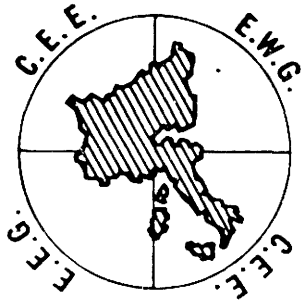


STUDIES

Food aid from the EEC to developing countries

Problems
and possibilities

Agricultural
series

14

COMMUNAUTÉ
ÉCONOMIQUE EUROPÉENNE

EUROPÄISCHE
WIRTSCHAFTSGEMEINSCHAFT

COMUNITÀ
ECONOMICA EUROPEA

EUROPESE
ECONOMISCHE GEMEENSCHAP

EUROPEAN
ECONOMIC COMMUNITY

BRUSSELS
1965

Food aid from the EEC to developing countries

Problems and possibilities

STUDIES
AGRICULTURAL SERIES No. 14
BRUSSELS 1965

CONTENTS

CHAPTER II : DISPOSAL OF AGRICULTURAL PRODUCE TO DEVELOPING COUNTRIES AND TERRITORIES

ANNEXES

This survey has been carried out by a panel of experts at the request of the Directorate-General of Agriculture of the European Economic Community and with the collaboration of the " Balances, Surveys and Information " department (H.B. Krohn, department head, and J.M.J. Lommez). The General Affairs Directorate of the Directorate-General for Agriculture, the Directorate-General for External Relations and the Directorate-General for Overseas Development assisted in the work. The panel consisted of:

Professor M. Cépède, Institut national agronomique, Paris.

Professor A. Maugini, Istituto agronomico per l'oltremare, Florence.

Professor H. Wilbrandt, Institut für Ausländische Landwirtschaft der Technischen Universität, Berlin.

Dr A. Kruse-Rodenacker, Technische Universität, Berlin, acted as rapporteur.

FOREWORD

For several years now the problem of co-operation with developing countries has been increasingly engaging the attention both of these countries themselves and of the industrialized nations in a position to offer their support.

In this connection, assistance in the form of supplies of agricultural and food products plays a not inconsiderable part, and the issues related to this form of aid are many and varied. Some of them are bound up in one way or another with decisions which must be taken within the framework of EEC, and more particularly with decisions concerning the common agricultural policy.

With regard to future measures in the sphere of production and of agricultural price policy, the greatest care has to be exercised to avoid the bulding up of structural surpluses of farm products in the Community.

Meanwhile, the idea has been put forward that certain EEC surpluses of agricultural and food products might find an outlet in developing and under-supplied countries.

In this context it has become essential to possess objective data in order to appraise the actual outlets for agricultural products in the form of aid — with due regard to the different aspects of these problems — to determine the limits of such outlets, and to obtain all the information needed to situate this specific form of aid in its general context of assistance to the economic development of the countries concerned.

The Commission therefore requested a panel of experts to carry out a close study of the opportunities and problems involved in aid in the form of agricultural and food products in the context of the general development aid which may be offered to these countries, with particular regard to the special interests of the beneficiary countries.

This survey may not, however, be considered as expressing the definitive ideas of the EEC Commission in this field, but solely those of the authors.

INTRODUCTION

The object of the present report is to study the opportunities for greater outlets for EEC agricultural products. For this purpose countries and territories associated with EEC and other developing countries are treated as destinatory countries. Countries belonging to the Soviet bloc do not fall within the scope of the present survey, although they may equally well constitute potential outlets.

As time goes on the world-wide problem of how to dispose of farm products will assume increasing importance for the EEC too. The authors of the report have reasoned from the premise that an expansion of commercial outlets for agricultural products in associate and other underdeveloped countries is hardly to be expected in the next few years — a fact borne out in the surveys of individual countries.

It is for this reason that non-economic outlets for agricultural products assume a major interest, all the more so since surpluses for which a non-commercial utilization might be foreseen now look like building up in EEC.

The report is confined to the following items : cereals, milk products, meat (beef) and sugar. Other products, such as wine, have also been considered on occasion.

The regional surveys concern the following countries and territories : Maghreb, Libya, West and Central Africa, Somalia, Ethiopia, Turkey and India. Besides these, there are subsidiary surveys dealing in condensed form with some aspects of the problems arising. These cover Tanganyika, Afghanistan, Saudi Arabia and Latin America.

In this report and the surveys annexed the countries have been studied from as many viewpoints as possible. The most widely differing climatic, ethnic and socio-economic factors have been taken into consideration.

The surveys concerning Afghanistan and India analyse the situation in the Middle and Far East. In addition to this, one study deals with Latin America, although only from the angle of outlets available for powdered milk.

The cases examined are probably to some extent representative of the very varied situation of the different countries and territories associated with EEC and of the other developing countries. They illustrate most of the essential features of these countries and territories, whose aggregate population amounts to about 790 millions. If the population of all the developing countries outside the Soviet bloc is calculated at about 1 300 millions, these countries account for about 60%. The surveys deal with the current position of the countries studied and have been carried out on the basis of the most recent statistical and social science documentation available. The authors of the reports on individual countries have also attempted to forecast the food deficit in 1975.

The regional surveys are given in the Annexes. The general report deals with the problem of food requirements and their importance for economic development. The order of magnitude of the food deficit, as calculated in the regional surveys, is briefly indicated, and the report then goes on to study the general aspects of the problem of outlets for agricultural products in developing countries.

The general report is preceded by a summary and the recommendations following from it.

I. *STATEMENT OF THE PROBLEM AND STARTING POINT*

1. The possibility has to be faced that structural products which cannot be commercially utilized on the spot will build up within the EEC territory. On the other hand, hunger and undernourishment prevail in numerous developing countries. The idea suggests itself of remedying or alleviating the shortage on one side by means of the surpluses existing on the other.

Structural surpluses of this kind have been current for years now in the United States and it has been necessary to find a use for them. American development aid is determined to a considerable extent by the need to utilize farm surpluses.

In EEC, on the other hand, there still exists some latitude in decisions on agricultural policy : the emergence of agricultural surpluses can be either encouraged or prevented. For this reason, it is important to investigate forthwith whether and how, to what extent, on what conditions, to what end, and at what cost, agricultural surpluses can be utilized in developing countries.

2. Shortage of food is not synonymous with demand and does not lead automatically to the equalization of glut and deficit markets. Exports to developing countries of agricultural products from soft-currency countries are on the increase. The opportunities and prospects for an expansion of commercial exports from hard-currency areas, such as EEC, to developing countries are limited, even if export bonuses are granted to bring higher national prices down to the world market level. Only a few countries with relatively limited requirements and adequate holdings of foreign currency, thanks to exports of petroleum, minerals, special agricultural products, etc., can afford to pay for such imports.

3. In numerous developing countries, especially heavily populated ones where growing needs are not yet met by national production, these can only be satisfied in the near future — if, indeed they can be satisfied at all — by planned utilization of surpluses. This means essentially utilization for specific aims — which cannot be achieved by commercial methods — encouraged by advantageous conditions: long-term financing, possibly at reduced interest and repayable not only in foreign currency but also in that of the country of destination or in goods, or even supply of surpluses as a gift. This survey deals only with possibilities of utilizing surpluses.

The disposal of surpluses may in the first place help to relieve possible strains on the EEC internal market. In this case, the desirability, the necessity and the financing of such disposal must be evaluated according to appropriate criteria. If it meets urgent development aid needs, surplus utilization must be appraised from this angle. We here assume that EEC will consider the utilization of surpluses in developing countries when this is the most effective means of eliminating shortages and at the same time deserves priority in the context of general development aid.

Before the emergence of surpluses creates a *fait accompli* which could impose a costly decision to valorise at any price — if the destruction of surpluses is rejected — it is advisable to examine for which products, in what quantities, and on what conditions opportunities for utilization exist.

It seems logical af first sight to consider the planned utilization of surpluses in developing countries only as a means of meeting fresh additional needs, that is need in excess of present commercial imports. A closer examination shows that this simple criterion is not always realistic or justified. When their economy begins to develop, the emerging countries' import needs increase for industrial products. The balance of trade begins to show a deficit or, if already in deficit, deteriorates even further. The order of import priorities changes and willingness to make commercial imports of agricultural products on the same scale is affected in consequence. Inversely, the rapid growth of population aggravates the need for food. For this reason, "fresh additional needs" cannot be deduced purely and simply from statistics of earlier imports.

4. Requirements and deficits in foodstuffs of the most varied kinds can be reduced to a common denominator. The different norms used to assess undernourishment have in common the fact that they take as a minimal standard a certain quantity of carbohydrates (expressed in calories) and a certain quantity of proteins (expressed in protein grammes). The

distinction between protein of animal and protein of vegetable origin is an essential one. Although there is general agreement among writers on the subject on a minimum final calories requirement per day per person of 2 300 to 2 500, the same is not true with regard to protein, and in particular to the proportion to be provided by animal sources. The FAS (Foreign Aid Service) uses the lowest norms (65 g. of total protein of which at least 7 g. are of animal origin and 17 g. from pulses and animal food). European authors set the minimum requirements in protein of animal origin rather higher (1).

In the rich countries, the food ration contains at least about 3 000 calories and 70 g. of protein, chiefly of animal origin. In deficiency countries the calorie ration, the total protein ration and the percentage of animal protein are below the minimum standard.

However, these figures still do not express the distinction between poor and rich nutrition. The following calculation shows this. Fodder plants constitute the basis of products of animal origin. On a rough average about 7 primary vegetable units are needed to produce one animal unit. A diet rich in food of animal origin and containing 3 000 final calories per day per person contains 10 000 to 12 000 primary calories, i.e. rather more than 1 000 kg of "grain units" annually. This is four or five times the value of a poor diet of 2 000 calories composed mainly of cereals and tubers. But the factor is even higher where the production costs of a rich diet are concerned. The simplest diet corresponding to the above norm contains 3 000 primary calories. But it normally costs, if it has to be bought, two or more times as much as a purely vegetable and unbalanced diet of 2 000 calories. Leaving aside special problems and starting from the nutritional requirement — or from the deficit — per head and from the numbers of population, it is possible to calculate total figures for the various developing countries or for all of them taken together.

II. *RESULTS OF REGIONAL SURVEYS*

5. The regional surveys annexed show great differences between the food levels of different countries. These model surveys, which are offered only as examples and are not based on homogeneous norms, constitute a sufficiently broad sample for an understanding of the problems of the developing countries as a whole and, in conjunction with other surveys, give an approximate idea of the food structure in these countries. Despite insufficient statistics, substantial deficits in respect of cereals, sugar, meat and other foods can be noted if physiological needs are confronted with the actual diet. A deficit in calories, and even more frequently in protein, an insufficiently varied or inadequate diet among the masses or in certain social classes, for the whole year or for certain periods, throughout the entire country or in certain regions, are features of the situation, particularly when harvests are bad. A variety of harmful effects results. These are particularly serious for the "vulnerable groups" of the population, when the minimum of animal protein is not attained.

6. The rapid growth of population during the last few decades, following improvements in health services and hygiene, has aggravated nutritional difficulties. Agriculture, usually traditional and primitive, is frequently unable to cope with such a rapid increase of needs. In this connection allowance must be made for the fact that in the first phase of development (the "negative phase" — see General Report) nutritional requirements increase faster than supplies from production.

7. As yet, imports and the disposal of surpluses have made a relatively small contribution to meeting the effective increase in consumption which chiefly affects simple foods of vegetable origin. In India, for example, with a present population of 438 million, 97% of the extra 20 million tons of cereals consumed by the population in 1958–59 compared with 1950–51 was provided by increased home production and only 3% by imports. Total annual cereal imports to developing countries rose from 14.1 million tons in 1948–52 to 19.5 million tons in 1958. The proportion of these supplies represented by United States surpluses increased from 25% to 44%.

8. The size of the deficit can be demonstrated by a comparison of the effective consumption with the nutritional needs resulting from minimum physiological standars.

If individual investigations are considered — that into India for example — surveys carried out in the United States, show a current deficit in relation to the FAS norms of 250 calories and 8 grammes of total protein, including 1 g. of animal origin, per person per day (2).

This deficit of 9 to 15% in relation to the norm corresponds to about 11 million tons of wheat and 440 000 tons of powdered skim milk. The total 1962 deficit of the developing countries estimated on this basis is calculated at 45 million tons of cereals and pulses and 1.8 million tons of powdered skim milk.

(1) See Annexes.

(2) See World Food Deficit, FAS-USDA 1961 p. 23.

9. The Indian Nutrition Advisory Committee (NAC)(1) has fixed nutritional targets, which provide among other things for per capita meat consumption 10 times higher than at present and milk consumption five times higher. The agricultural production necessary to cover this consumption would correspond at the present time to extra fodder requirements amounting to 80 million tons of grain units.

Amazing figures are obtained for nutritional requirements when consumption for the presumed 1976 population is forecast on the basis of the NAC norms. From the equivalent of 64.2 million grain units in 1958/59, requirements for direct human consumption and for livestock feeding would double or treble, increasing to 182 million, or according to another method of calculation, to as much as 267 million. Similar orders of magnitude would be obtained for other countries if the nutritional level of the presumed consumers in 15 years time were raised to norms approaching those obtaining in rich countries. If these calculations were generalized to cover all developing countries, astronomical figures would result for 1975. The enormous disparity between a primitive diet and a rich diet would be evident; however, we shall not make such a generalization here.

10. Such evaluations of physiological needs point to remote targets. It is, however, advisable to enquire whether they can provide a realistic basis for a planned utilization of surpluses. The actual needs to be anticipated must be examined, and an estimate made of what home production can contribute and of the balance which can and must be met by surpluses from other contries — in the event from EEC. A realistic answer can only be found if the forecast made in terms of physiological norms is supplemented by other considerations of a more profound nature. Technical, administrative, economic and other obstacles, must also be taken into account.

The food deficit in physiological terms is only one of the bases for an examination of possibilities for the utilization of agricultural produce. In general, it is much more substantial than the amount of demand which can be satisfied through purchases on the market. This grows only with the increase of national revenue and with the development of the monetary sector of the economy and of buying power.

III. *PROBLEMS AND LIMITS OF SURPLUS UTILIZATION TO OVERCOME FOOD SHORTAGE*

11. The chief aims of a feasible utilization of surpluses in developing countries can be broken down as follows:

i) Regular delivery of food to complement the diet of undernourished consumer groups,
ii) Improvement of the diet of vulnerable groups,
iii) Disaster aid,
iv) Promotion of agrarian reforms in the widest sense of the term,
v) Building up of reserves.

12. The desire to improve the diet of all undernourished persons so that their food intake shall correspond to certain norms comes up against a number of limits of which only the most important can be mentioned here.

13. The supply of free food to every undernourished person to complement his deficient diet would upset the fundamental principles of social and economic evolution, namely the creative will of the individual, personal responsibility, personal effort, the inseparability of performance, demands and satisfaction, etc. All personal efforts to achieve the best possible living conditions would be paralysed. Consequently, the regular utilization of surpluses must be confined to those groups of the population who are willing to work and produce in return for the extra food they receive.

14. Thus a farming population providing its own food cannot be considered for surplus utilization. The purchase of foodstuffs which one can produce one's self is incompatible with the very principle of farming exclusively or chiefly to meet the farmer's and his family's own needs.

15. Regions at a great distance from ports and internal communications or possible distribution centres and the population living there are largely excluded from this regular supply of extra food. Surplus products from abroad can only reach these places at very great expense.

16. In the majority of developing countries, these limitations reduce the number of potential consumers of surpluses to some 20%, and often less, of the total population. Less than 10% of the population lives in ports, and less than 20% in centres near the coast. Non-agriculturalists are rarely more than 20% of the total. It is possible that these percentages may increase somewhat by 1975, but they will show no fundamental change.

17. A frequent consequence of population growth is an increase in self-supply by farming households. Where production does not increase in step (for instance, in Turkey) the quantities of farm products available for sale fall. It becomes more difficult to supply a growing non-agricultural population. In such cases, imports of surpluses can remedy a food deficit.

---

(1) See Table V. Report on India.

18. Cereals and tubers are the staple food in poor countries. Food which can meet higher demands is an important aim for the future. But a diet with more meat, eggs, milk, etc. (animal protein) presupposes correspondingly higher purchasing power. This grows only slowly, with the expansion of the economy at large. If purchasing power is weak, protein requirements can in the main only be met by products of vegetable origin (pulses).

19. In the foreseeable future the supply of a simple diet to the accessible fraction of the fast-growing population of the developing countries is the principal factor determining the volume of surpluses which can be used for the general improvement of nutrition. This materially reduces the opportunities for utilizing surpluses, even when a rise in purchasing power makes possible consumption of food of animal origin approximating more closely to physiological needs.

20. Under present nutritional conditions, cereals (and small quantities of pulses) constitute the main surplus product which can be supplied from outside. This applies even where tubers are the staple diet (Africa). Besides economic factors, eating habits and the need to supply products which can be replaced later by increased home production militate in favour of this principle.

With regard to nutrition which improves with development, the cost factor practically rules out supplies of any sizeable quantities of milk products, meat, eggs, fat, etc. As a general rule, it seems more advisable from an economic point of view to meet extra needs by home production (resorting, if need be, to deliveries of coarse grain surpluses) than to supply produce of animal origin.

For this reason it is not advisable at present to hold out any prospects to EEC agriculturalists for the disposal in developing countries of large quantities of animal produce (for exceptions see point 21). However, supplies of surpluses may pave the way for possible commercial supply, even of sophisticated produce in the future.

21. Protein of animal origin is indispensable to complement the dietary of vulnerable groups (especially children, pregnant women and heavy workers). The use of powdered skim milk has given the best results. Free distribution of this product to children and pregnant women is to be recommended.

Each child benefiting from the supply of surpluses is expected to become a citizen capable of working. The supply of powdered milk to preserve life and improve health requires only a fraction of the expense which will have to be devoted to the child's education, his academic and professional training and the provision of employment, etc. for him in later life.

Food aid to vulnerable groups makes it imperative to pay attention to these supplementary expenses. Particularly in the initial stages of development (the negative phase), it is difficult to meet these costs. This may lead developing countries to give thought to the problem of planning their population.

22. Bad and, in extreme cases, even catastrophic harvests sometimes occur. In such an eventuality, surpluses — especially of cereals — can and must be used to relieve hunger, and humanitarian imperatives must outweigh economic considerations such as transport difficulties and the like. In famine years, when the provisioning of towns by home production is jeopardized and the rations of consumers without purchasing power are made up from outside, free supply seems appropriate, with the sole proviso that farming populations should be required to make repayment in kind from the produce of subsequent harvests or in the form of labour supply. Such reimbursement in kind might make it possible to introduce a stocking policy at national or regional level to cope with difficult situations in the future.

