37.1	39.5	40.5
FAR EAST [1]									
Cattle	193.6	211.7	223.5	219.7	224.4	227.7	229.9	232.8	241.6
Pigs	21.3	26.8	36.6	34.8	36.7	38.0	40.7	38.8	39.6
Sheep	46.6	49.7	52.4	51.4	52.7	52.7	54.1	54.5	54.7
Goats	65.1	74.5	79.2	79.5	78.8	79.8	79.4	79.6	84.1
NEAR EAST									
Cattle	24.3	28.7	32.7	32.5	33.4	33.3	32.4	33.1	33.1
Pigs	0.10	0.07	0.08	0.08	0.08	0.09	0.08	0.08	0.09
Sheep	86.7	100.1	119.9	120.4	119.3	125.4	123.1	120.8	121.3
Goats	45.4	52.4	56.7	56.0	57.5	57.7	57.1	54.3	53.8
AFRICA									
Cattle	86.2	96.7	107.4	107.5	108.2	108.5	111.4	112.1	112.9
Pigs	4.10	3.94	4.80	4.46	4.94	5.06	5.19	5.28	5.37
Sheep	112.6	124.8	126.4	126.8	126.7	125.3	126.9	127.7	128.5
Goats	80.8	84.3	94.4	90.9	96.1	98.6	98.9	99.5	99.4

[1] Excluding China (Mainland).

ANNEX TABLE 5. - TOTAL CATCH (LIVEWEIGHT) OF FISH, CRUSTACEANS, AND MOLLUSKS IN SELECTED COUNTRIES [1]

	1938	1948	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)	Average 1958-62	
	Thousand metric tons											%	*Thousand metric tons*
WORLD TOTAL	21 000.0	19 500.0	30 300.0	31 200.0	32 600.0	36 100.0	39 300.0	42 800.0	46 100.0	47 200.0	50 600.0	100	39 300.0
A. 1962 catch: 1 000 000 tons and more												65.0	25 549.5
Peru	4.8	47.7	297.3	483.1	930.2	2 152.4	3 531.4	5 293.1	6 961.9	6 901.3	9 127.4	9.6	3 773.8
Japan	3 677.7	2 518.5	4 772.8	5 407.3	5 504.7	5 884.1	6 192.7	6 710.5	6 864.9	6 697.8	...	15.9	6 231.4
China (Mainland)	...	...	2 648.0	3 120.0	4 060.0	5 020.0	5 800.0	...	...	...	...	13.5	5 296.0
U.S.S.R.	1 523.0	1 485.0	2 616.0	2 531.0	2 621.0	2 756.0	3 051.0	3 250.0	3 616.5	3 977.2	...	7.8	3 058.9
United States	2 260.1	2 416.6	2 989.4	2 759.8	2 708.6	2 890.8	2 814.7	2 931.9	2 972.8	2 711.9	2 638.2	7.3	2 863.8
Norway	1 152.5	1 504.0	2 187.3	1 745.8	1 434.5	1 575.2	1 543.0	1 523.2	1 331.7	1 387.8	1 608.3	3.7	1 481.5
Canada	836.8	1 052.9	1 105.5	997.1	1 007.6	1 054.4	934.5	1 019.6	1 124.8	1 197.1	1 210.1	2.6	1 028.1
South Africa and South West Africa	68.0	187.8	536.4	583.6	655.7	747.6	867.6	1 010.8	1 061.1	1 147.5	...	2.2	868.6
Spain (incl. Ceuta and Melilla)	408.5	547.2	761.6	777.2	844.9	859.1	969.9	987.7	1 075.4	1 097.9	1 196.2	2.4	947.4
B. 1962 catch: 500 000 tons and more, but less than 1 000 000 tons												17.6	6 926.9
India	...	...	1 012.3	1 233.0	1 064.6	823.2	1 161.4	961.0	973.9	1 045.8	...	2.5	996.3
United Kingdom	1 198.1	1 206.1	1 050.4	1 014.7	999.0	988.9	923.8	904.9	944.3	951.2	974.6	2.4	952.2
Indonesia	472.0	...	713.9	728.0	687.0	754.1	756.7	906.8	943.0	936.2	...	2.1	809.5
Denmark and Faeroe Islands	160.1	318.2	579.3	638.9	704.8	760.9	690.6	771.0	928.4	985.0	...	2.0	771.1
Iceland	327.2	478.1	517.3	502.7	580.4	640.8	592.8	710.0	832.6	784.5	...	1.7	671.3
France	643.6	512.8	623.7	595.9	611.8	703.1	734.2	750.9	744.3	742.3	...	1.8	708.9
Chile	32.2	64.6	188.3	213.1	225.8	272.6	339.6	429.8	638.6	761.9	1 160.9	1.0	381.3
Germany, Federal Rep. of	776.5	408.7	800.6	791.7	743.1	768.0	674.0	618.9	632.7	646.9	624.4	1.7	687.3
Portugal	247.2	292.1	482.6	479.5	466.0	427.8	475.1	500.0	525.6	539.8	...	1.2	478.9
Philippines	80.9	195.1	416.0	407.5	447.3	457.5	465.5	475.7	504.7	564.9	...	1.2	470.1
C. 1962 catch: 100 000 tons and more, but less than 500 000 tons												12.4	4 874.8
Korea, Rep. of	844.2	293.8	346.6	409.3	403.3	392.1	357.2	424.5	467.7	443.8	524.0	1.0	408.9
Brazil	103.3	144.8	208.0	212.2	211.9	239.1	251.0	275.1	379.4	...	...	0.7	271.3
Burma	...	...	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	0.9	360.0
Thailand	161.0	161.0	217.9	234.5	196.3	204.7	220.9	305.6	339.7	418.7	...	0.6	253.4
Pakistan	...	...	277.0	282.8	283.7	290.1	304.5	319.1	330.5	345.0	...	0.8	305.6
China (Taiwan)	89.5	83.5	193.2	208.0	229.7	246.3	259.1	311.4	327.0	350.7	376.3	0.7	274.7
Netherlands	256.2	294.1	298.1	300.8	313.8	319.6	314.7	346.1	321.9	361.0	387.7	0.8	323.2
Korea, North	925.2	...	...	291.5	...	...	...	...	...	...	...	0.8	300.0
Sweden	129.2	193.9	197.4	222.1	238.0	268.0	254.7	267.3	290.7	339.8	372.1	0.7	263.7
Angola	26.2	113.2	420.5	395.5	278.2	267.4	252.0	241.5	269.3	...	...	0.7	261.7
Viet-Nam, Republic of	180.0	...	130.0	135.0	143.0	153.5	240.0	250.0	255.0	332.0	...	0.5	208.3
Italy	181.2	156.6	221.6	212.0	211.0	214.9	213.3	239.6	220.7	232.2	252.4	0.6	219.9
Mexico	17.1	68.4	144.8	117.5	163.9	192.4	197.9	225.4	218.6	234.3	258.4	0.5	199.6
Malaysia: Malaya	...	147.2	148.7	152.7	152.2	158.0	178.6	190.9	212.5	243.1	241.1	0.4	178.4
Poland	12.5	47.1	139.3	138.8	145.1	162.2	183.9	185.5	179.6	226.7	264.3	0.4	171.3
Morocco	43.7	68.6	108.2	145.1	161.7	144.4	154.1	164.9	162.9	178.7	...	0.4	157.6
Congo, Dem. Rep. of	0.9	17.5	96.2	122.4	136.6	153.4	...	...	...	...	...	0.4	145.0
Cambodia	...	...	150.0	...	...	...	...	148.3	145.8	157.5	164.6	0.4	147.1
Senegal	...	...	...	75.5	85.9	99.8	122.1	126.9	133.4	...	...	0.3	113.6
Germany, Eastern	...	...	74.9	96.5	93.2	105.6	114.4	130.1	150.1	184.8	...	0.3	118.7
United Arab Republic	38.1	42.8	70.3	75.2	80.0	85.6	88.5	92.0	118.0	104.2	...	0.2	92.8
Muscat and Oman		...	...	...	...	...	...	...	...	...	...	0.3	100.0

ANNEX TABLE 5. - TOTAL CATCH (LIVE WEIGHT) OF FISH, CRUSTACEANS, AND MOLLUSCS IN SELECTED COUNTRIES [1] *(concluded)*

	1938	1948	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)	Average 1958-62	
	Thousand metric tons											%	*Thousand metric tons*
D. 1962 catch: 50 000 tons and more, but less than 100 000 tons												2.2	846.8
Venezuela	21.7	92.3	61.3	83.7	78.3	83.3	84.7	84.9	94.9	97.3	110.6	0.2	85.2
Argentina	55.3	71.2	75.4	81.7	82.6	88.7	101.0	93.8	94.1	124.0	160.1	0.2	92.0
Ceylon	...	24.0	40.3	38.5	40.7	48.3	57.8	74.0	83.9	92.6	...	0.2	60.9
Turkey	76.0	...	139.5	116.7	101.3	96.7	89.4	82.3	60.6	130.7	...	0.2	86.1
Greece	25.0	33.6	65.0	75.0	80.0	82.0	...	...	...	...	...	0.2	81.0
Hong Kong	...	34.3	57.2	67.2	69.5	67.0	62.3	63.6	70.8	75.1	...	0.2	66.6
Australia	33.5	38.9	49.9	55.3	54.3	58.8	61.0	62.4	66.6	70.8	76.4	0.2	60.6
Finland	44.4	46.1	60.2	64.5	61.5	67.4	66.0	67.1	64.8	80.1	63.1	0.2	65.4
Uganda	...	11.0	45.7	51.3	53.4	55.6	62.6	61.2	64.5	69.6	72.1	0.1	59.5
Tanganyika	16.0	22.0	55.0	55.0	55.0	60.0	60.0	60.7	60.2	74.0	...	0.1	59.2
Belgium	42.8	71.1	69.1	62.9	64.3	57.5	63.7	61.7	59.8	61.9	...	0.2	61.4
Aden	...	20.0	21.8	22.6	21.5	24.4	22.3	47.4	53.8	55.4	52.0	0.1	33.9
Colombia	10.0	15.0	21.2	30.1	25.0	21.1	29.7	47.5	51.7	47.4	53.3	0.1	35.0
E. 1962 catch: less than 50 000 tons												1.1	433.7
Ecuador	1.8	3.4	21.8	26.4	31.1	35.9	44.3	38.6	42.5	49.7	46.3	0.1	38.5
Greenland	4.7	21.0	25.8	30.8	32.0	33.2	34.6	41.8	43.3	33.3	...	0.1	37.0
Ghana	...	...	26.3	28.4	30.9	36.0	31.8	40.5	48.4	62.9	78.0	0.1	37.5
New Zealand	27.0	35.7	38.4	39.0	39.3	41.5	44.3	43.1	41.3	40.8	...	0.1	41.9
Cuba	10.0	8.3	15.6	22.0	21.9	28.2	31.2	30.5	35.0	35.6	...	0.1	29.4
Yugoslavia	16.8	21.2	28.4	30.7	31.4	29.4	30.9	37.3	30.3	34.4	38.3	0.1	31.9
Ireland	12.8	25.8	30.5	36.6	37.5	38.6	42.8	32.2	29.0	27.6	32.0	0.1	36.0
Algeria	21.2	30.0	22.3	22.2	18.8	22.5	25.6	...	...	...	...	0.1	22.3
Hungary	7.0	4.0	10.9	12.3	13.0	14.4	14.9	19.3	21.0	21.0	22.7	—	16.5
Sudan	8.8	11.4	13.5	9.9	19.2	16.2	16.5	17.3	18.6	...	...	—	17.6
Kenya	...	...	...	25.5	22.0	22.6	12.6	13.5	18.4	20.1	15.8	—	17.8
Ryukyu Islands	12.0	7.7	13.7	13.1	16.6	21.4	14.4	16.0	17.8	17.4	21.7	—	17.2
Israel	1.7	2.5	10.3	11.6	12.6	13.2	13.8	14.9	16.4	17.5	18.7	—	14.2
Tunisia	9.6	12.2	11.9	14.0	15.2	14.8	16.3	22.4	19.0	21.3	...	—	17.5
Ethiopia	...	...	11.0	13.5	27.9	34.7	19.1	17.2	14.0	8.9	...	0.1	22.6
Bulgaria	5.6	6.4	5.7	5.1	6.1	6.1	8.7	8.1	9.6	7.5	13.2	—	7.7
St. Pierre and Miquelon	1.9	2.2	9.3	7.9	8.3	9.4	10.3	13.6	8.1	8.2	8.6	—	9.9
Rwanda and Burundi	...	2.3	5.4	9.7	11.5	11.0	9.2	5.3	7.2	10.6	...	—	8.8
Uruguay	3.6	3.5	5.4	6.9	5.4	5.9	8.0	8.8	5.9	3.4	2.4	—	6.8
Malta and Gozo	1.1	1.5	0.8	1.0	1.1	1.1	1.2	1.3	1.3	1.6	1.4	—	1.2
Mauritius	2.0	1.6	1.7	1.7	1.6	1.3	1.4	1.5	1.2	1.4	1.4	—	1.4
F. 1962 catch: less than 50 000 tons												1.7	688.0
120 countries not specified [2]	...	...	...	...	...	...	...	...	...	...	...	1.7	688.0

[1] Countries arranged in order of 1962 catch. - [2] These countries do not publish regular annual fish catch statistics.

ANNEX TABLE 6. - WORLD [1] AND REGIONAL PRODUCTION OF MAJOR FOREST PRODUCTS

	Unit	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
		Million units										
WORLD [1]												
Fuelwood [2]	m³	786	761	795	808	796	803	786	810	802	810	812
Industrial roundwood [2]	"	856	927	951	940	942	1 004	1 024	1 016	1 028	1 032	1 065
Sawn softwood [2]	"	222.4	237.8	238.7	237.3	247.9	266.4	265.6	265.2	268.8	273.2	283.1
Sawn hardwood [2]	"	57.2	61.7	64.4	62.7	65.6	68.0	71.0	72.9	74.2	76.7	78.8
Plywood [2]	"	9.0	10.9	11.3	11.8	13.1	14.9	15.4	16.8	18.5	20.1	21.7
Fibreboard	M.T.	2.8	3.2	3.3	3.4	3.6	4.1	4.3	4.5	4.8	5.2	5.7
Mechanical woodpulp	"	14.6	15.4	16.2	16.3	16.0	17.3	18.3	18.7	19.2	19.6	21.3
Chemical woodpulp	"	27.9	31.0	33.3	33.8	33.9	37.6	40.8	43.9	45.9	49.4	53.0
Newsprint [2]	"	10.4	11.2	12.0	12.3	12.1	13.1	14.0	14.4	14.6	14.9	16.1
Other paper and paperboard [2]	"	41.1	45.5	48.2	49.2	50.5	55.8	59.7	63.2	66.4	70.3	75.0
EUROPE												
Fuelwood	m³	103.6	102.3	102.0	109.5	105.1	105.4	100.7	101.6	96.6	96.5	97.0
Coniferous logs [3]	"	86.1	93.6	87.4	83.3	87.5	83.5	92.3	93.1	92.9	88.8	93.0
Broadleaved logs	"	21.0	24.4	24.4	25.0	26.8	26.3	27.0	28.8	30.3	30.4	31.0
Other industrial roundwood	"	83.5	86.2	88.9	93.2	88.0	87.7	94.7	102.0	103.5	99.1	107.0
Sawn softwood	"	52.1	54.5	52.7	52.4	52.6	51.4	55.7	55.9	56.1	54.3	56.6
Sawn hardwood	"	10.0	11.0	11.2	11.8	12.1	12.2	13.0	13.9	14.0	14.2	14.9
Plywood	"	1.9	2.0	1.9	2.1	2.2	2.4	2.7	2.7	2.9	3.2	3.3
Fibreboard	M.T.	1.05	1.21	1.29	1.40	1.48	1.56	1.80	1.90	2.05	2.21	2.45
Particle board	"	0.15	0.26	0.37	0.48	0.60	0.88	1.24	1.55	1.90	2.32	2.78
Mechanical woodpulp	"	4.43	4.70	4.98	5.12	5.12	5.46	6.02	6.25	6.27	6.49	7.00
Chemical woodpulp	"	7.66	8.41	8.71	9.24	9.16	9.88	11.04	11.85	12.08	13.18	14.30
Newsprint	"	2.86	3.11	3.43	3.52	3.52	3.81	4.22	4.36	4.32	4.41	4.76
Printing and writing paper	"	3.34	3.54	3.68	3.93	4.08	4.30	4.87	5.28	5.37	5.84	6.39
Other paper and paperboard	"	8.78	9.64	10.00	10.79	11.11	11.96	13.38	14.07	14.64	15.60	16.76
U.S.S.R.												
Fuelwood	m³	123.1	121.8	120.2	123.6	124.1	127.7	108.0	97.7	97.0	96.7	96.0
Industrial roundwood	"	205.8	218.1	222.1	237.3	250.9	270.3	261.5	253.3	255.7	263.4	268.0
Sawn softwood	"	58.7	64.3	65.1	69.4	69.6	88.4	89.8	88.7	88.8	89.3	89.7
Sawn hardwood	"	10.4	11.3	11.5	12.2	14.1	15.6	15.8	15.6	15.7	15.8	15.8
Plywood	"	1.0	1.1	1.1	1.2	1.2	1.3	1.4	1.6	1.5	1.5	1.6
Fibreboard	M.T.	0.05	0.05	0.07	0.09	0.11	0.16	0.21	0.28	0.31	0.35	0.37
Particle board	"	...	...	...	...	...	0.05	0.10	0.18	0.22	0.28	0.34
Mechanical woodpulp	"	0.66	0.72	0.77	0.79	0.81	0.83	0.93	1.03	1.12	1.15	1.30
Chemical woodpulp	"	1.68	1.74	1.85	1.96	2.09	2.19	2.28	2.41	2.60	2.76	2.95
Newsprint	"	0.32	0.36	0.36	0.38	0.39	0.40	0.43	0.49	0.54	0.56	0.63
Other paper and paperboard	"	1.95	2.04	2.22	2.41	2.57	2.69	2.79	2.95	3.13	3.29	3.55
NORTH AMERICA												
Fuelwood	m³	62.6	62.0	59.8	58.4	55.8	54.0	49.3	48.3	39.4	36.6	35.0
Coniferous logs [3]	"	178.9	190.0	185.8	169.6	166.0	193.8	188.5	176.6	193.5	196.0	199.0
Broadleaved logs [3]	"	42.7	42.5	40.7	38.7	37.9	36.7	34.8	33.4	35.7	37.5	37.5
Other industrial roundwood	"	107.7	119.7	132.8	123.9	111.9	123.6	132.7	125.0	124.4	125.2	129.0
Sawn softwood	"	86.1	90.3	90.4	80.4	80.8	89.0	80.9	79.5	82.5	86.9	91.5
Sawn hardwood	"	17.8	18.8	19.9	14.8	14.1	16.7	15.8	15.1	15.8	16.9	16.5
Plywood	"	5.0	6.5	6.7	6.7	7.6	8.8	8.9	9.7	10.7	11.8	12.9
Fibreboard	M.T.	1.50	1.67	1.72	1.63	1.71	1.97	1.81	1.87	1.97	2.16	2.24
Mechanical woodpulp	"	8.32	8.87	9.20	8.98	8.70	9.36	9.58	9.50	9.87	9.87	10.80
Chemical woodpulp	"	17.02	19.16	20.62	20.25	20.27	22.54	23.78	25.13	26.46	28.11	29.80
Newsprint	"	6.51	6.92	7.32	7.41	7.04	7.51	7.89	7.96	7.95	7.91	8.50
Printing and writing paper	"	4.66	5.16	5.64	5.35	5.38	6.03	6.24	6.36	6.70	7.22	7.80
Other paper and paperboard	"	18.64	20.88	21.55	21.00	21.14	23.14	23.44	24.27	25.76	26.56	27.60

ANNEX TABLE 6. - WORLD [1] AND REGIONAL PRODUCTION OF MAJOR FOREST PRODUCTS (*concluded*)

	Unit	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
		Million units										
OCEANIA												
Fuelwood	m³	6.9	8.9	8.9	9.0	9.1	9.1	9.2	9.1	9.2	9.2	9.2
Coniferous logs [3]	"	4.1	4.3	4.1	4.2	4.7	5.0	5.6	5.4	5.2	5.3	5.4
Broadleaved logs [3]	"	7.2	7.6	7.5	7.4	7.1	7.2	7.6	7.7	7.1	7.0	7.1
Other industrial roundwood	"	1.9	2.2	2.8	2.4	2.7	2.7	2.8	3.0	2.0	3.5	4.0
Sawn softwood	"	2.0	2.1	2.1	2.1	2.1	2.3	2.3	2.2	2.1	2.2	2.3
Sawn hardwood	"	2.7	2.8	2.5	2.4	2.6	2.7	2.7	2.6	2.4	2.4	2.4
Mechanical woodpulp	M.T.	0.16	0.18	0.24	0.26	0.28	0.30	0.28	0.30	0.31	0.38	0.42
Chemical woodpulp	"	0.14	0.17	0.26	0.26	0.26	0.30	0.30	0.31	0.32	0.38	0.42
Newsprint	"	0.06	0.08	0.14	0.15	0.16	0.16	0.18	0.18	0.21	0.26	0.30
Other paper and paperboard	"	0.27	0.30	0.35	0.36	0.40	0.44	0.52	0.54	0.55	0.64	0.72
LATIN AMERICA												
Sawn softwood	m³	5.2	5.3	5.2	4.7	5.3	5.2	4.9	5.1	5.3	4.6	5.1
Sawn hardwood	"	6.7	7.2	7.5	6.7	6.6	6.2	6.3	6.3	6.5	6.2	6.4
Plywood	"	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.4
Mechanical woodpulp	M.T.	0.16	0.15	0.16	0.16	0.20	0.22	0.24	0.28	0.27	0.34	0.38
Chemical woodpulp	"	0.14	0.13	0.18	0.21	0.23	0.28	0.26	0.48	0.50	0.52	0.55
All paper and paperboard	"	0.93	1.04	1.19	1.24	1.39	1.49	1.57	1.82	1.91	1.99	2.10
FAR EAST [1]												
Industrial roundwood	m³	50.3	59.0	68.6	69.9	68.5	72.2	76.7	79.0	75.4	78.5	80.0
Sawn softwood	"	13.9	16.6	19.6	21.8	20.5	21.8	23.6	23.6	23.2	25.2	27.2
Sawn hardwood	"	7.5	8.6	9.9	9.9	9.7	9.4	11.1	12.3	12.5	14.0	15.5
Plywood	"	0.7	0.8	1.1	1.2	1.4	1.8	1.8	2.0	2.5	2.7	3.0
Mechanical woodpulp	M.T.	0.61	0.68	0.74	0.80	0.76	0.90	0.96	1.00	0.99	0.98	1.03
Chemical woodpulp	"	1.04	1.24	1.47	1.67	1.62	2.12	2.61	3.19	3.29	3.69	4.10
Newsprint	"	0.45	0.48	0.54	0.59	0.61	0.82	0.81	0.90	1.05	1.13	1.25
Other paper and paperboard	"	1.77	2.08	2.53	2.84	2.90	3.70	4.46	5.37	5.61	6.34	7.10
NEAR EAST												
Industrial roundwood	m³	2.3	7.1	7.0	7.5	7.9	7.6	7.7	7.4	7.7	8.5	8.5
Sawn softwood	"	0.4	0.8	0.6	0.7	0.6	0.7	0.8	0.7	1.0	1.0	1.0
Sawn hardwood	"	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4
AFRICA												
Fuelwood	m³	92.1	155.3	158.2	159.0	155.9	160.1	164.4	170.5	168.1	170.3	171.0
Industrial roundwood	"	10.4	14.1	14.5	16.0	16.5	17.7	18.6	19.5	19.6	20.0	20.8
Sawn softwood	"	0.5	0.5	0.6	0.5	0.6	0.6	0.7	1.0	1.0	1.0	1.1
Sawn hardwood	"	1.3	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.6	1.6	1.7
Plywood	"	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
All paper and paperboard	M.T.	0.14	0.20	0.23	0.24	0.26	0.29	0.32	0.34	0.43	0.47	0.50

[1] Excluding China (Mainland). - [2] Pre-1955 data not strictly comparable with those of 1955 and after. - [3] Sawlogs, veneer logs and logs for sleepers.

ANNEX TABLE 7. - STOCKS OF MAJOR AGRICULTURAL AND FOREST PRODUCTS

	Date	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965 (Forecast)
WHEAT		*Million metric tons*													
United States	1 July	7.0	16.5	25.4	28.2	28.1	24.7	24.0	35.2	35.8	38.4	36.0	32.5	24.5	24.5
Canada	1 Aug.	5.9	10.4	16.8	14.6	15.8	19.9	17.6	16.0	16.3	16.5	10.6	13.3	12.6	14.5
Argentina	1 Dec.	0.1	2.0	1.6	2.4	1.2	1.6	1.3	1.4	1.2	0.8	0.2	0.7	2.4	...
Australia	1 Dec.	0.5	1.0	2.6	2.6	2.4	1.1	0.5	1.8	1.6	0.7	0.5	0.6	0.6	2.3
TOTAL 4 MAJOR EXPORTERS		13.5	29.9	46.4	47.8	47.5	47.3	43.4	54.4	54.9	56.4	47.3	47.1	40.1	...
RICE (milled equivalent)															
Asian exporters [1]	31 Dec.	0.7	1.4	1.6	0.8	0.7	0.6	0.5	0.5	0.3	0.2	0.2	0.3	...	...
United States	31 July	0.1	—	0.2	0.8	1.1	0.6	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.3
TOTAL OF ABOVE		0.8	1.4	1.8	1.6	1.8	1.2	1.1	1.0	0.7	0.5	0.4	0.5	...	...
COARSE GRAINS [2]															
United States	1 July [3]	18.5	24.7	29.4	37.3	39.3	44.4	53.8	61.6	68.0	77.2	65.3	58.2	62.5	52.8
Canada	1 Aug.	3.6	5.1	5.6	3.7	4.3	6.6	5.2	5.1	4.7	4.5	2.8	4.4	5.7	4.0
TOTAL 2 MAJOR EXPORTERS		22.1	29.8	35.0	41.0	43.6	51.0	59.0	66.7	72.7	81.7	68.1	62.6	68.2	56.8
BUTTER															
United States		0.03	0.13	0.17	0.07	0.01	0.04	0.03	0.01	0.03	0.10	0.14	0.09	0.03	...
Canada		0.02	0.03	0.04	0.05	0.04	0.03	0.04	0.05	0.06	0.09	0.11	0.10	0.04	...
European countries [4]		0.04	0.06	0.05	0.04	0.10	0.12	0.08	0.06	0.12	0.14	0.13	0.13	0.15	...
Australia and New Zealand		0.05	0.05	0.06	0.06	0.05	0.06	0.06	0.05	0.07	0.07	0.06	0.05	0.07	...
TOTAL OF ABOVE	31 Dec.	0.14	0.27	0.32	0.22	0.20	0.25	0.21	0.17	0.28	0.40	0.44	0.37	0.29	...
CHEESE															
United States	31 Dec.	0.11	0.20	0.25	0.24	0.20	0.19	0.13	0.14	0.15	0.21	0.19	0.15	0.15	...
CONDENSED AND EVAPORATED MILK															
United States [5]	31 Dec.	0.18	0.12	0.10	0.10	0.11	0.10	0.09	0.10	0.10	0.10	0.07	0.06	0.08	...
DRIED SKIM MILK															
United States [6]	31 Dec.	0.08	0.23	0.06	0.04	0.04	0.05	0.06	0.04	0.14	0.14	0.28	0.17	0.08	...
LINSEED AND OIL (oil equivalent)															
United States	1 July	0.41	0.38	0.29	0.17	0.10	0.22	0.13	0.18	0.07	0.09	0.08	0.13	0.18	...
Argentina	1 Dec.	0.30	0.23	0.08	0.03	0.06	0.06	0.06	0.05	0.10	0.03	0.01	...	...	...
TOTAL OF ABOVE		0.71	0.61	0.37	0.20	0.16	0.28	0.19	0.23	0.17	0.12	0.09	...	...	...