23. Agrarian reforms, where they are necessary in developing countries, pose complex problems which often result in lower production during a transition period. The utilization of surpluses may bridge over such shortfalls in production.

24. If the problems described above are to be solved it is essential to lay in certain stocks when good harvests occur. At least in the first stages, assistance from outside would provide an effective stimulus.

25. Considerable unexploited production reserves exist in most developing countries, even the heavily populated ones. But time is needed before they can be developed by a combination of modern production techniques and other measures. It would be a complete misunderstanding of the demands of development to refrain from making every effort to encourage home production on the pretext that it is possible to obtain a certain quantity of surpluses. Surplus utilization may help to overcome difficulties in a period of transition, but it cannot take the place of home production.

Provided water is available in sufficient quantity, home production can most rapidly yake the place of surpluses in the case of sugar. Industrial organization combined with the promotion of sugar-cane or sugar-beet growing brings progress in a few years. Prospects of

supplying sugar to developing countries — in as far as they exist at all — will be present only during a brief transition period: (certain oil-producing countries are a probable exception). Production of cereals and pulses will only rarely increase at the same pace. The expansion of animal production is in general likely to take third place.

It must be expected that the promotion measures taken in a growing number of developing countries will increasingly lead to expanded production. The rate of progress is difficult to estimate. The extent and duration of surplus utilization will depend on the outcome of the race between growing needs and growing production.

26. None of the above mentioned aims in the utilization of surpluses can be achieved without an efficient institution to regulate the market in the receiving country, and to act as the partner of the supplying country. The task of this institution is to analyse the needs to be met from outside at any given moment, to ensure the transshipment, unloading, storage, transport and distribution of the surpluses in deficit areas. It must watch that they are utilized only where there is a threat of shortage and rising prices and that they do not cause excessive supply which would disturb the normal price structure and deprive home production of its outlets. Nor can it be the aim of this institution to facilitate direct or indirect re-exportation. This is especially applicable to the supply of extra food to vulnerable groups, which can be effectively carried out only where consumption can be supervised in hospitals, schools, etc.

Where such institutional facilities are lacking, really profitable surplus utilization, achieving all the aims mentioned, is impossible.

Abuses, misuse, damage and other shortcomings in administering supplies cast discredit upon the utilization of surpluses both in the country of destination and in the country of origin. In such cases supplies should be refused or at least reduced sufficiently below the limitations of volume already described to ensure their profitable utilization.

27. The conditions which have been recommended for the distribution of surpluses to consumers must be distinguished from the conditions to be agreed upon by the supplying and receiving countries. The utilization of surpluses presupposes the existence of the facilities mentioned under Point 3; otherwise it could not take place. The clauses of agreement depend on the particular situation and the aim of utilization.

Free supplies are desirable as aid in case of disaster, and as complementary food for vulnerable groups.

Various ways of financing utilization come to mind where other aims are concerned.

IV. *UTILIZATION OF SURPLUSES AS AN AID TO GENERAL ECONOMIC DEVELOPMENT*

28. Food aid from abroad does not always take priority in the programmes of the governments of developing countries. Other desiderata in the field of economic development in general, particularly the wish to industrialize, often have preference. Initially, only a small proportion of the potential labour force is required, with modern methods of work and production, in factories, transport, etc. — in short, in the relatively small vanguard of the early stages of a national economy. It is only here that the increased capacity for work resulting from an improved diet assumes importance in the context of general development. This category of privileged consumers is probably identical with the population groups described under Points 16 and 17, or perhaps even more restricted. Meanwhile, the greater part of the population increase must wait in the " ante-room of progress ". An improved diet for them can do little to promote general development.

It is not only when food aid is given as a form of credit, i.e. when it must be paid for at a future date, that governments may be inclined to accord it only limited or selective priority. As is known, costs occur in the supplying country even when food is made available free of charge. If the aid given is not repayable it may be desired to make it available for uses which the receiving country deems more profitable.

29. The interest of receiving — and of supplying — countries in the utilization of surpluses increases decisively if, in addition to providing better nutrition, the surpluses can play a wider role as an essential factor in the promotion of rapid and lasting economic development. This possibility exists.

In poorer countries many useful, productive and urgent development projects cannot be undertaken for want of the necessary capital. In every development project a certain proportion of the total expense is accounted for by food consumption. This proportion can often be made available in the form of surpluses. The higher the percentage of labour costs in a development project, the higher the proportion of outlay on food. Work on agricultural improvement, irrigation and drainage, reafforestation, the building of dams, canals and roads is wage-intensive.

In educational projects based on scholarships, food costs can account for half the total expenditure. On average, supplies of surpluses probably could cover 20% of the total costs of many development projects in industry, infrastructure, agriculture and education.

When foodstuffs are supplied to consumers against payment, but delivered by the supplying country on the favourable terms mentioned above, surplus utilization, as a contribution to the creation of capital, performs a double function in the acceleration of general economic development. The technique employed to obtain this double contribution is to pay the proceeds of the sale of surpluses into a development or counterpart fund. This fund will then be used to finance development projects which would otherwise be unrealizable.

30. The dual purpose of surpluses can only be achieved where food and capital are simultaneously in short supply and supplementary productive development projects can be carried out only with the help of such contribution from outside. Development projects financed from the proceeds of surpluses must therefore be undertaken only as a supplement to what was possible with the means previously available. If the provision of surpluses led to the neglect or abatement of efforts to increase agricultural production or to build up home capital, or to laxity in the collection of taxes, generating budgetary imbalance, it would quite obviously cease to promote general economic development and even become the very opposite of help to self-help.

31. The implementation of a project often calls for the use of capital goods manufactured abroad. Surpluses can only be completely effective if the foreign capital needed to procure such goods is made available at the same time.

32. An optimum development of the economy, which means *inter alia* a favourable input/output ratio, is in the interests of both the supplying and receiving countries. In the case of agricultural surpluses, this ratio is not favourable. Unlike supplies of industrial production media which, in the receiving country, retain all the value they had in the supplying country plus transport and other costs, agricultural products delivered do not have much more than half — and often less than half — the value of the price in the supplying country as regulated above the world level. While it may thus be true that surpluses cost the supplying country more than they are worth to the country benefiting, they nevertheless fulfil an important function by virtue of their dual utility.

33. The supply of surpluses must be regarded as part of total aid to developing countries. The aim cannot simply be to get rid of surpluses. Basically, such supply should not be considered merely as aid available only in this form to supplement other development help and nothing more. The surpluses must be utilized productively in the total context of general aid. Decision on whether a specific proportion of total aid shall be given in the form of surpluses should be made in the light of the requirements of each country's development plans. Only in this way is it possible to appraise the full value of a supply of surpluses.

The ideal share of surpluses in total development aid is not the same everywhere and at all times. Twenty per cent seems to be the average requirement (1). When development aid is well applied, this proportion falls as it becomes clear that increased supplies of surpluses mean smaller deliveries of industrial equipment. It must be expected that developing countries will increasingly try to reduce the share of surpluses by means of home production so as to obtain more investment goods which cannot be manufactured on the spot. In almost all developing countries, a growing need for capital to finance general economic development must be expected. Compared with this, food requirements lose in importance in terms of value.

If the proportion of surpluses is too high, they not only forego their effectiveness but will also be less appreciated in the receiving country. The latter, moreover, begins to wonder whether the purpose of the supplies is less to assist its development than to regulate the market and eliminate strains in the donor country. For this reason the supply of surpluses should not be regarded as a permanent task. It should rather be applied in such a way that it may progressively fade into the background and finally disappear in favour of aid to development in other fields.

34. Long-term programmes for surplus utilization must be worked out in agreement with the receiving countries. So that these programmes can be fitted into the general planning of production in EEC and overall development plans, relatively regular supplies on which both parties can rely are necessary. It is recommended that the supply of surpluses be made expressly dependent upon the agreements concerning optimum utilization in the fields of nutrition, capital formation and the use of counterpart funds for development projects. Agreements on the supervision of these funds should also be a precondition.

---

(1) This percentage agrees with a FAO recommendation which came to our knowledge only after the concept presented here had been completed.
See "Food products in the service of development". FAO (Rome 1961).

35. The improvements in nutrition and the programming of the expansion of production made possible by surplus utilization are complicated matters. Programming calls for specialist knowledge and skills, and for advice, leadership, and administration provided by experts who have received all-round training. The training of a considerable number of planning specialists from EEC and the developing countries should be put in hand in good time so as to facilitate joint planning of productive surplus utilization based on the most thorough knowledge available.

36. The EEC, the countries concerned, and the international organization dealing with the problems of surpluses would be well advised to work out a concept and common principles taking into account both the development needs of the receiving countries and the capacities of the supplying countries.

37. The current methods of surplus utilization are often regarded by certain international organizations as a form of dumping. The existing rules are not adequate to cover the supply of surpluses as part of development aid, which is an innovation calling for new standars, so long as it is not a cover for aggressive plans to expand markets, thus distorting the aim of development aid. New international agreements are necessary to regulate the provisions of surpluses. They should take account of the various aims of such operations and also protect the trade in agricultural produce which can and should to some extent be a consequence of surplus utilization.

It is recommended that the EEC take the initiative in concluding such agreements.

38. Many developments are impossible to predict, and this makes it difficult to attempt to estimate the possible extent of surplus utilization by EEC. Population growth might perhaps be calculated with a relatively small margin of error. But it is more difficult to assess the development of the economy at large, the proportion of the population which is " accessible ", the proportion of those who are not self-suppliers, their buying power, and the scope and pace of success in stepping up agricultural production. How far can programmes to improve nutrition, based on physiological considerations, be carried out in the face of all these uncertain factors? What will be the attitude of the United States — so far almost the only supplier of surpluses — and what consequences will it have for EEC?

In present circumstances, it would seem that the limits of development can be plotted as follows:

a) Opportunities for utilization over a considerable period fitting in with the requirements and resources of the developing countries exist only for cereals and powdered skim milk. The prospects for sugar are more limited in time. For meat they are practically non-existent;

b) It seems possible that the utilization of the combined supplies from EEC, the United States and possibly other countries will increase in the next five years beyond the present 14 million tons of cereals and 250 000 tons of powdered skim milk. During the following five years home production in many developing countries may be expected to make up much leeway. It is not therefore unlikely that in ten years surplus utilization will return to the present level, and later drop below it.

If the amount of surpluses rose to 20 million tons of cereals and a million tons of skim milk, this would be worth nearly 2 000 million dollars at current world prices, but would cost the supplying countries 50% to 100% more. These costs in excess of the world market level should be booked to the expense of market stabilization in the supplying countries.

If the proportion of surpluses is not to exceed one fifth of total development aid, the latter will need to be stepped up to 10 000 million dollars annually. As long as this total outlay is not achieved, there can be little hope of the amount of surplus utilization reaching the above figures. But if this total is reached it is possible that the maximum needs of the developing countries for outside aid will be exceeded, so that the proportion represented by surplus utilization might remain below 20%.

It is impossible to calculate on the basis of the developing countries' requirements what proportion of the total volume of surpluses might be provided by EEC. An assessment of this possible amount on the basis of the EEC contribution to total development aid from all donor countries would be of no more than speculative value.

GENERAL REPORT

CHAPTER I

FOOD NEEDS IN DEVELOPING COUNTRIES

1. *THE PROBLEM OF NUTRITION IN DEVELOPING COUNTRIES*

SEASONAL AND REGIONAL NATURE OF UNDERNOURISHMENT

Regional surveys of certain developing countries have made it possible to determine approximately the nutritional deficiencies of their populations. Section 4 contains quantitative data extracted from the reports on individual countries. The astonishingly high food deficit, not only in the countries dealt with, but very generally in a large number of underdeveloped countries, poses grave problems of a quantitative and qualitative nature for the future of these countries themselves and of mankind as a whole. The food deficit accounts for the widespread poverty in the world, with all its disastrous consequences for the health of the people concerned.

Undernourishment in underdeveloped areas generally varies by seasons and by regions. Thus, part of the population of the Maghreb (Morocco, Algeria, Tunisia and the Departments of the Sahara) is often inadequately fed for seven months of the year; this undernourishment affects 25% of the population in the West of the territory and 50% in the East. Similarly, throughout the whole vast extent of Ethiopia, where natural conditions are so varied, it is easy to find local shortages due to special climatic conditions or to epidemics.

In those areas of structural, i.e. permanent, deficit in India, which form a belt more than 2000 km long from the territories north of Bombay to the eastern tip of Assam province, both seasonal and regional variations in the food deficit can be observed. In Central Africa seasonal variations are specially marked in the zones of drought and in those areas where cultivation along rivers yields no harvest in the dry season. Platt and Miss Grand have recorded variations from 1400 calories at the end of the interharvest period, to 3000 calories after the harvest, with an average diet of 1800 calories. The observations of the Pales mission in former French West Africa largely confirm these findings.

SOCIAL GROUPS AND TRADITIONAL DIETARIES

The food level often varies noticeably according to different social categories and age groups, and while there is probably a sufficient supply of calories, undernourishment, even purely in terms of calories, is often very serious among children and adolescents. Thus the investigations carried out by Nicol in Nigeria have shown that the calorie deficit, by age group, among children in the South, is 25% of the requirement from one to three years of age, 22% between 10 and 12 years, and 6% after 13 years.

The traditional way of life of the local populations, which often hinders or entirely precludes any fight against caloric undernourishment and faulty nutrition, constitutes a special problem.

This leads to the conclusion that constant propaganda will be necessary to convince native populations of the need to collaborate actively in efforts to improve their diet. It certainly does not suffice that experts and statesmen record the quantitative and qualitative shortage of foodstuffs and the consequences of such a low nutritional level for health and physical efficiency, for the populations on the spot to be incited to work more and longer with the aim of extracting more foodstuffs from the soil; these people must also be made aware of the fact that the nutritional programmes are designed to meet urgent needs and are carried out exclusively in their interest and in that of their families. This attitude of the local populations, which might be described as a sort of unconscious indifference to any improvement of the food situation, can in many cases impede complete success.

Nutritional habits vary greatly according to ethnic groups, and this can sometimes have disastrous results: for instance the Ashanti workers employed in the rubber plantations of Liberia refuse to eat rice, the main cereal in that country's diet.

The investigation carried out by Périssé from 1954 to 1958 in five villages in Togo, none of them much further than 150 km from the others, produced the following results: in one of these villages, millet, voandzu peas, groundnuts and various other pulses form the staple diet; in

the second, millet and pulses are supplemented by a large quantity of yams; in the richly wooded southwestern region, roots, tubers and various plantains form the staple diet, while in another village, the inhabitants consume chiefly manioc but no yams, and the only cereal is maize. Throughout the whole of Black Africa, it can be observed that the indigenous population regard fish as a condiment and not as a subsistence food.

Such consumption habits are naturally the consequence of the low incomes and the production methods prevailing in different regions. Only a slight proportion of the foodstuffs produced is transported over relatively long distances. Thus in the dry regions of Central India, millet forms the staple diet, while the inhabitants of the Punjab chiefly consume wheat. In all regions of heavy rainfall where it can be cultivated — for example in the coastal areas in the South of India and especially in the northeastern provinces — rice is the staple diet. Vegetable produce plays an important part in numerous dietaries.

Deliveries of foodstuffs are not in themselves sufficient to solve these nutritional problems, for experience has shown that the local population does not readily learn to balance its diet with richer food products. For this reason non-commercial supplies should consist only of products which are part of the food of the insufficiently or incorrectly nourished population concerned whose diet they will help to balance and a part of whose basic food they may continue to be in the future.

CONSEQUENCES OF URBANIZATION

The problem is complicated by urbanization and its influence on nutritional habits, not only in the towns as such, but in all areas which come more or less into contact with modern civilization. A psychologically conditioned reluctance to consume local products often appears, and is reinforced by the impression that the use of new foods brings social prestige. Millet and sorghum are replaced by rice, maize, and even wheat. If, as is the case with rice, the imported product is less expensive in the coastal regions than rival local foods, this harmful process is naturally further accelerated. We have chosen the example of millet deliberately, because not only the economic but also the nutritional aspect of the problem is important: the substitution of rice and especially of maize, but even of wheat, for millet means a deterioration in the diet, which must then be supplemented by additional food rich in protein, often of animal origin, and consequently expensive. If imports of food do not serve simply to make up local production but replace it, the situation will be worsened instead of improved.

In some of the individual country reports [1], it has been possible to determine what proportion of the population could be reached. Thus in Libya it seems difficult to help the nomad population. But here, too, there are not hard an fast rules admitting of no exceptions and a solution which, for convenience sake, was confined to the urban populations could have dangerous consequences if it aggravated the exodus of the rural population to the shanty towns and slums which surround certain urban centres. Such assistance, instead of enabling insufficiently productive workers to become solvent consumers, would turn them into permanent recipients of relief. Instead of promoting development, it would thus have encouraged systematic impoverishment.

On the whole, the following facts emerge from the reports on individual countries and from other documentation:

a) Measured by the experience and criteria applicable to advanced countries, a high percentage of the population of developing countries, varying according to regions, suffers permanent or seasonal undernourishment or malnutrition, from the angles of the caloric value or protein content of its food, or of other norms or criteria;

b) Firmly established and long-standing habits are a barrier to progress;

c) Along with numerous improvements, social and economic changes in the developing countries often entail a deterioration in the food situation.

2. *NUTRITION AND ECONOMIC DEVELOPMENT*

The task of economic activity is to satisfy needs. Since nutrition is one of the fundamental needs of man, its improvement must also rank among the aims of a country's economic development. But to what extent is such an improvement an indispensable condition of economic development?

IMPROVED NUTRITION IS NOT SUFFICIENT TO BRING ABOUT INCREASED PRODUCTION

The food situation of certain countries is such that it is pointless to hope for economic development before breaking out of the vicious circle in which people do not eat enough because they do not work enough and do not work enough because they do not eat enough.

The improvement of the food situation of wider population groups in developing countries no doubt constitutes a physiological precondition for an increase in the output of human labour.

[1] See Annexes.

Nevertheless, satisfying these needs is not sufficient in itself to ensure increased productivity from a better-fed labour force. Along with physiological bases, other conditions, especially of an economic, social, psychological and institutional nature, must be satisfied. We shall return to this point later. The improvement of human nutrition with a view to increasing production consequently gives rise to numerous problems: the creation of new jobs, vocational training, higher capital input so as to increase work productivity, new behaviour patterns, etc., which we are accustomed to group under the general heading " development problems ". Improved nutrition in developing countries may be an indispensable factor in numerous cases, but is not sufficient on its own to solve the problem of economic development.

ASSIMILATION OF THE FOOD LEVELS OF DIFFERENT POPULATION GROUPS

There are also marked differences in the nutritional situation of the various population groups in most developing countries, and it is indeed observed that particularly badly fed groups often have to perform a substantial amount of work.

According to a survey compiled in Morocco for the period 1952/53 to 1955/56 by an FAO expert (Dr Ferro-Luzzi), it seems possible to estimate that a first group (about 20%), which he describes as " heavy eaters " probably consumes more than 3 250 calories per head per day: another group (about 20% to 30%) consumes on average 1 800 calories, or about half the first amount, while for the rest of the population the calorie level is quite normal.

With regard to protein, especially animal protein, the variations are even greater. This is the case in most developing countries.

For this reason, in the reports on individual countries (1), nutritional needs are often calculated, not on the basis of the total population, but on its breakdown into different groups. This breakdown is according to place of residence, social position, age, occupation, etc. Just as the incomes of these groups will be brought into line at a later stage of economic development, so the different nutritional levels ought first to be approximated in numerous developing countries.

SPECIAL POSITION OF VULNERABLE GROUPS

Vulnerable groups — pregnant and lactating women, children, adolescents, heavy manual workers, etc. — occupy a special position in this connection. Particular attention should be paid to improving their nutrition.

Not only are food deficits to be noted during the process of development but they even show a tendency to grow during a " negative phase " (2). The number and the needs of the mouths to be fed grow faster than the labour force available to produce food. As a result of this demographic phenomenon, this " negative phase " probably reaches its worst level towards the 15th year of the development process; the original level is regained at about the 25th year, and that of the developed countries attained at about the 45th year.

For all these reasons the improvement in nutrition will be able to take place not before, but only at the same time as the economic development of these countries.

The situation varies completely according to locality and, because of the political, economic and financial circumstances, these problems are extremely complex and defy any one specific solution. The time factor also plays an essential part. All progress on the social and human, as on other planes, requires a long process of psychological preparation and can only be achieved step by step.

DEVELOPMENT OF NATIONAL AGRICULTURE

As long as a country does not decide to risk devoting all its potential to industrialization and to utilize vast imports of foodstuffs, the improvement of nutrition remains of necessity geared to what home agriculture is able to produce. There are in fact numerous regions which are so backward that the prompt achievement of appreciable results in the execution of programmes to improve agriculture and stockraising is hardly possible. The main problem is the psychological preparation of the local population: how to bring them to realize that the instructions and advice given them aim exclusively at their well-being and the well-being of their families, and thus ensure their full co-operation in the programmes of development.

Among the manifold stages of development which can be noted in the course of the preliminary investigations, we may distinguish the following:

a) Those advanced elements of the rural population, who are prepared to put into practice forthwith the advice offered them by the experts. Here, it is easy to carry out programmes to intensify and improve existing forms of agriculture, and substantial progress can also be expected in the adoption of new techniques;

(1) See Annexes.
(2) See: Démographie et développement – Progrès et agriculture ISEA 1962.

b) Those who are basically open to the advice of experts, but somewhat suspicious and incredulous; such people need to be constantly supported and encouraged by special measures in their favour;

c) Finally, those rural circles whose outstanding characteristic is lack of initiative, and who adapt a negative attitude and are not prepared to co-operate more actively in agricultural progress. True, this category is a minority, but nevertheless it cannot be left out of account.

3. *ASSESSMENT OF THE SITUATION*

Another difficulty connected with the calculation and progressive elimination of the food deficit in developing countries is the quantitative assessment of what we call " the food requirement ".

It would hardly be realistic to assume that this requirement will correspond exactly to the aims of a physiologically satisfying diet. While " nutritional standards " can and must guide our investigations, allowance must be made for the obstacles to the desired transformations which can stem from nutritional habits. Account must also be taken of changes, more or less acceptable for the local population, which result, for instance, from increased purchasing power and urbanization.

We shall therefore attempt to arrive at a synthesis which is neither utopian nor the mere anticipation of an undirected evolution. However, we are dependent upon the available documentation which, if used without great caution, could lead to rather gross miscalculations.

A. SOURCES

For the individual countries we have in general used two sources of documentation: food balances and food inquiries.

a) Food balances vary in their completeness. Certain products consumed by the farmer himself do not always appear in them; this is often the case with the game, fish, wild fruit, roots, etc., which sometimes play an important part in improving the food level. However, it would be going too far to conclude from this that consumers in deficiency countries actually have more than is apparent from such balances, and that everything is for the best, for example, in India (see Helen Farnsworth - M.K. Bennet). To make such an assumption is to forget, first, that in developing countries averages in food balances conceal very marked divergences and, secondly, that one of the most immediate effects of economic development is precisely to curtail the part played by self-supply in the diet, especially with regard to food harvested by those who actually eat it, since provisions are increasingly obtained from the market.

It seems necessary to go a little further into the differences observed in the food levels of the populations of developing countries. Some of these differences are due to natural causes. Harvests can vary considerably from one year to another, particularly in regions where rainfall is the deciding factor (North Africa, India, Lybia). Pronounced seasonal changes can also cause wide variations in the level of nutrition in the course of the same year (West Africa). Other differences are concealed by the administrative structure of statistical regions; in former French Equatorial Africa, Chad, where stock-breeding was widespread, raised the average consumption of animal products over the whole territory — and yet meat was more than twice as dear in Brazzaville as in Fort Lamy. Other divergences, finally, depend upon human factors: seasonally conditioned variations in income affect prices when these are at their highest.

b) The food inquiries bear the same relation to balances as individual reports to statistics. They are more detailed, can be more precise and correspond to situations actually observed. However, the problem is to assess how far they are representative of the whole, and it can be hoped to find the answer by comparing them with the results of the food balances. It is not sufficient to draw up balances or to carry out inquiries; methods of evaluation enabling the results to be compared must also be laid down.

B. METHODS OF EVALUATION

If seems possible to resolve many of the difficulties in the evaluation of consumption or subsistence levels by taking calories as a basis — for example 2 500 calories per person per day. However, we know that calories alone are not sufficient; in addition to " fuel ", food must provide other vital substances necessary for the growth, the capacity to function and the continual renewal of the organism. Now living beings, Man in particular, are " imperfect chemists "; they cannot obtain the substances essential for them from the synthesis of all foodstuffs at will. The order passed on by the nutritionist to the agricultural scientist thus suddenly becomes much more complicated: not only are calories needed, but also mineral substances, vitamins and protein — and all of specific kind and volume. The theory that it was sufficient to ensure the necessary quantity of calories and that everything else needed would be found in the same food was only true in respect of an extremely varied and primitive nourishment. Only those

who have not advanced beyond the point of knowledge reached by Lavoisier would today propose to feed people with products which provide calories cheaply. The disatrous results would be all too soon apparent: when undernourishment or hunger as such has been theoretically defeated, malnutrition, the result of deficiencies in specific substances, takes over.

Wide discrepancies between estimates

Stockbreeders soon discovered that animals essentially suffer from the lack of nitrogenous fodder. Transferred to the field of human nutrition, this recognition led to nitrogenous products being included in rations. However, as it was desired to feed people as cheaply as possible, vegetable products, mainly pulses, were used to provide the nitrogen. At this stage of knowledge of human nutrition, bread, pulses and water form the basis of the diet of all collectivities (prisons, armies, boarding schools and hostels, canteens in factories, on building sites and on plantations. The disastrous results continue, for human beings cannot assimilate plant foods as well as the herbivorous animals, which are capable of synthesizing the aminic acids for their tissues from the protein in their vegetable diet. Humans obtain certain of these acids by consuming animal products (meat, fish, eggs, dairy produce).

This explains the natural tendency for the consumption of pulses to fall as soon as the food level improves, i.e. as soon as other sources of protein can be utilized. One point remains obscure in this matter : most physiologists seem in fact to admit that pulses could provide a large proportion of the necessary protein normally found in animal products. According to the hypotheses of the Foreign Agricultural Service (FAS) of the US Department of Agriculture in a series of recent surveys, a minimum of 7 grammes of animal protein would be sufficient in a daily protein requirement of 65 grammes, if the total animal and dry vegetable protein intake were 17 grammes per person per day.

The Office de la recherche sur l'alimentation et la nutrition en Afrique (ORANA) has given much higher figures (1) both for the total protein requirement and for that portion which should be of animal origin. Even taking as its unit of consumption the needs of a sedentary adult with a minimum of activity, ORANA considers that this adult needs 80 grammes of protein per day, of which 40 should be of animal origin.

On the basis of the same sources of information, the deficit in total protein and in animal protein per head in the countries listed in the table below is estimated following FAS criteria on the one hand, and ORANA criteria on the other.

grammes / day

Country	Total protein deficit		Animal protein deficit	
	FAS estimate	ORANA estimate	FAS estimate	ORANA estimate
Algeria	6	21	0	25
Ethiopia	0	4	0	24
Libya	9	24	0	32
Morocco	0	8	0	23
Tunisia	0	13	0	25
Republic of Congo (Léopoldville) and Ruanda-Urundi	16	31	0	33
Cameroons	14	29	2	35
Former French Equatorial Africa	9	24	0	33
Former French West Africa	6	21	2	35
Liberia	23	38	4	37
Turkey	0	0	0	28

Vegetable calories

These discrepancies between estimates of protein requirements, especially for animal protein, are an important problem, for the fact that human diet must contain certain elements which are only found in animal products is the chief reason for differences between food levels. These differences can be expressed in terms of volume of production, since animal products are obtained through the conversion of vegetable products by animals. This conversion is accompanied by not inconsiderable loss. On the basis of observation in Western Europe, the international organizations, in particular FAO in its worldwide investigation of food in the years 1934-38 published in 1946, put the ratio at 1:7, which means that to obtain one calorie of animal produce an average of 7 calories of vegetable produce must be consumed. This has made it possible to work out a method of evaluating the agricultural — i.e. vegetable —

(1) See regional survey on West and Central Africa page 65.

production necessary to ensure a particular standard of nourishment. This scale is much broader than that of calorie consumption, since in general poor dietaries are also poor in animal products, while these products tend to occupy a large place in a richer diet.

If a diet of 1900 final calories per person per day is made up of 1800 calories of vegetable products and of 100 calories of animal products it will represent, calculated in vegetable calories (also called original or primary calories) 1800 + (7 x 100) = 2500 vegetable calories. In the rest of the report and in the annexes, final calorie is used in the first case and primary or vegetable calorie in the second.

In a daily ration of 3000 final calories for a properly fed human being, there may easily be 1100 calories from animal products. To ensure this ration it has been necessary to produce 2500 calories from vegetable products consumed directly by humans and 7 x 1100 calories of such products converted by animals, or a total of 2500 + (7 x1 100) = 10200 vegetable calories.

4. *THE FOOD DEFICIT IN THE COUNTRIES INVESTIGATED*

The results of the calculations of food requirements, as made in the different reports on individual countries, are indicated below. The complexity of the problem of nutrition in developing countries, and the difficulty of taking established norms as a basis for calculation, explain why the figures given are only very approximate. These problems have been dealt with above.

Moreover, it has been possible to make calculations and estimates concerning the nutritional deficit only for representative foodstuffs. As the situation varies from country to country, the hypotheses on which the calculations and estimates are based sometimes diverge.

LIMITED VALIDITY OF THE CALCULATIONS

In most of the countries covered by this survey, the statistical documentation necessary to calculate the food deficit is hard to come by. The grouping together of different regions where food conditions are not the same yields averages of limited validity, especially when the data apply to several countries.

The calculations and estimates are based on different considerations according to the reports on individual countries: abolition of undernourishment, abolition of ill-balanced nutrition, growth and changing structure of the population, modification of eating habits, higher standards of education, etc.

The reports are also drawn up on premises which vary according to conditions in the different countries and the documentation available. In the interest of conciseness, calculated and estimated figures have had to be given below without the manifold hypotheses on which they were based. The reports annexed on individual countries provide more precise information on these points.

The forecasts for 1975 are of necessity extremely vague, for some of the countries dealt with are on the point of modifying permanently many of the factors on which they were based. This applies to population growth, which in some countries is on the edge of the "explosive phase" and in others is already about to be countered by family planning. It is just as difficult to predict for these countries the development of industrialization and the effectiveness of agricultural promotion and, consequently, of national agricultural production, which is such an important factor in any forecasts.

The authors of the surveys on the following countries have made every attempt to pinpoint as fas as possible the trends of development already emerging or to be expected.

In these conditions, the following data, both for the present period and for 1975, should by and large be considered only as giving examples of the high food deficit of the countries investigated.

In the reports concerning India and Turkey, the quantities shown concern the physiological needs on the one hand, and actual demand on the other. The other reports on individual countries, however, attempt a synthesis of these two elements in the figures they give.

A. MAIN REPORTS

North Africa

This territory comprises Morocco, Algeria and Tunisia; the Departments of the Sahara have been added.

The food deficit for 1960 amounts to:

Cereals	500 000 to 600 000 tons
Powdered skim milk	100 000 tons
Meat	500 000 tons
Sugar	300 000 tons

For 1975 two hypotheses have been considered and the following are the results:

in tons

Product	Hypothesis I	Hypothesis II
Cereals	0	500 000
Powdered skim milk	400 000	100 000
Meat	750 000	0
Sugar	730 000	730 000

Libya

In this country, the food deficit in 1961 was:

Wheat	46 000 tons
Milk	20 000 tons
Sugar	12 000 tons

and for 1975

in tons

Product	For the total population	For the stable population	Vulnerable groups
Wheat	83 000	67 000	27 000
Milk	36 000	29 000	12 000
Sugar	21 000	17 000	7 000

West and Central Africa

The territory investigated comprises the following countries: Senegal, Mali, Mauritania, Upper Volta, Dahomey, Ivory Coast, Niger, Chad, Togo, Cameroons, Gabon, Congo (Brazzaville) and the Central African Republic. Account has also been taken in the discussions of Congo (Léopoldville) including Ruanda-Urundi.

For this territory, the food deficit is the following:

in tons

Product	1960	1975
Cereals	1 250 000	2 250 000 to 4 050 000
Powdered skim milk	165 000	495 000
Meat	400 000	1 750 000

Somalia

On the basis of the two hypotheses, the food deficit in 1961 was:

in tons

Product	Hypothesis I	Hypothesis II
Milk	57 000	57 000
Wheat	3 000	19 000
Sugar	29 000	16 000

We consider that the forecasts according to which food needs, calculated for 1961, could remain constant until 1975 are well-founded.

Ethiopia

On the basis of three hypotheses, the food deficit in 1960 (including animal protein) was:

in tons

Product	Hypothesis I	Hypothesis II	Hypothesis III
Common wheat	178 000	35 000	14 240
Sugar	55 000	11 000	4 400
Whole milk	2 200 000	440 000	176 000

In 1975 it will be:

in tons

Product	Hypothesis I	Hypothesis II	Hypothesis III
Common wheat	106 700	42 700	17 100
Sugar	44 000	17 600	7 100
Whole milk	627 000	251 800	100 500

If only the purely physiological deficit is considered, the results obtained are very different. This is also valid for Turkey, whose case is examined below.

Turkey

In Turkey, the food deficit in cereals is at present between 0.5 and 1.5 million tons, depending on the results of harvests.

In the next ten years we must reckon with an increase which is unlikely to exceed 2 million tons and which, by 1975, should already again be shrinking. A deficit of 2 million tons is to be expected for 1975.

India

For India, the food deficit in cereals for 1960 can be put at about 5 million tons. By 1975 this deficit, after reaching a maximum of

10 million tons, should return towards the present level, unless the purchasing power of the population is substantially increased.

B. SUBSIDIARY REPORTS

Latin America

On the basis of an average forecast, which would entail uniform milk consumption throughout Latin America equal to the present level in Uruguay and ensuring an annual ration of 180 kg of milk products, expressed in terms of milk, to every inhabitant of Latin America (1957), the import requirement would be in the region of 14 million tons. This is only a third less than total internal output, which amounts to about 20 million tons.

While the milk requirement of vulnerable groups in 1960 can be estimated at 23 million tons, their needs calculated for 1975 amount to 32 million tons.

Tanganyika

In this country, the food deficit is unimportant. If existing opportunities are sufficiently exploited, there is no need to fear any appreciable shortage in the future either.

Afghanistan

Attempts at assessments in this country, where the situation is little known, encounter great difficulties. A very small food deficit in cereals (in the region of 50 000 to 80 000 tons) can be taken as a basis. This deficit will not necessarily increase by 1975.

Saudi Arabia

Saudi Arabia is the example par excellence of an oil-producing country with abundant foreign exchange. It is impossible to imagine a food deficit needing to be covered by non-commercial imports. On the contrary, commercial deliveries are possible. Import requirements for 1961 do not attain 100 000 tons; for 1975 they will be several times that figure, possibly rising to more than 500 000 tons of cereals.

C. CONCLUDING REMARKS

Even though for some countries (Turkey and India, for example) deficits may reach a maximum before 1975, it is equally true that none of them will have completed the "negative phase" of development at that date. The point in time at which the volume of the deficit will be less than that observed at present depends upon the further course of economic development and can hardly be forecast.

5. *THE SITUATION IN THE OTHER DEVELOPING COUNTRIES*

We have already pointed out that the countries studied in the present report provide very valuable information with regard to the situation of the other developing countries. The question now is to ascertain whether similar results may be expected for these countries.

The hypothesis on which the above-mentioned calculations and estimates are based are so diverse that it is impossible to convert the results into per capita rates for the whole of the territory studied. It appears even less justified to base estimates concerning other developing countries upon these results.

It seems fair, however, to suppose that the same calculations and estimates would reveal high deficits for other developing countries also. On this point, other surveys, such as those of the Foreign Agricultural Service, US Department of Agriculture: "World Food Deficit 1961" may be consulted.

6. *THE CHOICE OF PRODUCTS TO BE MADE AVAILABLE*

The choice of the farm products to be used in nutritional programmes presents difficult problems. Care must be taken not to supply products which do not correspond to any essential need or whose consumption cannot be kept up, given the living standards which development will most likely make possible within a reasonable period, whether such products come from the national output or from commercial imports.

CEREALS AND PULSES

From this point of view surpluses of cereals and pulses seem to offer abundant openings for utilization. Such products should nevertheless be quickly replaced by national products, for natural conditions in which these cannot be cultivated hardly occur in any country considered. The differences between production costs observed everywhere in the world today are in fact much more the result of economic and social conditions, population density, level of technical development, operating capital and productivity, which development should tend to

harmonize, than of the suitability for cultivation as such of the regions in question. Even if transport costs by inland waterway or sea are not so high as to be an adequate protection in coastal cities, costs of transport overland may, however, be such that the differences in production costs which might remain after adequate development of agriculture in the beneficiary countries could be made up and effective protection in inter-regional competition assured. In countries where harvests are subject to considerable fluctuations (for instance, in dry areas), supplies of cereals and pulses to build up buffer stocks could be of great assistance. In any case, during the whole negative phase, certain outlets exist for surpluses: the possible lag in the increase of agricultural production behind growing needs resulting from general development may even open up real commercial outlets for a number of years. This contingency, which depends upon the relative pace of development in the different areas, must be examined case by case.