ANNEX TABLE 7. - STOCKS OF MAJOR AGRICULTURAL AND FOREST PRODUCTS *(concluded)*

	Date	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965 (Forecast)
		Million metric tons													
LIQUID EDIBLE VEGETABLE OILS AND OILSEEDS (oil equivalent)															
United States	1 Oct. [4]	0.24	0.63	0.52	0.35	0.29	0.29	0.33	0.56	0.39	0.46	0.77	0.79	0.68	...
SUGAR (raw value)															
Cuba	31 Dec.	2.2	1.5	1.9	1.6	0.6	0.7	0.5	1.2	1.1	1.0	0.3	0.2	0.1*	..
WORLD TOTAL [7]	31 Aug.	10.0	9.4	10.8	10.5	9.1	8.7	8.5	11.8	12.5	13.2	10.9	8.2	8.3	...
COFFEE															
Brazil		0.18	0.20	0.20	0.20	0.63	0.44	0.87	1.44	2.64	3.10	3.42	3.71	3.41	...
TOTAL 5 COUNTRIES [8]	30 June	0.53	0.51	0.49	0.38	0.84	0.69	1.17	1.84	3.15	3.66	3.96	4.35	4.16	...
TOBACCO (farm weight)															
United States [9]	1 Oct.	1.56	1.66	1.69	1.83	1.89	2.00	1.89	1.81	1.74	1.70	1.83	2.00	2.21	...
COTTON (lint)															
United States		0.61	1.22	2.11	2.43	3.15	2.47	1.89	1.93	1.64	1.57	1.70	2.42	2.69	3.08
WORLD TOTAL [10]	31 July	3.41	4.05	4.59	4.84	5.33	5.11	4.80	4.60	4.41	4.38	4.29	5.02	5.61	5.97
NATURAL RUBBER															
WORLD TOTAL [11]	31 Dec.	0.73	0.72	0.73	0.76	0.74	0.76	0.75	0.70	0.76	0.76	0.77	0.71	0.82	...
NEWSPRINT															
North America [12] ..	31 Dec.	0.89	0.80	0.77	0.69	0.92	0.92	0.99	0.98	0.93	0.93	0.95	0.89	0.90	...
SAWN SOFTWOOD															
European importers [13]	31 Dec.	5.74	6.19	5.10	6.09	5.32	5.62	5.42	5.12	6.22	6.14	6.06	[illegible] 31	7.00	...
European exporters [14]	31 Dec.	...	1.55	1.42	1.53	1.50	1.71	1.78	1.57	1.48	1.75	2.13	90	1.83	...
North America	31 Dec.	14.01	15.68	14.23	14.18	16.23	15.88	14.96	15.18	17.47	15.03	14.48	13.14	14.67	...
SAWN HARDWOOD															
European importers [15]	31 Dec.	1.29	1.13	1.06	1.22	1.31	1.25	1.26	1.19	1.25	1.33	1.24	1.16	1.19	...
European exporters [16]	31 Dec.	...	0.42	0.41	0.50	0.59	0.62	0.57	0.55	0.54	0.73	0.68	0.62	0.52	...
North America	31 Dec.	5.11	5.41	4.62	4.17	4.77	4.73	4.77	4.79	5.06	5.11	4.36	4.85	3.80	...

NOTE: Quantities shown include normal carry-over stocks.

[1] Burma, Thailand, Republic of Viet-Nam. - [2] Barley, oats, maize, sorghum and rye. - [3] Maize and sorghum, 1 October. - [4] Austria, Belgium, Finland, Federal Republic of Germany, Ireland, Netherlands, Norway, Sweden, Switzerland, United Kingdom and (from 1957) France. - [5] Manufacturers' stocks and CCC uncommitted supplies. - [6] Cottonseed, 1 August. - [7] Excluding the U.S.S.R. and China (Mainland). [8] Brazil, Colombia, Ivory Coast, Uganda and United States. - [9] Flue-cured types, 1 July. - [10] Including estimates of cotton afloat. - [11] Including estimates of rubber afloat, but excluding strategic stockpiles. - [12] United States and Canadian mills and United States consumers. - [13] Belgium-Luxembourg, Denmark, Federal Republic of Germany, Netherlands, Switzerland, United Kingdom. - [14] Austria, Poland, Yugoslavia. - [15] Belgium-Luxembourg, Federal Republic of Germany, United Kingdom. - [16] Austria, Bulgaria, Yugoslavia.

ANNEX TABLE 8. - INVESTMENT [1] OF UNITED STATES COMMODITY CREDIT CORPORATION AS OF 30 APRIL 1965

	Quantity												Value											
	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
	Thousand metric tons												*Million dollars*											
Wheat	24 208	28 156	29 073	24 453	24 174	33 937	35 512	37 888	34 209	34 057	26 815	21 991	2 155	2 633	2 795	2 411	2 402	3 105	3 253	2 772	2 459	2 499	1 987	1 575
Rice	58	763	1 322	804	732	535	455	240	34	73	96	165	6	98	232	107	104	81	65	26	5	9	11	19
Barley	622	2 044	1 987	1 774	2 698	3 242	3 383	2 184	1 344	1 468	1 235	900	34	107	92	87	114	155	113	85	52	56	48	34
Oats	589	1 052	1 222	650	732	1 376	646	598	557	688	1 026	1 378	32	58	60	32	32	57	27	21	21	26	40	55
Maize	20 568	22 255	29 192	34 801	37 211	39 206	45 291	54 012	43 587	40 036	39 167	31 860	1 296	1 437	1 926	2 289	2 414	2 486	2 786	2 688	1 952	1 818	1 766	1 438
Grain sorghum	1 029	2 927	2 887	2 040	8 295	13 498	14 964	18 784	19 070	18 618	17 667	16 381	60	167	128	105	393	706	833	797	810	800	765	729
Butter	165	149	34	16	45	20	27	40	144	176	80	35	245	212	44	21	60	26	35	53	191	227	103	45
Cheese	164	176	130	87	74	5	4	—	38	30	10	3	146	156	111	73	62	4	3	—	32	25	8	3
Dried milk	298	101	81	65	70	59	108	117	217	311	147	127	109	38	30	24	26	20	34	35	80	102	48	41
Soybeans	101	876	270	1 228	1 746	3 255	1 598	89	2 565	1 567	1 588	368	10	70	20	95	131	247	114	6	214	129	130	30
Linseed	382	201	41	351	59	279	18	6	5	141	346	184	56	25	5	42	7	31	2	1	1	16	39	21
Linseed oil	31	37	26	—	—	—	14	—	—	—	—	36	13	14	9	—	—	—	4	—	—	—	—	9
Cottonseed oil	469	170	5	—	—	27	—	—	—	4	5	15	185	64	2	—	—	7	—	—	—	1	1	5
Cotton linters	279	318	141	20	—	—	—	—	—	—	—	—	58	67	31	5	—	—	—	—	—	—	—	—
Cotton, upland	1 674	1 817	2 839	2 056	973	1 628	1 179	565	1 203	2 214	2 579	2 903	1 268	1 439	2 268	1 580	642	1 260	947	410	894	1 600	1 842	1 995
Wool	55	70	54	24	—	—	—	—	—	—	—	—	81	103	92	35	—	—	—	—	—	—	—	—
Tobacco	281	366	402	451	427	414	317	280	211	285	432	535	270	406	535	609	590	594	441	393	321	461	679	843
Other commodities													165	167	263	301	274	154	176	141	152	191	160	110
TOTAL													6 189	7 261	8 633	7 816	7 251	8 933	8 833	7 428	7 184	7 960	7 627	6 952
													Percentage											
Change from previous year													+ 97	+ 17	+ 19	— 9	— 7	+ 23	— 1	— 1	— 3	+ 11	— 4	— 9

SOURCE: United States Department of Agriculture, Commodity Credit Corporation, Report of financial conditions and operations. 30 April 1954 - 30 April 1965.

[1] Stocks pledged for outstanding loans and stocks in price support inventory. - [2] As from 1961 the values are in accordance with the new accounting policy adopted by the CCC as of 30 June 1961. The 1961 total comparable with the previous years is $8.748 million and the percentage change 1960-61 refers to this amount.

ANNEX TABLE 9A. - PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES

	Period	Cereals [1]	Potatoes and other starchy foods [2]	Sugar [3]	Pulses and nuts [4]	Vegetables [5]	Meat [6]	Eggs [7]	Fish [8]	Milk [9]		Fats and oils
										Fat	Protein	
		Kilograms per caput per year										
WESTERN EUROPE												
Austria	1948/49–1950/51	129.6	107.6	23.2	2.7	60.8	30.1	3.8	2.0	5.0	6.0	15.3
	1951/52–1953/54	116.2	100.8	25.6	2.0	61.4	41.3	6.0	2.3	6.4	7.1	16.2
	1954/55–1956/57	117.8	95.8	30.9	2.5	63.2	47.2	8.3	3.1	6.9	8.0	17.6
	1957/58–1959/60	114.1	91.5	34.2	3.2	65.1	52.2	10.5	3.2	6.9	7.6	18.2
	1960/61–1962/63	103.9	84.1	36.4	3.8	61.9	59.8	11.9	3.6	6.9	7.4	18.0
	1963/64	101.7	82.0	35.5	3.6	69.2	62.8	13.8	3.7	6.8	7.2	18.4
Belgium-Luxembourg	1948/49–1950/51	106.0	148.0	28.5	3.9	60.4	47.0	12.1	5.9	4.2	5.1	21.0
	1951/52–1953/54	104.3	147.3	28.5	3.8	65.6	49.0	12.7	6.8	4.4	5.9	21.8
	1954/55–1956/57	100.0	149.5	28.5	3.9	65.1	53.0	14.4	6.9	4.5	6.2	22.1
	1957/58–1959/60	92.3	144.4	32.3	4.0	68.9	58.1	15.2	5.9	4.7	6.8	21.3
	1960/61–1962/63	90.0	118.2	31.7	3.9	76.3	60.2	13.3	5.3	5.3	6.5	29.4
	1962/63	84.5	112.6	29.7	4.2	74.7	64.3	12.3	4.8	5.3	6.6	38.6
Denmark	1948/49–1950/51	104.3	141.4	36.1	6.8	72.3	61.6	8.9	17.9	8.3	9.9	18.1
	1951/52–1953/54	95.1	137.3	40.8	5.3	63.7	56.8	7.8	12.6	8.4	9.4	25.3
	1954/55–1956/57	89.6	131.3	48.0	4.7	61.9	58.9	7.5	13.8	8.2	7.9	26.3
	1957/58–1959/60	81.6	128.5	45.5	4.1	65.7	64.8	9.4	15.1	8.8	8.4	28.2
	1960/61–1962/63	77.9	119.0	49.4	6.3	66.4	66.3	11.1	16.1	9.0	8.9	26.9
	1962/63	78.6	113.5	48.4	6.8	66.2	63.0	11.8	16.0	9.0	8.9	25.5
Finland	1949/50–1950/51	122.5	118.6	31.2	1.8	17.8	29.0	5.1	12.3	12.0	12.0	15.2
	1951/52–1953/54	120.5	115.4	34.2	2.0	18.5	29.3	7.2	10.4	12.6	12.5	17.0
	1954/55–1956/57	118.5	108.7	37.8	2.1	19.1	32.5	7.5	11.2	12.8	12.7	18.5
	1957/58–1959/60	114.4	98.5	40.5	2.1	20.6	31.7	6.3	11.0	12.0	12.0	18.5
	1960/61–1962/63	106.9	111.2	40.0	1.6	15.3	34.3	8.0	10.5	12.3	12.2	19.5
	1962/63	100.1	110.0	41.1	1.6	15.5	36.1	8.2	9.1	12.6	12.5	19.6
France	1948/49–1950/51	121.5	132.6	23.1	5.6	140.0	55.6	10.5	5.8	4.4	5.0	14.4
	1951/52–1953/54	116.4	122.0	26.3	5.1	138.7	60.5	10.8	5.9	4.5	5.2	15.8
	1954/55–1956/57	111.2	130.3	25.6	5.5	132.3	68.7	10.3	5.8	4.8	5.6	17.1
	1957/58–1959/60	106.3	106.7	30.3	5.7	127.2	74.3	10.7	5.7	5.7	6.7	17.2
	1960/61	99.2	103.6	28.8	6.6	98.4	74.5	11.2	...	6.2	7.2	...
Germany, Federal Republic of [10]	1948/49–1950/51	114.4	209.5	23.6	4.1	51.5	29.2	5.1	8.0	4.1	5.8	15.8
	1951/52–1953/54	99.0	172.5	24.9	3.0	45.5	41.5	8.1	7.0	5.4	6.7	22.7
	1954/55–1956/57	95.7	157.3	27.5	3.5	45.1	48.1	10.4	7.1	5.7	6.8	25.2
	1957/58–1959/60	87.8	143.2	28.1	3.3	46.3	53.6	12.4	6.8	5.7	7.0	25.2
	1960/61–1962/63	79.3	130.8	30.3	3.7	49.4	60.5	13.1	6.8	5.7	7.0	25.5
	1963/64	75.4	125.5	31.0	3.8	52.7	63.8	13.5	6.7	5.6	6.6	25.1
Greece	1948/49–1950/51	154.2	34.0	9.4	12.2	66.3	11.4	3.2	5.9	2.6	2.9	14.9
	1952–53	149.1	42.2	9.8	13.4	100.0	13.6	3.2	6.4	3.3	3.3	16.6
	1954–56	164.6	41.0	11.6	15.0	110.8	17.7	4.5	6.9	4.3	4.5	18.2
	1957–59	168.4	43.7	11.8	13.8	118.2	21.8	5.7	7.8	4.6	4.8	18.6
	1960–62	158.7	39.3	13.5	13.3	121.2	25.5	6.2	9.3	5.0	5.2	18.4
	1962	155.0	40.8	13.7	11.2	118.0	27.0	6.4	9.5	5.4	5.2	18.9
Ireland	1948–50	133.5	190.3	35.3	2.2	58.8	53.1	12.5	2.6	6.6	8.8	18.4
	1951–53	132.2	174.8	40.0	2.0	58.6	52.9	14.6	3.0	7.1	8.8	19.7
	1954–56	127.7	155.1	42.2	1.9	60.8	55.3	17.6	4.6	8.6	7.6	19.7
	1957–59	116.6	142.3	44.8	2.3	62.7	58.2	17.6	4.0	7.9	8.8	19.3
	1960–62	106.5	141.2	47.6	2.7	65.4	64.3	16.5	4.2	8.5	9.2	19.5
	1962	101.6	139.8	46.8	2.9	68.2	66.6	16.3	3.7	8.6	9.3	19.5
Italy	1948/49–1950/51	149.5	38.1	11.7	9.8	81.3	15.3	6.0	4.0	3.2	2.9	9.9
	1951/52–1953/54	146.2	40.4	14.3	11.2	92.5	17.6	6.9	4.5	3.2	3.5	12.1
	1954/55–1956/57	139.6	48.1	16.4	9.2	95.9	20.7	7.8	4.2	3.5	3.8	12.4
	1957/58–1959/60	134.8	49.2	18.9	10.6	127.7	25.7	8.5	4.6	3.8	4.1	14.1
	1960/61–1962/63	134.1	52.1	22.9	9.4	138.6	30.8	9.4	5.1	4.0	4.3	16.8
	1963/64	133.2	58.5	24.7	11.2	144.8	35.9	10.0	5.5	4.0	4.3	18.0

ANNEX TABLE 9A. - PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES (*continued*)

	Period	Cereals [1]	Potatoes and other starchy foods [2]	Sugar [3]	Pulses and nuts [4]	Vege-tables [5]	Meat [6]	Eggs [7]	Fish [8]	Milk [9]		Fats and oils
										Fat	Protein	
		Kilograms per caput per year										
Netherlands	1948/49–1950/51	98.3	158.6	35.8	3.7	67.8	27.7	4.9	6.2	7.2	8.7	22.9
	1951/52–1953/54	94.5	115.7	35.6	3.6	63.6	34.6	6.6	5.1	7.3	8.6	25.0
	1954/55–1956/57	89.6	96.2	38.9	4.2	66.2	43.1	10.5	4.7	7.4	8.5	23.8
	1957/58–1959/60	85.2	91.3	39.8	4.0	66.1	44.2	11.7	4.2	7.6	8.5	25.0
	1960/61–1962/63	80.4	98.7	42.9	4.3	70.0	46.8	12.1	5.8	8.1	8.5	28.8
	1963/64	76.7	96.2	43.6	3.9	70.2	45.7	13.1	5.3	8.3	8.5	27.3
Norway	1948/49–1950/51	116.4	127.8	24.5	3.4	28.4	33.0	7.1	24.6	11.0	10.0	23.2
	1951/52–1953/54	103.5	107.4	32.0	2.7	31.2	34.1	6.7	20.2	11.5	9.7	25.7
	1954/55–1956/57	94.7	104.7	38.9	4.1	34.5	37.4	7.7	19.6	11.7	9.1	26.5
	1957/58–1959/60	83.5	104.2	38.1	3.3	35.8	37.9	7.9	17.8	11.8	9.0	25.1
	1960/61–1962/63	78.2	99.3	40.2	3.7	33.4	39.6	8.8	20.2	11.4	8.3	23.0
	1963/64	76.0	103.3	48.9	3.5	30.0	40.3	8.9	20.4	11.1	8.4	23.3
Portugal	1948–50	120.5	108.1	12.1	10.6	107.3	16.0	2.6	16.3	0.8	0.7	13.8
	1951–53	124.7	116.8	13.6	9.6	110.8	16.3	3.0	17.0	0.9	0.9	14.7
	1954–56	125.1	113.1	15.3	8.8	109.7	18.0	3.3	17.5	1.3	1.1	15.5
	1957–59	122.5	103.2	16.7	8.9	104.6	17.7	3.4	19.7	1.3	1.4	15.5
	1960–62	125.2	98.9	18.8	9.3	110.0	19.4	3.6	20.6	1.5	1.5	15.5
	1963	132.4	115.9	19.4	10.0	108.5	19.8	3.7	20.0	1.7	1.6	16.0
Spain	1952/53–1953/54	122.8	104.4	10.6	15.4	102.0	14.1	4.7	9.9	2.1	2.4	15.5
	1954/55–1956/57	116.9	112.8	13.5	15.6	102.1	14.2	5.2	10.5	2.5	2.7	16.1
	1957/58–1959/60	112.5	114.7	15.4	16.1	114.5	16.0	5.3	11.2	2.4	2.7	18.0
	1960/61–1962/63	115.8	110.7	18.7	15.1	130.0	20.9	7.3	13.2	2.5	2.8	20.7
	1962/63	120.5	103.0	21.4	14.4	133.0	23.0	8.3	14.8	2.6	2.9	21.8
Sweden	1948/49–1950/51	88.2	119.6	44.4	3.2	25.0	48.7	10.6	15.7	11.0	9.5	20.1
	1951/52–1953/54	83.0	111.0	41.3	2.6	25.0	49.2	11.3	17.6	10.7	9.7	20.3
	1954/55–1956/57	76.2	102.0	42.0	2.9	25.1	50.2	11.4	18.3	10.3	9.3	21.0
	1957/58–1959/60	73.7	92.5	41.0	3.0	25.4	50.0	11.6	17.9	10.5	8.9	21.2
	1960/61–1962/63	71.9	90.8	41.3	3.4	29.9	51.2	12.0	19.6	9.9	9.3	23.0
	1963/64	70.8	97.9	40.6	3.2	33.3	50.7	11.9	20.6	9.4	9.4	23.0
Switzerland	1948/49–1950/51	116.6	88.6	37.6	5.8	72.9	44.1	8.6	2.0	11.3	11.2	14.7
	1951/52–1953/54	108.6	78.0	38.4	7.0	72.5	47.8	8.9	2.3	10.8	10.6	15.5
	1954/55–1956/57	101.2	74.3	40.4	6.9	75.1	51.4	9.7	2.8	10.5	10.4	17.3
	1957/58–1959/60	97.2	72.8	39.3	7.7	76.2	54.6	9.9	3.0	10.4	9.7	18.6
	1960/61–1962/63	96.0	68.7	42.8	7.8	75.2	59.9	9.9	3.7	10.0	9.0	19.9
	1962/63	88.7	66.4	44.0	7.6	76.4	61.6	10.0	4.0	9.9	8.9	20.5
United Kingdom	1948/49–1950/51	106.1	114.6	38.8	5.0	60.9	49.8	13.1	11.5	7.2	7.2	21.4
	1951/52–1953/54	96.6	104.0	40.5	5.2	56.2	55.0	12.5	9.8	7.2	7.2	21.0
	1954/55–1956/57	88.3	98.5	46.6	6.3	58.5	67.6	13.4	9.9	7.3	7.2	22.1
	1957/58–1959/60	84.3	94.7	48.8	5.7	59.6	70.5	14.6	10.1	7.3	7.3	22.2
	1960/61–1962/63	81.4	98.2	49.1	5.9	58.3	74.2	15.2	9.5	7.6	7.6	23.0
	1963/64	80.4	98.9	48.0	6.6	59.9	74.8	15.6	9.2	7.7	7.6	24.0
Yugoslavia	1952–53	190.2	64.0	8.1	7.8	31.6	20.0	2.2	1.4	2.7	3.4	7.7
	1954–56	185.8	60.3	10.4	10.4	39.0	23.2	2.4	1.3	3.1	3.8	9.3
	1957–59	186.6	66.8	13.5	10.0	49.6	24.5	3.4	1.8	4.0	4.9	9.9
	1960–62	184.4	66.9	16.8	10.8	55.1	28.6	3.2	1.2	3.5	4.4	11.1
	1962	184.6	63.9	18.0	11.0	55.0	27.5	3.2	1.1	3.3	4.2	10.0
NORTH AMERICA												
Canada	1948/49–1950/51	74.8	75.3	46.6	6.6	70.2	70.5	15.4	6.0	8.4	8.9	20.2
	1951/52–1953/54	75.0	66.6	43.5	5.1	70.8	72.6	15.0	6.2	8.3	8.9	19.6
	1954/55–1956/57	74.1	68.4	44.5	5.1	71.5	81.4	16.4	6.0	8.3	9.1	19.6
	1957/58–1959/60	70.0	66.1	44.3	4.9	76.6	77.8	16.6	6.7	8.2	9.2	19.2
	1960/61–1962/63	66.4	64.4	44.5	5.5	76.8	77.7	15.8	5.6	7.3	8.5	19.3
	1962/63	62.0	59.0	44.8	5.4	81.7	78.4	15.3	5.6	7.1	8.3	19.7

ANNEX TABLE 9A. - PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES (*continued*)

	Period	Cereals [1]	Potatoes and other starchy foods [2]	Sugar [3]	Pulses and nuts [4]	Vegetables [5]	Meat [6]	Eggs [7]	Fish [8]	Milk [9]		Fats and oils
										Fat	Protein	
		Kilograms per caput per year										
United States	1948-50	76.6	52.1	42.4	7.3	102.6	81.8	21.7	5.0	8.9	8.2	19.8
	1951-53	73.3	50.1	42.2	7.0	97.4	84.3	22.1	5.1	8.7	8.4	18.8
	1954-56	69.1	49.0	42.0	6.7	95.1	92.1	22.5	4.9	8.7	9.0	20.6
	1957-59	67.2	47.7	41.7	6.6	93.7	92.0	20.5	4.8	8.7	8.8	20.6
	1960-62	66.0	47.6	42.3	7.8	96.8	95.3	18.8	4.8	8.2	8.6	20.6
	1963	65.4	47.9	42.0	8.0	96.8	99.6	18.0	4.8	8.1	8.1	21.3
LATIN AMERICA												
Argentina	1948	125.8	88.1	35.0	2.1	39.6	116.3	7.4	2.0	5.5	5.1	15.8
	1951-53	104.9	79.0	31.8	4.0	44.7	102.8	8.6	2.3	5.1	5.1	18.2
	1954-56	104.7	83.5	33.8	3.2	49.3	108.0	6.6	2.0	5.0	4.6	17.8
	1957-59	115.5	69.9	33.5	2.1	44.1	109.3	7.2	1.9	4.2	3.9	16.4
	1960-62	91.1	87.9	35.1	2.7	47.7	99.8	8.1	2.1	3.6	3.4	15.7
	1962	75.7	68.7	36.9	2.2	47.2	101.3	7.0	2.0	3.6	3.5	16.2
Brazil	1948-50	85.0	147.7	30.9	24.9	4.2	28.4	2.2	1.9	1.2	1.2	5.7
	1951-53	89.3	139.2	33.4	25.2	5.3	28.3	2.5	1.9	1.6	1.6	6.1
	1954-56	98.8	149.8	37.1	26.4	6.4	28.6	3.1	2.2	1.5	1.5	7.4
	1957-59	95.9	145.4	38.2	25.9	7.5	29.6	3.3	2.1	1.6	1.5	7.8
	1960-62	107.2	147.8	39.9	29.3	8.0	26.9	3.3	2.6	1.8	1.8	8.4
	1962	111.3	153.8	37.7	29.4	8.6	26.8	3.4	2.8	1.9	1.8	8.9
Chile	1948	133.9	79.5	25.0	6.0	54.0	37.9	2.0	...	3.2	3.0	5.6
	1951-52	128.6	61.3	26.9	9.1	56.1	29.9	4.7	5.5	3.6	3.5	7.9
	1954-56	137.0	75.5	27.0	7.6	66.8	31.3	4.1	8.3	3.9	3.9	6.9
	1957-59	122.1	75.7	22.5	7.1	69.1	32.0	2.6	7.6	3.3	4.1	9.6
	1960-62	122.8	68.8	24.5	9.0	76.9	34.6	4.6	6.8	3.0	3.9	8.7
	1962	120.0	66.5	23.2	10.0	78.3	35.0	5.4	6.8	2.7	3.7	8.1
Colombia	1957-59	66.2	[11] 113.9	48.4	5.8	14.6	33.9	2.7	0.8	2.2	2.2	5.1
	1961	69.5	[11] 115.5	51.4	6.4	14.6	31.8	2.6	1.5	2.2	2.3	5.8
Dominican Republic	1959	56.2	[11] 137.1	20.6	18.0	22.7	18.3	3.8	3.5	2.6	2.8	4.0
Ecuador	1954-56	82.5	[11] 137.2	22.8	9.4	19.2	11.1	3.5	2.2	2.6	2.6	5.0
	1957-59	69.8	[11] 120.8	19.7	9.0	25.4	13.5	4.2	3.0	2.8	2.8	5.4
	1961	74.6	[11] 133.1	26.5	9.4	31.4	14.1	4.3	5.0	2.8	2.8	4.6
El Salvador	1960-62	128.4	1.9	22.1	11.6	4.4	12.2	4.5	1.2	3.1	3.1	4.5
	1962	133.2	1.9	20.6	12.3	4.4	11.9	4.6	1.3	3.1	3.2	5.7
Guatemala	1960-62	141.7	[11] 9.0	30.8	8.6	...	11.7	2.3	0.3	1.1	1.2	2.8
	1962	154.0	[11] 9.5	30.6	9.0	...	11.0	1.7	0.3	1.4	1.4	2.9
Honduras	1948/49-1950/51	107.9	6.0	22.2	11.6	...	...	2.9	...	0.9	2.8	4.9
	1952/53	117.7	9.4	21.6	10.8	...	...	4.7	...	1.0	3.5	4.1
	1954/55	117.7	9.0	21.1	12.8	...	...	3.6	...	0.9	3.3	3.0
	1962	131.8	11.0	21.6	11.3	...	12.8	4.4	...	0.9	3.2	5.7
Jamaica	1958	81.3	[11] 63.6	35.8	10.8	17.3	17.1	4.2	11.4	1.3	2.0	7.0
Mexico	1954-56	126.3	[11] 16.5	32.3	19.3	23.9	19.7	4.2	2.2	2.4	2.4	9.5
	1957-59	122.2	[11] 14.3	32.0	21.1	23.9	22.2	6.4	2.3	3.1	3.0	9.3
	1960-62	127.4	[11] 17.2	32.6	22.7	16.7	22.8	5.2	2.5	4.3	4.3	10.9
	1962	126.9	[11] 18.2	34.5	23.8	11.8	23.7	5.0	2.6	4.6	4.5	10.6
Paraguay	1957-59	76.5	271.1	15.7	15.5	36.4	...	0.6	0.1	2.6	2.6	4.3
	1960-62	75.4	262.1	16.0	13.8	16.2	45.0	0.6	0.3	2.4	2.4	4.8
	1962	80.8	256.2	14.4	14.9	16.5	43.6	0.6	0.3	2.4	2.3	4.8