SUGAR

Wherever a sufficient quantity of water is available, national sugar production can be relatively easily expanded. In regions where sugar-cane can be cultivated no considerable industrial investments are required. In all countries with a rising standard of living the consumption of sugar also rises rapidly. However it provides only calories. It seems therefore that it should not be considered in food aid programmes and be kept preferably for commercial transactions. This conclusion is subject to reservations in that sugar can be used as a preservative and as an ingredient in food compounds specially designed for the programmes (e.g. condensed milk, biscuits, etc.) and that supplies may awaken a requirement or accelerate the rate of growth of consumption. Sugar is moreover a product which helps governments to find fiscal resources and to mop up purchasing power which could distort development, especially in places where wages are relatively high (large coastal towns, petroleum and mining centres).

ANIMAL PRODUCTS

Exactly like that of sugar, the consumption of animal products will probably increase in step with growing purchasing power and, in a general way, with economic development. But unlike the consumption of sugar, that of animal products is not of interest merely as one consequence of a higher standard of living: it has a positive effect on the state of health of the population and their capacity to work, and must therefore be a factor in any development planning.

However, the possibility of including these products, especially meat, in the programmes is limited by their high price. The expansion of local or, at least, regional production is often dependent on natural conditions which it will not always be easy to improve (e.g. dangers of epidemics in tropical forest regions). It is still true, however, that vast areas of developing countries offer considerable opportunities for increased output of animal products, particularly meat. Poultry farming is possible almost everywhere.

In view of the cost of livestock products and their importance for consumers, all measures must be prevented which would limit their volume or would interrupt – even temporarily – commercial supplies at present helping to provision the local populations.

a) *Meat*

At some future date, however, the natural suitability of certain non-European countries in the temperate zone for animal breeding should enable them to export a certain amount of meat, at least to the coastal areas of developing countries in the tropical rainy forest zone.

The hopes of European countries of finding outlets for large quantities of animal products in developing countries are therefore likely to be disappointed. The pros and cons of including these products in food aid programmes should be very carefully weighed, if it is desired to avoid distortions in the development of beneficiary countries.

b) *Milk products*

On the other hand the importance of milk products, particularly of powdered skim milk, in the nutritional programmes of developing countries is such that certain financial sacrifices may be contemplated both by donor and receiving countries in favour of such products. As a result there may be considerable outlets for powdered skim milk. Financial sacrifices in regions insufficiently suited to raising their own cattle would then pave the way for permanent commercial supplies.

CHAPTER II

DISPOSAL OF AGRICULTURAL PRODUCE TO DEVELOPING COUNTRIES AND TERRITORIES

1. *NEED FOR A NON-COMMERCIAL UTILIZATION FOR AGRICULTURAL PRODUCTS (SURPLUSES)*

Acquaintance with the territories, populations and rural economies of the regions whose economic and agricultural development is to be promoted by the aid programmes is a first precondition for the success of the latter.

The carrying out of these tasks involves certain detailed investigations into the physical and biological environment and into historical, political, demographic, economic, commercial and other factors. The aim of these investigations, which describe the situation in the territory, is to reveal the points to which the main effort must be directed and where careful adjustment and reordering can hasten the desired development.

On the completeness and realistic quality of the information included in the preliminary studies will depend the diagnosis of the symptoms and consequently the choice of programmes.

Investigations of this nature may present considerable difficulties, for it is not always easy to understand the psychology of the native population, to interpret the hidden details and to find an explanation for a large number of facts observed in the course of the investigation.

In order to facilitate understanding for the native way of life, it must be remembered that it has to be interpreted in terms of adjustment to the environment, i.e. that it is the result of innumerable factors through whose simultaneous action the phenomena noted in the course of the investigations are determined.

Some of these many different factors have already been taken into account in the calculations and estimates used to assess the food deficit. On the other hand, the physiological food deficit proper, if the present level of nutrition in developing countries is judged by the nutritional standards of highly developed economies, runs into astronomical figures.

Furthermore, the calculations and estimates of food deficit in the reports on individual countries leave out of account all those problems and difficulties which the delivery of agricultural produce by EEC and other potential suppliers will certainly raise. This second chapter will now correct this lacuna and show the positive ways in which EEC can deliver agricultural products to developing countries with a food deficit.

The reports on individual countries show that commercial outlets for food products are very few in number and limited in size. This is due mainly to the low purchasing power of the populations, the high storage and distribution costs, the balance-of-payments deficit of the countries concerned, the rigidity of eating habits and numerous other factors which will be examined later.

The outlets available to EEC farm products are therefore not generally of a commercial nature. Rather is it necessary for developing countries to contemplate specific non-commercial procedures in the form of long-term credits, low-interest loans, barter on favourable terms for beneficiary countries, price abatements and, above all, gifts. The surplus products beginning to appear in EEC take on particular importance in view of this special position of the developing countries.

WHAT ARE SURPLUSES?

The question now arises as to what fraction of agricultural production may be considered as surpluses. Here we must distinguish between:

a) Supply of domestic production at the internal price obtaining at any given time;

b) Home and foreign demand at this price.

In themselves, the products of supplier a) which are no longer absorbed by demand b) may be regarded as surpluses. In supply a) account would also need to be taken of the artificial limitation of national production.

As a general rule, however, the price of the agricultural products offered is differentiated and, above all, subsidized. Other steps to regulate the market are also taken, for example to smooth out fluctuations in supply. Consequently it is extremely difficult to ascertain what ought or ought not to be regarded as surplus production.

For this reason, when speaking in the following pages of surpluses and their utilization we mean abnormal stocks which have piled up

over a long period and which can only find outlets in the producing country, and especially abroad, if specific measures of a non-commercial nature are resorted to by public authorities.

Such measures can take various forms: price-cutting, barter, counterpart funds, gifts, etc. Measures, even similar to these, which form part of transactions regulated by international commodity agreements are for this reason not considered in the remarks below. In some cases, non-governmental organizations may also apply such measures for surplus utilization.

The EEC does not yet possess surpluses, in the sense described above, of any sizeable quantity. However, as we already emphasized at the beginning of this chapter, the possibility of their emergence as the EEC agricultural policy develops is not to be excluded.

POSITION OF EEC

It is therefore possible that EEC will be able to respond to the developing countries' requirements for a better supply of food products – requirements which, as we have seen, can in the main be met only by non-commercial measures – by the utilization of any surpluses which might build up.

Traditional surplus countries, the United States in the van, are at present under compulsion to utilize their already existing surpluses, cost what it may. The EEC, on the other hand, is not yet affected by this necessity, for it does not yet possess surpluses for which a use has to be found at any price.

The EEC thus has the opportunity and the duty to envisage measures of surplus utilization which would take full account of the legitimate interests of the beneficiary countries and of the world market situation and past experience in putting surpluses to profitable use.

2. *UTILIZATION OF SURPLUSES TO HELP DEVELOPING COUNTRIES*

If existing surpluses are utilized in such a way as to promote the economic development of beneficiary countries, the contribution they make to the economic growth of these countries is of particular interest. Surplus can also be used to relieve great distress (famine, disasters) and to carry out special aid programmes.

Economic expansion in the beneficiary country shows itself by an increase in the real income per inhabitant and should be accompanied by expansion of the national production programme, stabilization of the currency and of the employment situation, etc.

UTILIZATION OF SURPLUSES AND ECONOMIC GROWTH

The question must now be formulated in the following terms: what contribution can the utilization of surpluses make to the economic expansion of beneficiary countries? It is not always possible to avoid a degree of contradiction between this aspect of the problem and the purely nutritional aspect. From the point of view of bringing levels of nutrition into line on a new worldwide scale nothing seems more natural and desirable than for well-fed countries to make over their surplus foodstuffs to under-nourished countries. However, if not only nutrition but also the economic development of beneficiary countries is considered, the utilization of surpluses actually poses many problems for both receiving and donor countries.

Three factors militate in favour of giving economic development priority over exclusively nutritional considerations:

a) The endeavours of developing countries to raise the per capita income of their populations;

b) The fact that increasing per capita incomes also lead, in the long run, to the solution of nutritional problems;

c) The fact that deficit countries are thus enabled to free themselves from permanent dependence on countries with surpluses.

One of the important functions of surpluses in beneficiary countries is to mop up the growing purchasing power of households (effect of earlier investment on incomes). Surpluses make it possible to resist the pressure of inflation, as long as the counterpart funds are not invested, or are held back for investment at the appropriate time and to the appropriate amount. Policy on counterpart fund spending can be entirely directed to maintaining price stability. The building up of these funds by donor countries also vests in the latter a degree of responsibility as to the price and monetary policies of the receiving countries. If only for this reason, surplus utilization must be adapted to the requirements and aims of the development plans of the countries benefiting. This also applies to the adaptation of the time-table of surplus utilization to the different phases of national Plans.

The first function of surplus utilization as a contribution to the economic development of the beneficiary country must be to serve as capital aid. Long-term credit and gifts play

an important part in this respect. But barter transactions, as they have been practised in the context of surplus utilization, can have the same effect when there is a deficit in the beneficiary country's balance of payments.

Capital aid is of particular interest to the beneficiary country when it enables its factors of production to be used more efficiently. Care must be taken in this respect that the utilization of surpluses does not impede the internal economic development of the beneficiary country or its external trade, nor set up or aggravate imbalances.

UTILIZATION OF SURPLUSES AS CAPITAL AID

The utilization of surpluses especially contributes direct capital aid when the beneficiary country is not required to place means of payment at the disposal of the donor country in return for the surpluses received (gifts), when only a partial obligation is imposed (sale below world price; barter) or when such obligation takes effect at a later date (credit).

With some reservations indicated below, gifts represent direct and effective capital aid. However, past experience with surplus utilization shows that they have played only a limited part to date. If surplus utilization provides support for the world market prices of the product in question, its sale on favourable terms at the (supported) world price will be of little or no help to the receiving country. Only the donor country and other exporting countries will benefit from the supported world market price.

If the beneficiary country can pay for the surplus products received by using its own soft currency, it obtains direct capital aid from the donor country only when it cannot purchase the products required at the same price or on the same terms from other soft-currency countries and the above-mentioned price disadvantages do not operate. The beneficiary country is at a disadvantage if it is required to meet its obligations in the hard currency of the donor country. In past years, beneficiary countries have had to accept higher rates of interest when they paid in their own currency.

Delivery on credit of surplus products may constitute real capital aid – provided, once again, that the price disadvantages mentioned above do not interfere – on condition that the credit thus made available is utilized in a productive way. Improved nutrition of the population, if not accompanied by increased productivity, will only aggravate the position of the beneficiary when the time comes for the credit to be repaid.

The following question thus arises: how can the manpower available in developing countries be used more productively than it has been to date?

3. *UTILIZATION OF SURPLUSES SOLELY ALONG WITH SUPPLEMENTARY AID*

PRODUCTIVE UTILIZATION OF MANPOWER

Better nutrition does not necessarily mean greater returns from the angle of the national economy, but merely constitutes the physiological precondition for them. In underdeveloped countries agricultural and industrial workers are often required to put forth relatively greater efforts than in industrialized countries, while they are less well fed. Ever less exacting utilization of manpower (as a consequence of mechanization and shorter working hours) is indeed a sign that a country is advancing economically, while the level of nutrition steadily rises (thanks to a more balanced diet and a greater consumption of primary and, above all, secondary calories).

However, the course and the pace of economic development is decided less by the physiological capacity of the population to work than by the effective contribution of the labour factor to the national product. It is therefore of prime importance that this production factor be more effectively utilized, i.e. orientated towards the end to be achieved and better provided with capital goods. In order to do this, it is often necessary to cut back on consumer expenditure.

Even when considered from the standpoint of employment, the priority to be given to the procurement of capital is obvious: the growth of the national product stems less from an improvement in the diet of a relatively restricted number of full-time employed and a relatively high number of underemployed or workless than from the creation of new jobs. Today in developing countries these often require much more capital than in the early period of industrialization of states which are now highly developed.

Projects which require little capital but a great deal of manpower, such as irrigation, road construction, bringing of new land under the plough, soil improvements, reafforestation, etc., are an exception to this rule. Such projects are often quoted as examples of a possible and particularly effective contribution by surplus products to the economic development of beneficiary countries. Their importance is certainly not inconsiderable.

However two qualifications apply here:

a) Investments in relation with these projects should be supplementary and not involve cutbacks on other schemes;

b) It should be the exception for foreign countries at the same time as they supply surplus products.

It is precisely these projects which bear relatively late fruit, i.e. their contribution to economic development is apparent only after a number of years. Their labour productivity is generally very low. Moreover, a more detailed analysis of their costs shows that they demand not only payment of manpower – which could be made in part by using surplus products – but also very considerable outlay for equipment, transport and overheads, such as planning, administration, workers' accommodation, etc.

Thus in India [1] the manpower costs in infrastructure projects amounted to 60% of total costs. The projects were for dams, canals, irrigation, urbanization, road construction and other works. The cereals needed to feed the persons employed accounted for about 25% of the total costs.

PRIORITY OF CAPITAL AID

The problem of employing more workers and of employing them more productively is therefore not to be solved simply by providing extra food. With regard to raising the employment level, it must be added that in many developing countries a large part of the labour force (underemployed or unemployed) could be taken from agriculture without thus reducing the production of foodstuffs and hence per capita supplies to the population. As to the growth of productivity, it should be said that this depends on giving priority to projects encouraging expansion and on increasing capital investment. Compared with this, expenses for feeding the labour force drawn from agriculture are comparatively low.

This is shown by the following examples. In the industrialized countries of Western Europe it costs approximately 5 000 to 7 000 dollars to create a job in industry. Last year alone in the Federal German Republic more than 500 dollars per person employed, that is per existing job, were invested in industry [2]. These sums are smaller in developing countries as befits the desired level of production. Nevertheless, the 5 000 to 7 000 dollars mentioned above would there be sufficient to ensure the subsistence of a worker for more than 20 years. It is quite obvious that the need for supplementary capital far exceeds, in value, the need for supplementary foodstuffs.

It is in such beneficiary countries, where the assignment of workers from agriculture to expansion projects is reflected by a drop in production, that surplus utilization could best make an effective contribution to development. However, this is not usually the case, for the rural population is still predominantly underemployed.

Special programmes designed to improve the nutrition of children have reduced infant mortality in beneficiary countries, and this has favoured population growth, as have numerous public health, hygiene and medical measures. This applies to all food aid, especially during the negative phase mentioned above. Donor countries assume a great responsibility in this respect: the fact that population growth is being supported by improved nutrition makes it incumbent on them to take concurrent action to create new jobs.

This shows the extent to which food aid demands other measures of assistance spread over a longer period and requiring more capital. When the factors already mentioned, as well as aspects to be examined later, are taken into account, it seems that food aid should amount at most to 20% of the accompanying capital aid [3].

As the receiving countries develop, the percentage of foodstuffs in capital aid will decrease progressively. This is demonstrated by the raising of the level of nutrition as the countries helped become more self-sufficient and by the increasing importance assumed by the production of industrial goods in the course of a country's advance. A special case which is, however, of topical concern for numerous developing countries is that of the repercussions of essential agrarian reforms. For social reasons such reforms are not always compatible with the valid short-term economic criteria and it may happen that they are postponed or abandoned because they might initially involve a fall in production. In such cases agricultural surpluses may be productively utilized to remedy temporary shortfalls in production.

It remains for us to study the background of institutions against which the beneficiary country's economy develops. The most varied institutions tend to have a say in the distribution of the surplus products received. Larger and larger counterpart funds arouse the interest

[1] See report on India, in Annex, page 141.
[2] See Deutsches Institut für Wirtschaftsforschung – Berlin – 4th Quarterly Report, 1961.
[3] FAO have arrived at the same percentage.

of the most diverse groups, both in donor and in receiving countries, and the economic principle does not always prevail. This is also a result of the non-commercial character of surplus utilization. Both the act of giving and the act of receiving come to involve elements of a national domestic political nature and military security questions.

The existence of considerable counterpart funds consequently makes necessary agreements between donor and receiving countries defining the investment policy to be followed, the purpose of the funds, and the way in which they should be employed.

4. *SURPLUS UTILIZATION SOLELY FOR THE PURPOSE OF RAISING CONSUMPTION TO A REQUIRED LEVEL*

If surplus products are to contribute to the economic development of the beneficiary country, their volume should not exceed the needs of supplementary consumption, except in the case of short-term measures (e.g. disaster aid). The volume of surpluses may be less than the supplementary consumption in beneficiary countries, but it must never exceed it.

If this principle were not respected, imports of the same or other foodstuffs would fall. We shall return to this point when dealing with international trade. However, it is also necessary to reckon with disturbances on the internal market. If surplus products do not encounter at least equivalent extra demand, they exert pressure on prices and production in the beneficiary country. The result is a further worsening of the position of agriculture. Falling investments, increased subsidies, out-of-date production methods and stagnation of production, etc., are features of this situation.

DIFFICULTY OF PREDICTING GROWTH OF DEMAND

It is difficult to predict – and special investigations are sometimes required – whether the demand for food products will increase at least in the same proportion as the contribution of surpluses. This is especially true when the equivalent value of the latter is used to finance various projects. If counterpart funds are used to meet budget deficits or for non-productive purposes, etc., the consequences for the development of incomes are still more difficult to assess.

When the investment of counterpart funds is reflected in extra income and purchasing power, the question then arises as to the volume of the increased consumption stemming from such investment. As experience has shown, it is when manpower leaves its customary environment (private or collective household) as is the case in many development projects (manpower leaving agriculture, creation of new centres of industrial production, etc.) that it is most difficult to determine this increase in consumption. Even when work is paid for, entirely or in part, with the help of surplus products (for example in the case of the community development projects), it is always to be feared that workers will sell the food they have received or exchange it for other goods. Moreover, the supplementary demand resulting from extra income may extend to other foodstuffs, so that the pressure exerted by surplus products on the domestic prices and production of these is reinforced. Thus in a general way the contribution of surplus products is fraught with certain risks, which must be taken into account, for the stability of markets in beneficiary countries.

Moreover, in many developing countries, foodstuffs supply and demand show considerable regional differences which cannot be ironed out because of poor transport and distribution facilities. While one province has a food deficit another has a glut. In this case, the national market as a whole is not " permeable ", i.e. existing imbalances do not show sufficiently clearly through the price phenomenon and, most important, cannot be eliminated. India provides a typical example of largely isolated regional markets.

The contribution of surpluses, by cluttering up certain regions and certain channels of trade, may aggravate imbalances existing on the national market of the beneficiary country. Wherever national production is insufficient or too expensive (transport costs) lack of market permeability will make it difficult in the long run to relieve undernourishment by surplus utilization.

As long as the problem of distribution remains unsolved, it will not be possible simply to confront food deficits and surpluses throughout the world and to use the latter to offset the former.

Unfortunately, insufficient attention is paid to the often complex background of undernourishment and famine and to the difficulties of distribution. Surplus utilization can provide a solution – limited however in time and from the angle of volume – to these closely related problems.

5. *DISTRIBUTION OF SURPLUS PRODUCTS IN THE BENEFICIARY COUNTRY*

The United States, today the most important surplus country, considered from the beginning

that its surpluses constituted a problem of (over) production. Disposal in the country itself raised no fundamental problems of distribution. After the Second World War, the greater attention paid to developing countries led to re-thinking of the problem in terms of production: national overproduction was matched by widespread world underproduction. Nothing seemed more natural than to eliminate this imbalance in the world output of foodstuffs by utilizing surpluses.

However, as soon as it is concentrated on developing countries, such utilization frequently becomes a problem of distribution. These countries often comprise many regional markets, more or less isolated from each other, whose fusion must be regarded, in the context of development, as a particularly difficult, lengthy and expensive task. Foodstuffs belong par excellence to that class of products which are mainly consumed at the place of production. The monetary economy is often but slightly developed. Measures to bring foodstuffs under control further reinforce the autocratic character of regional administrations. The fewer foodstuffs available, the stricter and more far-reaching such measures become and the more free market transactions (purchases, transport, stockpiling, processing) are hindered or halted.

Surplus utilization therefore seems easiest when it is confined to seaports and to towns situated near the coast. The relatively plentiful transshipment facilities in many seaports in developing countries is a favourable factor in this connection. The distribution of surplus products in ports and coastal towns does not present insoluble problems or involve exorbitant expense. However, it reaches only a relatively small proportion of the underfed population of developing countries, as is shown by the following approximate calculations:

The 1958 population of 94 developing countries outside the Soviet bloc amounts to 1 300 million inhabitants. Thirty-eight of these countries have a total of 72 seaports and towns of over 100 000 inhabitants situated near the coast. The aggregate population of these centres in the early 1950's was about 50 million. It can therefore be estimated that, despite rapid urbanization, hardly one-tenth of the population of all these 94 developing countries lives in ports or large towns near the coast.

Furthermore, in developing countries, areas of famine due to climatic conditions tend to "migrate", and this also complicates the distribution of products according to needs. Thus in India, periods of floods and drought in the years 1954/55, 1955/56, 1956/57 and 1957/58 affected in succession the centre, West, North, South and, finally, the East of the country. The distribution of surplus products is made difficult not only by the inadequate communications network, but also by the insufficient and unsuitable storage facilities. A country like India still had only one modern grain silo in 1959. Other stores usually consist of underground sheds (go-down sheds). Losses caused by rodents, insects, mould and floods are considerable. Different nutritional habits in the various regions further increase distribution difficulties. In countries where the internal trade network is insufficiently developed, consumers are more easily moved to the products than vice versa, especially during periods of grave shortage.

ALLOCATION BY SPECIAL AGENCIES

Attempts are being made to counter these various difficulties to some extent by making organizations in the receiving countries, not normally required to carry out distribution, play their part in the allocation of surplus products. Among such organizations are educational and vocational training and health institutes, religious associations, philanthropic societies and the army. School meals programmes are a typical example.

The advantage of this method lies in the relatively low distribution costs and in the choice of consumers. At the same time the method makes it possible to improve the eating habits of the population by introducing foodstuffs to which it was not accustomed and by completing the dietary.

The drawbacks lie in the relatively high losses resulting from the inefficiency or corrupt character of the persons entrusted with distribution. The produce distributed must, moreover, be ready for consumption, which makes the utilization of raw surplus products difficult if not impossible. Finally, there is the risk of a bad choice of consumers being made, running counter to the aims of the country's economic development.

Provision of food in schools should be particularly profitable to the vulnerable groups in the population. It has also proved useful in the fight against illiteracy. Lastly, it repays to some extent the sacrifice made by workers' families who leave adolescents free to continue their education.

In addition, the distribution of surpluses increases the influx of population, mainly from remote famine-stricken rural districts. Rural underemployment thus becomes urban unemployment, with all the resulting political and social consequences. The distribution of cereals in Ancient Rome to a socially disintegrated urban population living solely from gifts is the historical example of this situation.

6. *UTILIZATION OF SURPLUSES AND INTERNATIONAL TRADE*

According to a GATT expert report (1), the stockpiling of wheat, by the United States and Canada provides appreciable support to the world market price. The world price of certain farm products kept at a high level by surplus utilization, is only of advantage to developing countries when they themselves export the produce in question. This is generally not the case for countries receiving aid. On the contrary, imports of farm products and, especially, of foodstuffs into developing countries are growing.

Thus cereals imports to Africa, Asia and Latin America have increased in the last decade, while European imports remained more or less unchanged. In addition imports of cotton, upon the export of which many developing countries depend, increased to a negligeable extent (10%) in Europe between 1948 and 1958 and the same applies to world imports (11%). The United States has not only recorded a falling-off in its imports during the same period, but also increased its exports in 1956 by means of radical price reductions. This caused considerable losses to exporting developing countries. Since 1956 these losses have amounted to about 40 million dollars each year for each cent of the reduction in the price of a pound of cotton. Among the countries worst hit, special mention should be made of Mexico, Peru, Brazil, Egypt, Turkey and the Sudan.

This post-war trend is evident in developing countries with regard to other raw materials also: falling exports of agricultural commodities, owing to the heavy pressure on prices, go hand in hand with imports of foodstuffs, whose prices are kept at a high level by surplus utilization.

The proportion represented by surplus utilization in normal international trade has steadily increased in the last ten years. The proportion of government aid programmes has developed as follows:

Share of government aid programmes in international wheat exports (1)

in %

1954/55	12.0
1955/56	18.7
1956/57	21.5
1957/58	23.1
1958/59	24.4

Source : International Wheat Council, November 1960.
(1) Australia, Canada, United States.

UTILIZATION OF SURPLUSES AS A FORM OF DUMPING

In a general way, prices and terms on which the utilization of surpluses is carried out differ from those valid on the national market and for normal exports. Because of this, surplus utilization can be regarded as a genuine form of dumping. The consequences with regard to the share obtained in the market are favourable for the surplus country and unfavourable for rival exporting countries (dumping to win markets). Even if it is true that discounts or other advantageous terms allowed when surplus products are supplied promote the economic development of the receiving country, this is irrelevant to the fact that dumping occurs. Finally, any exporting country which engages in dumping can point to the advantages which it thus brings to the receiving country.

Well-known American experts moreover in no way deny that surplus utilization in such conditions should be regarded as a form of dumping and consequently condemned. Cochrane, for example, stated in his address on the utilization of surpluses by America: " We have become sophisticated dumpers ".

On the other hand, many developing countries – particularly those engaged in single-crop production – are real or potential surplus countries and could with equal justification claim the right to practice one form or other of " sophisticated dumping " themselves.

Such a development is probably to be feared; it would be in flagrant contradiction with the GATT rules. However, it is not for the authors of this report to suggest solutions to these problems.

NEW TRENDS IN WORLD FOODSTUFFS TRADE

Since the prewar period world trade in agricultural raw materials has been marked by two main trends: on the one hand, net imports of certain food products and agricultural commodities by industrialized countries from non-industrialized countries have fallen; on the other hand the available quantities of such products have increased. The combination of these two factors has caused a distinct worsening of the foreign trade position of the developing countries.

If a comparison is made between 1938 and 1954 it can be seen that the available quantities of foodstuffs have increased by 35%. On the other hand, the net foodstuffs imports of industrialized

(1) GATT – Trends in international trade. A Report by a Panel of Experts. Geneva 1958, p. 76.

countries have only increased by a total of 12%, net imports of raw materials of agricultural origin have remained unchanged, those of wheat, maize, rice, butter, sugar and meat fell by 52%. This development must be put down to savings of primary products in the industrial production of the advanced countries, to growing home production of certain products, and to other factors.

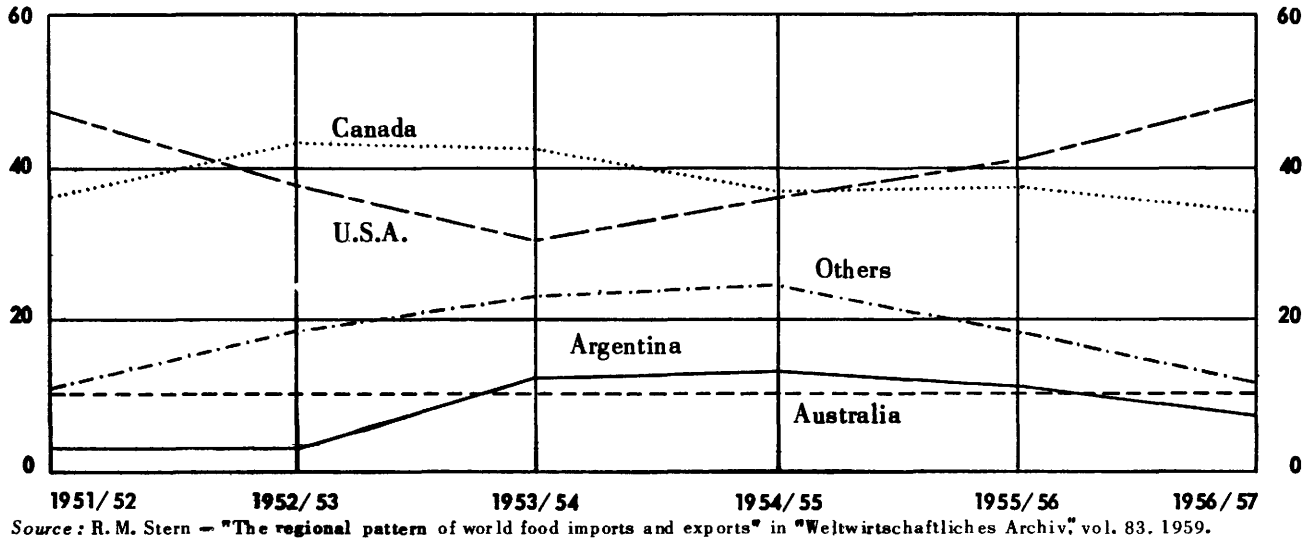
MODIFICATION OF THE PATTERN OF TRADE THROUGH SURPLUS UTILIZATION

With regard to the modification of the pattern of trade through surplus utilization, the only valid surveys have been carried out on the cereals market, in particular the wheat market. Although this market only exceptionally concerns exporting countries in course of development (Argentina) it seems however necessary in this context to go into the problem of the changing pattern of markets.

Of the leading wheat-exporting countries, only the United States has improved the percentage of its exports over the last ten years.

While in the 1930's the United States share in world exports was relatively small (8%), it rose to a very high level after the Second World War. Between 1951/52 and 1953/54, it fell once more from 45.8% to 25.7%. Except in the Near East, this proportional decrease could be observed on all markets. (Western Europe, Latin America, the Far East and Africa). Shortly afterwards the United States was able to record a new increase in its share of exports which is still continuing. This rise has been accompanied by a relative decline in the share of all the other important exporters in the world total.

Shares of the leading world wheat exporters



Source : R. M. Stern — "The regional pattern of world food imports and exports" in "Weltwirtschaftliches Archiv," vol. 83. 1959.

This diagram gives only the percentages and not the development of the actual amounts. It shows that Canada has suffered the most pronounced decline in its share of world exports. Argentina's share, like that of other exporting countries, has decreased as that of the United States rose; only Australia has been able to consolidate its position a little.

Similar, but also sometimes different, observations can be made in respect of other products, such as rye, soya-beans, cotton, etc. However, statistical information is particularly instructive with regard to wheat, which is the subject of our study.

North American experts also attribute to surplus utilization the considerable advance of the United States in competition with the other leading exporters, which is essentially due to expansion in Near and Far Eastern markets (1). It is indeed impossible to overlook the chronological coincidence of the governmental subsidies in the 1950's with the increase of the American share in world wheat exports.

The first phase of this development (1951-53) was marked by the accumulation of large stocks (government purchases by the Community Credit Corporation) in order to maintain prices, and was accompanied by a fall in the share of exports. The second phase, which began in 1954, has been dominated by the utilization of surpluses and at the same time has seen a

(1) *Source :* See the graph above.

remarkable expansion of the share of American exports of wheat and other farm products to the world market.

This expansion has caused noticeable strains in relations between the United States and other exporting countries. At GATT conferences, particularly since 1955, overseas exporting countries, but also certain European countries have, criticized the utilization of surpluses, as practised by the United States, since it " adversely affects the balance of payments of other exporting countries and causes a shrinkage of normal international exchanges ". The exporting countries in question also protest against the fact that statutory provisions governing surplus utilization i.e. Public Law 480, only take cognizance of the dangers threatening (normal) American exports (1). Against this, the preceding law, the Mutual Security Act, expressly refers in Section 550, to the dangers threatening other exporting countries and calls for appropriate measures to allay them.

On the American side it is argued that surplus utilization has only mopped up the supplementary demand of importing countries. Other exporting countries do not consider that this is any justification, for the aim of their foreign trade is precisely to meet the supplementary demand of other countries.

In point of fact, the question is often not one of additional needs, but of shifting the demand of beneficiary countries towards surplus products to the detriment of others, i.e., of commercial imports. Trade with other exporting countries and/or the sale of the national agricultural commodities of the beneficiary country can be adversely affected in consequence. The United Nations Food and Agricultural Organization has already drawn attention to these dangers. It does not fall within the province of this report to deal in greater detail with the differences of opinion which have arisen with regard to the utilization of surpluses. We merely wish to draw attention to the fact that such differences can be provoked between donor countries and the other exporting countries by these operations.

UTILIZATION OF SURPLUSES TO ENABLE BENEFICIARY COUNTRIES TO EXPORT OTHER PRODUCTS AND QUALITIES

Surplus products often differ in quality from products exchanged in normal international trade. The objection expressed by surplus countries that the receiving countries plan the procurement of products of such differing quality " independently of each other ", is only valid in exceptional cases. On the contrary, by importing inferior quality surplus products, beneficiary countries are able to export their own high-quality output. This process has been described in the report on Turkey and can also be seen at work in many other developing countries. It shows that the other exporting countries are indirectly affected by surplus utilization carried out by a given country.

This process may be regarded as a disguised form of re-export, even though the products exported may not be the same as the surpluses initially imported. Such indirect re-export reduces the balance-of-payments deficit of the beneficiary country, and is especially attractive for that country when national superior quality products are exported against payment in hard currency, while the surplus products received at the same time are paid for in (soft) national currency and on a long-term basis.

In addition, direct forms of re-export connected with surplus utilization can hardly be prevented for, as is known, it is extremely difficult to keep a precise check on a country's international exchanges of goods. There is a particularly strong temptation for beneficiary countries to act in this way in the case of deliveries below the world price or as gifts. The different practices possible – which can, however, only be fully indulged in up to a certain point – cannot be kept under supervision by the countries concerned, i.e. the other exporters.

NEED FOR INTERNATIONAL AGREEMENTS

Surplus utilization therefore endangers the present machinery of the world market for several reasons, of which the following two should especially be noted:

Firstly, exporting countries disposing of their surpluses supplant countries which are not yet engaged in any such surplus utilization. They impose a new pattern on the market by resorting to means which traditional foreign trade regards as unfair (2).

Secondly, pressure on markets in the most varied forms is continued through the export of like products by beneficiary countries.

There is thus danger of a chain reaction: more and more exporting countries are able to engage in surplus utilization in the most differing and " wildcat " forms. They are

---

(1) Public Law 480. Section I, simply stipulates : "Take reasonable precautions to safeguard usual marketings of the United States and to assure that sales under this act will not unduly disrupt world prices of agricultural commodities".

(2) See U.N. Press Release GATT/318, 9 November 1956.

pressed into doing this by the developing countries, which now regard as an "injustice" the fact that other exporting countries do not grant them the same or similar concessional terms as those governing surplus utilization by richer countries. In as far as surplus utilization will be more and more widely practiced in future by a growing number of countries, it will be difficult to respect the principles of world commerce in force at present. Fresh agreements on a world scale must take account of the particular conditions of surplus utilization in such a way that commercial outlets for agricultural commodities continue to be assured.

7. *PAST EXPERIENCE IN THE UTILIZATION OF SURPLUSES*

ATTITUDE HITHERTO ADOPTED BY FAO

The FAO has not yet solved the problem of surpluses at an international level. It has confined itself (1) to laying down, general principles and instructions for the utilization of surpluses by donor countries (1954). These principles demand:

a) That as far as possible surpluses should be eliminated not by limiting production but by stepping up demand,

b) That heavy pressure on prices should be avoided, and

c) That donor and receiving countries should take care that surpluses do not have unfavourable repercussions on the normal functioning of production and foreign trade.

It is stressed in the directives that surplus utilization does not solve the problem of surpluses if steps are not taken at the same time to avoid new ones building up.

Generally speaking, however, the main stress is laid on the distribution of existing surpluses. This emerges once more from the plenary meeting in October 1960 at which a resolution was adopted in favour of intensifying the activity of FAO with regard to the allocation of existing surpluses.

THE DISPOSAL OF UNITED STATES SURPLUSES

The experience acquired over decades by the United States in the utilization of farm surpluses may be regarded as unique both in its diversity and in its extent. We shall need to refer later to this valuable experience, which is of particular interest in our context. In so doing we in no way wish to criticize the utilization of farm surpluses by the United States.

The real beginnings of farm surplus utilization in the United States occurred in the 1930's. Programmes have been expanded over the last ten years. The first basic laws are the following:

a) Section 32 of the 1935 law (Public Law 320)

b) Section 416 of the 1949 Agricultural Act.

Both laws provide for the purchase of surpluses, their storage and transport. The first law was designed to abolish surpluses by the expansion of stocks, the second to maintain prices by the immediate distribution of surpluses, without intermediate storage, to needy groups of the population. Many organizations – CARE, the Church World Service, etc. — have had a hand in applying these measures, along with State Agencies such as the Department of Agriculture (later also the International Cooperation Administration). Surpluses were initially used within the United States. It was only later that programmes were directed towards utilization abroad.