ANNEX TABLE 9A. - PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES (*continued*)

	Period	Cereals [1]	Potatoes and other starchy foods [2]	Sugar [3]	Pulses and nuts [4]	Vegetables [5]	Meat [6]	Eggs [7]	Fish [8]	Milk [9]		Fats and oils
										Fat	Protein	
		Kilograms per caput per year										
Peru	1952	112.1	169.2	22.3	9.6	54.8	21.7	2.9	2.3	1.2	1.2	6.4
	1957–59	104.7	152.3	25.7	9.6	89.1	18.6	0.8	5.7	1.0	1.1	8.5
	1960–62	102.5	157.0	26.6	10.3	88.0	18.4	0.9	7.2	0.8	1.0	7.8
	1962	95.4	157.3	26.3	11.2	83.8	18.5	0.9	7.2	0.9	1.1	8.0
Surinam	1958–59	112.1	[11] 28.6	28.0	9.2	11.4	8.0	2.4	9.2	1.2	1.4	9.4
	1960–62	107.2	[11] 27.6	27.5	8.3	11.3	9.1	2.6	9.7	1.4	1.6	10.2
	1962	110.1	[11] 27.6	27.7	7.6	11.7	9.6	2.5	8.7	1.4	1.5	10.0
Uruguay	1948–50	99.4	51.0	33.2	2.8	22.4	115.0	7.4	1.1	5.6	5.4	14.2
	1952–53	96.2	58.7	32.2	2.3	26.6	122.8	6.6	1.1	5.9	5.6	15.9
	1954–56	98.8	61.5	32.7	2.0	36.5	108.9	6.6	1.1	6.3	6.1	16.6
	1957–59	91.7	64.7	32.1	2.2	47.5	111.4	6.9	1.1	6.3	6.1	21.2
	1961	89.7	70.0	33.1	4.0	39.3	101.0	6.6	1.5	7.4	7.3	17.2
Venezuela	1952–53	82.8	[11] 88.8	32.8	14.7	10.0	19.0	4.4	6.4	2.1	2.4	6.2
	1954–56	82.2	[11] 77.9	31.6	13.0	10.4	19.5	4.6	5.9	2.3	2.6	7.0
	1957–59	84.2	[11] 88.0	33.2	15.8	12.8	24.4	4.3	8.3	3.0	3.1	8.4
	1960–62	90.0	[11] 111.2	34.2	16.8	13.8	26.0	3.4	7.2	2.6	3.1	9.6
	1962	88.4	[11] 111.2	34.2	16.3	12.5	26.4	3.0	6.4	2.5	3.1	10.4
FAR EAST												
Ceylon	1952–53	118.0	34.8	16.2	32.4	41.8	2.8	1.6	5.4	0.5	0.5	3.9
	1954–56	124.8	33.8	16.5	34.0	41.8	2.8	1.2	5.1	0.6	0.5	3.7
	1957–59	125.7	22.0	18.3	29.9	43.3	2.8	1.0	6.1	0.6	0.5	3.6
	1960–62	127.3	34.7	18.6	29.6	42.1	2.1	1.1	6.0	0.6	0.5	3.6
	1963	117.3	36.8	13.5	28.5	41.0	1.9	1.8	6.2	0.9	0.8	3.6
China (Taiwan)	1948–50	137.5	76.2	9.4	[12] 5.6	62.2	11.0	1.5	5.9	–	–	2.2
	1951–53	145.4	65.6	9.4	[12] 8.0	61.8	16.8	1.6	8.3	–	–	3.5
	1954–56	148.3	70.3	9.4	[12] 9.2	58.4	16.8	1.7	9.6	–	–	3.8
	1957–59	155.6	72.2	9.4	[12] 10.1	59.7	18.1	1.7	10.4	–	–	4.0
	1960–62	160.5	63.8	9.4	[12] 10.1	58.1	15.9	1.6	12.2	–	–	4.6
	1963	156.8	50.1	9.2	[12] 10.3	60.3	17.9	1.9	13.7	–	–	4.8
India	1949/50–1950/51	118.2	8.8	11.8	20.1	...	1.4	0.1	0.9	[13] 2.5	[13] 1.7	[14] 3.0
	1951/52–1953/54	121.4	11.1	11.2	21.3	...	1.4	0.2	0.9	[13] 2.6	[13] 1.7	[14] 3.0
	1954/55–1956/57	126.4	10.7	13.1	23.7	...	1.5	0.2	1.1	[13] 2.7	[13] 1.7	[14] 3.6
	1957/58–1959/60	131.2	10.6	13.8	23.0	...	1.5	0.2	1.0	[13] 2.7	[13] 1.8	[14] 3.9
	1960/61–1962/63	138.1	11.0	17.9	22.5	2.8	1.4	0.2	1.0	[13] 2.7	[13] 1.7	[14] 3.7
	1962/63	134.2	10.5	17.1	21.3	2.8	1.4	0.2	1.0	[13] 2.6	[13] 1.7	[14] 3.8
Japan [15]	1948–50	157.0	62.5	4.0	[16] 7.1	61.1	1.8	0.6	13.3	–	–	0.7
	1951–53	146.8	56.7	9.8	[16] 13.4	69.3	2.8	2.5	19.5	–	–	1.6
	1954–56	150.8	62.4	12.1	[16] 15.6	67.6	3.9	3.4	22.1	–	–	2.6
	1957–59	153.5	66.6	13.4	[16] 16.5	75.0	5.5	3.9	24.7	0.6	0.5	3.5
	1960–62	149.1	69.1	15.6	[16] 16.4	89.6	7.7	6.0	26.6	0.9	0.8	4.8
	1963	148.3	65.8	16.4	[16] 15.5	103.8	9.6	7.4	27.8	1.2	1.0	6.1
Pakistan	1949/50–1950/51	160.0	...	12.0	8.0	18.3	4.4	0.4	0.6	[13] 2.5	[13] 1.8	[14] 3.0
	1951/52–1953/54	152.9	...	13.0	6.9	17.8	4.5	0.4	1.0	[13] 2.6	[13] 2.0	[14] 3.6
	1954/55–1956/57	149.6	...	14.2	7.9	17.8	4.5	0.4	1.6	[13] 2.6	[13] 2.0	[14] 3.5
	1957/58–1959/60	153.3	3.7	15.0	6.8	18.5	4.1	0.3	1.5	[13] 1.8	[13] 2.2	[14] 3.4
	1960/61–1962/63	154.6	4.3	14.3	5.5	18.5	3.6	0.4	1.6	[13] 2.5	[13] 2.0	[14] 4.3
	1962/63	150.8	4.7	16.6	5.9	18.5	3.6	0.4	1.6	[13] 3.5	[13] 2.7	[14] 5.5

ANNEX TABLE 9A. - PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES (*continued*)

	Period	Cereals [1]	Potatoes and other starchy foods [2]	Sugar [3]	Pulses and nuts [4]	Vegetables [5]	Meat [6]	Eggs [7]	Fish [8]	Milk [9]		Fats and oils
										Fat	Protein	
		Kilograms per caput per year										
Philippines [17]	1953	112.3	44.0	13.7	4.1	32.0	14.6	2.8	8.6	–	–	1.8
	1954–56	114.1	43.7	12.6	3.8	31.8	15.8	3.2	9.7	–	–	1.9
	1957–59	114.7	43.2	12.1	4.3	31.0	16.3	3.3	10.5	–	–	2.5
	1960–62	116.3	42.0	12.7	6.6	28.7	14.8	3.4	10.7	–	–	2.5
	1962	114.1	40.4	15.4	6.6	29.1	14.5	2.9	9.7	–	–	2.5
NEAR EAST												
Israel	1950/51	133.1	45.4	18.9	8.6	103.1	15.2	18.9	16.0	3.6	5.3	15.3
	1951/52–1953/54	150.1	39.6	20.6	6.6	115.7	11.8	13.1	11.7	4.1	5.1	15.0
	1954/55–1956/57	140.1	46.8	24.9	8.9	116.2	20.9	15.3	8.1	4.6	5.3	15.9
	1957/58–1959/60	122.9	41.2	28.7	6.7	117.3	29.7	18.9	7.2	4.3	5.0	16.4
	1960/61–1962/63	116.0	37.4	32.2	7.5	111.9	39.7	20.2	6.7	4.2	4.7	17.5
	1962/63	110.6	39.3	32.3	7.5	111.5	43.3	21.2	6.2	4.3	4.7	17.6
Jordan	1957–59	129.1	12.6	22.0	12.3	90.2	7.5	1.1	0.8	2.4	2.2	6.9
	1960–62	118.2	11.9	23.2	8.1	168.9	10.3	2.6	0.8	1.5	1.6	9.3
	1963	104.2	12.5	22.2	7.3	158.2	6.1	2.8	0.8	1.2	1.5	12.3
Lebanon	1960–62	123.4	15.9	21.2	11.9	103.9	15.7	2.8	2.0	1.8	2.9	11.5
	1962	125.1	18.0	25.8	12.2	111.9	18.4	3.4	2.2	2.1	3.1	9.8
Libya	1959	114.7	17.0	28.2	6.6	57.1	10.0	1.8	1.2	1.8	2.0	7.5
Syria	1957	162.0	9.7	11.0	10.7	58.6	11.5	1.3	0.7	0.9	4.4	6.4
Turkey	1948/1949–1950/51	186.4	18.2	6.4	9.6	55.6	14.2	1.2	0.8	2.3	3.1	6.8
	1951/1952–1953/54	198.8	28.3	8.3	10.9	68.0	14.6	1.3	1.5	2.8	2.8	7.9
	1954/1955–1956–57	200.8	29.4	9.6	12.5	76.2	13.6	1.7	1.5	2.3	3.0	7.8
	1957/1958–1959–60	199.6	39.6	9.4	14.0	78.5	13.3	1.6	1.6	3.3	2.7	7.5
	1960/61	223.0	38.5	17.0	13.2	105.0	13.5	1.8	2.5	3.6	3.5	7.9
United Arab Republic	1948/49–1950/51	172.9	10.6	13.1	11.5	45.6	10.3	0.8	3.3	[13] 3.7	[13] 2.3	[14] 3.6
	1951/52–1953/54	171.6	8.8	14.0	10.1	49.9	11.1	0.9	2.6	[13] 2.8	[13] 1.7	[14] 3.5
	1954/55–1956/57	180.0	9.0	12.9	10.2	63.1	12.5	1.1	4.6	[13] 2.8	[13] 1.8	[14] 3.7
	1957/58–1959/60	184.0	9.4	12.3	10.5	78.1	12.8	1.1	4.5	[13] 7.6	[13] 1.7	[14] 4.8
	1960/61–1962/63	195.3	10.9	10.7	10.6	89.8	12.1	1.1	4.8	[13] 2.6	[14] 1.7	[14] 5.4
	1962/63	212.8	9.6	11.7	11.7	91.0	12.2	1.2	4.9	[13] 2.7	[13] 1.8	[14] 6.7
AFRICA												
Mauritius	1955–56	131.1	16.7	39.3	11.5	28.4	5.5	0.1	6.3	1.4	1.5	9.4
	1957–59	131.2	16.3	37.1	10.6	28.6	5.3	1.3	5.6	1.4	1.6	10.1
	1960–62	130.2	13.0	38.7	11.3	31.9	5.8	1.5	5.5	1.8	2.0	12.5
	1963	131.5	12.9	37.6	10.1	41.8	6.6	1.6	4.9	1.2	2.4	13.7
Southern Rhodesia	1951–53	184.4	11.9	12.9	14.0	25.9	30.3	0.6	1.5	1.1	1.2	1.9
	1953	201.0	10.4	11.7	16.0	26.2	29.3	0.7	1.5	1.1	1.2	2.0
South Africa [18]	1948–50	155.8	15.9	42.0	3.3	34.3	42.0	2.6	5.5	2.8	2.8	4.9
	1951–53	161.4	12.9	38.8	3.2	34.6	39.6	2.9	7.6	2.7	2.7	5.6
	1954–56	149.3	14.0	39.4	3.9	38.0	43.3	3.2	8.4	2.9	2.9	5.5
	1957–59	154.8	15.7	42.5	4.2	36.3	44.5	3.2	8.2	3.0	2.9	5.7
	1960/61	166.4	14.4	41.0	4.1	36.3	44.5	3.2	8.8	2.9	2.9	5.4

ANNEX TABLE 9A. - PER CAPUT FOOD SUPPLIES AVAILABLE FOR HUMAN CONSUMPTION IN SELECTED COUNTRIES (*concluded*)

	Period	Cereals [1]	Potatoes and other starchy foods [2]	Sugar [3]	Pulses and nuts [4]	Vegetables [5]	Meat [6]	Eggs [7]	Fish [8]	Milk [9]		Fats and oils
										Fat	Protein	
		Kilograms per caput per year										
OCEANIA												
Australia	1948/49–1950/51	96.9	49.6	53.4	5.4	66.0	109.5	11.8	4.5	6.5	6.4	14.7
	1951/52–1953/54	93.7	50.7	51.2	4.5	60.3	107.8	10.4	4.3	6.6	6.1	16.3
	1954/55–1956/57	92.6	45.9	51.8	4.1	61.3	112.1	10.3	4.4	7.1	6.3	16.1
	1957/58–1959/60	85.9	53.0	50.6	3.8	62.9	115.2	10.7	4.7	7.3	6.6	15.5
	1960/61–1962/63	83.6	46.9	49.6	4.4	63.4	108.3	11.9	5.1	7.4	6.9	14.6
	1962/63	81.8	56.1	49.6	4.5	63.9	109.4	11.8	5.0	7.4	6.9	14.6
New Zealand	1948–50	89.7	52.5	50.5	3.3	79.2	102.7	12.7	7.3	10.9	8.8	16.4
	1951–53	86.3	43.7	43.0	3.6	86.2	105.8	12.1	6.4	10.9	9.4	19.6
	1954–56	86.4	52.1	42.9	3.4	72.8	105.3	13.6	6.9	10.6	9.7	19.4
	1957–59	86.1	57.3	41.9	3.3	68.6	105.6	15.1	7.0	10.8	10.1	20.4
	1960–62	86.6	59.3	41.4	3.7	79.4	110.2	15.9	6.6	11.1	10.7	20.2
	1963	85.8	61.7	39.1	3.4	94.4	115.7	16.3	6.7	11.2	10.8	20.8

[1] In terms of flour and milled rice. - [2] Including sweet potatoes, cassava, and other starchy foods. - [3] In terms of refined sugar: crude sugar included on the basis of its calorie content; excluding syrups and honey. - [4] Shelled equivalent for nuts; including cocoa beans. - [5] In terms of fresh equivalent, but including also minor quantities of processed vegetables in terms of product weight. - [6] Including offal, poultry, and game; expressed in terms of carcass weight, excluding slaughter fats. - [7] Fresh egg equivalent. - [8] Estimated edible weight. - [9] Milk and milk products excluding butter, expressed in terms of fat and protein. - [10] From 1960 onward including the Saar. - [11] Including plantains. - [12] Including soybean curd in terms of soybean. - [13] Including milk for making butter. - [14] Excluding butter. - [15] Refers to fiscal year, April-March. - [16] Including "Miso" and "Shoyu" (soybean preparations) in terms of soybean. - [17] Series subject to revision. - [18] Split year starting July 1959.

ANNEX TABLE 9B. - ESTIMATED CALORIE AND FAT CONTENT OF NATIONAL AVERAGE FOOD SUPPLIES PER CAPUT

	Calories						Fats					
	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/64	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/64
	Number per day						*Grams per day*					
WESTERN EUROPE												
Austria	2 670	2 700	2 900	2 980	2 970	2 960	79.8	91.7	101.6	107.8	111.9	114.2
Belgium-Luxembourg	2 880	2 950	2 970	2 930	3 030	[1] 3 200	108.0	113.5	117.1	117.5	138.5	[1] 165.1
Denmark	3 240	3 330	3 340	3 360	3 370	[1] 3 310	125.2	141.6	145.7	158.7	155.8	[1] 149.3
Finland	[2] 2 980	3 070	3 160	3 110	3 110	[1] 3 080	[2] 98.6	105.7	112.6	109.6	114.3	[1] 115.4
France	2 800	2 840	2 890	2 940	...	...	89.5	95.3	103.1	108.6	...	...
Germany, Federal Republic of [3]	2 730	2 880	3 000	2 940	2 960	2 930	78.8	109.3	120.6	124.0	127.9	127.7
Greece [4]	2 500	2 590	2 880	2 990	2 940	[5] 2 910	65.4	73.3	82.2	85.9	87.2	[5] 89.2
Ireland [4]	3 430	3 460	3 460	3 420	3 450	[5] 3 430	116.7	121.0	125.1	126.6	130.9	[5] 132.9
Italy	2 350	2 480	2 470	2 570	2 740	2 860	51.6	60.1	62.0	70.1	80.0	85.3
Netherlands	2 940	2 900	2 940	2 950	3 030	2 890	102.1	113.8	120.6	125.1	132.8	126.0
Norway	3 100	3 100	3 160	3 010	2 930	3 000	122.3	129.9	135.7	132.3	128.0	127.5
Portugal [4]	2 320	2 420	2 480	2 470	2 560	2 720	62.6	66.1	69.3	68.9	70.7	74.0
Spain	...	[6] 2 490	2 520	2 590	2 810	2 920	...	[6] 72.2	74.0	78.2	89.3	96.5
Sweden	3 110	3 020	2 980	2 930	2 990	2 980	128.1	127.6	129.8	128.3	135.2	133.1
Switzerland	3 170	3 110	3 130	3 120	3 220	3 170	108.7	112.4	118.2	124.2	130.4	132.2
United Kingdom	3 130	3 110	3 260	3 280	3 270	3 300	124.1	127.3	139.4	141.3	143.5	147.0
Yugoslavia [4]	...	[7] 2 690	2 780	2 920	2 990	[5] 2 960	...	[7] 62.2	70.9	74.3	79.0	[5] 74.7
NORTH AMERICA												
Canada	3 110	3 050	3 150	3 110	3 060	...	130.2	128.2	138.1	139.3	141.5	...
United States [4]	3 180	3 130	3 140	3 100	3 100	3 120	138.6	136.2	143.6	142.0	142.4	145.5
FAR EAST												
Ceylon [4]	...	[7] 1 990	2 070	2 030	2 080	1 940	...	[7] 49.7	49.2	45.0	43.9	44.3
China (Taiwan) [4]	1 980	2 140	2 210	2 330	2 350	2 300	25.1	35.4	37.0	39.9	40.1	42.1
India	[2] 1 700	1 740	1 850	1 900	2 000	[1] 1 940	[2] 23.6	24.2	26.3	26.8	26.1	[2] 26.0
Japan [8]	1 900	1 930	2 070	2 170	2 230	2 280	10.6	21.4	25.8	30.2	36.3	42.6
Pakistan	[2] 2 010	2 000	1 990	1 980	2 010	[1] 2 080	[2] 22.2	24.3	24.0	22.0	25.3	[1] 31.7
Philippines [4]	...	[9] 1 690	1 730	1 760	1 810	[5] 1 800	...	[9] 19.0	22.5	25.7	27.4	[5] 27.2
NEAR EAST												
Israel	[10] 2 680	2 780	2 870	2 780	2 820	[1] 2 800	[10] 74.4	71.9	82.2	85.0	91.0	[1] 93.2
Jordan	...	...	...	2 200	2 160	2 050	...	...	...	39.1	31.6	48.1
Lebanon	...	...	...	...	2 460	[5] 2 550	...	...	...	...	54.3	[5] 50.9
Libya	...	...	...	[11] 2 100	...	...	...	...	...	[11] 38.5	...	...
Syria	...	...	...	[14] 2 330	...	...	...	...	...	[14] 37.0	...	...
Turkey	2 510	2 730	2 780	2 820	[13] 3 110	...	43.2	48.7	47.7	49.5	[13] 53.8	...
United Arab Republic	2 360	2 340	2 470	2 530	2 670	[1] 2 890	38.5	36.0	37.0	39.5	42.0	[1] 47.8
AFRICA												
Mauritius [4]	...	...	[12] 2 290	2 270	2 370	2 400	...	...	[12] 39.3	41.4	50.4	52.4
Southern Rhodesia [4]	...	2 450	...	...	...	...	...	52.4	...	...	...	...
South Africa [4]	2 640	2 680	2 610	2 730	[13] 2 820	...	63.3	64.8	64.4	67.0	[13] 68.0	...
OCEANIA												
Australia	3 240	3 170	3 230	3 210	3 140	[1] 3 140	121.2	124.8	133.2	135.4	132.7	[1] 132.3
New Zealand [4]	3 360	3 350	3 400	3 430	3 490	3 520	140.8	149.1	149.8	153.0	157.2	161.3

ANNEX TABLE 9B. - ESTIMATED CALORIE AND FAT CONTENT OF NATIONAL AVERAGE FOOD SUPPLIES PER CAPUT (*concluded*)

	Calories						Fats					
	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/64	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/64
	..... *Number per day*						..... *Grams per day*					
LATIN AMERICA [4]												
Argentina	3 240	2 980	3 070	3 090	2 810	2 660	109.4	111.7	122.0	117.3	108.9	109.8
Brazil	[15] 2 280	2 380	2 610	2 600	2 800	2 860	[15] 45.9	48.5	51.9	56.0	60.7	63.9
Chile	2 420	[16] 2 450	2 550	2 380	2 410	2 360	46.5	[16] 53.2	80.1	60.1	58.4	56.4
Colombia	...	...	...	1 990	[17] 2 080	...	...	...	...	45.3	[17] 48.9	...
Dominican Republic	...	...	...	2 080	...	...	...	...	...	42.4	...	...
Ecuador	...	...	2 050	1 780	[17] 1 970	...	...	...	35.9	39.3	[17] 37.5	...
El Salvador	...	...	...	...	1 990	2 050	...	...	...	...	41.9	45.5
Guatemala	...	...	...	...	2 080	2 210	...	...	...	...	34.1	35.7
Jamaica	...	...	...	[18] 2 250	...	...	...	...	...	[18] 49.8	...	...
Mexico	...	...	2 360	2 410	2 600	2 630	...	...	59.4	62.0	71.2	72.4
Paraguay	...	...	...	2 440	2 560	2 580	...	...	...	48.2	50.7	50.9
Peru	...	[19] 2 260	...	2 190	2 310	2 250	...	[19] 39.6	...	44.5	44.6	45.8
Surinam	...	...	...	[20] 2 000	1 980	2 000	...	...	...	[20] 43.0	46.0	45.4
Uruguay	2 670	[7] 2 950	2 960	3 020	[17] 2 970	...	107.3	[7] 120.0	119.6	135.7	[17] 124.5	...
Venezuela	...	[7] 2 050	2 010	2 220	2 370	2 340	...	[7] 37.5	40.2	49.0	57.1	60.5

NOTE: Split years are indicated by a stroke, i.e., 1951/-1953/ indicates 1951/52-1953/54.

[1] 1962/63. - [2] 1949/50-1950/51. - [3] From 1959/60 onward, including the Saar. - [4] Calendar years instead of split years. - [5] 1962. - [6] 1952/53-1953/54. - [7] 1952-53. - [8] Refers to fiscal year April-March. - [9] 1953. - [10] 1950/51. - [11] 1959. - [12] 1955-56. - [13] 1960/61. - [14] 1957. - [15] 1948-50. - [16] 1951-52. - [17] 1961. - [18] 1958. - [19] 1952. - [20] 1958-59.

ANNEX TABLE 9C. - ESTIMATED PROTEIN CONTENT OF NATIONAL AVERAGE FOOD SUPPLIES PER CAPUT

	Total protein						Animal protein					
	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/64	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/64
	Grams per day											
WESTERN EUROPE												
Austria	77.2	80.4	85.2	87.1	86.8	86.6	30.1	37.7	42.2	44.7	47.5	48.2
Belgium-Luxembourg	84.1	86.5	87.8	87.8	85.5	[1] 85.0	37.7	41.0	44.0	46.8	45.9	[1] 47.2
Denmark	104.8	94.6	90.0	90.5	93.3	[1] 92.3	59.9	53.5	50.3	54.7	57.9	[1] 57.4
Finland	[2] 96.2	96.4	97.6	94.0	93.9	[1] 92.9	[2] 51.6	52.9	55.0	52.7	54.7	[1] 55.5
France	92.4	92.8	95.3	97.5	...	...	40.3	43.0	47.2	52.0	...	...
Germany, Federal Republic of [3]	79.5	77.4	79.1	79.3	80.2	79.7	32.1	39.0	43.5	46.1	49.2	49.3
Greece [4]	76.3	79.2	90.7	95.8	95.4	[5] 94.2	16.6	18.8	24.1	27.4	30.6	[5] 32.0
Ireland [4]	100.6	95.0	94.4	90.6	90.4	[5] 90.2	47.6	48.0	49.6	51.1	54.2	[5] 54.9
Italy	69.7	71.9	72.7	76.4	80.0	84.0	19.3	21.3	23.6	26.6	29.8	32.0
Netherlands	80.6	80.4	80.5	79.2	80.4	78.2	39.7	40.9	43.4	44.2	46.1	46.8
Norway	99.5	90.1	88.4	83.8	81.3	80.8	51.3	50.3	50.1	49.1	48.8	49.3
Portugal [4]	66.6	68.0	71.7	72.6	72.4	74.2	20.9	22.1	25.3	27.6	27.3	26.4
Spain	...	[6] 69.8	70.2	71.1	77.1	[1] 79.9	...	[6] 17.8	19.3	20.1	23.4	[1] 25.6
Sweden	86.7	86.5	83.5	81.2	82.7	83.5	52.3	54.1	53.3	52.4	54.3	55.2
Switzerland	95.9	93.5	93.0	90.3	90.1	[1] 88.2	50.8	51.0	52.1	51.0	51.3	[1] 51.8
United Kingdom	90.3	84.7	85.6	86.3	88.9	89.3	45.1	44.9	49.6	51.0	53.4	53.5
Yugoslavia [4]	...	[7] 87.0	89.6	95.6	96.6	[5] 98.8	...	[7] 19.2	21.6	25.9	25.5	[5] 24.6
NORTH AMERICA												
Canada	93.4	93.3	97.2	95.0	92.4	...	57.2	58.2	62.9	63.1	63.8	...
United States [4]	89.2	89.8	92.2	91.9	91.6	90.6	59.6	61.1	64.8	64.9	64.2	63.9
FAR EAST												
Ceylon [4]	...	[7] 43.4	44.4	44.6	44.3	41.8	...	[7] 8.3	7.8	8.7	7.9	8.6
China (Taiwan) [4]	43.3	50.0	53.0	56.9	58.5	58.8	8.3	11.7	13.2	14.4	15.3	16.8
India	[2] 45.4	47.0	49.7	50.5	51.4	[1] 49.7	[2] 5.4	5.7	6.0	6.0	5.9	[1] 5.9
Japan [8]	49.4	60.0	65.5	67.9	69.2	72.4	8.6	10.9	13.3	13.9	16.9	20.4
Pakistan [2]	[3] 44.4	46.2	46.6	46.0	45.5	[1] 47.8	[2] 7.6	7.9	8.1	7.3	7.7	[1] 9.8
Philippines [4]	...	[9] 41.3	43.0	43.8	43.3	[5] 42.4	...	[9] 13.3	14.5	15.1	14.0	[5] 13.6
NEAR EAST												
Israel	[10] 88.3	87.1	88.0	83.5	85.4	[1] 85.2	[10] 33.7	27.4	30.6	33.1	36.3	[1] 37.7
Jordan	...	...	...	62.0	58.5	51.6	...	...	...	10.4	9.8	8.1
Lebanon	...	...	...	...	68.1	[5] 72.0	...	...	...	...	15.7	[5] 17.5
Libya	...	...	...	[11] 52.8	...	...	...	...	...	[11] 10.4	...	...
Syria	...	...	...	[14] 78.0	...	...	...	...	...	[14] 16.8	...	...
Turkey	80.9	88.4	88.1	90.5	[13] 97.5	...	15.3	16.8	14.6	15.3	[13] 15.9	...
United Arab Republic	69.4	67.8	71.7	73.5	79.0	[1] 85.5	12.5	10.7	12.2	11.9	12.2	[1] 12.5
AFRICA												
Mauritius [4]	...	...	[12] 46.6	46.4	47.6	49.4	...	...	[12] 10.5	10.8	12.3	10.4
Southern Rhodesia [4]	...	75.2	...	...	...	...	...	16.2	...	...	...	...
South Africa [4]	72.8	74.0	73.7	77.1	[13] 80.4	...	27.2	27.4	30.1	31.3	[13] 31.6	...
OCEANIA												
Australia	97.4	92.3	91.1	91.4	89.8	[1] 90.1	66.0	61.5	59.1	60.9	59.6	[1] 59.9
New Zealand [4]	99.8	102.5	103.8	105.5	109.4	112.0	66.5	69.4	70.4	71.8	74.8	77.2

ANNEX TABLE 9C. - ESTIMATED PROTEIN CONTENT OF NATIONAL AVERAGE FOOD SUPPLIES PER CAPUT (*concluded*)

	Total protein						Animal protein					
	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/64	1948/-1950/	1951/-1953/	1954/-1956/	1957/-1959/	1960/-1962/	1963/64
	Grams per day											
LATIN AMERICA[4]												
Argentina	110.4	97.1	96.9	97.8	81.7	77.2	66.1	59.4	58.2	56.9	52.3	52.9
Brazil	[15] 54.7	57.8	61.4	60.3	65.3	66.5	[15] 15.6	17.1	17.0	17.6	17.5	17.6
Chile	74.8	[16] 75.1	80.1	77.4	78.9	79.4	25.5	[16] 26.0	29.0	28.8	29.2	29.0
Colombia	...	...	...	45.7	[17] 46.1	...	...	...	...	20.5	[17] 20.0	...
Dominican Republic	...	...	...	49.8	...	...	...	...	...	19.8	...	...
Ecuador	...	...	49.6	45.2	[17] 49.8	...	...	...	13.0	15.0	[17] 16.4	...
El Salvador	...	...	...	...	56.8	58.5	...	...	...	...	15.2	15.2
Guatemala	...	...	...	...	54.4	58.0	...	...	...	...	8.5	8.6
Jamaica	...	...	...	[18] 57.9	...	...	...	...	...	[18] 22.5	...	...
Mexico	...	...	63.3	66.6	72.0	73.0	...	...	16.6	19.7	23.4	24.0
Paraguay	...	...	...	64.6	64.0	66.0	...	...	...	24.6	24.6	23.7
Peru	...	[19] 59.3	...	54.9	58.2	58.0	...	[19] 13.2	...	13.4	13.9	14.1
Surinam	...	...	...	[20] 44.2	44.7	44.5	...	...	...	[20] 14.0	15.1	14.5
Uruguay	91.3	[7] 99.2	95.9	94.6	[17] 94.5	...	58.2	[7] 66.4	61.5	62.1	[17] 61.9	...
Venezuela	...	[7] 54.0	53.4	61.2	63.1	61.2	...	[7] 19.0	19.7	24.2	25.3	25.3

NOTE: Split years are indicated by a stroke, i.e., 1951/-1953/ indicates 1951/52-1953/54.