The essential text on this point is the Agricultural Trade Development and Assistance Act (Public Law 480 – abridged as PL 480) published in 1954 and still in force.

CONSEQUENCES OF SUBSIDY POLICY

The growing dimensions of surplus disposal in the United States are not only due to foreign trade considerations, but also to internal economic policy. In this respect the Flexible Parity Program which is designed to guarantee flexible adaptation of subsidies to the state of the market deserves special mention. This programme however has the – certainly unintended – side-effect of increasing the need for surplus disposal. The programme provides for subsidies to be reduced in inverse ratio to the increase in over-supply and vice-versa. By over-supply is meant the difference between the total supply constituted by stocks, estimated production and estimated imports, on the one hand, and demand comprising estimated national consumption, estimated exports and particular stocks, on the other hand. When oversupply decreases, subsidies increase and vice-versa.

(1) The Committee on Commodity Problems (CCP), with a limited programme, was set up in 1949 instead of the planned International Commodity Clearing House, whose task was to attempt to balance existing surpluses and deficits on a world scale.

American farming circles are therefore interested in the disposal of surpluses because this reduces over-supply and thus triggers off a rise in subsidies. This in its turn brings about a new expansion of surpluses, so that the utilization of surpluses in no way achieves their abolition.

FUTURE TREND OF UNITED STATES FARM EXPORTS

The following question now arises: is it not possible that a growth in normal (private) exports from the United States will make the disposal of surplus agricultural commodities in developing countries progressively unnecessary? In the case of the United States this possibility encounters the following difficulties:

a) The increase and better utilization of facilities for agricultural production in developing countries will cause a shrinkage rather than an expansion of long-term import requirements, especially with regard to mass-consumption goods, with a high water content (transport costs) and those which require expensive storage.

b) The dollar incomes of these countries, from exports to the United States are low. Non-agricultural products and transport services to the United States account for about half the dollar income drawn by all foreign countries from the United States. However, only a minor portion of this income goes to developing countries.

Developing countries, which are the chief beneficiaries from surpluses, are therefore hardly in a position to pay for increasing imports from the United States. The same is true for other foreign countries, which have not been particularly successful since 1950 increasing their dollar incomes (unless American Government spending abroad is taken into account).

c) American farm exports are burdened by price and income subsidies to the agricultural export sector. It is hardly likely that these charges will be abolished in the future.

d) The fact that United States exports are comparatively small in proportion to national production, the more or less planned economies of most of America's trading partners, and the ever-increasing reliance of emerging countries on development aid, hardly point to good prospects for private exports. It must be concluded from all this that even in the future normal exports will not succeed in reducing likely surpluses, still less in abolishing them.

COST OF SURPLUS UTILIZATION – A TENTATIVE MODEL ESTIMATE

What does surplus utilization cost the United States, and what is the value, in dollars, of these surpluses to beneficiary countries? In answering these two questions [1] allowance must be made for storage and administrative costs, losses, etc. borne by the State stocking agencies. These costs, plus the purchase price (subsidized price) of surpluses, make up the total expenses of the Commodity Credit Corporation (CCC). The proportion of the costs accounted for by storage, administration, losses, etc., is estimated at 30% of the total. The "counterpart" of the surplus products corresponds to the total of all these costs (CCC costs).

It has been calculated that if surpluses were disposed of as normal exports, the price obtained would not exceed about 75% of the actual export price. If the support which the export price derives from surplus utilization were abolished, along with costs for storage and administration, losses, etc., the price obtained for surpluses in normal export would possibly not exceed about half the total costs with surplus utilization (CCC costs) [2].

However, would the United States make a profit at all if surpluses were exported in the normal way? According to the American calculations, this question must be answered in the negative. Since the abolition of surplus utilization would lower prices by about 25% and since, moreover, surplus utilization accounts for 27% of normal exports of farm products, such a transaction would not show a profit.

And what is the value of surpluses for beneficiary countries? Here again the first point to be grasped is that if surplus utilization were discontinued the beneficiary countries could import the commodities in question for about half the total costs occasioned by such utilization.

Furthermore, there is no doubt whatsoever that the value of the surpluses amounts to less than 50% of the CCC costs, for if beneficiary countries had a free supply of dollars at their disposal they would import only a part of the commodities in question and for the rest would

---

[1] Th. Schultz, S.R. Sen, L. Witt, Impact and Implication of Foreign Surplus Disposal on Underdeveloped Economies; E. Mortensen, M. Ezekiel, M. Meyrs, R.L. Kristjanson, ditto on Developed Economies *in* Journal of Farm Economies, Vol. XLII p. 1022 et seq.

[2] That is after the above mentioned storage and other costs and the price support afforded on the world market have been eliminated.

procure investment goods. For this reason American estimates place the effective value of surpluses for beneficiary countries at 37% of the total costs.

It goes without saying that the "value" of these commodities also depends upon the quantity imported. For this reason the above-mentioned data are of only limited significance. To sum up, it can be seen that if surpluses had been disposed of commercially, they would have fetched only a very low price – in proportion to the total effective costs of surplus utilization.

CONCLUSIONS TO BE DRAWN FOR A UTILIZATION PROGRAMME

The lessons of the American example should be borne in mind in every programme for the utilization of surpluses. However, the reflexions on the probable effects of both price maintenance and surplus utilization policies are of a theoretical nature which should discourage hasty conclusions.

Indeed it is worth asking what production would be in each of the countries concerned in the absence of such policies. In the United States, for example, the rise in production in the years 1938-48 was due chiefly to a rise in area yields, i.e., to an intensification of the system of production. In the American case the result is a growing price elasticity of supply. A drop in prices would cause considerable economic and social difficulties and perhaps a fall in production greater in volume than the present surpluses. On the other hand, is it fair to assert that the fall in Argentina's wheat exports is the consequence of abnormal competition due to the policy of distributing surpluses, when we note that for many years Argentina has not been in a position to supply the quotas allocated to her under the International Agreement?

Nor is it certain with regard to outlets, that the volume of imports of developing countries would have been the same in the absence of surplus imports on special terms; there is every reason to believe that it would have been very much smaller, because the importing country would have given priority to other imports. S.R. Sen pointed out to Sir John Crawford that Indian Imports of Australian wool were only made possible by imports of American grain surpluses, and was able to maintain that Australia's gain from this outweighed losses through reduced wheat imports, which would probably have occurred in any case (1).

In these conditions we must realize that forecasts are unreliable in the absence of sufficient experience in surplus utilization for the economic development of beneficiary countries and welcome the possibility of extra information which FAO's World Food Programme, if carried out, should make it possible to collect, provided the search for information is gone about in a planned manner.

---

(1) International Conference of Agricultural Economists - Cuernavaca - Mexico 1961.

ANNEXES

THE REGIONAL SURVEYS, COMPLETED IN 1961, TAKE NO ACCOUNT OF POLITICAL, ECONOMIC AND SOCIAL DEVELOPMENTS SINCE THAT DATE

ANNEX No. 1

Regional Survey

NORTH AFRICA

by
Professor M. Cépède
Institut national agronomique
Paris

CONTENTS

FOREWORD

Institut national agronomique

Comparative Sociology
and Rural Economy

Paris

The Director General
of Agriculture

European Economic Community

Brussels

Dear Sir,

Please find herewith the two regional surveys :

I. North Africa

II. West and Central Africa

with the preparation of which you were so kind as to entrust me in connection with the survey project : "EEC food aid to developing countries", which my colleagues Professor A. Maugini of Florence and Professor H. Wilbrandt of Berlin, and myself, have carried out at your request.

I would like to express my thanks :

on the one hand, to my assistants and pupils who have prepared the documentation and carried out indispensable investigations and calculations, particularly to Mr. René Pouzet, agricultural engineer, technical secretary to the Conseil Supérieur de l'Agriculture and chief promoter of its Commission for the franc area headed by Georges Monnet, Minister and M. Denis Cépède, ingénieur économiste, and

on the other hand to the officers of the United Nations Food and Agricultural Organization and of the United States Agricultural Department who have made available to us documentation often unpublished at the time, as well as to :

Professor Roche, Rector of the University of Paris
Professor Chabot, Director of the Geographical Institute, Paris
Doctor Claudian, of the National Hygiene Institute, Paris
Monsieur Frölich, Director of the Centre des Hautes Etudes de l'Afrique et de l'Asie Moderne, Paris
Monsieur Pales, Colonel, Army Medical Corps, Assistant Director of the Musée de l'Homme, Paris, former Director of ORANA at Dakar,

who have give us the benefit of their invaluable advice as well as of selected documents and information.

It is thanks to the help of those mentioned that we have been able to complete a task of which the resulting two short surveys give only a faint idea. We should like to express our thanks to them here.

M. Cépède

Professor.

NORTH AFRICA

INTRODUCTION

This area comprises the three countries, Morocco, Algeria and Tunisia. If we include the Départements of the Sahara (1 980 000 sq. km – 559 000 inhabitants), it covers 2.8 million sq. km. The area of the "Isle of Maghreb" (Djezireh el Maghreb) known to the Arab geographers, has been estimated, for the purposes of this survey, at 780 000 sq. km (78 million hectares), on which live about 26 million inhabitants, or 33 to the sq. km.

FOOD RESOURCES

The proportion of good quality land is very low, hardly more than 12%, of which three quarters are devoted to cereals. The vast expanses of poor pasture land are used for extensive stockbreeding. The average yield of cereals per hectare is low and the difficulty of increasing it, even on the best managed farms, are therefore essential elements of our diagnosis. No doubt a good year may give the impression of a great leap forward, but averages taken over five years of yields obtained on farms run by native farmers force us to moderate our optimism.

In Morocco, for example, yields of durum wheat increased between 1921–25 and 1926–30 from an average of 5.36 to 6.07 quintals per hectare, but this figure had not been attained again in 1951–55, when the five-year average was 5.80. It has moreover risen regularly after the worst period, 1936–40, when the average was only 4.72.

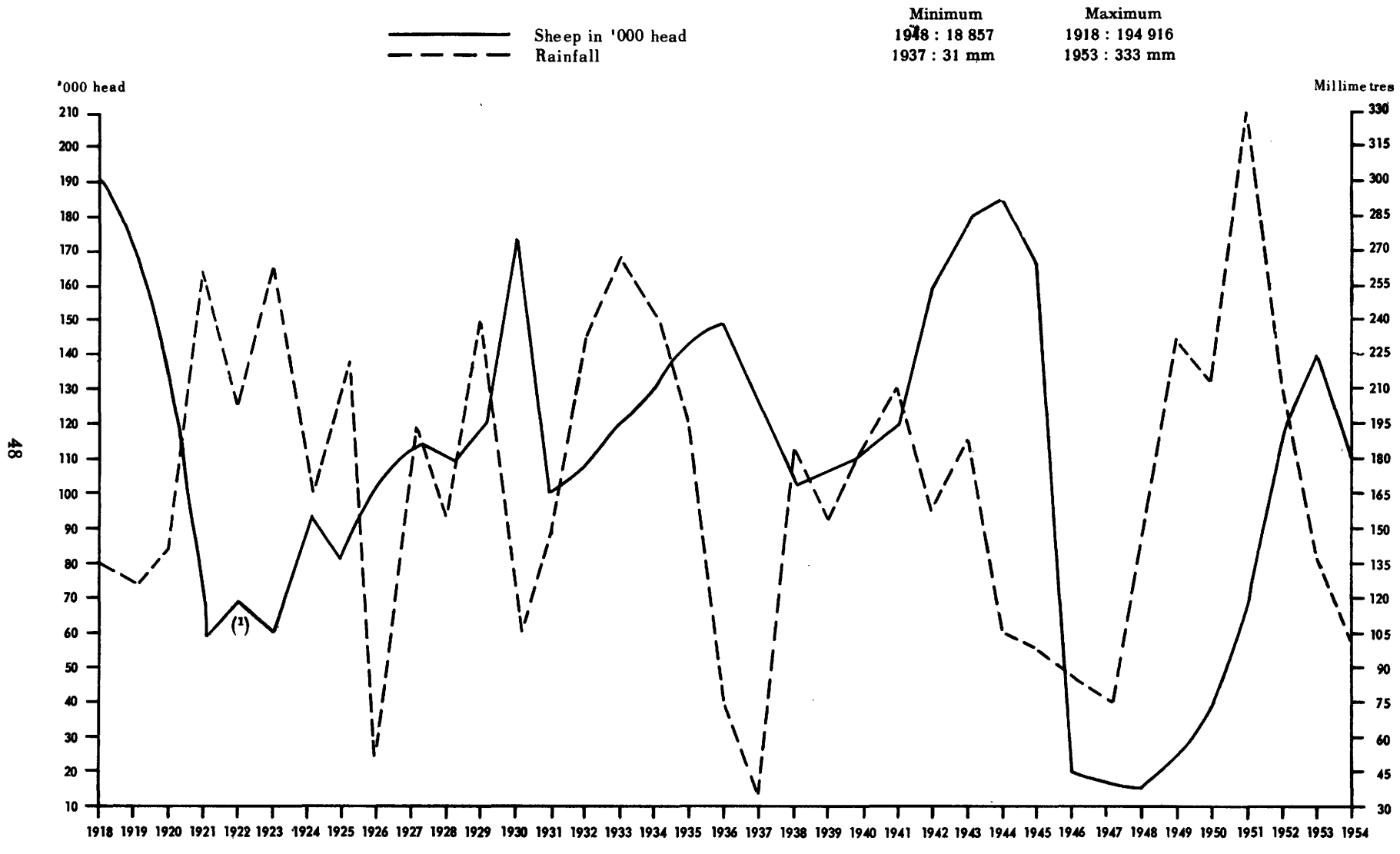
Barley displays smaller differences between the five-year averages (minimum 1941–45: 6.78 – maximum 1951–55: 7.97), but common wheat shows greater differences (minimum 1946–50: 4.85 – maximum 1921–25: 8.58).

These observations sufficiently justify the preference shown by the population for barley as a staple crop. However, the five-year averages conceal part of the phenomenon of annual fluctuations: from 1933/34 to the Second World war, the Moroccan harvest has varied between less than 8 million and almost 22 million quintals; variations involving the doubling or the halving of the yield have occurred 4 times in 7 years, that is over 5 intervals. In 1944/45 the barley harvest dropped to less than 2.5 million quintals.

Animal produce is also very sensitive to climatic variations; these restrict fodder production, the amount of which may be measured by the total head of sheep maintained. For this reason the graph below seems typical of the natural hazards to which the agricultural resources of the countries of the Maghreb are subject.

We shall attempt to strike a summary balance of the food resources of the three countries of the Maghreb.

Variations of rainfall and of total sheep population



(1) The opposing trend of the two curves is due to an outbreak of epizootic disease.

Table of the chief Agricultural Products in the Maghreb

in '000 tons

Product	Production (a)				Imports (b)				Exports (c)				Apparent consumption (d) = (a - b - c)			
	Morocco	Algeria	Tunisia	Total	Morocco	Algeria	Tunisia	Total	Morocco	Algeria	Tunisia	Total	Morocco	Algeria	Tunisia	Total
Cereals	3 113	1 972	839	5 924	30	122	28	180	291	244	223	758	2 852	1 850	644	5 346
Sugar	—	1	—	1	347,8	209	78,9	635,7	1,7	—	—	1,7	346,1	210	78,9	635
Potatoes	70	240	30	340	45	192,4	15,3	252,7	0,3	59,9	7,5	67,7	114,7	372,5	37,8	525
Pulses	75	45	22	142	3,6	23	4,4	31	26,3	10,3	1,4	38	52,3	57,7	25	135
Meat	157,8	94	36	287,8	0,8	20,4	0,7	21,9	1,2	1	0,7	2,9	157,4	113,4	36	306,8
Milk and milk products	666	337	103	1 106	113,5	230	43,7	387,2	—	—	0,2	0,2	779,5	567	146,5	1 493
Eggs	45,8	58	11	114,8	—	1,9	—	1,9	5,1	—	0,1	5,2	40,7	59,9	10,9	111,5

Taking into account consumption by livestock and uses other than human consumption, this would give food availabilities in vegetable products:

in calories × 10^{11}

Country	Apparent consumption	Deduction of utilizations: fodder, etc.	Food availabilities.
Morocco	112,91	22,2	90,71
Algeria	76,20	17,6	58,6
Tunisia	26,09	4,8	21,29
Maghreb	215,29	44,6	170,60

In animal products:

in calories × 10^{11}

Country	Apparent consumption	
	Final calories	Original calories
Morocco	8,78	61,46
Algeria	6,95	48,65
Tunisia	1,82	12,74
Maghreb	17,55	122,85

Hence the following total availabilities:

Country	Final calories		Original calories	
	Total (× 10^{11})	Per head per day	Total (× 10^{11})	Per head per day
Morocco	99,5	2 350	152,17	3 595
Algeria	65,6	1 750	107,25	2 860
Tunisia	23,1	1 630	34,03	2 400
Maghreb	188,2	1 996	293,45	3 113

These figures do not take into account certain products consumed by the farmer, oils, dates, etc., whose contribution is by no means negligible. They lead us to believe that on average an adequate caloric intake should be fairly easily met, but that malnutrition caused by an insufficient supply of animal products must be serious.

The figures published by the Foreign Agriculture Service of the American Department of Agriculture (Food Balances in Foreign Countries FASM 108. Feb. 1961) give a similar impression.

Cereals account for about 65% of the consumption of final calories, and sugar 14% in Morocco and between 9% and 10% in Algeria and Tunisia.

Calorie intake per head per day

Product	Morocco (1958)	Algeria (1958)	Tunisia (1957)
Wheat	705	990	995
Barley	680	380	345
Other cereals	180	35	50
Total cereals	1 565	1 405	1 390
Sugar	340	210	210
Potatoes	20	50	20
Pulses	25	80	65
Other vegetables	15	25	20
Fruits	90	70	105
Vegetable oils	130	110	110
Total other vegetable products	620	545	530
Total vegetable products	2 185	1 950	1 920
Meat	105	110	105
Fish	10	10	15
Animal fats	25	35	20
Milk and cheese	140	110	95
Eggs	15	15	15
Total animal products	295	280	250
Total ration final calories	2 480	2 230	2 170
Total ration primary calories	4 250	3 910	3 670

POPULATION

The population of the three countries of the Maghreb is about 26 million, distributed as follows: 11.6 million in Morocco, 10.5 million in Algeria and 3.9 million in Tunisia.

Population densities per square kilometre thus work out as follows: 23 in Morocco, 47 in Northern Algeria and 31 in Tunisia. The percentages of the population of European origin are 3% to 3.5% in Morocco and Tunisia and over 10% in Northern Algeria.

If we examine these figures more closely we find that the regional differences are still greater. As M. Benoit Bidot has written, of Algeria: "Algeria is overpopulated because unequally populated". While the Igamie (administration area) of Algiers has a population density of 50 per square km and 13.5% of non-Moslems, that of Oran has the lowest density (30 per square km) and the highest percentage of non-Moslems (almost 19%). The Igamie of Constantine, which has the lowest non-Moslem population (5.65%) is seen to have an intermediate density (35 per square km), even though it includes in Kabylia concentrations of high density (Babor: 100; Djurdjure: 200; Tizi-Ouzou: 210). Similar phenomena can be observed in Morocco and Tunisia. The divergences seem to be increasing as time goes on. Urbanization is making very rapit strides throughout the area. In spite of the influx of Moslems into the towns and their suburbs, in which (except for Oran) they have been in a majority for a short time now, the concentration of people of European origin tends to give the urban population particular features which distinguish it from the country-dwellers.

Problems of supply are to be seen in a completely different light in the cities from the same problems in rural areas. The relative trends of the city and rural populations must also be borne in mind when considering the development of agriculture. An agriculture which provides only 150 days of employment per year, and sometimes less, cannot guarantee a suitable standard of living, and is a factor in the exodus towards the towns. The birth and death rates of these populations are very different and are changing rapidly. Taking into account the probable development of the Moslem population for which we have noted the results of the INSEE's calculations (Moslem population in 1975: Morocco: 17.2 million; Northern Algeria: 14.65; Sahara: 0.9; Tunisia: 5.85) giving the Moslem population for 1975 as 37.7 million (excluding the Sahara), or 38.6

(including the Sahara), we estimate that the total population of the Maghreb will be between a minimum of 38 and a maximum of 41 million inhabitants in 1975. We shall take the figure of 40 millions.

This forecast is no more than the extrapolation of trends observed in these three countries during the last few decades. It is indeed hardly likely that the rates will vary considerably between now and 1975, and the fact that, from 1953, the age pyramid for Algeria shows 51% of the population under 20 (54% of Moslems, 35% of non-Moslems) must be taken into account.

This demographic upsurge has outstripped the growth of food production for local consumption, and output per head of the chief products (with the exception of potatoes) is now no more than about half (44% for barley; 58% for olive oil; 62% for wheat) what it was in 1911.

To this must be added the deterioration of soils caused by disastrous methods of cultivation and grazing and which today calls for enormous restoration efforts if the verdict of an agricultural scientist that " every day Algeria has a thousand more inhabitants and a hundred hectares less of arable land " is to be proved false.

LIVING STANDARDS – LEVELS OF NUTRITION

The " asymetric structure of the Algerian economy " is well-known. In 1956 the average yearly income per head expressed in present-day francs was between 200 and 300 frs. for Moslems and between 2 500 and 3 000 for Europeans.

The variations in both groups are moreover considerable and cannot be properly grasped, with their effects on levels of nutrition, without the help of monographs. Those at our disposal give a fairly exact impression.

More often than not more than half the population have at their disposal less than 25 FF per consumption unit per month (about 22 FF per head). The share spent on food often exceeds 70%.

Agricultural income is still lower and is subject to wide fluctuations because of the climate: it may sink to a very low level without however disappearing altogether. So the fellah a long way from the town will say: " We are like hens: if we don't scratch away at the earth, we don't eat! " This is true of most of the population: in Morocco, in 1952, the average income in traditional agriculture was about 30 000 francs per annum (including self-supply). The Moslems in the towns or on more advanced farms had an average income of 62 000 francs, the few European farmers, an average of 557 000 francs and the Europeans in other economic sectors 315 000 francs. The relatively high wages in the towns attracted rural workers who can only get enough to eat in trade and no longer have any " earth to scratch away at ". Their position is very vulnerable and an unemployed worker seldom avoids extreme poverty.

Situations of relative prosperity are to be found in the villages from which workers migrate to France. The money they send back often accounts for almost half, sometimes even 80% (Tizemourine) of the income of these villages, where land capable of yielding harvests and trees capable of bearing fruit are neglected for want of hands and interest in agriculture. The worker who has been in Europe has had no contact there with farming: thus migration is not a factor in agricultural development. The savings brought back are often invested in the home and rarely in agriculture.

Just as in the town earnings are insufficient for the purchase of enough food of the right kind, money income in the country is not enough to obtain the extra food necessary to balance the ration obtained by self-supply.

In one and the same rural area, considerable variations occur in annual consumption: from 2.4 kg to 63 kg for meat; from 2.5 kg to 113 kg for dairy produce; from 2 to 23 kg for sugar and sweetmeats; from 3.7 to 21 litres for oil; from 10 to 41 kg for fresh vegetables. The richest producers are in every case the biggest consumers of each product. This is true even for cereals (376 kg, as against 204) and pulges (39 kg, as against 0 among the poorest producers), and underlines the fact that we are dealing with habits of nutrition bedevilled by the threat of hunger and that it is too early to talk in terms of " substitutions " in diets, but only of additions.

From a survey carried out for the period 1952/53 – 1955/56 by an FAO expert in Morocco (Dr Foro Luzzi), it seems possible to estimate that one group (about 20%) of the population, which he describes as " heavy eaters ", probably consumes more than 3 250 final calories per head per day, while another group (about 20% to 30%) consumes on average in the region of 1 800 final calories, i.e. about half. The remainder are close to the norms as far as the calorie level is concerned. With regard to protein, and especially animal protein, the variations are still greater, but the deficit is, however, general.

While the results of the investigations reveal diets with an incredibly low final caloric con-

tent, which seems to suggest that certain information must have been overlooked, we note at the same time that plentiful diets, sometimes exceeding 5 000 final calories per day contain, like diets of about 1 800 calories, more than 80% cereals calories, and thus no more than 6 000 original calories. The diet therefore lags far behind normal development.

Cereals, meat and milk, the most important food products, are moreover extremely irregular and since they are dependent upon rainfall, supplies decrease and become more uncertain as one goes from West to East and from North to South.

While cereals are technically easy to store, it is nevertheless true that the gaps between harvests is often a difficult time, when groups without purchasing power go short.

Animal products are regarded as luxuries. Cattle are mainly kept to be sold when the cereal harvest is insufficient for self-supply. Their rôle as "four-legged capital" takes precedence over their nutritional rôle and their productivity is greatly reduced in consequence.

In conclusion, the population of the Maghreb are often underfed. The undernourishment is both regional (25% in the West, 50% in the East) and seasonal (more or less sufficient nutrition for 7 months of the year). Even when incomes are sufficient, there is always malnutrition due to a deficit of animal products.

From the surveys carried out we can attempt to estimate the food requirements of the population of the Maghreb in terms of the norms usually chosen by dietitians; this estimate will not take into account the "backwardness" of the eating habits of the Maghreb, apparent in consumption trends with different living standards, the importance of which we have already underlined.

The present nutritional deficit of the population of the Maghreb (26 millions) can be estimated as follows:

Product	Population apparently suffering from deficit		Theoretical food deficits		Deficit given increased purchasing power and present trends	Probable apparent deficit
	Number of inhabitants (in thousands)	% of the total population	per head per annum	total		
Cereals	7 300	28	50 kg	365 000 t	1 300 000 t	500 000 t 600 000 t
Meat	26 000	100	35 kg	920 000 t	390 000 t	500 000 t
Milk products (expressed as milk)	17 500	75	100 l	17 500 000 hl	3 900 000 hl	10 000 000 hl
Sugar	26 000	100	10 kg	260 000 t	300 000 t	300 000 t

As shown in the following table, the needs of a population of 40 million inhabitants in 1975 can also be estimated on the basis of two hypotheses:

Hypothesis I: dietically balanced nutrition at the accepted levels: an average ration of 2 550 final calories, and 5 500 vegetable or original calories.

Hypothesis II: continuation of the backwardness observed at present: average ration of 2 690 final calories and 3 770 vegetable or original calories.

Product	Daily requirements per head				Total annual requirements (in '000 tons)	
	Hypothesis I		Hypothesis II		Hypothesis I	Hypothesis II
	g	calories	g	calories		
Cereals	410	1 400	580	1 950	6 000	8 400
Meat	100	300	50	150	1 460	730
Milk	300	200	50	30	4 400	730
Sugar	50	200	50	200	730	730
Oil	30	270	30	270	440	440
Vegetables and fruit	300	180	150	90	4 400	2 200

This means that, with a population index of 150, a food supply of:
285 x 10^{11} final calories or
440 x 10^{11} original calories
would be needed to maintain the present level.

At the level foreseen by Hypothesis I, the nutritional availabilities would have to be increased to:
372 x 10^{11} final calories or
810 x 10^{11} original calories,
or an index of 275 instead of 150 in the previous hypothesis.

At the level foreseen by Hypothesis II, the nutritional availabilities would have to be increased to:
394 x 10^{11} final calories or
551 x 10^{11} original calories,
or an index of 190.

To ensure the inhabitants of the Maghreb a level of nutrition corresponding to the EEC average, availabilities would have to be increased to 1335 x 10^{11} original calories, or an index of 450.

What are the chances of meeting the nutritional needs thus defined?

On average over a long period it should be possible to meet the needs for cereals under Hypothesis I if the expected progress is achieved, in other words if the plans of the three countries in this respect are carried out with reasonable success. However, both because of the relative persistence of nutritional habits (Hypothesis II) and the ever-present possibility of a delay in the execution of the plans, it is safer to suppose that the annual deficit, which stands at the moment at 500 000 tons, might still be the same at the end of the period concerned (in 1975).

The needs for meat could be met under Hypothesis II if enough were done to ensure ample supplies of cereals making possible a rationalization of the breeding of animals, which would forfeit their rôle as "four-legged capital", but it would seem impossible to attain in 15 years the level of supply corresponding to Hypothesis I, which would require an even greater transformation of stockbreeding.

It seems therefore safe to estimate that the present probable deficit of 500 000 tons of meat per year may increase to 750 000 tons by 1975. The dairy product requirement under both Hypotheses cannot be met by production in the area; the deficit estimated at present at 10 million hectolitres of fresh milk (100 000 tons of powdered milk) should increase fourfold by 1975 under Hypothesis I.

Sugar requirements can practically be met only by imports (730 000 tons per annum).

We must point out that our hypotheses are much higher than those of the Foreign Agriculture Service of the United States Department of Agriculture, which estimates that needs are satisfied when 2 375 definitive calories and 65 g of protein, of which 17 from pulses and animal products and 7 from the latter alone, are available per person per day.

In these conditions, and bearing in mind the following consumption levels for 1958:

Consumption per head per day in 1958

Country	Population (in millions)	Calories (number)	Protein (g)				Oils and Fats (g)
			Animal	Pulses	Others	Total	
Morocco	10,1	2 480	17	1	54	72	30
Algeria	10,6	2 230	15	5	39	59	28
Tunisia	4,1	2 170	15	4	48	67	27
	24,8						

FAS (The World Food Deficit FAS – USDA March 1961) concludes that in 1958 there was no food deficit in Morocco and no protein deficit in Tunisia. In Algeria, the deficit is put at 6 g per head per day of protein from all sources, the calorie deficit being 145 final calories per head per day in Algeria and 205 in Tunisia – deficits which could be covered by 260 000 tons of wheat in Algeria and 90 000 tons in Tunisia, or 350 000 tons in all.

Infrastructures

The necessary infrastructures for internal transport, storage, import by sea (ports and installations) present no special problems in the Maghreb as such.

In the Sahara, the provisioning of the population and of those operating mining and – especially – oil installations naturally raises particular difficulties. It may happen that produce which seems relatively expensive (irrigated crops from Béni-Abbès) and will probably still be so in 1975, may compete with products obtained on the coast and from Europe, but the markets will be relatively limited (fruit and fresh vegetables) both by the number of consumers and by the fact that competition will be as keen as that existing, for example, in European countries. The actual problem seems different to us and should, we feel, be centred on the satisfaction of essential needs and the resulting contribution to development, and on the possible share of EEC's chief agricultural products in this contribution.

DEFICITS AND TRENDS

We have estimated the 1960 deficits for the whole of the Maghreb at the equivalent of:

Cereals	500 000 to 600 000 t
Powdered skim milk	100 000 t
Meat	500 000 t
Sugar	300 000 t

It should be remembered that, according to FAS, this deficit would be equivalent to only 350 000 tons of cereals, since under their criteria there is no deficit in pulses and animal protein (powdered skim milk).

For 1975, two hypotheses were considered, giving the following deficits:

in t

Product	Hypothesis I	Hypothesis II
Cereals	0	500 000
Powdered skim milk	400 000	100 000
Meat	750 000	0
Sugar	730 000	730 000

The sugar consumption and, consequently, the deficits observed in 1960 and forecast for 1975 are more consequences of the higher living standards of a part of the population and of the expected expansion of purchasing power than a factor in this development.

It should be noted that the population of the Maghreb tends to consume more sugar whenever it can.

In these conditions, it should be possible to deal with the sugar deficit of the Maghreb through ordinary commercial channels, with the exception of quantities utilized in special programmes (pregnant and lactating women, children, school meals) in conjunction with products like powdered skim milk, which form the basis of such programmes.

With regard to cereals, while Hypothesis II assumes the continuing insufficiency of the improvement in the quality of the diet, the deficit of 500 000 tons is only an average, and it was assumed that an equalization system will make it possible to ensure a constant supply in spite of the serious harvest fluctuations. If this were not so it would be pointless to hope for the development of stockbreeding which, according to this Hypothesis II, would eliminate the meat deficit, and reduce the milk deficit to 100 000 tons by 1975.

A fortiori, the development of the diet assumed by Hypothesis I, is unlikely to be realized, outside the cities, if, failing the assurance of a constant supply of cereals, stockbreeding is regarded more as a safeguard against famine than as the source of a part of the daily food supply in the form of meat and milk.

In any case, the extensive stockbreeding in the Maghreb plays the rôle of "four-legged capital" extremely badly, since, in time of drought, the animals often fall victims to the resulting famine before their owners do, and without anyone benefiting.

It therefore seems necessary, in both hypotheses, to set up stocks sufficient to offset the fluctuations of cereals production in the Maghreb area. These stocks cannot be established on the spot, especially if good harvests lead to exports which, at best, bring the situation back to average. Since this average actually involves import requirements, it is pointless to hope that the government of any Maghreb country, however strong it may be, could collect the quantities necessary to build up stocks in a period of plenty, let alone in time of shortage.

A large quantity of cereals (wheat and barley) would therefore have to be made available to the Maghreb countries to constitute these stocks. This could be done in the form of a loan, stipulating the conditions of the collection, replenishment and reconstruction of the said stocks. Since "technical exchanges" between the Maghreb and Europe can always be profitable, such an agreement on stocks could be considered when negotiating these exchanges.

Should it appear difficult to reach an agreement of this sort, EEC might consider earmarking from its own stocks, which it would, of course, continue to administer, the quantities of cereals necessary to meet a shortage due to drought, for example, and making them available to North African consumers.

In either case, close attention would have to be paid to the structure of the distribution system to avoid losses and resales. Technical assistance on this point would need to be provided at the same time as the loan, or should even be a condition of the latter.

As far as powdered skim milk is concerned, it is chiefly in supplementary nutrition programmes, connected on one hand with mother and infant care, and on the other with the development of schooling, that imports on special terms might be considered.

Normal commercial imports could be used for the provisioning of urban centres. Without going so far as to repeat what was achieved in Bombay for example, it is very likely that the reconstitution of milk from skim milk will provide more hygienic and cheaper produce than will the establishment of " central dairies " near towns or the collection of milk over considerable distances.

As regards meat, imports on special terms should be the exception, reserved for collective programmes, such as school meals. Here, even more than with cereals or milk, it is important not to discourage local production (which should on the contrary be stimulated), by competition resulting from leakages of products sold at a low price to a market possessing sufficient purchasing power.

Here, too, " technical exchanges " can be profitable, for the estimated deficit is a net one.

ANNEX No. 2

Regional Survey

LIBYA

by
Professor A. Maugini
Istituto agronomico per l'oltremare
Florence

CONTENTS

LIBYA

INTRODUCTION

This report concerns a vast territory in North Africa, stretching from the Western desert of Egypt to the southern part of Tunisia, and constituting the United Kingdom of Libya, a state which achieved independence in 1951. The country has an area of 1759540 square kilometres and is divided geographically and for administrative purposes into three provinces: Tripolitania and its capital, Tripoli (353000 sq. km); Cyrenaica with its capital at Benghazi (855000 sq. km); the Fezzan and its capital Sebha (551000 sq. km).

Although it borders on the Mediterranean, the region shares the climate of that basin in only a few of its aspects. The desert surrounding it on the South, East and West greatly influences its climate, causing pronounced instability in atmospheric conditions, especially rainfall.

This geographical area has been chosen for the very reason that it shows the marked influence of a desert climate on the biological environment, in which plant and animal life are very much subject to the conditions imposed by rainfall whose wide variations determine the fate of crops and cattle. These variations also have repercussions of capital importance on the economic and social life of the population. The most interesting region from an economic point of view, and the most heavily populated, is formed by the plateau of Cyrenaica and by its coastal strip, and to the West by the area between the mountains and the sea, and the coast as far as Sirte.

My warmest thanks are due to Dr Piero Ballico, an official of the Ministry of Agriculture and Forests, seconded to the Overseas Agronomics Institue in Florence, for his assistance in preparing this report, both during the collection of the documentation and in collating and working up the subject-matter. His assistance and advice have been particularly useful because of his excellent knowledge of Libya acquired through having lived there from 1936 to 1947.

I should also like to express my gratitude to Signor Massimiliano Mariani, agricultural expert in the Institute, who is very familiar with Libya and its problems, having worked in the country from 1926 to 1944.

I. – FOOD REQUIREMENTS

In this report we have considered the possible importation to Libya of wheat and flour, sugar, products derived from milk and wine, all of which it is thought could be in surplus production in the EEC countries. The needs have been calculated with reference to the products in their unprocessed state, i.e. to wheat and fresh milk. In the case of milk, supplied in the form of condensed or powdered products, it will be necessary to reduce the quantities.

ESTIMATE OF FOOD CONSUMPTION

a) *Population and social structure*

According to the census conducted unter UNO auspices in 1954, the population was 1088900 inhabitants, distributed as follows over the three provinces of the United Kingdom of Libya:

Tripolitania: 738900 inhabitants
Cyrenaica: 291000 inhabitants
Fezzan: 59000 inhabitants

From the point of view of living habits the breakdown can be estimated as follows:

Sedentary population: 806000 (74%)
Semi-sedentary: 196000 (18%)
Nomadic: 87000 (8%)

The population of Libya is concentrated in a few towns and especially in the agricultural areas. However nomads and semi-nomads are scattered throughout the territory, chiefly in areas which provide grazing land for the cattle which provide their chief livelihood.