[1] 1962/63. - [2] 1949/50-1950/51. - [3] From 1959/60 onward, including the Saar. - [4] Calendar years instead of split years. - [5] 1962. - [6] 1952/53-1953/54. - [7] 1952-53. - [8] Refers to fiscal year April-March. - [9] 1953. - [10] 1950/51. - [11] 1959. - [12] 1955-56. - [13] 1960/61. - [14] 1957. - [15] 1948-50. - [16] 1951-52. - [17] 1961. - [18] 1958. - [19] 1952. - [20] 1958-59.

ANNEX TABLE 10A. - VOLUME OF WORLD [1] EXPORTS OF MAJOR AGRICULTURAL COMMODITIES

	Prewar average	Average 1948-52	Average 1953-57	Average 1958-62	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
	Million metric tons										
Wheat and wheat flour (wheat equivalent)	15.30	24.92	26.68	33.60	27.66	29.35	33.25	40.79	36.95	45.30	53.66
Barley	1.76	3.23	5.92	5.89	6.50	6.18	4.93	6.19	5.66	5.04	7.24
Maize	9.22	4.35	5.60	11.97	8.80	9.99	11.12	12.47	17.49	18.90	20.40
Oats	0.72	1.23	1.42	1.34	1.46	1.40	1.29	1.22	1.34	1.20	1.45
Millet and sorghums	0.28	1.21	1.23	3.02	2.57	3.28	3.03	2.36	3.83	3.90	3.55
Rice (milled equivalent) [2]	9.67	4.40	4.85	5.27	4.95	4.76	5.50	5.68	5.47	5.99	5.91
Sugar (raw equivalent) [3]	9.63	10.75	13.02	15.29	14.35	13.34	16.09	17.15	15.49	15.00	14.65
Potatoes	1.19	2.00	2.10	2.47	2.62	2.38	2.38	2.34	2.66	2.40	2.36
Apples	0.69	0.57	0.89	1.26	0.85	1.29	1.24	1.39	1.51	1.22	1.43
Bananas	2.48	2.34	3.04	3.75	3.53	3.68	3.89	3.99	3.68	4.06	4.22
Citrus fruit [4]	1.86	1.88	2.63	3.21	2.78	3.09	3.35	3.23	3.58	3.24	3.88
Vegetable oils and oilseeds (oil equivalent) [5]	3.65	3.14	3.99	4.71	4.31	4.49	4.86	4.77	5.14	5.18	5.46
Oilseed cake and meal	2.32	1.84	3.00	4.69	3.84	4.54	4.32	4.80	5.94	6.39	6.64
Cattle [6]	1.91	1.69	2.09	3.16	3.14	2.63	2.82	3.66	3.55	3.57	3.71
Meat [7]	1.14	0.94	1.20	1.64	1.48	1.57	1.56	1.61	1.99	2.30	2.36
Milk (condensed, evaporated and powdered)	0.30	0.61	0.73	0.92	0.80	0.91	0.90	0.96	1.03	1.21	1.39
Eggs (in the shell)	0.25	0.24	0.34	0.39	0.39	0.43	0.42	0.39	0.35	0.29	0.23
Coffee (green)	1.64	1.93	2.10	2.56	2.19	2.55	2.61	2.67	2.78	2.98	3.20
Cocoa beans	0.68	0.67	0.73	0.87	0.64	0.75	0.90	1.01	1.03	1.02	1.03
Tea	0.36	0.41	0.47	0.51	0.52	0.49	0.49	0.51	0.54	0.54	0.50
Wine	1.93	1.61	2.39	2.61	2.75	2.38	2.62	2.60	2.69	2.22	2.33
Tobacco (unmanufactured)	0.48	0.54	0.63	0.70	0.66	0.64	0.68	0.77	0.78	0.78	0.82
Wool (actual weight)	0.96	1.05	1.14	1.34	1.15	1.37	1.31	1.43	1.42	1.40	1.37
Cotton (lint)	2.88	2.37	2.67	3.04	2.65	2.79	3.50	3.28	2.97	3.17	3.35
Jute	0.79	0.85	0.91	0.79	0.95	0.89	0.77	0.61	0.76	0.77	0.78
Rubber (natural) [8]	0.98	1.67	1.89	2.15	1.97	2.27	2.01	2.21	2.30	2.11	2.38

[1] Including exports from the rest of the world to the U.S.S.R., eastern Europe and China (Mainland), but excluding exports from these countries. - [2] Including paddy converted at 65 percent. - [3] Including refined sugar converted at 108.7 percent. - [4] Oranges, mandarines and lemons. - [5] Excluding re-exports 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. - [8] Excluding imports into Malaysia for re-export and exports from Hong Kong, but including unrecorded shipments from Indonesia to Malaysia.

ANNEX TABLE 10B. - VOLUME OF REGIONAL EXPORTS OF MAJOR AGRICULTURAL COMMODITIES

	Prewar average	Average 1948-52	Average 1953-57	Average 1958-62	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
	Million metric tons										
WESTERN EUROPE											
Wheat and wheat flour (wheat equivalent)	1.39	0.75	2.43	3.57	3.88	3.76	3.35	3.16	3.68	4.92	5.07
Barley	0.15	0.24	0.80	1.34	0.77	0.64	1.05	2.51	1.71	2.31	3.00
Maize	0.50	0.38	1.31	0.65	0.61	0.37	0.81	1.09	0.35	0.94	1.35
Sugar (raw equivalent) [1]	0.85	1.37	1.71	1.40	1.37	1.34	1.57	1.47	1.25	1.59	1.44
Potatoes	0.86	1.34	1.52	1.78	2.03	1.70	1.58	1.75	1.83	1.64	1.67
Apples	0.19	0.31	0.56	0.72	0.38	0.79	0.71	0.84	0.88	0.54	0.71
Citrus fruit [2]	0.97	0.91	1.18	1.45	1.20	1.35	1.48	1.49	1.73	1.21	1.74
Vegetable oils and oilseeds (oil equivalent) [3]	0.50	0.18	0.29	0.34	0.27	0.29	0.42	0.36	0.38	0.35	0.35
Oilseed cake and meal	0.45	0.19	0.61	0.80	0.61	0.77	0.77	0.92	0.92	0.89	0.94
Cattle [4]	0.90	0.73	1.16	1.43	1.34	1.26	1.38	1.80	1.37	1.76	1.90
Meat (fresh, chilled and frozen) [5]	0.05	0.09	0.22	0.40	0.25	0.31	0.40	0.45	0.59	0.65	0.56
Bacon, ham and salted pork	0.26	0.14	0.28	0.34	0.30	0.31	0.37	0.36	0.37	0.35	0.36
Milk (condensed, evaporated and powdered)	0.24	0.26	0.40	0.57	0.46	0.51	0.58	0.63	0.69	0.72	0.75
Butter	0.27	0.20	0.22	0.24	0.25	0.21	0.25	0.26	0.23	0.24	0.23
Cheese	0.14	0.16	0.24	0.33	0.29	0.32	0.33	0.34	0.36	0.38	0.39
Eggs (in the shell)	0.20	0.17	0.27	0.31	0.31	0.34	0.32	0.30	0.28	0.24	0.18
Wine	0.50	0.46	0.73	0.91	1.13	0.72	0.84	0.96	0.90	1.14	1.25
Wool (actual weight)	0.11	0.05	0.08	0.11	0.08	0.11	0.11	0.12	0.12	0.13	0.10
EASTERN EUROPE AND U.S.S.R.											
Wheat and wheat flour (wheat equivalent)	...	...	[7] 3.34	5.36	4.11	6.34	5.86	5.29	5.19	4.58	...
Barley	...	...	[7] 1.0	0.56	0.38	0.19	0.43	1.18	0.61	0.73	...
Maize	...	...	[7] 0.70	0.94	0.73	0.27	0.59	1.19	1.94	1.48	...
Rye [6]	...	...	[7] 0.55	0.82	0.46	0.55	0.68	1.09	1.30	0.82	...
Sugar (raw equivalent) [1]	...	...	[7] 0.77	2.03	1.10	1.36	1.33	3.21	3.17	2.12	...
Potatoes	...	...	[7] 0.10	0.33	0.17	0.31	0.25	0.40	0.51	0.44	...
Sunflowerseed [6]	...	...	[7] 0.05	0.07	0.05	0.06	0.07	0.08	0.11	0.10	...
Oilseed cake and meal	...	...	[7] 0.19	0.46	0.38	0.59	0.53	0.42	0.37	0.25	...
Meat (fresh, chilled and frozen) [5]	...	...	[7] 0.07	0.15	0.07	0.21	0.10	0.15	0.22	0.22	...
Butter	...	...	[7] 0.03	0.09	0.06	0.11	0.08	0.09	0.11	0.09	...
Eggs	...	...	[7] 0.05	0.09	0.06	0.07	0.10	0.13	0.11	0.08	...
Cotton	...	...	[7] 0.23	0.36	0.32	0.35	0.39	0.39	0.35	0.33	...
Flax	...	...	[7] 0.03	0.07	0.05	0.09	0.07	0.07	0.06	0.03	...
NORTH AMERICA											
Wheat and wheat flour (wheat equivalent)	6.08	18.39	17.18	23.38	19.18	19.64	23.29	29.84	24.98	31.11	37.45
Barley	0.50	1.44	2.80	3.21	4.25	3.83	3.01	2.40	2.58	1.62	2.48
Maize	0.80	2.31	3.13	6.79	4.57	5.59	5.61	7.35	10.81	11.12	12.14
Millet and sorghums	0.01	1.14	0.86	2.27	1.88	2.59	2.46	1.64	2.79	2.94	2.55
Rice (milled equivalent) [8]	0.07	0.54	0.67	0.79	0.57	0.68	0.87	0.80	1.05	1.20	1.33
Citrus fruit [2]	0.17	0.24	0.40	0.29	0.27	0.33	0.29	0.30	0.27	0.26	0.30
Soybeans and soybean oil (oil equivalent)	0.01	0.22	0.43	1.01	0.79	0.96	1.14	0.88	1.29	1.29	1.47
Linseed and linseed oil (oil equivalent)	—	0.08	0.23	0.17	0.17	0.19	0.19	0.18	0.14	0.14	0.21
Oilseed cake and meal	0.29	0.20	0.56	0.87	0.44	0.93	0.83	0.79	1.37	1.69	1.95
Milk (condensed, evaporated and powdered)	0.03	0.25	0.21	0.23	0.22	0.25	0.21	0.23	0.23	0.35	0.47
Tobacco (unmanufactured)	0.20	0.22	0.24	0.24	0.23	0.23	0.24	0.24	0.23	0.25	0.26
Cotton (lint)	1.29	1.04	0.95	1.19	1.04	0.83	1.73	1.45	0.87	0.99	1.19
OCEANIA											
Wheat and wheat flour (wheat equivalent)	2.80	3.09	2.68	3.78	1.42	2.68	3.60	6.41	4.79	6.69	6.82
Barley	0.07	0.26	0.57	0.59	0.32	0.88	0.38	0.95	0.40	0.28	0.39
Oats	0.01	0.19	0.15	0.28	0.07	0.38	0.22	0.47	0.27	0.31	0.37
Sugar (raw equivalent) [1]	0.56	0.47	0.87	1.03	0.89	0.84	1.04	0.99	1.38	1.44	1.47

ANNEX TABLE 10B. - VOLUME OF REGIONAL EXPORTS OF MAJOR AGRICULTURAL COMMODITIES (*continued*)

	Prewar Average	Average 1948-52	Average 1953-57	Average 1958-62	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
	Million metric tons										
Copra and coconut oil (oil equivalent)	0.13	0.13	0.16	0.17	0.16	0.17	0.18	0.18	0.18	0.18	0.19
Beef and veal	0.15	0.13	0.23	0.30	0.28	0.32	0.25	0.26	0.37	0.40	0.43
Mutton and lamb	0.27	0.30	0.26	0.39	0.34	0.39	0.42	0.41	0.41	0.43	0.48
Butter	0.24	0.21	0.22	0.25	0.24	0.28	0.22	0.25	0.24	0.27	0.28
Cheese	0.10	0.12	0.11	0.11	0.10	0.10	0.10	0.11	0.12	0.12	0.12
Wool (actual weight)	0.49	0.66	0.70	0.85	0.73	0.87	0.85	0.89	0.92	0.92	0.90
LATIN AMERICA											
Wheat and wheat flour (wheat equivalent)	3.44	2.00	3.22	2.28	2.45	2.48	2.49	1.10	2.87	1.97	3.72
Maize	6.61	1.20	1.18	2.48	1.74	2.74	3.11	1.79	3.01	3.18	3.50
Millet and sorghums	0.04	0.08	0.09	0.38	0.34	0.33	0.20	0.39	0.67	0.63	0.65
Rice (milled equivalent) [8]	0.10	0.25	0.17	0.22	0.17	0.12	0.13	0.35	0.31	0.20	0.20
Sugar (raw equivalent) [1, 9]	4.05	7.06	7.86	9.37	8.84	8.17	10.01	10.91	8.91	7.63	7.53
Bananas	2.04	1.92	2.37	2.96	2.79	2.94	3.11	3.10	2.87	3.16	3.30
Linseed and linseed oil (oil equivalent)	0.55	0.19	0.18	0.24	0.18	0.24	0.21	0.27	0.29	0.25	0.26
Oilseed cakes and meal	0.42	0.94	0.76	1.13	1.35	0.97	0.94	1.09	1.30	1.20	1.15
Cattle [4]	0.42	0.30	0.36	0.79	0.71	0.61	0.66	0.84	1.12	0.94	0.96
Beef and veal	0.51	0.27	0.27	0.42	0.46	0.42	0.37	0.37	0.49	0.65	0.70
Coffee (green)	1.40	1.61	1.58	1.80	1.56	1.87	1.85	1.83	1.89	2.00	2.20
Cocoa beans	0.21	0.18	0.21	0.19	0.19	0.17	0.23	0.19	0.15	0.17	0.18
Tobacco (unmanufactured)	0.06	0.07	0.07	0.10	0.08	0.08	0.09	0.11	0.12	0.14	0.14
Wool (actual weight)	0.19	0.18	0.18	0.20	0.18	0.20	0.19	0.23	0.22	0.19	0.19
Cotton (lint)	0.34	0.39	0.65	0.74	0.59	0.73	0.61	0.76	1.01	0.83	0.83
FAR EAST, excluding China (Mainland)											
Maize	0.63	0.07	0.19	0.57	0.32	0.45	0.72	0.72	0.64	0.89	0.90
Rice (milled equivalent) [8]	8.96	3.05	3.38	3.62	3.32	3.55	3.83	3.86	3.55	3.90	3.70
Sugar (raw equivalent) [1]	3.31	1.01	1.92	2.09	1.98	1.81	2.19	2.19	2.28	2.57	2.35
Vegetable oils and oilseeds (oil equivalent) [3, 10]	1.52	1.23	1.36	1.27	1.22	1.12	1.30	1.41	1.32	1.47	1.46
Oilseed cakes and meal	0.88	0.19	0.44	0.97	0.60	1.00	0.90	1.01	1.32	1.57	1.50
Coffee (green)	0.10	0.02	0.07	0.11	0.08	0.08	0.09	0.16	0.13	0.17	0.17
Tea	0.36	0.39	0.45	0.46	0.49	0.45	0.45	0.46	0.48	0.48	0.45
Cotton (lint)	0.65	0.27	0.25	0.14	0.18	0.13	0.14	0.11	0.15	0.21	0.18
Jute	0.79	0.84	0.91	0.79	0.94	0.89	0.77	0.61	0.75	0.76	0.78
Rubber (natural) [11]	0.95	1.61	1.78	2.00	1.83	2.12	1.85	2.06	2.14	1.96	2.21
NEAR EAST											
Wheat and wheat flour (wheat equivalent)	0.24	0.27	0.66	0.23	0.27	0.45	0.08	0.06	0.30	0.26	0.24
Barley	0.38	0.46	0.73	0.35	0.58	0.26	0.02	0.16	0.76	0.56	0.57
Rice (milled equivalent) [8]	0.15	0.27	0.21	0.22	0.41	0.05	0.31	0.20	0.14	0.38	0.39
Potatoes	0.02	0.06	0.10	0.19	0.11	0.19	0.24	0.15	0.26	0.20	0.20
Citrus fruit [2]	0.30	0.20	0.28	0.45	0.39	0.46	0.51	0.40	0.49	0.60	0.61
Oilseed cake and meal	0.26	0.12	0.24	0.33	0.31	0.31	0.28	0.35	0.42	0.49	0.47
Cotton (lint)	0.47	0.47	0.56	0.67	0.54	0.76	0.72	0.66	0.68	0.83	0.83
AFRICA											
Wheat and wheat flour (wheat equivalent) [12]	0.08	0.10	0.12	0.08	0.12	0.09	0.09	0.05	0.05	0.04	0.04
Barley	0.21	0.55	0.44	0.15	0.25	0.25	0.16	0.04	0.04	0.24	0.30
Maize	0.66	0.36	0.95	1.49	1.56	0.83	0.87	1.54	2.68	2.75	2.50
Sugar (raw equivalent) [1]	0.68	0.71	1.02	1.18	1.18	1.12	0.99	1.20	1.43	1.65	1.67
Bananas	0.14	0.22	0.36	0.39	0.39	0.37	0.38	0.43	0.36	0.45	0.45
Citrus fruit [2]	0.15	0.40	0.61	0.82	0.71	0.75	0.88	0.83	0.91	0.91	0.96

ANNEX TABLE 10B. - VOLUME OF REGIONAL EXPORTS OF MAJOR AGRICULTURAL COMMODITIES (*concluded*)

AFRICA (*concluded*)	Prewar Average	Average 1948-52	Average 1953-57	Average 1958-62	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
	Million metric tons										
Groundnuts and groundnut oil (oil equivalent)	0.24	0.25	0.40	0.51	0.52	0.50	0.44	0.54	0.55	0.57	0.59
Palm kernels and palm kernel oil (oil equivalent)	0.30	0.34	0.36	0.36	0.39	0.38	0.36	0.35	0.33	0.32	0.34
Palm oil	0.24	0.33	0.37	0.36	0.37	0.40	0.39	0.36	0.30	0.30	0.30
Oilseed cake and meal	0.02	0.19	0.37	0.56	0.50	0.55	0.57	0.62	0.58	0.53	0.60
Cattle [4]	0.18	0.23	0.24	0.23	0.21	0.18	0.25	0.25	0.27	0.28	0.28
Coffee (green)	0.13	0.28	0.43	0.64	0.54	0.59	0.66	0.67	0.74	0.79	0.80
Cocoa beans	0.46	0.48	0.51	0.66	0.44	0.56	0.66	0.81	0.85	0.82	0.83
Wine	1.40	1.13	1.63	1.66	1.52	1.63	1.76	1.62	1.76	1.05	1.05
Tobacco (unmanufactured)	0.03	0.06	0.08	0.10	0.08	0.09	0.11	0.11	0.12	0.12	0.15
Cotton (lint)	0.13	0.19	0.24	0.26	0.27	0.29	0.27	0.27	0.20	0.27	0.27
Sisal	0.16	0.22	0.29	0.37	0.34	0.36	0.37	0.36	0.40	0.40	0.39
Rubber (natural)	0.01	0.06	0.10	0.14	0.13	0.14	0.15	0.14	0.15	0.14	0.15

[1] Including refined sugar converted at 108.7 percent. - [2] Oranges, mandarines and lemons. - [3] Groundnuts, copra, palm kernels, soybeans, olive oil, groundnut oil, coconut palm oil, palm kernel oil, soybean oil. - [4] Million heads. - [5] Beef and veal, mutton and lamb, pork. [6] U.S.S.R. only. - [7] Average 1955-57. - [8] Including paddy converted at 65 percent. - [9] Excluding trade between the United States and its territories. - [10] Excluding re-export of copra from Malaysia, but including unrecorded shipments of copra from Indonesia and the Philippines to Malaysia. - [11] Excluding imports into Malaysia for re-export and exports from Hong Kong, but including unrecorded shipments from Indonesia to Malaysia. - [12] Including coarse ground flour.

ANNEX TABLE 10C. - VOLUME OF REGIONAL IMPORTS OF MAJOR AGRICULTURAL COMMODITIES

	Prewar average	Average 1948-52	Average 1953-57	Average 1958-62	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
	Million metric tons										
WESTERN EUROPE											
Wheat and wheat flour (wheat equivalent)	11.98	14.46	13.87	12.97	12.34	12.87	11.16	15.13	13.32	12.04	11.47
Barley	2.41	2.53	4.19	4.52	4.69	4.77	4.27	4.19	4.72	3.63	4.42
Maize	8.46	4.03	4.57	9.05	6.32	7.65	8.93	9.43	12.91	13.87	13.43
Oats	0.73	0.78	0.87	1.22	1.32	1.41	1.24	0.84	1.31	1.05	0.94
Rye	0.81	0.90	0.83	0.74	0.56	0.59	0.76	0.75	1.02	0.74	...
Millet and sorghums	0.20	0.82	0.93	2.35	1.88	2.72	2.51	1.77	2.88	2.04	1.98
Rice (milled equivalent) [1]	1.17	0.33	0.46	0.57	0.51	0.61	0.64	0.54	0.58	0.57	0.57
Sugar (raw equivalent) [2]	3.47	4.26	4.58	4.48	4.87	4.61	4.62	4.10	4.22	5.32	4.88
Potatoes	0.75	1.09	1.23	1.71	1.81	1.86	1.40	1.48	1.97	1.72	1.48
Apples	0.60	0.39	0.65	0.99	0.68	0.99	0.95	1.11	1.23	0.95	1.13
Bananas	0.74	0.62	1.19	1.75	1.59	1.63	1.74	1.86	1.93	1.92	1.97
Citrus fruit [3]	1.48	1.49	2.14	2.67	2.35	2.54	2.76	2.71	2.98	2.71	3.26
Vegetable oils and oil seeds (oil equivalent) [4]	2.57	2.22	2.77	3.05	2.90	2.96	3.22	3.09	3.08	3.11	3.14
Oilseed cake and meal	2.36	1.65	2.76	4.57	3.68	4.42	4.44	4.60	5.69	5.90	6.09
Cattle [5]	1.11	0.77	1.18	1.51	1.41	1.32	1.49	1.83	1.49	2.02	1.93
Meat (fresh, chilled and frozen) [6]	1.12	0.81	0.97	1.12	1.11	1.07	1.18	1.04	1.18	1.50	1.60
Butter	0.57	0.39	0.39	0.47	0.46	0.47	0.48	0.47	0.49	0.51	0.56
Cheese	0.23	0.27	0.29	0.35	0.33	0.34	0.34	0.36	0.39	0.42	0.42
Coffee (green)	0.67	0.48	0.67	0.92	0.79	0.87	0.93	0.99	1.04	1.12	1.08
Cocoa beans	0.35	0.33	0.40	0.46	0.38	0.42	0.46	0.52	0.53	0.53	0.91
Tea	0.23	0.22	0.26	0.27	0.29	0.25	0.26	0.28	0.28	0.29	0.27
Wine	1.68	1.39	2.13	2.46	2.67	2.23	2.51	2.34	2.54	1.94	2.00
Tobacco (unmanufactured)	0.37	0.33	0.39	0.45	0.41	0.39	0.46	0.48	0.51	0.52	0.53
Wool (actual weight)	0.74	0.66	0.79	0.82	0.74	0.86	0.80	0.84	0.86	0.85	0.79
Cotton (lint)	1.67	1.40	1.52	1.51	1.42	1.43	1.69	1.57	1.45	1.46	1.52
Sisal	0.17	0.16	0.24	0.33	0.31	0.32	0.34	0.33	0.36	0.37	0.35
Rubber (natural)	0.30	0.52	0.66	0.61	0.59	0.60	0.61	0.61	0.62	0.64	0.65
EASTERN EUROPE AND U.S.S.R.											
Wheat and wheat flour (wheat equivalent)	...	...	[7] 3.81	4.57	3.66	4.59	5.10	5.34	4.18	8.18	...
Barley	...	...	[7] 0.89	0.58	0.61	0.48	0.43	0.69	0.67	0.89	...
Maize	...	...	[7] 0.47	0.73	0.69	0.39	0.63	0.59	1.34	0.94	...
Rye	...	...	[7] 0.68	0.61	0.49	0.40	0.54	0.76	0.87	0.78	...
Rice (milled equivalent) [1]	...	...	[7] 0.45	0.47	0.50	0.72	0.61	0.16	0.86	0.32	...
Sugar (raw equivalent) [2]	...	...	[7] 0.80	2.12	0.49	0.46	2.03	4.22	3.42	1.90	...
Citrus fruit [3]	...	...	[7] 0.17	0.11	0.10	0.11	0.11	0.12	0.12	0.10	...
Vegetable oils and oilseeds (oil equivalent) [4]	...	...	[7] 0.27	0.22	0.23	0.28	0.22	0.19	0.17	0.16	...
Meat (fresh, chilled and frozen) [6]	...	...	[7] 0.22	0.21	0.20	0.25	0.21	0.16	0.25	0.21	...
Coffee (green)	...	...	[7] 0.02	0.06	0.03	0.06	0.06	0.08	0.07	0.09	...
Cocoa beans	...	...	[7] 0.05	0.07	0.04	0.07	0.09	0.06	0.09	0.10	...
Wine	...	...	[7] 0.09	0.16	0.13	0.12	0.18	0.19	0.18	0.26	...
Tobacco (unmanufactured)	...	...	[7] 0.13	0.14	0.14	0.16	0.13	0.12	0.13	0.16	...
Cotton (lint)	...	...	[7] 0.42	0.63	0.54	0.62	0.67	0.66	0.66	0.71	...
Rubber (natural)	...	...	[7] 0.17	0.36	0.34	0.30	0.29	0.45	0.43	0.39	...
NORTH AMERICA											
Maize	1.14	0.22	0.19	0.53	0.38	0.33	0.41	0.61	0.92	0.61	0.55
Sugar (raw equivalent) [2, 8]	3.22	3.89	4.24	4.87	5.01	4.86	4.93	4.55	4.98	4.84	4.06
Bananas	1.35	1.48	1.65	1.87	1.76	1.91	2.02	1.94	1.72	1.73	1.71
Citrus fruit [3]	0.11	0.19	0.22	0.21	0.20	0.24	0.22	0.20	0.20	0.22	0.25
Vegetable oils and oilseeds (oil equivalent) [4]	0.78	0.45	0.44	0.51	0.47	0.49	0.50	0.51	0.55	0.51	0.55
Cattle [5]	0.36	0.35	0.30	0.97	1.16	0.74	0.67	1.05	1.25	0.86	0.58
Meat (fresh, chilled and frozen) [6]	0.01	0.04	0.05	0.32	0.21	0.31	0.25	0.34	0.48	0.57	0.40
Coffee (green)	0.81	1.27	1.25	1.41	1.26	1.45	1.38	1.41	1.54	1.51	1.44
Cocoa beans	0.26	0.29	0.25	0.28	0.21	0.23	0.27	0.37	0.31	0.30	0.29
Wool (actual weight)	0.10	0.29	0.17	0.16	0.12	0.19	0.15	0.16	0.17	0.17	0.11
Rubber (natural)	0.52	0.81	0.66	0.50	0.52	0.63	0.45	0.43	0.47	0.42	0.50

ANNEX TABLE 10C. - VOLUME OF REGIONAL IMPORTS OF MAJOR AGRICULTURAL COMMODITIES *(concluded)*

	Prewar average	Average 1948-52	Average 1953-57	Average 1958-62	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
OCEANIA	*Million metric tons*										
Wheat and wheat flour (wheat equivalent)	0.06	0.21	0.29	0.26	0.32	0.27	0.22	0.22	0.27	0.27	0.27
Sugar (raw equivalent) [2]	0.09	0.11	0.11	0.13	0.13	0.11	0.13	0.16	0.14	0.15	0.15
Rubber (natural)	0.01	0.04	0.05	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.05
LATIN AMERICA											
Wheat and wheat flour (wheat equivalent)	1.67	2.80	3.42	4.11	3.40	3.95	4.20	4.19	4.82	5.49	5.61
Maize	0.02	0.06	0.35	0.39	0.96	0.16	0.21	0.22	0.38	0.62	0.63
Rice (milled equivalent) [1]	0.39	0.36	0.28	0.34	0.40	0.35	0.27	0.36	0.31	0.29	0.30
Sugar (raw equivalent) [2]	0.25	0.36	0.41	0.35	0.37	0.39	0.24	0.51	0.23	0.33	0.37
Bananas	0.18	0.18	0.19	0.26	0.27	0.25	0.27	0.27	0.24	0.28	0.28
Cattle [5]	0.22	0.28	0.20	0.29	0.24	0.21	0.30	0.35	0.37	0.37	0.38
Milk (condensed, evaporated and powdered)	0.03	0.10	0.12	0.17	0.15	0.17	0.15	0.18	0.18	0.19	0.19
Rubber (natural)	0.01	0.04	0.08	0.09	0.10	0.08	0.09	0.09	0.07	0.08	0.09
FAR EAST excluding China (Mainland)											
Wheat and wheat flour (wheat equivalent)	1.01	4.89	5.66	8.84	7.87	8.40	10.26	9.17	8.52	11.49	10.80
Barley	0.05	0.69	0.97	0.37	1.07	0.50	0.02	0.18	0.10	0.22	0.19
Maize	0.21	0.20	0.42	1.72	0.82	1.15	1.65	2.20	2.78	3.09	3.00
Millet and sorghums	0.30	0.61	0.08	0.16	0.09	0.07	0.06	0.17	0.43	0.79	0.79
Rice (milled equivalent) [1]	6.16	3.11	3.58	3.55	3.85	3.17	3.88	3.39	3.47	3.83	4.00
Sugar (raw equivalent) [2]	1.72	1.17	2.13	2.16	2.08	1.91	2.08	2.28	2.44	2.31	2.34
Vegetable oils and oilseeds (oil equivalent) [4, 9]	0.30	0.22	0.44	0.59	0.50	0.54	0.60	0.61	0.67	0.75	0.72
Milk (condensed, evaporated and powdered)	0.11	0.23	0.30	0.37	0.36	0.36	0.38	0.42	0.45	0.46	0.44
Wool (actual weight)	0.10	0.04	0.10	0.20	0.13	0.18	0.20	0.26	0.22	0.25	0.24
Cotton (lint)	0.89	0.52	0.77	1.02	0.75	0.90	1.15	1.26	1.04	1.14	1.14
Jute	0.04	0.27	0.24	0.16	0.14	0.12	0.21	0.16	0.18	0.15	0.14
Rubber (natural) [9]	0.07	0.08	0.13	0.23	0.18	0.22	0.24	0.26	0.28	0.27	0.28
NEAR EAST											
Wheat and wheat flour (wheat equivalent)	0.28	1.42	1.67	3.44	2.29	2.90	3.99	4.24	3.77	4.46	4.53
Maize	0.01	0.16	0.07	0.27	0.12	0.23	0.21	0.31	0.51	0.49	0.53
Rice (milled equivalent) [1]	0.10	0.09	0.18	0.33	0.19	0.40	0.36	0.38	0.30	0.34	0.35
Sugar (raw equivalent) [2]	0.35	0.55	0.84	1.23	1.05	1.13	1.17	1.51	1.30	0.98	1.01
Vegetable oils and oilseeds (oil equivalent) [4]	0.04	0.04	0.04	0.12	0.09	0.11	0.12	0.10	0.19	0.22	0.22
AFRICA											
Wheat and wheat flour (wheat equivalent)	0.28	0.75	0.87	1.63	0.79	1.66	1.74	2.09	1.89	1.68	1.68
Barley	0.06	0.02	0.03	0.14	0.01	0.01	0.01	0.38	0.26	0.12	0.15
Rice (milled equivalent) [1]	0.39	0.18	0.33	0.49	0.38	0.53	0.51	0.49	0.55	0.45	0.50
Sugar (raw equivalent) [2]	0.41	0.55	0.90	1.10	1.01	1.08	1.12	1.15	1.16	0.98	1.04
Potatoes	0.11	0.14	0.23	0.31	0.29	0.26	0.32	0.38	0.29	0.33	0.30
Cattle [5]	0.12	0.21	0.22	0.25	0.22	0.23	0.26	0.29	0.24	0.25	0.24
Wine	0.06	0.15	0.28	0.24	0.20	0.22	0.26	0.30	0.24	0.25	0.25

[1] Including paddy converted at 65 percent. - [2] Including refined sugar converted at 108.7 percent. - [3] Oranges, mandarines and lemons. - [4] Groundnuts, copra, palm kernels, soybeans, olive oil, groundnut oil, coconut oil, palm oil, palm kernel oil, soybean oil. - [5] Million head. - [6] Beef and veal, mutton and lamb, pork. - [7] Average 1955-57. - [8] Excluding trade between the United States and its territories. - [9] Excluding imports into Malaysia for re-export.

ANNEX TABLE 11. - VOLUME OF WORLD [1] EXPORTS OF FISHERY PRODUCTS

	1938	Average 1948-52	Average 1953-57	Average 1958-62	1958	1959	1960	1961	1962	1963
	Million metric tons									
Fresh, chilled or frozen fish	0.42	0.63	0.77	1.12	0.96	1.06	1.13	1.13	1.30	1.40
Dried, salted or smoked fish	0.68	0.59	0.67	0.57	0.61	0.57	0.55	0.55	0.55	0.54
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	0.08	0.12	0.16	0.21	0.18	0.21	0.21	0.23	0.24	0.24
Fish products and preparations, whether or not in airtight containers	0.28	0.27	0.37	0.51	0.47	0.51	0.51	0.52	0.54	0.50
Crustacean and mollusk products and preparations whether or not in airtight containers	0.02	0.02	0.03	0.05	0.04	0.05	0.05	0.05	0.05	0.05
Oils and fats, crude or refined, of aquatic animal origin	0.18	0.21	0.35	0.58	0.48	0.54	0.59	0.62	0.67	0.74
Meals, solubles and similar animal feedstuffs of aquatic animal origin	0.17	0.21	0.47	0.55	0.66	0.80	1.02	1.35	1.71	1.77

[1] Excluding China (Mainland).

ANNEX TABLE 12. - VOLUME OF WORLD [1] AND REGIONAL TRADE IN FOREST PRODUCTS

Exports	Unit	Average 1948-52	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
		Million units											
WORLD [1]													
Pulpwood	m³	9.3	8.8	10.9	10.6	10.3	8.4	9.0	10.9	13.1	12.4	11.7	13.4
Coniferous logs [2]	"	2.1	1.6	1.7	1.6	2.0	2.6	3.2	4.1	6.0	6.4	8.7	9.3
Broadleaved logs [2]	"	3.1	6.0	7.0	7.7	8.4	9.4	11.7	13.2	13.9	14.2	17.4	18.9
Sawn softwood	"	23.4	29.1	32.0	28.2	30.3	29.7	32.3	36.3	36.4	38.2	41.4	44.4
Sawn hardwood	"	2.5	3.0	3.7	3.6	3.5	3.6	3.9	4.5	4.2	4.3	4.4	4.9
Plywood and veneers	"	0.5	1.0	1.2	1.2	1.3	1.5	2.0	1.8	1.9	2.2	2.4	2.9
Fibreboard	M.T.	0.3	0.4	0.6	0.6	0.6	0.7	0.8	0.8	0.9	0.9	1.0	1.2
Mechanical woodpulp	"	1.0	1.2	1.2	1.3	1.3	1.1	1.2	1.3	1.3	1.2	1.3	1.4
Chemical woodpulp	"	4.4	5.7	6.4	6.5	6.6	6.6	7.4	8.4	8.5	9.0	10.0	10.9
Newsprint	"	5.4	6.2	6.6	7.0	6.9	6.8	7.0	7.5	7.7	7.6	7.8	8.6
Other paper and paperboard	"	2.0	2.8	3.1	3.2	3.5	3.4	3.9	4.5	5.0	5.2	5.9	6.8
EUROPE													
Pulpwood	m³	3.53	4.11	5.74	5.21	5.13	4.13	4.70	5.99	7.04	5.56	5.10	5.63
Coniferous logs [2]	"	1.71	0.88	0.84	0.61	0.69	0.92	0.97	1.29	1.46	1.31	1.30	1.27
Broadleaved logs [2]	"	0.42	0.56	0.77	0.68	0.68	0.59	0.80	1.04	0.98	0.93	0.92	0.98
Pitprops	"	3.00	2.44	3.01	3.03	3.13	2.62	2.10	1.85	2.06	1.53	1.25	0.97
Sawn softwood	"	12.64	14.88	15.25	13.93	14.65	13.52	15.10	17.24	16.28	16.33	16.83	17.84
Sawn hardwood	"	0.83	1.02	1.30	1.07	1.19	1.11	1.25	1.65	1.58	1.63	1.69	1.83
Plywood and veneers	"	0.30	0.54	0.60	0.49	0.56	0.51	0.64	0.76	0.73	0.76	0.85	0.97
Fibreboard	M.T.	...	0.37	0.46	0.48	0.54	0.57	0.67	0.75	0.77	0.81	0.88	0.95
Particle board	"	...	...	...	...	...	0.60	0.11	0.15	0.19	0.24	0.28	0.35
Mechanical woodpulp	"	0.72	0.94	0.99	1.06	1.02	0.88	0.92	1.10	1.06	0.97	1.05	1.15
Chemical woodpulp	"	2.79	3.44	3.71	3.90	3.89	3.95	4.42	4.80	4.55	4.88	5.44	5.94
Newsprint	"	0.87	1.02	1.12	1.30	1.20	1.34	1.36	1.16	1.66	1.67	1.67	1.93
Other paper and paperboard	"	1.49	2.27	2.41	2.44	2.67	2.59	2.94	3.36	3.68	3.87	4.35	4.91
U.S.S.R.													
Pulpwood	m³	0.06	—	0.55	0.53	0.59	0.82	1.18	1.60	2.33	3.26	3.50	4.30
Coniferous logs [2]	"	0.09	0.06	0.12	0.24	0.65	0.99	1.14	1.50	1.83	2.45	2.63	2.68
Pitprops	"	0.29	0.78	0.84	0.64	0.82	0.99	0.89	1.11	1.00	1.20	1.40	1.64
Sawn softwood	"	0.82	1.74	2.33	2.21	3.46	3.63	4.38	4.99	5.20	6.00	6.53	7.68
Plywood	"	0.05	0.06	0.09	0.05	0.10	0.11	0.12	0.13	0.13	0.14	0.15	0.17
Chemical woodpulp	M.T.	0.06	0.10	0.14	0.15	0.15	0.22	0.20	0.24	0.27	0.27	0.25	0.25
NORTH AMERICA													
Pulpwood	m³	5.68	4.64	4.58	4.88	4.52	3.29	2.90	3.12	3.17	3.20	2.88	3.14
Coniferous logs [2]	"	0.33	0.60	0.71	0.72	0.54	0.60	0.79	1.00	2.28	2.24	4.32	4.85
Broadleaved logs [2]	"	0.23	0.25	0.22	0.26	0.24	0.27	0.24	0.34	0.31	0.40	0.41	0.38
Sawn softwood	"	8.41	11.14	12.60	10.80	10.22	10.76	11.38	12.55	13.28	14.50	16.68	17.36
Sawn hardwood	"	0.60	0.46	0.63	0.61	0.57	0.53	0.64	0.62	0.55	0.60	0.59	0.69
Plywood and veneers	"	0.05	0.13	0.17	0.16	0.13	0.13	0.22	0.19	0.21	0.29	0.31	0.45
Mechanical woodpulp	M.T.	0.25	0.22	0.24	0.26	0.23	0.21	0.22	0.22	0.22	0.24	0.23	0.26
Chemical woodpulp	"	1.58	2.60	2.48	2.37	2.41	2.27	2.59	3.18	3.45	3.60	4.09	4.40
Newsprint	"	4.50	5.14	5.42	5.55	5.51	5.27	5.47	5.74	5.84	5.68	5.74	6.29
Other paper and paperboard	"	0.44	0.49	0.58	0.59	0.68	0.70	0.78	0.89	0.99	1.05	1.22	1.56
OCEANIA													
Coniferous logs	m³	—	—	—	—	—	0.04	0.15	0.13	0.27	0.30	0.35	0.40
LATIN AMERICA													
Pulpwood	m³	—	—	—	—	0.05	0.18	0.24	0.18	0.24	0.34	0.24	0.30
Broadleaved logs [2]	"	0.40	0.34	0.40	0.46	0.35	0.38	0.26	0.34	0.35	0.31	0.29	0.30
Sawn softwood	"	1.25	1.19	1.60	1.03	1.74	1.46	1.19	1.25	1.37	1.10	1.07	1.10

ANNEX TABLE 12. - VOLUME OF WORLD [1] AND REGIONAL TRADE IN FOREST PRODUCTS (*continued*)

	Units	Average 1948-52	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
		Million units											
FAR EAST [1]													
Broadleaved logs [2]	m³	0.76	2.60	2.92	3.54	3.97	4.64	6.43	6.80	7.72	8.28	10.77	11.80
Sawn hardwood	"	0.56	0.89	1.09	1.08	1.06	1.10	1.18	1.44	1.24	1.20	1.29	1.44
Plywood	"	0.02	0.17	0.25	0.30	0.36	0.49	0.71	0.50	0.58	0.65	0.73	0.91
All other paper and paperboard	M.T.	...	0.09	0.12	0.16	0.13	0.12	0.15	0.20	0.28	0.24	0.25	0.29
AFRICA													
Broadleaved logs [2]	m³	1.19	2.06	2.54	2.64	3.00	3.38	3.92	4.60	4.44	4.13	4.80	5.30
Sawn hardwood	"	0.17	0.32	0.36	0.39	0.46	0.56	0.56	0.60	0.60	0.61	0.60	0.64
Imports													
EUROPE													
Pulpwood	m³	3.73	4.35	6.55	6.29	5.80	5.13	5.61	7.50	9.62	8.82	8.07	9.98
Coniferous logs [2]	"	3.56	1.14	1.36	1.23	1.39	1.71	1.78	2.39	2.62	2.69	2.79	2.69
Broadleaved logs [2]	"	1.54	2.43	3.27	3.26	3.62	3.91	4.66	5.93	5.95	5.70	6.26	7.03
Pitprops	"	3.89	3.06	3.88	3.58	3.66	3.23	2.55	2.47	2.39	2.15	1.83	1.88
Sawn softwood	"	11.21	15.93	17.43	15.26	17.56	16.48	18.36	21.79	21.45	22.37	23.88	26.66
Sawn hardwood	"	1.25	1.40	1.74	1.57	1.71	1.69	1.78	2.17	2.12	2.04	2.31	2.60
Plywood and veneers	"	0.34	0.57	0.69	0.54	0.68	0.68	0.79	1.01	0.97	1.04	1.16	1.39
Fibreboard and veneers	"	0.04	0.26	0.34	0.35	0.42	0.42	0.50	0.57	0.58	0.63	0.70	0.79
Mechanical woodpulp	"	0.72	0.91	1.05	1.08	1.04	0.94	0.98	1.14	1.08	1.00	1.06	1.21
Chemical woodpulp	"	2.22	3.27	3.69	3.71	3.91	3.91	4.26	5.18	5.16	5.25	6.12	6.61
Newsprint	"	0.40	0.75	0.92	1.02	1.14	1.18	1.14	1.37	1.48	1.55	1.61	1.76
Other paper and paperboard	"	0.84	1.35	1.62	1.57	1.85	1.92	2.20	2.72	3.12	3.39	3.87	4.49
U.S.S.R.													
Sawn softwood	m³	0.96	0.78	0.61	0.49	0.42	0.34	0.27	0.21	0.20	0.16	0.11	0.10
Sawn hardwood	"	0.02	0.13	0.08	0.14	0.16	0.18	0.22	0.24	0.27	0.27	0.24	0.24
NORTH AMERICA													
Pulpwood	m³	4.94	4.36	4.08	4.42	4.19	3.31	3.05	3.42	3.43	3.39	3.08	1.81
Coniferous logs [2]	"	0.90	0.99	0.91	0.90	0.74	0.64	0.75	0.90	0.97	1.21	1.23	1.46
Broadleaved logs [2]	"	0.42	0.42	0.54	0.55	0.41	0.33	0.33	0.36	0.22	0.28	0.24	0.26
Sawn softwood	"	5.24	7.01	8.20	7.84	6.78	7.87	9.31	8.97	9.86	11.15	12.11	11.72
Sawn hardwood	"	0.64	0.67	0.87	0.92	0.81	0.83	1.09	0.94	0.82	0.97	0.97	1.02
Plywood	"	0.11	0.32	0.44	0.47	0.47	0.55	0.90	0.66	0.73	0.96	1.07	1.31
Mechanical woodpulp	M.T.	0.25	0.22	0.23	0.25	0.21	0.18	0.21	0.24	0.28	0.30	0.31	0.32
Chemical woodpulp	"	1.71	1.68	1.83	1.93	1.76	1.78	2.06	1.98	2.01	2.34	2.28	2.42
Newsprint	"	4.33	4.53	4.68	5.05	4.74	4.43	4.77	4.91	4.96	4.97	4.91	5.40
Other paper and paperboard	"	0.15	0.23	0.34	0.33	0.30	0.32	0.39	0.31	0.29	0.30	0.28	0.31
OCEANIA													
Sawn softwood	m³	0.66	0.65	0.84	0.66	0.56	0.65	0.55	0.83	0.73	0.60	0.58	0.60
Newsprint	M.T.	0.16	0.19	0.26	0.22	0.21	0.21	0.22	0.25	0.30	0.20	0.22	0.24
Other paper and paperboard	"	0.16	0.12	0.18	0.13	0.11	0.12	0.12	0.13	0.20	0.15	0.17	0.19
LATIN AMERICA													
Broadleaved logs [2]	m³	0.31	0.28	0.31	0.34	0.32	0.27	0.19	0.24	0.21	0.20	0.19	0.20
Sawn softwood	"	1.09	1.03	1.67	1.38	1.83	1.48	0.90	0.99	1.26	1.09	0.98	1.02
Chemical woodpulp	M.T.	0.27	0.50	0.48	0.44	0.42	0.35	0.35	0 30	0.36	0.38	0.41	0.44
Newsprint	"	0.36	0.36	0.42	0.47	0.55	0.51	0.52	0.57	0.61	0.58	0.54	0.56
Other paper and paperboard	"	0.26	0.19	0.27	0.34	0.38	0.34	0.31	0.30	0.27	0.28	0.26	0.26

ANNEX TABLE 12. - VOLUME OF WORLD [1] AND REGIONAL TRADE IN FOREST PRODUCTS (*concluded*)

	Units	Average 1948-52	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
		Million units											
FAR EAST [1]													
Pulpwood	m³	...	...	...	...	...	0.10	0.13	0.19	0.42	0.47	0.49	0.50
Coniferous logs [2]	"	0.04	0.34	0.11	0.22	0.27	0.60	1.00	1.25	2.68	3.25	4.45	4.90
Broadleaved logs [2]	"	0.44	2.00	2.40	2.98	3.13	3.89	5.10	5.72	6.74	8.00	9.62	11.00
Sawn softwood	"	0.15	0.27	0.49	0.37	0.49	0.38	0.56	0.60	0.91	0.81	1.08	1.15
Sawn hardwood	"	0.17	0.15	0.16	0.12	0.11	0.21	0.12	0.09	0.13	0.43	0.17	0.19
Chemical woodpulp	M.T.	0.06	0.16	0.12	0.17	0.24	0.12	0.22	0.32	0.36	0.46	0.71	0.84
Newsprint	"	0.14	0.20	0.25	0.19	0.21	0.19	0.23	0.24	0.26	0.23	0.25	0.35
Other paper and paperboard	"	0.18	0.31	0.31	0.32	0.35	0.27	0.32	0.36	0.37	0.38	0.36	0.38
NEAR EAST													
Sawn softwood	m³	0.38	0.71	0.63	0.55	0.59	0.53	0.71	0.76	0.58	0.67	0.57	0.60
All paper and paperboard	M.T.	0.05	0.08	0.13	0.10	0.12	0.14	0.16	0.17	0.16	0.19	0.21	0.22
AFRICA													
Sawn softwood	m³	1.47	1.38	1.45	1.34	1.40	1.43	1.19	1.28	1.36	1.27	1.40	1.44
Sawn hardwood	"	0.25	0.47	0.49	0.44	0.48	0.51	0.42	0.55	0.48	0.32	0.33	0.35
Newsprint	M.T.	0.08	0.08	0.10	0.12	0.12	0.14	0.14	0.16	0.16	0.14	0.14	0.14
Other paper and paperboard	"	0.21	0.24	0.27	0.24	0.28	0.31	0.29	0.34	0.35	0.35	0.33	0.35

[1] Excluding China (Mainland). - [2] Sawlogs, veneer logs and logs for sleepers.

ANNEX TABLE 13A. - WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS, BY COMMODITY GROUPS

	Prewar average	Average 1948-52	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
Export volume	..... *Indices, average 1957-59 = 100*													
WORLD [1]														
Agricultural fishery and forest products	...	...	...	...	89	95	98	97	105	111	118	121	125	...
Fishery products	[2] 55	58	68	79	82	90	91	100	108	111	117	130	133	140
Forest products	...	...	77	86	96	94	97	96	106	118	122	126	138	152
Agricultural products	...	...	...	...	87	95	99	97	104	110	117	119	122	...
Food and feed	...	...	...	...	85	93	98	98	104	111	121	124	130	...
Beverages and tobacco	...	...	...	...	92	100	99	97	103	110	115	119	121	...
Raw materials	...	...	...	...	91	96	101	94	105	110	112	109	108	...
WORLD [3]														
Agricultural products	79	77	83	83	88	97	99	97	103	110	116	118	122	130
Food and feed	75	72	79	79	86	96	99	99	103	110	119	122	130	140
Beverages and tobacco	74	82	91	84	92	100	100	97	103	109	115	119	121	125
Raw materials	89	83	87	89	90	96	101	94	105	109	111	109	108	113
WESTERN EUROPE														
Agricultural products	65	50	72	81	89	88	99	100	101	112	122	121	128	131
Food and feed	61	54	71	83	90	86	100	98	102	114	124	123	128	133
Beverages and tobacco	56	51	77	77	81	96	97	119	84	97	108	100	121	128
Raw materials	121	59	72	67	83	101	95	89	116	107	123	128	136	113
EASTERN EUROPE AND U.S.S.R.														
Agricultural products	...	...	...	...	72	66	93	90	118	116	141	144	129	...
Food and feed	...	...	...	...	64	55	92	87	121	112	149	156	132	...
Beverages and tobacco	...	...	...	...	61	86	91	92	117	134	122	116	147	...
Raw materials	...	...	...	...	102	95	97	97	107	120	124	115	109	...
NORTH AMERICA														
Agricultural products	48	79	71	68	70	97	105	96	99	120	124	118	134	157
Food and feed	27	75	73	61	72	99	97	97	106	116	127	132	151	178
Beverages and tobacco	87	94	105	94	113	104	104	99	98	103	104	100	106	109
Raw materials	102	85	54	84	51	90	137	89	74	143	121	74	83	102
OCEANIA														
Agricultural products	69	85	90	83	92	97	99	92	109	106	120	121	129	132
Food and feed	79	87	98	88	97	107	98	92	110	106	128	126	142	150
Beverages and tobacco	81	55	72	67	73	83	92	92	115	134	168	196	234	234
Raw materials	61	83	85	78	89	90	100	92	109	106	112	115	117	114
LATIN AMERICA														
Agricultural products	92	86	93	88	93	99	95	99	106	110	112	117	114	132
Food and feed	96	77	80	85	86	91	98	103	99	110	109	112	105	123
Beverages and tobacco	85	96	101	83	95	103	95	95	110	112	110	112	120	131
Raw materials	98	79	105	109	104	111	83	98	118	104	128	150	125	160
FAR EAST [1]														
Agricultural products	141	85	90	92	103	102	100	98	102	100	106	109	111	113
Food and feed	208	80	83	89	106	103	107	96	97	110	115	112	125	120
Beverages and tobacco	87	76	87	95	81	101	98	105	97	97	108	111	117	111
Raw materials	109	93	98	94	109	101	96	97	107	95	99	106	100	109

ANNEX TABLE 13A. - WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS, BY COMMODITY GROUPS (*continued*)

	Prewar average	Average 1948-52	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
NEAR EAST	..... *Indices, average 1957-59 = 100*													
Agricultural products	72	75	101	96	90	89	98	90	112	111	107	116	123	125
Food and feed	70	66	99	127	82	102	105	102	93	114	107	134	136	141
Beverages and tobacco	47	84	96	92	85	87	125	84	91	81	115	117	69	69
Raw materials	77	77	102	84	93	83	89	87	124	116	105	108	131	132
AFRICA														
Agricultural products	58	68	78	86	91	96	98	97	104	107	116	122	122	123
Food and feed	63	67	78	91	91	95	95	105	101	95	105	114	118	120
Beverages and tobacco	54	67	76	79	90	97	103	92	105	119	127	138	130	132
Raw materials	59	73	85	88	93	97	94	97	110	103	108	98	107	107
Export value														
WORLD [1]														
Agricultural fishery and forest products	...	...	...	...	93	98	103	96	101	107	111	113	124	...
Fishery products	[2] 19	55	63	73	76	88	92	101	108	109	115	134	137	158
Forest products	...	...	73	83	98	97	101	96	103	115	118	119	128	145
Agricultural products	...	...	...	...	93	98	104	96	100	106	110	110	122	...
Food and feed	...	...	...	...	85	93	101	97	103	107	117	121	139	...
Beverages and tobacco	...	...	...	...	100	103	103	102	95	97	96	97	102	...
Raw materials	...	...	...	...	104	105	113	88	99	111	107	100	103	...
WORLD [3]														
Agricultural products	28	86	92	93	94	100	105	96	99	105	108	109	121	133
Food and feed	28	82	87	83	86	96	101	98	101	106	115	119	138	153
Beverages and tobacco	22	74	97	109	101	103	103	102	95	96	95	96	101	113
Raw materials	34	106	96	97	103	105	113	88	99	111	106	99	103	111
WESTERN EUROPE														
Agricultural products	30	63	77	83	89	91	103	98	99	109	115	118	136	147
Food and feed	29	62	77	85	90	90	103	97	100	112	116	119	135	148
Beverages and tobacco	35	58	72	72	82	87	99	115	87	97	108	115	146	156
Raw materials	45	74	86	77	92	110	114	84	103	101	114	116	130	118
EASTERN EUROPE AND U.S.S.R.														
Agricultural products	...	...	...	...	76	69	96	88	115	113	135	138	141	...
Food and feed	...	...	...	...	66	57	93	85	121	111	142	151	150	...
Beverages and tobacco	...	...	...	...	59	80	92	94	115	131	115	110	152	...
Raw materials	...	...	...	...	122	105	109	97	94	113	120	108	104	...
NORTH AMERICA														
Agricultural products	22	95	83	77	76	102	108	96	96	114	123	118	134	158
Food and feed	14	92	86	68	75	103	99	97	104	110	126	131	152	181
Beverages and tobacco	38	72	95	86	102	94	102	99	99	108	111	108	115	120
Raw materials	42	115	68	106	66	101	145	90	65	131	117	73	78	94
OCEANIA														
Agricultural products	29	93	105	91	95	99	111	85	105	102	112	113	134	147
Food and feed	35	85	100	87	95	100	95	89	117	108	126	125	151	168
Beverages and tobacco	25	52	71	89	79	73	83	105	112	112	122	135	168	180
Raw materials	23	100	110	95	96	98	126	81	93	97	99	103	119	127

ANNEX TABLE 13A. - WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF EXPORTS OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS, BY COMMODITY GROUPS (*concluded*)

	Prewar average	Average 1948-52	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
	..... *Indices, average 1957-59 = 100*													
LATIN AMERICA														
Agricultural products	26	92	108	111	103	106	105	99	96	99	100	103	109	123
Food and feed	30	90	87	85	85	87	104	100	96	103	102	104	124	132
Beverages and tobacco	17	87	123	129	113	119	109	98	93	94	88	87	89	114
Raw materials	40	114	131	139	127	127	97	99	104	103	129	144	119	121
FAR EAST [1]														
Agricultural products	45	97	90	92	109	102	102	93	105	106	100	99	107	112
Food and feed	60	96	105	99	98	99	105	96	99	102	107	107	138	140
Beverages and tobacco	34	73	80	111	96	103	101	105	95	94	97	96	103	100
Raw materials	40	109	84	79	122	104	99	86	115	115	97	95	87	99
NEAR EAST														
Agricultural products	28	91	95	98	93	98	110	92	98	104	97	100	112	115
Food and feed	30	73	95	113	82	109	109	102	89	104	102	132	144	148
Beverages and tobacco	21	64	79	84	84	91	131	85	84	63	78	85	67	74
Raw materials	29	100	99	95	100	96	106	90	105	113	99	91	109	110
AFRICA														
Agricultural products	19	72	85	98	95	96	98	102	99	98	101	104	112	116
Food and feed	23	71	86	96	92	100	99	103	97	92	103	110	119	122
Beverages and tobacco	15	63	77	100	94	89	95	106	99	100	98	103	102	108
Raw materials	23	100	103	99	103	107	105	92	103	107	106	96	123	125

[1] Excluding China (Mainland). - [2] 1938. - [3] Excluding the U.S.S.R., eastern Europe and China (Mainland).

ANNEX TABLE 13B. - WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF IMPORTS OF AGRICULTURAL PRODUCTS, BY COMMODITY GROUPS

	Prewar average	Average 1948-52	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
Import volume	..... *Indices, average 1957-59 = 100*													
WORLD [1]														
Agricultural products	...	...	...	...	87	94	99	97	104	109	113	116	119	...
Food and feed	...	...	...	...	84	92	98	99	104	109	113	118	123	...
Beverages and tobacco	...	...	...	...	90	95	99	98	103	107	112	117	119	...
Raw materials	...	...	...	...	91	96	103	93	104	108	111	108	109	...
WORLD [3]														
Agricultural products	80	77	84	83	88	95	100	97	103	108	111	115	118	118
Food and feed	76	71	79	77	83	93	97	99	104	109	111	117	122	122
Beverages and tobacco	73	81	88	85	92	97	99	99	102	107	113	118	118	121
Raw materials	96	86	94	93	95	100	105	92	103	107	109	106	108	106
WESTERN EUROPE														
Agricultural products	88	75	83	84	89	97	101	97	102	106	108	113	114	117
Food and feed	85	73	79	79	86	97	98	98	104	107	109	116	119	121
Beverages and tobacco	83	89	79	86	91	93	100	101	99	109	113	119	119	129
Raw materials	96	83	93	95	96	98	108	92	99	103	101	101	100	99
EASTERN EUROPE AND U.S.S.R.														
Agricultural products	...	...	...	...	79	81	96	96	108	115	126	123	131	...
Food and feed	...	...	...	...	94	86	101	92	107	118	136	131	137	...
Beverages and tobacco	...	...	...	...	63	78	97	92	111	109	100	108	137	...
Raw materials	...	...	...	...	65	75	88	103	109	114	124	119	120	...
NORTH AMERICA														
Agricultural products	57	99	98	86	93	96	95	97	108	101	106	115	113	104
Food and feed	73	77	83	79	81	83	89	105	106	103	109	121	121	104
Beverages and tobacco	65	95	98	83	92	100	98	95	108	106	112	117	115	112
Raw materials	121	147	124	104	117	110	100	88	112	88	88	95	91	86
OCEANIA														
Agricultural products	49	75	79	93	98	94	99	104	97	98	96	93	102	104
Food and feed	44	68	73	81	87	94	100	105	95	96	103	107	115	119
Beverages and tobacco	57	76	85	92	98	91	101	101	99	101	102	91	97	94
Raw materials	46	82	79	108	111	97	94	109	97	96	78	80	93	103
LATIN AMERICA														
Agricultural products	49	76	86	89	90	85	99	103	98	102	106	109	118	119
Food and feed	49	73	85	85	97	82	97	102	101	102	106	111	118	121
Beverages and tobacco	75	101	97	100	95	95	107	110	83	94	108	100	110	102
Raw materials	31	80	79	109	102	95	104	102	94	106	103	102	123	126
FAR EAST [1]														
Agricultural products	82	63	78	76	78	94	101	97	102	120	126	122	139	138
Food and feed	77	66	80	75	78	92	102	100	98	114	112	115	136	135
Beverages and tobacco	73	72	78	82	95	108	105	93	101	108	147	163	105	182
Raw materials	91	55	76	77	76	97	101	89	110	134	153	133	142	141

ANNEX TABLE 13B. - WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF IMPORTS OF AGRICULTURAL PRODUCTS, BY COMMODITY GROUPS (*continued*)

	Prewar average	Average 1948-52	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
NEAR EAST	*Indices, average 1957-59 = 100*													
Agricultural products	28	56	61	57	70	85	93	95	111	124	136	135	139	141
Food and feed	23	51	55	49	65	85	93	94	112	130	143	137	144	149
Beverages and tobacco	54	80	84	83	95	87	96	98	106	103	112	118	117	103
Raw materials	21	53	71	96	73	74	87	100	113	127	132	164	159	184
AFRICA														
Agricultural products	48	60	74	78	86	95	99	94	107	118	130	122	114	112
Food and feed	48	55	69	72	82	90	97	92	111	121	134	128	117	117
Beverages and tobacco	53	75	91	94	90	114	104	99	97	109	117	100	111	93
Raw materials	23	61	76	94	94	93	104	100	96	114	126	131	96	133
Import value														
WORLD [1]														
Agricultural products	...	...	...	...	93	98	105	96	99	104	104	107	117	...
Food and feed	...	...	...	...	86	95	102	97	101	105	107	114	130	...
Beverages and tobacco	...	...	...	...	100	98	104	102	95	94	93	94	97	...
Raw materials	...	...	...	...	106	107	114	89	96	109	106	101	104	...
WORLD [2]														
Agricultural products	31	86	92	92	94	100	105	96	98	103	103	106	116	121
Food and feed	31	81	86	81	85	95	101	97	101	104	106	113	129	132
Beverages and tobacco	23	72	92	108	102	100	104	102	94	94	93	94	95	109
Raw materials	40	112	105	102	111	110	117	88	95	108	104	100	103	106
WESTERN EUROPE														
Agricultural products	36	84	88	90	95	101	107	96	97	103	101	107	115	122
Food and feed	37	83	83	80	88	102	102	96	102	104	105	114	128	135
Beverages and tobacco	28	60	76	98	95	91	101	106	93	98	98	101	102	117
Raw materials	39	108	108	106	110	108	121	89	90	102	96	94	96	98
EASTERN EUROPE AND U.S.S.R.														
Agricultural products	...	...	...	...	84	84	101	95	104	112	118	115	131	...
Food and feed	...	...	...	...	95	87	105	91	105	113	127	125	148	...
Beverages and tobacco	...	...	...	...	63	74	96	95	109	102	89	93	123	...
Raw materials	...	...	...	...	77	85	98	100	102	116	119	112	111	...
NORTH AMERICA														
Agricultural products	27	99	105	102	102	102	101	97	102	95	93	97	102	101
Food and feed	29	77	84	79	77	80	89	105	106	101	104	114	130	110
Beverages and tobacco	15	89	115	124	111	113	109	97	94	87	86	85	83	100
Raw materials	54	172	123	97	134	122	108	79	113	100	84	88	87	85
OCEANIA														
Agricultural products	21	85	81	98	109	97	101	103	96	97	87	83	95	100
Food and feed	17	78	81	84	87	95	104	103	93	91	97	102	123	128
Beverages and tobacco	24	74	80	106	113	90	100	103	98	92	84	74	80	80
Raw materials	21	112	81	102	129	111	101	102	97	112	78	75	90	97

ANNEX TABLE 13B. - WORLD AND REGIONAL INDICES OF VOLUME AND VALUE OF IMPORTS OF AGRICULTURAL PRODUCTS, BY COMMODITY GROUPS (*concluded*)

	Prewar average	Average 1948-52	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
	Indices, average 1957-59 = 100													
LATIN AMERICA														
Agricultural products	18	89	100	101	97	88	102	102	96	99	100	104	116	124
Food and feed	18	89	102	96	94	85	100	101	98	98	102	107	119	126
Beverages and tobacco	19	79	103	133	100	91	107	112	81	77	80	77	90	94
Raw materials	16	96	82	108	120	103	110	96	94	119	101	100	121	127
FAR EAST [1]														
Agricultural products	28	80	94	87	85	98	109	96	95	113	117	115	135	141
Food and feed	23	81	97	84	81	92	108	99	93	106	101	109	134	140
Beverages and tobacco	34	73	90	96	107	103	98	100	103	98	125	138	139	168
Raw materials	37	81	88	92	92	111	113	89	98	131	147	125	135	140
NEAR EAST														
Agricultural products	13	71	74	69	80	87	103	93	104	114	125	122	138	143
Food and feed	11	70	72	56	69	86	103	91	106	118	132	127	150	156
Beverages and tobacco	18	77	80	101	116	91	104	97	99	95	98	96	95	84
Raw materials	8	66	77	110	84	80	98	96	106	134	138	159	159	194
AFRICA														
Agricultural products	18	69	84	86	91	99	102	96	101	108	117	108	107	108
Food and feed	18	67	81	79	86	96	101	93	106	111	123	113	110	114
Beverages and tobacco	20	73	95	103	100	106	103	108	90	94	94	85	98	84
Raw materials	12	84	82	94	120	105	116	92	93	127	131	131	98	128

[1] Excluding China (Mainland). - [2] Excluding the U.S.S.R., eastern Europe and China (Mainland).

ANNEX TABLE 14. - WORLD [1] AVERAGE EXPORT UNIT VALUES OF AGRICULTURAL, FISHERY AND FOREST PRODUCTS

	Prewar average	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
	Indices, average 1957-59 = 100																	
AGRICULTURAL PRODUCTS	38	111	101	105	132	116	110	112	106	103	106	99	96	96	93	93	99	103
Food and feed	42	132	114	102	115	115	111	105	100	101	103	99	98	97	96	97	108	110
Cereals	45	168	135	115	124	137	134	114	107	103	102	100	98	97	97	103	103	106
Edible oils and oilseeds	32	140	117	105	136	108	112	107	96	100	101	98	101	97	95	91	98	98
Meat	40	78	83	77	90	95	96	98	97	97	95	101	104	108	106	102	110	119
Dairy products	50	132	124	96	106	116	113	109	109	111	104	92	104	103	96	96	102	106
Beverages and tobacco	29	79	76	94	104	104	107	130	110	103	104	105	92	88	83	82	85	91
Agricultural raw materials	40	102	98	120	187	128	110	110	114	108	112	94	94	103	97	92	96	99
FISHERY PRODUCTS [2]	[3] 36	105	98	85	92	88	91	92	93	98	101	100	99	101	102	107	107	113
FOREST PRODUCTS [2]	...	...	...	...	...	...	96	97	102	103	104	99	97	98	97	95	93	96
	U.S.$ per metric ton																	
AGRICULTURAL PRODUCTS																		
Wheat	31.1	105.9	88.5	71.5	74.1	78.6	79.7	68.2	65.8	62.8	63.5	62.6	62.2	61.7	63.4	66.1	64.2	66.2
Wheat flour	44.4	139.8	116.1	96.9	105.5	112.4	111.2	102.9	92.6	86.8	85.8	81.6	77.5	75.2	78.1	81.1	80.7	83.9
Barley	25.8	105.4	64.9	59.1	72.0	77.4	62.9	53.1	55.7	55.1	50.9	51.3	52.6	52.7	47.0	57.6	55.4	55.7
Maize	18.8	93.2	64.2	60.4	77.7	85.3	69.7	60.8	61.5	59.9	55.1	50.6	50.2	50.1	48.5	47.7	52.2	54.5
Rice (milled)	29.2	164.1	152.2	126.9	135.1	167.1	183.5	146.9	117.7	115.5	115.5	120.4	110.6	101.9	107.9	120.9	122.2	124.3
Sugar (raw)	38.3	99.0	98.5	104.0	116.1	110.0	97.4	99.0	95.1	95.4	116.5	99.8	94.5	89.5	93.3	94.1	144.3	142.3
Apples	66.3	118.4	78.6	98.6	101.3	112.8	103.6	120.6	97.5	123.1	136.8	155.3	111.6	140.8	124.9	139.1	146.3	135.0
Bananas	30.6	100.0	105.0	103.7	100.6	97.2	99.9	99.9	100.1	102.8	102.4	93.1	86.8	78.7	84.0	85.4	78.2	78.5
Oranges and tangerines	56.5	115.8	126.2	107.7	102.9	102.7	96.0	105.1	102.1	124.5	134.8	127.9	104.9	109.4	120.3	114.8	127.0	119.0
Raisins	123.3	260.7	242.1	226.8	270.6	229.4	201.6	207.2	240.6	274.5	280.2	328.0	316.8	265.2	280.3	264.0	265.1	322.7
Copra	45.4	252.1	170.0	195.4	219.1	144.2	191.4	172.6	149.6	142.5	139.4	167.7	202.4	173.3	142.6	144.4	160.5	164.8
Palm kernels	37.0	132.1	148.1	120.2	173.1	155.7	152.0	136.3	121.6	123.5	120.5	125.1	159.2	158.5	127.1	121.6	138.3	139.3
Soybeans	37.7	134.0	100.6	95.1	122.1	114.4	108.3	113.3	94.9	96.0	91.1	86.6	84.3	83.3	94.4	93.0	99.2	99.4
Groundnuts (shelled)	50.6	214.2	209.5	149.3	210.0	225.4	210.3	210.3	185.7	194.9	203.8	171.7	164.6	182.2	179.7	168.9	168.5	169.0
Olive oil	268.8	950.4	738.7	547.5	783.2	584.1	586.0	529.0	560.9	719.5	664.5	598.2	510.2	518.0	533.3	574.5	784.3	565.2
Coconut oil	83.9	413.4	348.3	333.2	394.2	258.9	306.7	289.0	237.6	232.9	241.3	277.8	348.9	288.7	233.1	221.6	244.1	275.4
Palm oil	61.2	279.5	254.1	206.0	309.6	243.9	188.5	184.6	200.0	217.4	220.9	200.4	204.3	191.7	203.7	189.4	197.4	212.8
Palm kernel oil	108.4	360.8	373.8	293.9	366.0	250.8	295.7	265.9	240.3	236.5	242.4	253.3	316.6	296.6	230.4	213.2	296.7	320.6
Soybean oil	120.3	539.1	340.0	320.4	461.5	307.7	309.9	317.1	321.7	343.3	338.4	303.3	254.9	233.5	285.4	245.7	240.1	240.5
Groundnut oil	129.4	489.1	482.3	388.0	495.3	394.9	419.7	404.4	319.4	397.8	405.7	361.8	326.0	349.8	350.4	330.3	313.6	314.4
Cattle [4]	36.3	116.3	114.7	121.6	132.8	110.9	117.6	129.8	125.1	124.8	125.7	135.9	144.7	136.9	130.3	122.5	127.9	152.5
Beef and veal	120.9	312.7	361.7	353.3	458.7	500.3	439.2	464.2	451.1	418.4	437.8	503.8	577.9	596.9	563.3	524.9	566.7	661.7
Mutton and lamb	213.7	287.0	314.7	245.2	268.5	291.4	325.1	386.2	417.4	415.6	449.8	414.5	365.9	387.4	364.3	353.0	387.7	432.4
Bacon, ham, salted pork	409.0	776.2	751.6	612.5	650.1	711.8	674.1	666.0	663.6	722.7	679.2	707.1	667.5	681.8	660.5	666.7	719.3	773.2
Canned meat	270.0	593.4	639.5	733.3	846.1	858.9	954.9	906.5	873.9	869.2	826.7	854.3	889.0	905.6	942.5	912.6	958.6	937.2
Cheese	323.5	766.0	749.7	583.2	630.2	686.1	658.6	648.6	674.9	742.3	709.3	636.7	741.1	724.0	721.4	706.0	712.7	782.8
Butter	424.6	1 109.6	1 078.5	815.3	883.9	957.4	963.1	970.6	951.5	927.0	784.5	641.1	897.4	831.3	715.5	762.3	830.5	909.3

Eggs (in the shell)	283.4	776.1	730.5	584.1	631.0	689.1	686.6	628.4	649.9	642.0	608.4	596.3	537.9	557.2	555.9	527.8	655.5	551.3
Milk, condensed and evaporated	134.5	379.9	347.2	287.0	329.2	352.1	327.2	310.6	310.1	317.5	330.1	311.2	307.9	308.8	307.4	299.7	305.7	326.2
Milk, powdered	191.7	604.4	486.2	334.5	445.2	514.8	458.9	410.9	377.2	375.0	437.4	372.8	355.6	402.1	360.9	332.3	299.5	306.5
Potatoes	31.8	59.1	47.9	46.2	53.9	59.6	57.6	51.7	46.9	59.7	52.2	59.7	57.6	58.9	51.6	73.1	61.1	58.5
Oilseed cake and meal	23.6	92.0	62.2	58.2	74.5	75.6	72.6	71.9	73.3	67.7	61.8	54.7	67.8	67.9	63.9	70.4	78.8	66.1
Coffee	182.3	510.3	580.8	959.2	1 075.0	1 104.4	1 141.3	1 401.0	1 075.8	1 048.2	1 024.7	918.4	747.1	719.9	679.2	651.6	639.6	772.9
Cocoa	117.4	707.3	461.4	558.0	711.2	688.2	660.5	1 070.2	818.0	580.8	563.0	844.6	738.8	593.5	474.3	453.0	485.5	475.4
Tea	515.8	1 200.5	1 112.3	986.2	1 043.1	947.6	998.2	1 327.3	1 413.6	1 255.0	1 228.3	1 208.5	1 194.2	1 214.4	1 193.2	1 145.9	1 163.5	1 200.9
Wine	86.9	241.1	206.1	164.8	180.8	171.4	165.1	147.3	143.0	155.4	169.8	216.2	174.3	178.2	181.1	188.9	209.4	222.4
Tobacco (unmanufactured)	566.1	1 114.8	1 118.1	1 096.2	1 126.3	1 163.5	1 229.5	1 225.0	1 267.7	1 228.4	1 337.8	1 280.5	1 291.8	1 286.6	1 224.2	1 229.6	1 343.6	1 272.3
Linseed	44.9	222.0	180.0	148.9	166.8	170.4	132.1	112.6	130.3	143.5	115.5	123.9	130.4	128.9	124.8	131.9	122.0	119.1
Linseed oil	105.3	561.2	370.6	318.3	390.3	397.5	230.7	166.9	205.4	313.4	245.8	250.7	212.5	246.8	253.9	230.0	187.3	191.3
Cotton	261.2	856.4	797.6	837.7	1 169.5	1 002.5	771.5	828.3	805.2	739.9	741.8	680.5	593.1	630.2	647.2	619.2	601.1	603.9
Jute	63.9	327.6	301.1	243.6	327.6	250.2	175.9	185.1	189.4	184.0	209.5	195.2	177.5	223.7	307.9	219.3	209.8	289.7
Sisal	77.1	299.3	291.8	272.4	423.5	374.6	204.7	176.7	157.3	158.9	141.5	145.2	173.1	214.7	193.4	195.5	294.2	286.5
Wool (greasy)	446.0	1 027.8	1 164.1	1 527.5	2 589.8	1 413.1	1 593.1	1 549.2	1 357.3	1 379.6	1 600.3	1 133.8	1 084.5	1 163.6	1 146.1	1 136.1	1 325.5	1 417.6
Rubber (natural)	282.7	414.4	342.2	662.8	1 090.1	670.9	484.0	450.1	701.8	634.0	603.5	519.3	662.0	745.2	547.5	512.3	501.6	497.0
FISHERY PRODUCTS [2]																		
Fresh, chilled or frozen fish	[3] 103.7	221.5	209.5	225.3	240.2	249.4	262.1	263.5	258.9	275.1	291.9	295.5	279.4	287.7	302.6	320.1	305.9	...
Dried, salted or smoked fish	[3] 88.4	252.3	250.7	228.5	243.9	272.7	252.6	250.9	266.8	286.5	295.5	293.9	305.8	329.0	331.4	346.0	361.1	...
Crustaceans and mollusks, fresh, frozen, dried, salted, etc.	[3] 105.1	366.9	325.3	340.4	383.1	411.5	456.7	458.6	483.5	540.6	660.8	681.4	669.0	679.5	727.1	809.2	896.7	...
Fish products and preparations, whether or not in airtight containers	[3] 236.4	606.3	598.1	505.2	521.3	552.9	548.2	567.7	561.5	631.9	607.9	645.1	631.6	622.5	601.0	676.7	643.5	...
Crustacean and mollusk products and preparations, whether or not in airtight containers	[3] 459.5	772.8	847.1	888.4	1 011.6	1 194.8	1 145.3	1 196.9	1 080.5	1 069.9	1 045.3	1 119.4	1 076.6	1 076.8	1 158.3	1 163.3	1 209.0	...
Oils and fats, crude or refined, of aquatic animal origin	[3] 84.9	496.7	386.7	263.6	341.9	265.0	210.7	213.7	213.3	237.2	241.7	207.5	192.1	180.0	172.7	133.3	137.4	...
Meals, solubles and similar animal feedstuffs of aquatic animal origin	[3] 45.8	134.2	141.3	124.5	113.9	116.7	120.9	134.9	144.8	146.2	138.4	135.2	136.8	92.6	86.8	103.9	107.6	...
FOREST PRODUCTS [2]																		
Fuelwood [5]	...	...	...	...	...	...	8.2	8.2	9.1	9.5	9.5	9.0	8.4	8.3	9.3	9.4	9.8	9.9
Charcoal	...	...	...	...	...	...	28.9	23.4	26.3	26.2	28.3	26.1	25.1	28.5	28.6	25.3	25.1	25.4
Coniferous logs [5]	...	...	...	...	...	...	15.8	16.1	16.4	16.0	17.3	16.4	16.5	17.0	18.0	19.1	15.5	15.5
Broadleaved logs [5]	...	...	...	...	...	...	20.0	19.8	19.5	20.2	18.0	19.3	19.7	22.6	22.0	22.9	23.4	23.6
Pulpwood [5]	...	...	...	...	...	...	12.7	11.6	12.7	12.2	12.4	11.7	10.6	10.5	12.0	11.6	10.6	11.0
Pitprops [5]	...	...	...	...	...	...	14.3	12.8	14.1	13.6	14.6	14.0	13.1	12.0	13.0	13.1	12.4	12.8
Poles, piling, posts [5]	...	...	...	...	...	...	34.4	31.2	30.0	32.1	32.8	27.3	24.5	24.2	22.5	24.3	24.5	25.0
Sawn softwood [5]	...	...	...	...	...	...	37.2	37.5	40.4	39.5	39.1	36.9	35.5	36.8	36.5	35.3	35.6	37.1
Sawn hardwood [5]	...	...	...	...	...	...	59.6	61.2	62.8	65.6	63.0	62.4	62.4	62.0	65.0	61.7	63.1	63.8
Sleepers [5]	...	...	...	...	...	...	36.3	34.4	35.2	39.2	42.4	39.8	41.5	37.6	36.5	40.1	38.1	38.3
Veneer sheets [5]	...	...	...	...	...	...	266.0	298.0	282.9	287.6	313.6	254.4	262.2	367.4	359.0	370.9	367.1	368.0
Plywood [5]	...	...	...	...	...	...	142.4	152.3	167.1	154.2	149.0	139.8	139.2	138.6	132.8	136.3	134.8	135.0
Particle board	...	...	...	...	...	...	—	—	138.8	125.9	110.7	116.4	112.0	111.8	111.1	109.2	106.0	103.7
Fibreboard	...	...	...	...	...	...	93.7	89.2	93.5	91.5	91.2	86.6	84.6	84.0	81.8	80.8	82.5	85.5
Mechanical woodpulp	...	...	...	...	...	...	67.9	68.8	70.2	76.6	77.1	70.5	67.4	66.5	66.1	65.6	64.8	64.7
Chemical woodpulp	...	...	...	...	...	...	134.0	141.1	143.5	147.8	150.0	140.4	133.9	132.8	131.7	124.9	124.5	132.7
Newsprint	...	...	...	...	...	...	128.6	130.2	130.5	135.3	140.8	138.2	139.8	134.6	128.8	126.8	125.5	124.6
Printing and writing paper	...	...	...	...	...	...	230.5	248.2	251.9	259.7	265.5	245.8	234.2	233.7	227.3	224.6	217.6	218.0

[1] Excluding the U.S.S.R., eastern Europe and China (Mainland). - [2] Excluding China (Mainland) only. - [3] 1938. - [4] US$ per thousand head. - [5] US$ per cubic meter.

ANNEX TABLE 15. - REGIONAL INDICES OF AVERAGE EXPORT UNIT VALUES, BY COMMODITY GROUPS

	Prewar average	Average 1948-52	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 (Preliminary)
	Indices, average 1957-59 = 100													
WESTERN EUROPE														
Agricultural products	47	116	104	100	100	102	104	98	98	98	94	98	108	111
Food and feed	47	115	105	100	99	104	103	99	98	97	93	96	107	110
Beverages and tobacco	58	118	91	91	98	89	101	96	103	100	100	114	122	124
Raw materials	38	124	118	113	109	108	119	93	88	94	92	90	95	104
NORTH AMERICA														
Agricultural products	51	119	114	110	106	102	103	101	96	96	100	101	100	101
Food and feed	53	121	114	107	102	101	102	100	97	96	99	100	100	102
Beverages and tobacco	43	76	90	92	90	90	98	101	101	105	107	108	109	110
Raw materials	44	138	129	132	134	114	108	103	89	94	99	100	96	94
OCEANIA														
Agricultural products	42	111	118	112	104	104	112	93	96	97	94	93	104	112
Food and feed	46	98	105	102	100	99	97	97	106	103	100	99	106	111
Beverages and tobacco	23	92	100	138	108	90	89	114	97	85	74	72	76	80
Raw materials	37	123	130	121	108	109	126	88	86	91	88	89	102	112
LATIN AMERICA														
Agricultural products	28	107	114	129	111	107	111	99	90	90	89	86	98	104
Food and feed	35	114	105	101	99	95	107	97	96	94	95	94	124	124
Beverages and tobacco	20	91	120	153	118	116	114	102	84	83	79	76	73	86
Raw materials	41	143	120	128	117	111	116	99	86	98	99	95	96	96
FAR EAST [1]														
Agriculture	40	112	100	109	108	101	102	95	103	107	97	92	96	100
Food and feed	31	115	125	110	95	95	99	100	102	92	92	95	109	116
Beverages and tobacco	42	91	88	112	115	103	103	100	98	97	92	88	91	93
Raw materials	44	119	90	88	113	104	104	89	107	121	101	92	90	101
NEAR EAST														
Agriculture	40	123	95	106	104	112	112	101	88	93	91	86	90	92
Food and feed	45	121	104	99	105	114	102	100	97	95	100	99	106	105
Beverages and tobacco	46	78	83	91	100	105	106	101	93	78	70	74	99	109
Raw materials	37	134	94	111	105	113	116	101	83	95	92	83	83	83
AFRICA														
Agriculture	33	105	107	116	104	99	100	105	94	92	88	86	93	95
Food and feed	38	107	110	105	101	106	105	98	97	97	97	95	102	101
Beverages and tobacco	25	91	100	127	105	90	92	115	93	83	77	75	79	83
Raw materials	40	123	121	111	109	109	112	95	94	103	99	97	113	116

[1] Excluding China (Mainland).

ANNEX TABLE 16. - UNITED STATES: EXPORTS UNDER SPECIAL PROGRAMS IN RELATION TO TOTAL AGRICULTURAL EXPORTS

	Average 1942-45	Average 1946-52	Average 1953-54	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	Total 1955 to 1964
	Million U.S. dollars													
Exports under Public Law 480														
Title I	—	—	—	265	641	755	752	730	993	853	970	1 151	1 182	8 292
Title II	—	—	—	121	102	71	84	56	79	195	143	174	116	1 141
Title III (barter)	—	—	—	260	373	244	65	176	118	181	137	75	123	1 752
Title III (donations)	—	—	—	188	186	165	159	107	122	155	178	169	183	1 612
Title IV	—	—	—	—	—	—	—	—	—	1	42	51	93	187
Total	—	—	—	834	1 302	1 235	1 060	1 069	1 312	1 385	1 470	1 620	1 697	12 984
Mutual Security Act	—	—	—	362	449	318	214	158	157	179	35	11	23	1 906
Total special programs	1 341	1 473	527	1 196	1 751	1 553	1 274	1 227	1 469	1 564	1 505	1 631	1 720	14 890
Commercial exports [1]	415	1 982	2 350	1 999	2 419	2 954	2 580	2 722	3 355	3 466	3 526	3 953	4 627	31 601
TOTAL AGRICULTURAL EXPORTS	1 756	3 465	2 877	3 195	4 170	4 507	3 854	3 949	4 824	5 030	5 031	5 584	6 347	46 491
	Percent													
Exports under special programs as percentage of total agricultural exports	76	42	18	37	42	34	33	31	30	31	30	29	27	32
Exports under Public Law 480 as percentage of total agricultural exports	—	—	—	26	31	27	28	27	27	28	29	29	27	28

[1] Includes shipments of some commodities with government assistance in the form of export payments, short- and medium-term credit, and sales of government-owned commodities at less than domestic market prices.

ANNEX TABLE 17. - INDICES OF PRICES PAID AND RECEIVED BY FARMERS IN SELECTED COUNTRIES

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
	Indices, average 1953-55 = 100									
	Indices of prices received by farmers at current prices									
Australia [1]	98	104	98	93	100	101	96	97	103	[2] 106
Austria	105	105	112	110	116	115	115	118	120	127
Belgium	96	98	98	95	101	99	100	102	112	113
Canada	97	98	98	102	103	104	109	113	108	103
China (Taiwan)	104	112	124	124	139	193	200	189	206	[3] 211
Denmark [4]	103	106	95	93	103	99	93	103	109	115
Finland	107	122	125	132	140	144	143	145	154	169
France	99	109	116	141	133	139	141	151	164	163
Germany, Federal Republic of [1]	100	103	105	105	108	103	108	110	114	[5] 116
Greece [6]	103	114	110	106	107	108	113	118	128	...
India: Assam State	92	111	139	131	119	131	140	131	134	152
Ireland	102	93	99	101	101	99	99	101	101	112
Italy [1]	101	102	109	97	98	99	106	116	121	125
Japan [1,7]	102	99	101	98	99	105	114	125	133	135
Netherlands [1]	101	104	99	99	102	97	97	96	110	[3] 114
Norway	104	106	109	111	116	113	118	124	125	129
Portugal	91	94	93	109	111	112	105	114	105	98
Spain	101	118	134	158	152	158	163	177	184	192
South Africa [1]	94	105	95	86	92	90	91	95	104	...
Sweden [1]	106	104	104	107	109	112	113	124	125	[8] 133
Switzerland	102	103	105	106	106	105	107	113	115	[9] 118
United States	95	94	96	103	98	98	98	100	99	97
Yugoslavia	108	112	123	118	119	130	147	173	190	...
	Indices of prices received by farmers deflated by cost of living									
Australia [1]	87	96	88	83	87	85	79	80	84	[2] 84
Austria	103	100	102	99	104	101	97	96	94	96
Belgium	96	95	92	89	94	90	90	91	98	95
Canada	97	97	95	95	95	94	98	101	95	89
China (Taiwan)	98	95	98	97	98	115	110	102	108	[3] 112
Denmark [4]	99	96	83	81	88	84	76	78	78	80
Finland	108	112	102	102	106	106	103	99	101	101
France	98	106	109	116	103	104	101	104	108	104
Germany, Federal Republic of [1]	99	100	100	98	99	94	96	94	95	[5] 94
Greece [6]	101	109	101	96	95	94	98	103	108	...
India: Assam State	98	108	128	114	99	107	117	102	102	101
Ireland	101	88	89	88	88	86	84	81	79	84
Italy [1]	99	97	103	88	89	88	93	97	95	92
Japan [1,7]	96	93	92	89	89	91	94	96	95	93
Netherlands [1]	98	100	89	86	88	83	81	78	86	[3] 84
Norway	103	100	101	97	100	97	99	98	96	95
Portugal	91	91	89	103	104	101	93	98	90	80
Spain	99	107	112	115	104	106	107	109	105	102
South Africa [1]	92	101	88	77	82	79	78	81	87	...
Sweden [1]	104	97	93	91	92	90	90	94	93	[8] 94
Switzerland	101	101	101	100	101	98	97	99	97	[9] 98
United States	95	93	93	96	91	90	88	88	87	84
Yugoslavia	101	96	102	97	97	94	99	106	110	...
	Indices of prices paid by farmers									
Australia [1]	102	108	111	111	113	117	118	119	120	[2] 122
Austria	107	110	111	112	116	119	124	129	134	140
Belgium	103	105	108	110	114	116	119	125	129	135
Canada	100	103	107	108	112	114	116	119	122	125
China (Taiwan)	104	113	121	122	134	183	190	189	192	[3] 195
Finland	100	106	116	127	132	135	134	137	143	154
France	97	98	101	109	121	122	123	127	131	133

ANNEX TABLE 17. - INDICES OF PRICES PAID AND RECEIVED BY FARMERS IN SELECTED COUNTRIES (*concluded*)

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
	Indices, average 1953-55 = 100									
	Indices of prices paid by farmers (*concluded*)									
Germany, Federal Republic of [1]	101	104	105	109	111	113	115	120	123	[5] 125
Greece [6]	103	113	112	108	108	112	114	119	123	...
India: Assam State	98	104	109	111	111	114	114	115	121	131
Italy [1]	104	103	100	99	100	99	100	105	112	115
Japan [1,7]	102	102	104	102	102	105	111	114	119	123
Netherlands [1]	104	110	115	120	123	128	132	140	148	[3] 163
Norway	101	110	116	119	122	124	126	132	135	138
Switzerland	103	106	108	110	111	114	117	124	130	[9] 135
United States	100	100	103	106	107	108	108	110	112	113
	Ratio of prices received to prices paid by farmers									
Australia [1]	96	96	88	84	88	86	81	82	86	[2] 87
Austria	98	95	101	98	100	97	93	91	90	91
Belgium	93	93	91	86	89	85	84	82	87	84
Canada	97	95	92	94	92	91	94	95	89	82
China (Taiwan)	199	99	102	102	104	105	105	100	107	[3] 108
Finland	107	115	108	104	106	107	107	106	108	110
France	102	111	115	129	110	114	115	119	125	122
Germany, Federal Republic of [1]	99	99	100	96	97	91	94	92	93	[5] 93
Greece [6]	100	101	98	98	99	96	99	99	104	...
India: Assam State	94	107	128	118	107	115	123	114	111	116
Italy [1]	97	99	109	98	98	100	106	110	108	109
Japan [1,7]	100	97	97	96	97	100	103	110	112	110
Netherlands [1]	97	95	86	83	83	76	73	69	74	[3] 70
Norway	103	96	94	93	95	91	94	94	93	93
Switzerland	99	97	97	96	95	92	91	91	88	[9] 87
United States	95	94	93	97	92	91	91	91	88	86

[1] Annual averages refer to crop years: Australia, June-June; Federal Republic of Germany, Italy, Netherlands, and South Africa, July-June; Japan, April-March; Sweden, September-August. - [2] Average of first two quarters. - [3] Average of 8 months. - [4] 1950-55 average = 100. - [5] Average of 9 months. - [6] 1954-55 average = 100. - [7] 1951-55 average = 100. - [8] Average of 7 months. - [9] Average of 3 months.

ANNEX TABLE 18. - MAIN FEATURES OF POSTWAR DEVELOPMENT PLANS

Country	Duration	Status	Scope	Currency	Total investment	Public investment	Share of agriculture in		Planned annual increase	
							Total investment	Public investment	GNP	Agricultural production
				..... *Million*			..... *Percent*			
WESTERN EUROPE										
France	1947–52	Partially implemented	Comprehensive	Francs	50 000	22 474	18	32	6.0	3.2
	1954–57	"	"	"	73 650	...	16	...	6.2	5
	1958–61	Implemented	"		213 900	25 000	17	30	4.5	5
	1962–65	Current	"	"	325 400	64 400	13	27	5.5	4.5
Greece	1958–62	Partially implemented	Public sector	Drachmae	...	27 000	...	27	6	3.7
	1962–66	Current	Comprehensive	"	140 000	52 000	18	23	6	3.5
Ireland	1958–63	Implemented	Public sector	£	...	298	...	15	4.1	3.3
	1964–70	Current	"	"	...	569	...	17	4.3	3.8
Italy	1956–64	Implemented	Comprehensive	Lire	24 337 000	...	14	...	5	1.6
	1965–69	Current	"	"	38 150 000	10 850 000	...	24	5	3
Portugal	1953–58	Implemented	"	Escudos	11 600	5 900	11	21	3.8	0.1
	1959–64	"	"	"	22 000	11 000	12	30	4.2	2.5
Spain	1964–67	Current	"	Pesetas	900 000	335 000	...	20	6	3
EASTERN EUROPE and U.S.S.R.										
Bulgaria	1949–53	Implemented	Centrally-planned economy	Leva	...	...	18	...	5.5	12.0
	1953–57	"	"	"	...	...	...	...	...	13.2
	1961–65	Current	"	"	8 215	4 925	...	6	9.9	7.7–8.5
Czechoslovakia	1949–53	Implemented	"	Korunas	...	...	8	...	11.4	...
	1956–60	"	"	"	...	...	...	...	9.6	5.0
	1961–65	Current	"	"	42 600	...	15	...	8.4–8.6	4.4–4.6
Germay, Eastenrn	1951–55	Implemented	"	Marks	...	...	6	...	10.0	...
	1956–60	"	"	"	...	...	11	...	5.0	3.4
	1964–70	Current	"	"	...	...	...	...	8.6	...
Hungary	1950–54	Implemented	"	Forints	...	...	13	...	12.6	8.4
	1961–65	Current	"	"	19 000	...	19	...	7.2	4.4–4.6
Poland	1950–55	Implemented	"	Zlotys	...	...	12	...	13.0	...
	1956–60	"	"	"	...	...	19	...	9.0	5.0
	1961–65	Current	"	"	72 000	...	13	...	8.2	4.4
Romania	1951–55	Implemented	"	Lei	...	...	10	...	13.0	...
	1956–60	"	"	"	13 400	...	12	...	10.0	...
	1960–65	Current	"	"	22 750	...	...	...	11.7–13.3	11.7–13.3
U.S.S.R.	1946–50	Implemented	"	Rubles[1]	...	25 000	...	8	...	15.0
	1951–55	"	"	"	...	59 100	...	9	9.9	...
	1956–60	Partially implemented	"	"	...	99 000	...	...	9.9	...
	1959–65	Current	"	"	...	190 400	...	8	7.1–7.4	7.9

ANNEX TABLE 18. - MAIN FEATURES OF POSTWAR DEVELOPMENT PLANS (*continued*)

Country	Duration	Status	Scope	Currency	Total investment	Public investment	Share of agriculture in		Planned annual increase	
							Total investment	Public investment	GNP	Agricultural production
				..... *Million*			..... *Percent*			
LATIN AMERICA										
Argentina	1947–51	Implemented	Public sector	Pesos	...	6 590	...	3	...	....
	1953–57	"	"	"	...	33 500	...	4	...	...
	1965–69	Current	Comprehensive	" [2]	1 339 195	426 965	17	2	6.0	...
Barbados	1960–65	"	Public sector	£	...	11.1	...	...	...	...
Bolivia	1963–64	Partially implemented	"	$	...	210	...	13	6	...
	1962–71	Current	Comprehensive	Bolivianos	12 289 324	...	11	...	7	6.3
Brazil	1963–65	Partially implemented	"	Cruzeiros [3]	3 500 000	1 170 000	...	8	7	5.7
	1964–66	Current	"	" [4]	[5] 5 120 000	...	[5] 8	...	6	...
British Guiana	1960–64	Implemented	Public sector	£	...	23	...	...	...	...
Chile	1961–70	Current	Comprehensive	Escudos [2]	10 149	5 074	10	6	5.5	5.5
Colombia	1961–70	"	"	Pesos	[6] 74 403	...	12	...	5.7	4.3
Cuba	1962–65	"	Centrally-planned economy		...	...	...	20	8–10	...
Ecuador	1960–62	Implemented [7]	Comprehensive	Sucres [8]	7 075	2 591	...	...	4.8	...
	1964–73	Current	"	" [2]	41 007	17 713	...	7	6.3	5.6
El Salvador	1964–65	"	Public sector	Colones	...	238	...	14	...	...
Guatemala	1955/56 1960/61	Implemented	Comprehensive	Quetzales	540	250	...	17	5	...
	1960/61–1964/65	"	Public sector	"	.....	[9] 78.5	...	[9] 22	...	...
	1965–69	Current	Comprehensive	"	...	334	...	25	5.6	...
Haiti	1951–56	Implemented	Public sector	Gourdes	...	200	...	21	...	...
	1964–65	Current	"	"	...	490	...	18	...	...
Honduras	1963–64	Implemented	Comprehensive	Lempiras	363	144	...	8	[10] 2.5	...
Jamaica	1963/64–1967/68	Current	"	£	280	91	...	24	[11] 5	3.3
Mexico	[12] 1963–65	"	"	Pesos	80 000	40 000	...	18	5.4	5.5
Nicaragua	1953–57	Implemented	Public sector	$	...	59–76	...	34–36	[13] 4.5	...
	1965–69	Current	"	Córdobas	3 271	1 500	...	...	6.0	...
Panama	1964–66	"	"	$	...	95	...	19	...	...
Peru	1964–65	"	Comprehensive	Soles	38 873	11 264	...	18	7	5.7
Trinidad and Tobago	1964–68	"	Public sector	WI. $	1 980	330	...	16	[11] 5.1	4.7
Venezuela	1963–66	"	Comprehensive	Bolivars	[14] 28 191	[14] 9 433	...	17	7.9	8
FAR EAST										
Burma	1952–59	Partially implemented	"	Kyats	7 500	4 020	...	9	7.4	5.0
	1956/57–1959/60	Implemented	"	"	...	2 511	...	17	...	...
	1961/62–1964/65	Partially implemented	"	"	5 787	2 629	10	15	6	...

ANNEX TABLE 18. - MAIN FEATURES OF POSTWAR DEVELOPMENT PLANS (*continued*)

Country	Duration	Status	Scope	Currency	Total investment	Public investment	Share of agriculture in		Planned annual increase	
							Total investment	Public investment	GNP	Agricultural production
				..... *Million*			..... *Percent*			
Cambodia	1956/57–1957/58	Implemented	Public sector	C. Rupees	...	3 500	...	20	...	...
	1960–64	"	"	"	...	8 000	...	12	3	...
Ceylon	1947/48–1952/53	"	"	C. Rupees	...	1 246	...	42	...	...
	1954/55–1959/60	Partially implemented	"	"	...	2 529	...	38	...	...
	1959–68	"	Comprehensive	"	13 601	9 232	32	22	5.9	4.7
	1961/62–1963/64	Implemented	"	"	3 415	2 005	...	28	4.8	...
	1964–65	Current	"	"	1 325	769	...	23	...	...
China (Mainland)	1953–57	Implemented	Centrally-planned economy	Yuan	...	76 640	...	8	...	...
China (Taiwan).....	1953–56	"	Public sector	N.T. $	...	8 753	...	27	6.2	4.0
	1957–60	"	Comprehensive	"	20 000	12 327	20	14	7.4	4.6
	1961–64	"	"	"	50 190	34 129	16	13	8.0	5.4
India	1951/52–1956/57	Partially implemented	Public sector	Rupees	...	26 400	...	36	...	...
	1951/52–1955/56	Implemented	Comprehensive	"	41 568	23 568	...	32	2.1	...
	1956/57–1960/61	"	"	"	62 000	38 000	23	22	4.6	3.3
	1961/62–1965/66	Current	"	"	104 000	63 000	20	22	6.0	5.4
Indonesia	1956–60	Partially implemented	"	Rupiahs	30 000	12 500	...	26	3.0	...
	1961–68	Current	Public sector	"	...	240 000	...	10	3.7	...
Japan	1956/57–1960/61	Partially implemented	Comprehensive	Yen	5 512 000	...	19	...	5.0	3.2
	1961/62–1970/71	Current	"	"	38 430 000	16 130 000	...	6	7.2	2.8
Korea, North	1961–67	"	Centrally-planned economy	Won	7 000	...	...	...	15.2	13.2
Korea, Republic of	1962–66	"	Comprehensive	Hwan	3 214 500	1 118 600	17	17	5.0	3.8
Laos	1952–56	Implemented	Public sector	Piasters	...	903	...	24	...	...
	1959/60–1963/64	Partially implemented	"	Kips	...	2 758	...	11	...	...
Malaysia: Malaya	1956–60	Implemented	"	M. $	...	1 149	...	23	...	...
	1961–65	Current	Comprehensive	"	5 830	2 931	...	19	4.1	2.8
Sabah	1948–55	Partially implemented	Public sector	"	...	47.5	...	...	...	...
	1950–57	"	Comprehensive	"	108.7	...	36	...	...	...
	1955–60	"	"	"	47	...	12	...	...	...
	1959–64	Implemented	"	"	142.1	...	5	...	...	...
Sarawak	1951–57	Partially implemented	Public sector	"	...	38.6	...	13	...	...
	1955–60	"	"	"	...	99.4	...	14	...	...
	1959–63	Implemented	"	"	...	153.7	...	27	...	...
	1964–68	Current	"	"	...	343.0	...	29	...	...
Singapore	1951–57	Partially implemented	"	"	...	454.2	...	...	...	...
	1955–60	Implemented	"	"	...	562.2	...	...	...	...
	1961–64	"	"	"	...	871.0	...	6	...	...

ANNEX TABLE 18. - MAIN FEATURES OF POSTWAR DEVELOPMENT PLANS (*continued*)

Country	Duration	Status	Scope	Currency	Total investment	Public investment	Share of agriculture in		Planned annual increase	
							Total investment	Public investment	GNP	Agricultural production
					Percent		*Million*			
Nepal	1956/57–1960/61	Implemented	Public sector	Rupees	...	330	...	31	...	...
	1962/63–1964/65	"	"	"	...	670	...	20	...	...
Pakistan	1951/52–1956/57	Partially implemented	Comprehensive	"	2 600	2 200	32	...	...	...
	1955/56–1959/60	Implemented	"	"	11 600	9 352	...	26	2.8	...
	1960/61–1964/65	"	"	"	23 000	14 620	19	24	4.4	2.7
Philippines	1955/56–1959/60	Partially implemented	Public sector	Pesos	...	1 737	...	10	6.9	2.4
	1956/57–1960/61	"	Comprehensive	"	5 200	1 860	16	16	6.0	4.0
	1959/60–1961/62	"	"	"	3 446	1 067	...	14	5.9	...
	1958/59–1962/63	Partially implemented	Public sector	Pesos	...	4 348	...	13	5.8	...
	1962/63–1966/67	Current	Comprehensive	"	12 053	2 809	9	11	6.0	3.0
Thailand	1961/62–1966/67	"	Public sector	Baht	...	31 977	...	14	6.0	3.0
Viet-Nam, Republic of	1957–61	Implemented	"	Piastres	...	17 500	...	18	4.5	...
	1962–66	Current	Comprehensive	"	41 750	...	...	17	5.0	3.7
NEAR EAST										
Afghanistan	1957/58–1961/62	Implemented	Public sector	Afghanis	...	[15] 5 000	...	50	...	...
	1962/63–1966/67	Current	"	"	...	[15] 31 350	...	24	7	...
Cyprus	1961–65	"	"	£. Cyp.	...	62	...	34	6.7	...
Iran	1948/49–1954/55	Partially implemented	"	Rials	...	26 300	...	28	...	...
	1955/56–1961/62	Implemented	Comprehensive	"	167 000	84 000	...	23	...	...
	1962/63–[16] 1967/68	Current	"	"	...	200 000	...	23	6.2	4.1
Iraq	1951–55	Partially implemented	Public sector	I. Dinars	...	155.4	...	49	...	...
	1955–59	"	"	"	...	304.4	...	38	...	...
	1955–60	"	"	"	...	500.7	...	37	...	...
	1959/60–1962/63	"	"	"	...	392.2	...	12	...	...
	1961/62–1965/66	"	"	"	...	556	...	20	7	...
Jordan	1964/65–1970/71	Current	Comprehensive	J. Dinars	209	90	23	...	5.9	6.5
Libya	1963/64–1967/68	"	Public sector	£. L.	...	169	...	20	...	...
Somalia	1963–67	"	"	Som. Sh.	...	1 400	...	24	...	...

ANNEX TABLE 18. - MAIN FEATURES OF POSTWAR DEVELOPMENT PLANS (*continued*)

Country	Duration	Status	Scope	Currency	Total investment	Public investment	Share of agriculture in		Planned annual increase	
							Total investment	Public investment	GNP	Agricultural production
				..... *Million*			..... *Percent*			
Sudan	1946/47–1950/51	Implemented	Public sector	£. Sd.	...	14.6	...	36	...	...
	1951/52–1955/56	"	"	"	...	44.5	...	27	...	...
	1961/62–1970/71	Current	Comprehensive	"	565	337	21	27	[11] 4.3	4
Syria	1955–61	Implemented [17]	Public sector	£. Syr.	...	610	..	[18] 38	...	...
	1960/61–1964/65	Current	Comprehensive	"	2 720	1 720	40	51	[19] 7	5.8
Turkey	1963–67	Current	Comprehensive	T. Liras	59 647	35 700	18	...	7	4.1
United Arab Republic ..	1960/61–1964/65	"	"	£ E	...	1 577	...	25	[19] 7	5.1
AFRICA										
Algeria	1959–63	Partially implemented	Public sector	Francs	...	2 500	...	14	...	...
Basutoland	1960–63	Implemented	"	£	...	1.6	...	...	...	...
Bechuanaland	1960–63	"	"	£	...	1.8	...	...	...	...
Cameroon	[20] 1947–59	"	"	CFA francs	...	74 470	...	...	...	...
	1961–65	Current	Comprehensive	"	[21] 53 182	...	22	...	[10] 4.6	...
Chad	1948–53	Implemented	Public sector	"	...	4 112	...	18	...	...
	1953–59	"	"	"	...	8 425	...	43	...	...
Congo (Brazzaville)	[22] 1961–63	Implemented	Public sector	"	...	16 630	...	14	...	...
	1964–68	Current	Comprehensive	"	50 283	30 347	6	...	[11] 7.3	[23] 4.3
Congo (Leopoldville)	1949–58	Implemented	Public sector	B Congo Fr.	...	50 936	...	6	...	...
Dahomey	1962–65	Partially implemented	Comprehensive	CFA francs	[24] 40 119–47 569	...	18–21	...	[11] 6.5–7.5	[25] 5
Ethiopia	1957/58–1961/62	Implemented	"	Eth. $	[26] 535	...	8	...	3.8	...
	1962/63–1966/67	Current	"	"	[27] 1 696	...	21	...	4.6	2.3
Gabon	[22] 1963–65	"	Public sector	CFA francs	...	19 585	...	14	...	...
Gambia	1955–60	Partially implemented	"	£	...	0.9	...	...	...	...
	1959–64	"	"	"	...	3.5	...	...	...	...
	1962–64	"	"	"	...	2.7	...	...	...	...
	1964–67	Current	"	"	...	4 .4	...	21	...	...
Ghana	1951–57	Implemented	"	"	...	120	...	...	...	...
	1959–64	Partially implemented	"	£. G.	...	350	...	8	...	...
	1963/64–1969/70	Current	Comprehensive	"	1 016	476	6	14	5.5	6.3
Guinea	1960–63	Implemented	Public sector	G. francs	...	38 912	...	26	[11] 16	4
Ivory Coast	[20] 1947–59	"	"	CFA francs	...	58 464	...	...	...	...
	[22] 1962–63	"	"	"	...	44 670	...	15	[10] 7	...

ANNEX TABLE 18. - MAIN FEATURES OF POSTWAR DEVELOPMENT PLANS (*continued*)

Country	Duration	Status	Scope	Currency	Total investment	Public investment	Share of agriculture in		Planned annual increase	
							Total investment	Public investment	GNP	Agricultural production
				..... *Million*			..... *Percent*			
Kenya	1954–57	Partially implemented	Public sector	£	...	30	...	...	...	...
	1957–60	"	"	"	...	23	...	32	...	...
	1960–63	"	"	"	...	26	...	...	...	...
	1964–70	Current	Comprehensive	"	317	102	4	14	[11] 5.2	6.8
Madagascar	[22] 1960–63	Implemented	Public sector	CFA francs	...	23 000	...	41	...	6.0
	1964–68	Current	Comprehensive	Mg. francs	[28] 165 000	69 000	12	31	5.5	5.9
Malawi	1955–60	Partially implemented	Public sector	£	...	9.5	...	...	...	...
	1957–61	Implemented	"	"	...	12.5	...	...	...	...
	1962–65	Partially implemented	"	"	...	12.9	...	13	[19] 6	...
	1965–69	Current	"	"	...	44.5	...	...	...	...
Mali.....	1957–60	Implemented	"	CFA francs	...	20 000	...	...	...	...
	1961–65	Current	"	M. francs	...	65 000	...	20	8	9
Mauritius	1955–60	Partially implemented	"	£	...	9.8	...	...	...	...
	1960–64	Implemented	"	Mau. rupees	...	26.5	...	...	...	...
	1962–65	"	"	"	...	212	...	24	...	...
Mauritania	[20] 1947–59	"	"	CFA francs	...	3 766	...	...	...	...
	1960–62	"	"	"	...	7 766	...	...	...	...
	1963–66	Current	Comprehensive	"	27 761	13 573	8	17	9.2	2
Morocco.....	1960–64	Partially implemented	"	Dirhams	6 600	2 580	12	32	6	5.5
	1965–67	Current	"	"	3 440	...	...	...	.....	...
Niger	[22] 1961–63	Implemented	"	CFA francs	22 614	15 811	16	23	4	3.5
Nigeria	1955–60	"	Public sector	£	...	290	...	...	...	...
	1962–68	Current	"	"	...	677	...	14	4	...
Portuguese Territories ..	1953–58	Implemented	"	Escudos	...	5 800	...	31	...	...
	1959–64	"	"	"	...	8 200	...	[29] 45	...	...
Senegal	1948–53	"	"	CFA francs	...	19 800	...	20	...	...
	1953–58	"	"	"	...	18 500	...	27	...	...
	1961–64	"	Comprehensive	"	92 100	50 560	10	19	8	5
Sierra Leone	1956–59	"	Public sector	£	...	7.6	...	...	...	...
	1962/63–1966/67	Current	Comprehensive	"	124	100	6	8	8	...
Spanish Guinea	1963–66		Public sector	Pesetas	2 579	1 651	...	...	7.6	...
Swaziland	1960–63	Implemented	"	£	...	5.4	...	...	..	...
Tanzania: Tanganyika	1955–60	"	"	"	...	25.8	...	...	...	...
	1961/62–1963/64	"	"	"	...	23.9	...	28	...	...
	1964/65–1968/69	Current	Comprehensive	"	246	130	15	28	6.7	[23] 7.5
Zanzibar	1955–59	Implemented	Public sector	£	...	1.4	...	...	...	...
	1961–64	Partially implemented	"	"	...	1.2	...	...	...	...
	1964–67	Current	"	"	...	23	...	8	...	...

ANNEX TABLE 18. - MAIN FEATURES OF POSTWAR DEVELOPMENT PLANS (*concluded*)

Country	Duration	Status	Scope	Currency	Total investment	Public investment	Share of agriculture in		Planned annual increase	
							Total investment	Public investment	GNP	Agricultural production
				..... *Million*			..... *Percent*			
Tunisia	1962–64	Implemented	Comprehensive	T. Dinars	330	140	7	15	6	5.5
	1965–71	Current	"	"	1 770	...	...	33		
Uganda	1955–56	Partially implemented	Public sector	£	...	34	...	...	...	...
	1960–63	"	"	"	...	17	...	...	...	...
	1961/62–1965/66	Current	Comprehensive	"	[30] 94	[30] 72	15	19	5	...
Upper Volta	[22] 1963–64	Implemented	"	CFA francs	13 583	9 000	40	...	...	...
Zambia	1954–59	Partially implemented	Public sector	£	...	28	...	...	...	...
	1959–63	"	"	"	...	34	...	...	...	...
	1961/62–1964/65	"	"	"	...	30	...	21	...	....
	1964–66	"	"	"	...	35	...	30	...	...
	[22] 1965–66	Current	"	"	...	45.9	...	20	...	...
OCEANIA										
Fiji	1949–60	Partially implemented	"	"	...	13.2	...	...	...	...
	1957–60	Implemented	"	"	...	6.8	...	...	...	...
	1961–64	"	"	"	...	8.1	...	...	...	...
	1964–68	Current	"	"	...	15.1	...	...	...	...
Gilbert and Ellice Is.	1955–60	Partially implemented	"	"	...	0.4	...	...	...	...
	1959–64	Implemented	"	"	...	0.4	...	...	...	...
Solomon Is.	1957–60	Partially implemented	"	£	...	1.0	...	...	...	...
	1960–64	Implemented	"	"	...	1.7	...	...	...	...
New Hebrides	1958–60	Partially implemented	"	"	...	0.3	...	...	...	...
	1960–64	Implemented	"	"	...	0.6	...	...	...	...

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. Agriculture includes animal production, fisheries, forestry, irrigation, land reclamation, community development, agricultural extension, etc. Plans are included in the table only if they have been approved by the government and their implementation actually begun. The terms "implemented" and "partially implemented" in column 3 refer not to the extent to which planned targets have been achieved, but to whether the plan was in force throughout the period originally envisaged or was shelved or superseded before the end of this period.

[1] Of 1961. - [2] Of 1960. - [3] Of 1962. - [4] Of 1964. - [5] Internal resources only. - [6] For nine years only. - [7] Implemented in 1962-63. [8] Of 1959. - [9] 1963/64-1964/65 only. - [10] Per caput. - [11] Gross domestic product. - [12] Originally for 1962-64. - [13] Agriculture and industry only. - [14] Excluding additional public investment of 3,816 million bolivars approved for 1964-66. - [15] Includes some minor private investment. - [16] 5½ years, Sept. 1962-March 1968. - [17] Through annual budgets. - [18] Including power. - [19] Net domestic product. - [20] Originally a ten-year plan, but changed to two four-year plans. - [21] Including CFA fr. 17,000 million investment in kind. - [22] Interim plan. - [23] Marketed production only. - [24] Including CFA fr. 14,420 investment in kind. - [25] Food production only. - [26] Excluding Eth. $139 million investment in kind. - [27] Excluding Eth. $245 million investment in kind. - [28] Including Mg fr. 14,000 million investment in kind. - [29] Including settlement and colonization. - [30] Including recurrent expenditures.

ANNEX TABLE 19. - SUPPORTED OR STABILIZED PRODUCER PRICES OF MAIN COMMODITIES: 1964/65 IN COMPARISON WITH 1958/59

	Price in 1964/65	Price in 1964/65 in national currency in relation to 1958/59	
		At current prices	Deflated by cost of living index
WHEAT	*U. S. $ per 100 kg*	*Indices, 1958/59 = 100*	
Canada [1]	5.11	107	99
Argentina [2]	5.59	260	93
Australia	5.93	101	91
Iran [3]	6.60	100	78
United Arab Republic [3]	6.70	100	101
New Zealand	6.90	117	102
Mexico [4]	7.06	100	90
Denmark	7.10	102	82
Morocco [3]	7.11	109	91
United Kingdom	7.30	96	83
United States	7.35	110	103
Kenya	7.59	100	94
Pakistan	7.60	108	98
Tunisia	7.61	100	98
Ireland [3]	8.20	102	93
Yugoslavia	8.26	172	110
Turkey [3]	8.33	183	120
France	8.76	120	94
Israel [2]	8.92	125	92
Austria	9.50	99	83
Belgium [3]	9.52	101	95
Italy	9.87	92	74
Netherlands	9.90	122	102
Greece [2]	10.00	128	122
India [2,5]	10.40	132	106
Portugal	10.47	100	87
Sweden	10.63	134	113
Germany, Federal Republic of	10.66	103	90
Spain	11.10	132	96
Cyprus	11.38	100	96
Japan	12.50	123	94
Poland [3]	13.96	108	99
Norway	14.42	114	95
Ecuador	14.60	100	83
Switzerland	16.45	109	96
Finland [2]	18.63	123	98
RYE			
Argentina [2]	3.94	324	115
United States	4.21	97	91
United Kingdom	5.95	98	85
Turkey [3]	6.33	178	119
France [2]	6.71	109	90
Denmark	6.81	104	83
Spain	7.33	121	88
Netherlands	7.46	123	103
Yugoslavia	8.27	188	120
Portugal	8.56	104	90
Austria	8.85	100	84
Poland [3]	9.46	103	94
Germany, Federal Republic of	9.66	103	90
Sweden	10.24	144	121
Switzerland	13.19	100	88
Norway	13.44	116	97
Finland [2]	18.01	124	98

	Price in 1964/65	Price in 1964/65 in national currency in relation to 1958/59	
		At current prices	Deflated by cost of living index
BARLEY	*U. S. $ per 100 kg*	*Indices, 1958/59 = 100*	
Kenya [2]	3.43	100	94
Argentina [2]	3.66	291	104
Canada [1]	4.09	100	92
Tunisia	4.41	100	98
United States	4.41	103	96
Morocco [3]	4.54	135	112
Turkey [3,6]	4.78	139	91
Ireland	5.51	108	92
Yugoslavia	6.66	161	102
Israel [2]	6.56	116	86
Spain	6.75	119	87
Portugal	6.89	100	87
Cyprus [2]	7.05	114	110
France [2]	7.06	107	88
United Kingdom	7.35	92	80
Netherlands	8.23	116	97
Germany, Federal Republic of	9.19	106	93
Korea, Republic of [2,3,7]	9.19	214	140
Norway	10.64	108	90
Japan [8]	11.10	118	90
Poland [3]	14.38	121	111
OATS			
Kenya [2]	2.98	97	92
Canada [1]	3.61	100	92
Turkey [3,9]	4.44	129	85
United States	4.48	106	99
Spain	5.83	117	85
Yugoslavia	6.67	161	102
United Kingdom	7.56	100	87
Netherlands [3]	7.60	114	101
Poland [3]	8.88	103	94
Norway [8]	9.38	110	92
MAIZE			
Costa Rica [2,3]	3.47	100	90
Thailand [2]	3.84	109	100
Argentina [2,10]	4.30	261	93
South Africa [3,11]	4.43	103	96
Colombia [2,4,12]	4.64	131	113
United States	4.92	92	86
Kenya [2]	5.03	86	81
Guatemala [2]	5.43	86	86
Southern Rhodesia [3]	5.53	86	83
Nicaragua [2]	6.01	92	89
Congo (Brazzaville) [2,3]	6.07	150	121
Yugoslavia	6.66	161	102
Jamaica [2,3]	6.79	109	96
Korea, Republic of [2]	6.80	234	120
Spain	7.25	124	91
Portugal	7.65	100	87
France	7.71	100	87
El Salvador [2,3]	7.83	90	91
Ceylon [2]	7.85	131	122
Venezuela [3,12,13]	9.70	100	94

ANNEX TABLE 19. - SUPPORTED OR STABILIZED PRODUCER PRICES OF MAIN COMMODITIES: 1964/65 IN COMPARISON WITH 1958/59 (*continued*

	Price in 1964/65	Price in 1964/65 in national currency in relation to 1958/59	
		At current prices	Deflated by cost of living index
SORGHUM	*U. S. $ per 100 kg*	*Indices, 1958/59 = 100*	
Kenya [3,13]	2.40	108	100
Costa Rica [2,3]	2.87	86	77
Argentina [2]	3.51	290	103
United States	4.41	109	102
Israel [2]	5.91	113	84
Ceylon	6.20	97	91
Korea, Republic of [2]	6.21	251	129
RICE			
Paddy			
Burma [14]	3.13	109	104
Kenya [2]	6.18	80	75
Congo (Brazzaville) [2,3]	6.48	123	99
Ecuador [2,12]	6.77	100	83
Philippines	6.82	141	112
Colombia [2,4]	7.94	129	111
Malaysia	8.66	107	102
Guatemala [13]	8.70	100	99
Nicaragua [2]	9.06	100	97
Korea, Republic of [2]	9.33	249	128
Portugal [2]	10.26	106	93
United States	10.38	101	95
Spain	11.67	171	125
Ceylon	12.35	100	93
Jamaica [2,3]	13.27	100	88
Costa Rica [2,3]	13.95	100	90
Yugoslavia [2]	16.33	195	124
Venezuela [3]	17.91	100	94
Milled			
Pakistan, East [2,12]	10.89	100	88
Korea, Republic of [2]	13.86	250	128
Japan [15]	27.78	146	111
CATTLE			
Canada [2,16]	35.90	98	92
New Zealand [2]	37.02	132	119
Kenya [2]	41.36	122	115
United Kingdom [16]	46.85	108	94
Belgium [2,16]	49.74	102	98
Poland [2,3]	53.95	107	99
Yugoslavia [2,16]	60.66	246	159
Israel [2,16]	86.64	113	84
Norway [2]	95.20	109	92
Sweden [2]	117.91	136	122
SHEEP, LAMBS			
Yugoslavia [2,17]	29.33	220	142
Poland [2,3,18]	35.25	104	96
Canada [2,19]	36.62	92	86
New Zealand [2]	38.93	97	87
Kenya [2,20]	79.37	103	97
United Kingdom [21]	97.73	96	83
Norway [2,22]	105.00	112	95

	Price in 1964/65	Price in 1964/65 in national currency in relation to 1958/59	
		At current prices	Deflated by cost of living index
PIGS	*U. S. $ per 100 kg*	*Indices, 1958/59 = 100*	
Canada [2]	48.37	95	89
Spain [3,16]	50.43	131	102
Yugoslavia [2,16]	51.33	175	113
Ireland [3,13,23]	63.40	100	91
United Kingdom	71.12	103	90
Poland [2,3]	80.33	113	105
Norway [2]	81.20	105	89
Sweden [2]	96.75	123	104
Finland [2,24]	104.35	129	109
WOOL			
New Zealand	84.27	100	90
Canada	122.73	100	92
United States	136.70	100	93
United Kingdom	141.47	102	89
MILK			
Canada [2]	5.95	104	99
United States	6.94	103	96
Belgium [2,3]	7.28	108	104
Austria [3]	7.30	100	88
France	7.53	125	98
Netherlands	8.56	97	82
Germany, Federal Republic of [2,4]	8.73	112	104
Sweden [2]	9.45	119	101
Tunisia [2]	10.12	121	119
United Kingdom	10.52	108	94
Finland [2]	11.84	126	99
Switzerland	11.55	116	101
Israel [2]	11.87	128	95
Malta [2]	14.17	100	86
BUTTER			
Australia [2]	82.30	100	92
New Zealand [2,25]	86.57	93	84
Sweden	115.65	116	97
Denmark [2]	122.77	142	115
United States [2]	127.87	102	96
Canada [2]	158.31	100	93
Switzerland	256.94	116	101
SOYBEANS			
Colombia [4]	7.20	100	81
Canada [2]	7.33	108	101
United States	8.27	108	101
Korea, Republic of [2]	11.31	238	120
Yugoslavia [2]	16.00	218	141
Japan	16.25	110	84
GROUNDNUTS			
Senegal	9.22	103	83
Sierra Leone [13]	10.79	83	70
Nigeria [2,3]	11.09	93	79
Argentina [2,26]	12.19	227	81
Congo (Brazzaville) [2,3,26]	14.18	109	88

ANNEX TABLE 19. - SUPPORTED OR STABILIZED PRODUCER PRICES OF MAIN COMMODITIES: 1964/65 IN COMPARISON WITH 1958/59 (*concluded*)

	Price in 1964/65	Price in 1964/65 in national currency in relation to 1958/59	
		At current prices	Deflated by cost of living index
GROUNDNUTS (*concluded*)	*U. S. $ per 100 kg*	*Indices, 1958/59 = 100*	
Ecuador [2]	17.93	100	83
Ceylon	20.37	100	93
Israel [2,26]	24.60	142	105
United States	24.69	105	98
LINSEED			
Argentina [2]	8.61	240	85
United States	11.42	104	97
Yugoslavia [2]	14.67	141	91
Poland [2]	33.33	100	92
RAPESEED			
Yugoslavia [2]	11.33	131	84
Sweden	15.46	114	96
Japan	16.16	120	92
Germany, Federal Republic of [3]	16.50	100	90
Switzerland [13]	27.78	109	96
Poland [2,3]	33.33	100	92
SESAME			
Colombia [4]	13.98	115	93
Costa Rica [2,3]	13.06	110	99
Ecuador [2]	20.61	131	124
Venezuela [2,3]	35.82	109	108
SUNFLOWERSEED			
Canada [3]	8.62	106	100
Argentina [2]	10.04	280	100
Yugoslavia [2]	11.33	170	110
PALM KERNELS			
Nigeria	7.58	95	85
Congo (Brazzaville) [2,3]	9.72	120	97
Sierra Leone	10.07	116	98
Ghana [2]	10.29	120	87

	Price in 1964/65	Price in 1964/65 in national currency in relation to 1958/59	
		At current prices	Deflated by cost of living index
OLIVE OIL	*U. S. $ per 100 kg*	*Indices, 1958/59 = 100*	
Tunisia	39.71	100	98
Portugal	45.22	96	83
Spain [2]	50.00	154	120
Greece [13]	63.33	115	110
SUGAR BEET			
Denmark [2]	1.35	120	98
Canada [2]	1.40	87	81
Germany, Federal Republic of [3]	1.68	100	89
Ireland [3,13]	1.72	103	94
United Kingdom	1.76	101	88
Netherlands	1.79	120	101
Spain	2.07	146	106
Israel [2]	2.08	135	100
COCOA			
Congo (Brazzaville) [2,3]	27.55	80	64
Cameroon [4]	28.36	92	79
Ivory Coast [3]	28.36	78	67
Ghana	30.86	83	59
Nigeria	33.07	80	65
Sierra Leone	38.76	71	60
COFFEE			
	18.23	100	81
Congo (Brazzaville) [2,3]	16.98	75	71
Uganda	32.67	65	47
Ghana [2]	34.43	74	64
Ivory Coast [3]			
COTTON			
Uganda	17.59	121	114
Ecuador [2]	19.74	118	98
Spain	25.83	100	73
Australia [2,3]	28.81	100	93
Tanzania: Tanganyika [3,27]	64.51	107	108
United States [27]	73.85	97	91
Israel [2,27]	83.33	103	76

[1] Initial payment. - [2] 1959/60 = 100. - [3] 1963/64 price. - [4] 1962/63 price. - [5] Support policies operated to a very limited extent. - [6] Dark barley. - [7] Common, unhulled. - [8] Common barley. - [9] White oats. - [10] Flint maize. - [11] Levy deducted. - [12] Average. - [13] 1960/61 = 100. - [14] 1958-1960 = 100. - [15] Brown rice. - [16] Liveweight. - [17] Live sheep. - [18] Sheep. - [19] Live lambs. - [20] Dressed lamb. - [21] Dressed. - [22] Lamb. - [23] Bacon pigs. - [24] Pigmeat. - [25] Butterfat. - [26] Shelled. - [27] Lint.

ANNEX TABLE 20. - INSTITUTIONAL AGRICULTURAL CREDIT GRANTED AND OUTSTANDING IN SELECTED COUNTRIES

	Currency	Loans advanced during								Loans outstanding at the end of							
		1951	1952	1953	1955	1957	1959	1961	1963	1951	1952	1953	1955	1957	1959	1961	1963
		Million units, national currency															
NORTH AMERICA																	
United States	Dollars	...	...	...	...	...	...	...	...	7 837	8 408	8 249	9 813	11 247	13 906	15 892	19 748
Canada	Dollars	...	...	...	...	...	...	666	822	...	...	540	586	612	804	1 085	1 271
OCEANIA																	
Australia	Pounds	...	...	...	...	...	...	...	...	...	...	...	398	412	463	500	552
New Zealand	Pounds	...	...	...	...	...	...	...	...	...	...	...	132	158	180	226	345
WESTERN EUROPE																	
Austria	Schillings	870	...	...	...	...	...	...	...	...	1 212	1 516	2 467	3 056	4 034	4 789	[1] 8 064
Belgium	Francs	...	1 051	1 376	1 773	2 516	2 493	3 538	4 932	...	4 486	5 166	6 342	8 169	9 582	11 415	15 862
Denmark	Kroner	...	...	...	...	...	...	...	...	...	...	...	...	7 554	8 705	10 660	12 157
Finland [1]	Markkaa	...	...	...	...	...	...	...	...	42	45	51	93	97	118	153	184
France [1]	New francs	433	570	688	949	...	...	...	...	...	336	413	528	768	...	...	...
Germany, Federal Republic of	DM	...	753	876	2 081	2 317	2 747	3 359	4 691	926	1 384	1 902	3 986	6 306	8 947	11 612	16 111
Greece	Drachmas	...	...	...	3 386	5 480	5 528	6 090	...	...	...	...	...	...	...	...	...
Italy [1]	Lire	97	123	144	243	269	304	346	474	83	104	138	253	354	455	599	770
Norway	Kroner	...	...	...	...	...	...	...	...	1 497	1 475	1 671	2 019	2 196	2 427	2 882	3 295
Poland	Zloty	...	...	...	...	...	...	9 373	11 916	...	...	...	...	...	...	...	...
Portugal	Escudos	...	...	...	2 315	2 704	3 376	3 344	3 081	...	...	...	859	1 041	1 359	1 921	1 912
Romania	Lei	...	...	...	...	...	...	940	...	...	...	...	...	...	...	...	...
Sweden	Kronor	...	...	...	...	...	...	...	...	...	2 988	3 245	3 678	3 999	4 454	4 930	5 589
United Kingdom	Pounds	...	...	...	...	...	...	...	...	...	231	233	272	280	355	438	498
Yugoslavia [1]	Dinars	17	24	11	39	115	303	...	...	38	40	79	140	...	...	...	...
LATIN AMERICA																	
Bolivia [1]	Bolivianos	...	...	...	...	...	12	7	11	...	...	...	...	...	4	...	27
Chile [1]	Pesos	...	...	14	33	64	...	...	...	...	...	...	...	...	...	199	...
Cuba	Pesos	...	...	...	...	...	32	...	372	36	48	44	...	...	36	...	444
Dominican Republic	Dollars	9	...	38	18	11	16	...	...	...	...	...	...	...	...	...	...
El Salvador [2]	Colones	...	...	...	...	...	...	...	1 036	...	...	...	...	...	...	...	933
Ecuador [2]	Sucres	181	207	226	314	369	283	337	301	...	...	...	...	...	...	...	529
Guatemala	Quetzales	...	...	...	...	27	26	38	47	...	...	...	...	...	...	...	...
Haiti [2]	Gourdes	...	...	...	...	...	...	...	923	...	...	...	...	...	...	...	3 007
Honduras [2]	Lempiras	3 699	5 350	7 995	...	...	...	...	...	...	4 334	5 094	3 948	...	...	...	...
Mexico	Pesos	...	...	...	6 303	9 000	...	...	...	514	...	...	1 072	1 218	...	...	...
Panama [2]	Balboas	...	...	815	1 851	2 278	...	...	...	...	...	616	1 455	2 111	...	...	...
Paraguay	Guaranies	...	...	57	...	80	...	...	...	...	...	40	...	56	...	...	...
Peru	Soles	...	...	...	...	...	...	2 578	...	...	...	...	...	...	1 090	...	...
Puerto Rico	Dollars	29	30	31	37	...	...	...	...	30	33	33	44	...	...	...	...
Venezuela	Bolivares	...	...	...	...	...	372	...	...	...	...	...	...	...	...	...	...

FAR EAST																	
Burma	Kyats	...	...	53	...	55	70	87	...	...	...	...	...	...	...	...	...
Cambodia	Piasters	8	15	24	57	132	164	85	...	4	18	27	65	43	91	139	...
Ceylon	Rupees	31	32	...	...	38	33	42	63	...	...	...	...	...	...	...	...
Hong Kong [2]	Dollars	...	...	528	2 228	4 073	2 579	8 595	3 642	...	...	...	...	3 509	3 320	6 324	2 511
India	Rupees	519	670	771	863	1 659	2 086	...	...	...	...	...	...	...	...	...	...
Indonesia	Rupiah	...	...	...	...	...	...	...	...	...	...	...	...	693	...	...	...
Japan [1]	Yen	...	...	...	...	...	...	...	...	101	184	252	364	512	557	1 025	1 457
Laos [2]	Kips	...	...	7 265	6 468	...	...	...	...	...	...	...	...	...	...	...	...
Malaysia: Malaya [2]	Dollars	...	...	3 179	...	...	...	10 375	...	...	...	3 241	...	...	...	...	...
Sarawak [2]	Dollars	...	...	...	...	...	1 431	3 959	...	...	...	...	...	...	...	...	...
Nepal [2]	NC	...	...	...	...	200	...	2 277	2 030	...	...	...	...	...	...	...	3 009
Philippines	Pesos	...	204	229	245	346	610	859	1 431	...	294	345	413	577	703	912	1 308
China (Taiwan)	Dollars	...	...	...	...	6 083	...	...	...	...	...	...	...	992	...	...	...
Viet-Nam, Republic of	Piasters	...	...	18	154	201	868	320	495	...	...	...	...	...	...	...	...
Thailand	Baht	...	...	...	...	...	...	...	55	...	...	...	...	...	...	...	301
NEAR EAST																	
Cyprus [2]	Pounds	...	...	...	...	...	...	7 935	...	...	...	...	...	...	...	17 852	...
Iran	Rials	181	192	284	...	...	1 960	...	...	653	571	615	...	...	3 101	...	...
Israel	Pounds	...	...	...	...	...	...	...	...	...	...	...	513	447	558	768	1 250
Jordan [2]	Dinars	...	...	465	713	...	1 042	...	...	...	...	...	...	...	4 458	...	...
United Arab Republic	Pounds	12	19	20	13	20	29	39	70	2	7	7	...	...	...	...	27
AFRICA																	
Algeria	Francs	...	63	60	65	67	...	...	...	...	29	36	40	39	...	...	...
Cameroon	CFA francs	...	...	...	...	...	597	...	...	...	...	...	...	...	...	...	...
Central African Republic	CFA francs	...	...	...	...	...	...	...	334	...	...	...	...	...	...	...	...
Chad	CFA francs	...	...	...	...	...	...	2 346	3 099	...	...	...	...	...	...	...	...
Congo (Brazzaville)	CFA francs	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	87
Dahomey	CFA francs	...	...	...	...	...	...	...	88	...	...	...	...	...	...	...	131
Ethiopia [2]	Dollars	161	150	259	...	1 707	1 445	1 243	851	148	274	451	...	3 229	5 327	6 631	7 257
Gabon	CFA francs	...	...	...	...	...	...	...	16	...	...	...	...	...	...	...	...
Ghana [2]	Pounds	...	...	...	...	...	2 531	...	...	...	...	...	...	...	...	810	...
Kenya	Pounds	...	...	...	...	9	8	8	10	...	...	...	...	12	12	13	12
Liberia [2]	Dollars	...	...	...	...	...	...	...	639	...	...	...	...	...	...	...	786
Libya	Pounds	...	24	40	...	...	348	...	...	...	...	...	...	...	239	...	...
Madagascar	CFA francs	...	514	162	280	...	504	342	...	...	631	537	561	...	...	...	...
Mauritania	CFA francs	...	...	...	...	...	...	...	20	...	...	...	...	...	...	...	17
Mauritius	Rupees	...	...	...	70	72	...	...	...	...	...	...	...	...	96	113	60
Morocco	Dirhams [3]	...	...	90	97	159	63	[3] 53	...	...	...	8 589	9 559	12 465	...	...	...
Mozambique	Escudos	...	...	...	...	...	...	...	...	17	17	17	...	...	...	...	...
Nigeria [2]	Pounds	...	270	597	1 588	1 384	2 477	...	5 325	...	148	244	832	1 007	2 990	...	2 886
Reunion	Francs	...	324	189	665	...	...	...	...	...	369	206	834	...	...	...	...
Seychelles [2]	Rupees	...	...	...	...	6	38	36	160	...	...	...	131	...	45	...	...
Sierra Leone [2]	Pounds	6	7	...	67	...	...	...	...	5	5	...	42	...	...	...	...
Tanzania: Tanganyika [2]	Pounds	...	...	...	...	...	...	...	...	2 344	...	...	...	3 248	5 148	...	...
Togo	CFA francs	...	4	...	7	13	126	...	66	...	...	...	...	13	167	...	166
Tunisia	Francs [4]	...	...	3 732	5 880	...	...	5 916	6 100	...	...	...	...	...	...	2 294	3 242

[1] Thousand million national currency units. - [2] Thousand national currency units. - [3] For the years prior to 1961, francs have been converted at the rate of 1.025 dirhams per new franc. - [4] For the years prior to 1961, francs have been converted at the rate of 0.851 dinars per new franc.

TIPOGRAFIA SQUARCI-ROMA

THE STATE OF FOOD AND AGRICULTURE

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In addition to the usual review of the recent world food and agriculture situation, each issue of this report from 1956 has included one or more special studies of problems of longer term interest. Special chapters in earlier issues have covered the following subjects:

1956	Some factors influencing the growth of international trade in agricultural products
	World fisheries: general trends and outlook with examples from selected countries
1957	Factors influencing the trend of food consumption
	Postwar changes in some institutional factors affecting agriculture
1958	Food and agricultural developments in Africa south of the Sahara
	The growth of forest industries and their impact on the world's forests
1959	Agricultural incomes and levels of living in countries at different stages of economic development
	Some general problems of agricultural development in less developed countries in the light of postwar experience
1960	Programing for agricultural development
1961	Land reform and institutional change
	Agricultural extension, education and research in Africa, Asia and Latin America
1962	The role of forest industries in the attack on economic underdevelopment
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