According to the statistics mentioned the rate of population growth in Libya averages about 1.4%, but in recent years because of the general improvement in living conditions it may be considered to have reached at least 2%.

On this assumption the total population in 1961 may be estimated at 1 200 000 inhabitants.

b) *Diet of the Libyan population*

The average daily ration per inhabitant has been calculated indirectly by examining the foodstuffs consumed in the country during the past few years. Owing, however, to the wide fluctuations in this consumption, the number of years studied is too small for the averages obtained to be completely reliable.

In calculating the food ration, account has been taken of the components which concern the aims of this work: the total value in calories and the animal and vegetable protein contents.

More exhaustive investigations have been carried out by Ferro-Luzzi for Tripolitania and by Kroeller for Cyrenaica.

The results for these two most important provinces were the following:

Tripolitania (750 000 inhabitants)
Animal protein: 77 g
Vegetable protein: 46.4 g
Total value in calories: 1 880

Cyrenaica (296 000 inhabitants)
Animal protein: 23.3 g
Vegetable protein: 40.2 g
Total value in calories: 1990.

For the Fezzan, the sparse information available enables us to establish an average daily ration as follows:
Animal protein: 10 g
Vegetable protein: 50 g
Total value in calories: 2000

The above data may serve as rough indications (1). Personal experience also shows that in Libya periods in which consumption is less than the above norms are unfortunately frequent, especially among those whose income is below the average.

An examination of general adult nutrition reveals no serious deficits, with the exception of borderline cases of obvious calorie deficiency illnesses are generally rare.

It is on the contrary among children that signs of metabolic damage are frequently to be observed. These cases are due either to an insufficient diet or to faulty practices in weaning infants. The many thin and physically retarded children seen are evidence of an insufficient calorie intake and a meagre supply of protein. This explains the high rate of infant mortality, which is the cause of the present low growth rate of the population of Libya.

c) *Sources of food supply*

Libya's present economy is, to a great extent, based on agriculture and pastoral stockbreeding. These activities supply almost all the food consumed in the country, although some foodstuffs are imported.

Other elements of the economy are several industries, most of which transform agricultural products. To these should be added fishing and the tourist industry. The discovery of rich petroleum deposits has recently been announced.

The distribution of land in Libya can be estimated approximately as follows:

Total area	175 950 000 hectares
Cultivated area	2 908 000 hectares
Permanent meadows and pastures	7 542 000 hectares
Wooded areas	450 000 hectares
Land which cannot be used	165 041 000 hectares

With regard to stockbreeding, the most recent estimates are as follows:

Sheep	1 416 000 head
Goats	1 292 000 head
Cattle	111 000 head
Camels	172 000 head

These different stocks are raised mostly according to traditional methods based largely upon the movement of herds.

Total volumes of agricultural and animal production are only modest and are mainly for consumption within the country.

The chief agricultural commodities are barley, wheat, dates, olive oil, potatoes, groundnuts and grapes. The animal products are milk, meat, wool and hides.

The chief foodstuffs imported are wheat flour, sugar, barley, rice, potatoes, vegetable oils and tea.

Some of these are mainly intended for the resident European population.

ESTIMATE OF FOOD REQUIREMENTS

These estimates have been made on the initial assumption that the average daily ration per inhabitant should supply at least 2 500 calories and contain a minimum of 70 grammes of protein, at least half of which of animal origin.

(1) In the publication FAS/USDA – FAS – M-198 February "Food Balances in Foreign Countries IV", an average of 2 180 final calories is given for the population of Libya.

From these data the total annual deficiency for the entire population of Libya can be estimated as follows for 1961:

Undernourished population:	1 200 000 persons
Animal protein:	98 293 tons
Calories:	248 930 millions

When we consider the problem of eliminating these deficiencies, many solutions spring immediately to mind. Nevertheless, in this survey, we are dealing only with the products considered above, i.e. with wheat, milk and sugar.

The animal protein deficiencies, however, might well be remedied by milk, and the amounts of vegetable protein increased by wheat.

The possible calorie deficiency remaining after the supply of these two products would be remedied by sugar.

The average values of the three products are as follows:

Product	Protein	Value in calories
Soft wheat	105 g/kg	3 100 cal/kg
Fresh milk	35 g/kg	700 cal/kg
Refined sugar		4 000 cal/kg

On the basis of these hypotheses and in view of the nutritional deficiencies we have just observed, the total requirements of these different products would be as follows (10% to be added for fluctuations during the commercial phase):

Total population	Wheat	Milk	Sugar
1 200 000 persons	61 893 t	26 793 t	15 961 t

If we consider the natural and human situation we must note that, for the effective distribution of these products, part of the population (25%) is difficult to reach because of its nomadic way of life and its scant contact with the outside world.

Because of this, we may tentatively assume that intervention of this kind will be confined to the more sedentary population, equal to 3/4 of the total, that is to say about 900 000 persons.

The needs calculated above would thus be modified as follows:

Stable population	Wheat	Milk	Sugar
900 000 persons	46 421 t	20 096 t	11 970 t

Some of these quantities should be supplied according to a scale of priorities to the vulnerable groups of the sedentary population (about 40% of the total).

On this assumption, the different quantities would be as follows:

Vulnerable population	Wheat	Milk	Sugar
360 000 persons	18 568 t	8 036 t	4 788 t

DEVELOPMENT OF LOCAL POPULATION AND PRODUCTION UP TO 1975

It is indispensable to refer briefly to the prospects of the Libyan economy in the next fifteen years and to its influence on the progressive development of the well-being of the population.

The progress which has been made since the time when Libya was a predominantly pastoral country (with occasional farming chiefly confined to coastal cases) is well-known and easily recognizable. Expansion has taken place in every sphere, and the country possesses the fundamental infrastructure necessary for further progress.

The traditional economic resources, represented by the utilization of land for farming and animal breeding have been given a powerful stimulus by the adoption of two fundamental policies:

a) Prospecting for subterranean water to extend irrigable areas;

b) Extensive cultivation of fruit trees (olive and almond trees, vines, citrus and other fruit).

The aim of these two policies is to counter adverse climatic fluctuations as far as possible.

Besides this, European colonization has had a great influence by investments of labour and capital in vast projects to open up new land.

The change in the political situation has not noticeably affected progress in agriculture, particularly in Tripolitania, even though some of the farms are now directed by Libyan citizens.

A new factor, on the other hand, which has recently emerged in the Libyan economy and whose influence will be increasingly felt by the whole country in the near future, is the discovery of very extensive petroleum deposits. It is thought that it will not be possible to exploit them thoroughly before 1965.

If the petroleum industry develops, it will certainly be agriculture which will suffer the consequences, since the already existing tree plantations and irrigated land under cultivation require large numbers of workers. The exodus from rural areas will also become more marked because of the difference in wages among the various social classes in Libya, and the possibility is not to be discounted that part of the forestry capital, built up in the past at the cost of many sacrifices, may suffer a serious decline.

Moreover, the Libyan himself has no agricultural traditions, and because of this he finds it difficult to acquire modern technical methods. The environment, which seriously hampers the profitable exercise of agriculture and stockraising, must also be considered. The lack of the capital necessary for investment and the difficulty of obtaining credit, except at high rates of interest, must be added to these factors. Certain political attitudes are not always favourable to the Italian farmers who form the most efficient nucleus of Libyan agriculture, and some of them have already left the country. Any increase in the repatriation of Italian farmers could have quite serious effects on Libya's rural economy.

On the other hand, the Libyan Government will be able to draw from its petroleum resources considerable financial assets which, used in the interests of the country's progress, will generally benefit the population by raising living standards, improving hygienic and social conditions and increasing consumption. National production of consumer goods will in all likelihood be insufficient to meet the needs of the growing population, and present food deficiencies will probably remain at the same levels.

On the basis of these hypotheses, and assuming an annual rate of growth of 2%, the 1975 population may be estimated at 1 615 000 inhabitants. The percentage of nomads and semi-nomads will vary as they pass into more stable categories; this will also be a consequence of the new activities developing around the petroleum industry.

As regards nutritional needs for 1975, it is foreseen that present deficiencies will persist, increasing in proportion to the growth of the population.

REQUIREMENTS IN 1975

Hypothesis I: *Deficiencies with regard to the total population of the three provinces :*

Population in 1975:	1 615 040 persons
Products necessary:	Wheat: 83 300 t (10% included) Milk: 36 060 t (10% included) Sugar: 21 481 t (10% included)

Hypothesis II: *Deficiencies with regard to the stable population of the three provinces :*

Population in 1975:	1 615 040 persons
Stable population:	1 292 032 persons
Products necessary:	Wheat: 66 642 t (10% included) Milk: 28 850 t (10% included) Sugar: 17 184 t (10% included)

Hypothesis III: *Deficiencies with regard to the vulnerable categories of the stable population of the three provinces only :*

Stable population:	1 292 032 persons
Vulnerable population:	516 813 persons
Products necessary:	Wheat: 26 656 t (10% included) Milk: 11 536 t (10% included) Sugar: 6 873 t (10% included)

In order to arrive at the preceding statement of the situation and to give it some concrete value, in the absence of any reliable documentation, it was necessary to resort to certain hypotheses on problems of fundamental importance, such as the size and structure of the population, the present average quantitative and qualitative level of nutrition of the native population, and the food produce available on the spot. That is to say, a choice had to be made, with the help of personal knowledge and experience, between various possibilities. The probable food deficiencies in calories and in protein for the present period and for 1975 were estimated on the basis of the hypotheses formulated, which must be regarded as only partly consonant with the real state of affairs.

It seems unnecessary to dwell any longer on the significance of the figures we have quoted: they serve merely to give a general, very approximate idea of the volume of the food deficiencies. Moreover, the fact that we have found it advisable to formulate three distinct forecasts, applying respectively to the total population, the sedentary population more easily accessible to possible food aid and, finally, to the vulnerable groups alone, may help provide a corrective to our limited present knowledge of the problem examined.

It should, however, be borne in mind that the intention originally defined of remedying food deficiencies by means of certain products which it is thought that EEC may have at its disposal

cannot be entirely realized in practice, although deficiencies may, in fact, be remedied by means of various products, for example in the case of animal protein by increasing the consumption of fish, eggs, etc. These observations, too, may make it easier to appreciate the significance which should be ascribed to the present report.

II. – TRANSPORT, STORAGE AND DISTRIBUTION OF FOOD IN LIBYA

The first of these problems does not seem to present any special difficulties with regard to possible shipments of goods from abroad. The port of Tripoli is fully efficient and possesses facilities to handle an appreciable increase in goods traffic, even in perishables; the port of Benghazi can accommodate a substantial volume of traffic.

In addition, the large centres and the most important agricultural areas have adequate storage facilities under State control, particularly for cereals, with a total capacity of 85 000 tons. Numerous private undertakings could effectively lend their help in any exceptional food collecting and distributing operations.

The Libyan transport network may be regarded as entirely satisfactory for the distribution of the goods. Libya in fact possesses many roads, laid out across the country without any special surfacing, but passable in all seasons, as well as some sections of railway.

Transport media are many and efficient. The problem of transporting foodstuffs therefore presents no particular difficulties, even when the most distant areas, such as those in the Fezzan, are to be reached.

Natural disasters (especially drought, invasions of locusts, etc.) and the shortages they cause among the population must also be considered in relation to the distribution problem. It is not possible to delimit hunger zones in the strict sense in Libya, but phenomena of this kind occur more frequently in the pre-desert region. Food crises with very limited effects play a normal part in the life of the population, in bad years or simply before the harvest.

Wise government action is therefore required to limit the effects of such crises, and it would be useful from the EEC's point of view to consider building up stocks of cereals sufficient to cope with critical situations.

With regard to the technico-administrative preparation of Libyan staff in the event of special deliveries of food products to the country, no particular difficulties are anticipated, given the satisfactory level of instruction of both governmental and private personnel.

III. – EFFECTS OF POSSIBLE FOOD AID ON THE LIBYAN ECONOMY

The question should now be asked whether the supply of food products envisaged could be prejudicial to the Libyan economy, and whether it should be considered advisable.

In the first place, it must be remembered that in spite of all the progress made in the most temperate agricultural areas, wheat, sugar and milk have to be imported on a permanent basis. Any supply of these products by EEC would therefore not harm local production.

As we have seen above, future prospects for Libya's agricultural and livestock production involve various factors, a number of which are bound up with an economic advance not foreseeable in the near future. More limited opportunities perhaps exist for increasing livestock production. On the other hand, the reorganization consequent upon the country's independence and, particularly, the industrial development linked with the discovery of oil, which causes an uninterrupted flow of workers from agriculture to industry, are so many factors militating against the development mentioned. The continual exodus of Italian farming families and the consequent abandonment of productive land must also be kept in mind.

The present outlook is therefore that in the periods preceding and following the intensive exploitation of petroleum resources, agriculture may experience difficult phases of depression during which Libya for many years will have to obtain its supplies of the principal food products from abroad.

An examination of the deficit in the balance of trade shows that in the event of a possible programme of differentiated trade, Libya would have little to offer. Once oil exports get under way, the situation in this sector could change radically, but it is impossible to make predictions in this respect. A programme of food aid, especially with the aim of remedying the protein and calorie deficiencies of the average food ration of the population and, consequently, of increasing its well-being and labour productivity, would certainly have a beneficial effect.

However, the supply of food surpluses by EEC will have to take into account the interests of the countries which are Libya's traditional suppliers of these same products. This point, which mainly concerns Italy, needs to be specially studied, if it should come to the practical implementation of programmes for food aid.

IV. – DEMAND FOR EEC PRODUCTS AND CONDITIONS OF TRADE

From all the points set out above, it seems that the following conclusions may be drawn:

a) Libya is not at present self-sufficient with regard to wheat, sugar and dairy produce, and no substantial change is to be anticipated in the present conditions of the country;

b) Generally speaking, Libya could consequently profit from the supply of food surpluses by EEC to improve the nutritional and health conditions of part of its population;

c) Agreements of this kind would encounter no particular organizational difficulties, provided, of course, that they are possible and expedient in the context of general EEC policy.

But how could deliveries of this kind be made ?

An examination of this question, which of its nature is such a delicate one, presupposes extensive knowledge of the general policies and economic and financial aims of the Libyan Government, of existing agreements, of Libya's obligations towards other countries and of its future political and economic orientation. All these matters clearly fall within the province of those responsible for political problems. Reactions to a programme of aid may vary greatly from one country to another, sometimes causing difficulties, chiefly of a psychological nature, which should obviously be avoided.

A superficial and, so to speak, " impressionistic " examination of these difficult subjects can yield only a few summary observations, which might be of some modest practical utility.

The sale of products under normal trading conditions, assuming that the Libyan Government was not bound by engagements of another kind, would very probably raise the question of prices, and this could doubtless lead to purchases on the world market being given preference. In addition, the financial situation of Libya (which belongs to the Sterling area) seems unlikely to permit payments abroad in desirable foreign currency.

It might on the other hand be expedient to consider whether it is worthwhile going into the question of possible differentiated trade programmes with an eye to the time when Libya would be able to export crude petroleum and would thus possess large commercial assets to offer in exchange. It would also be necessary to study possible forms of food aid combined with the economic development programmes, thus helping to finance activities which should bring substantial improvement to the Libyan economy. Here it will be advisable to ascertain the intentions of the Libyan Government as to programming so as to clarify the situation and provide a basis for study. It would seem, at least in theory, that priority should be given to projects of obvious importance for economic development, that is to say, projects which hold out the promise of effective progress by the Libyan economy in its primary, secondary and tertiary sectors.

ANNEX No. 3

Regional Survey

WEST AND CENTRAL AFRICA

by
Professor M. Cépède
Institut national agronomique
Paris

CONTENTS

FOREWORD

Institut national agronomique

Comparative Sociology
and Rural Economy

Paris

The Director General
of Agriculture

European Economic Community

Brussels

Dear Sir,

Please find herewith the two regional surveys :

I. North Africa

II. West and Central Africa

with the preparation of which you were so kind as to entrust me in connection with the survey project : "EEC food aid to developing countries", which my colleagues Professor A. Maugini of Florence and Professor H. Wilbrandt of Berlin, and myself, have carried out at your request.

I would like to express my thanks :

on the one hand, to my assistants and pupils who have prepared the documentation and carried out indispensable investigations and calculations, particularly to M. René Pouzet, agricultural engineer, technical secretary to the Conseil Supérieur de l'Agriculture and chief promoter of its Commission for the franc area headed by Georges Monnet, Minister and M. Denis Cépède, ingénieur économiste, and

on the other hand to the officers of the United Nations Food and Agricultural Organization and of the United States Agricultural Department who have made available to us documentation often unpublished at the time, as well as to :

Professor Roche, Rector of the University of Paris
Professor Chabot, Director of the Geographical Institute, Paris
Doctor Claudian, of the National Hygiene Institute, Paris
Monsieur Frölich, Director of the Centre des Hautes Etudes de l'Afrique et de l'Asie Moderne, Paris
Monsieur Pales, Colonel, Army Medical Corps, Assistant Director of the Musée de l'Homme, Paris, former Director of ORANA at Dakar,

who have give us the benefit of their invaluable advice as well as of selected documents and information.

It is thanks to the help of those mentioned that we have been able to complete a task of which the resulting two short surveys give only a faint idea. We should like to express our thanks to them here.

M. Cépède

Professor.

WEST AND CENTRAL AFRICA

INTRODUCTION

This region ought, logically, to be divided into at least two parts, one forest, the other savannah, but the frontier between these would not correspond to the frontiers of the countries, often even of the administrative regions on the basis of which certain indispensable statistical information is established. An attempt to regroup Western Africa, from Senegal to Lake Chad, on the one hand, and Equatorial Africa, Gaboon, the two Congos and the Central African Republic on the other, proved deceptive.

For the sake of convenience our survey has dealt mainly with the former French territories. We have disregarded the Spanish possessions in the Sahara region and Guinea (215 000 inhabitants in all), Gambia (290 000 inhabitants) and Portuguese Guinea (565 000 inhabitants).

This area covers 11.5 million square kilometres, of which 7.8 represent the Republics constituted by the former territories of French West Africa and French Equatorial Africa and the Republics of Togo and Chad, and 2.35 the Congo (Léopoldville).

However, the 1.35 million square kilometres comprising mainly Liberia and the three British countries, Sierra Leone, Ghana and Nigeria, account for 41 million of the 88 million inhabitants in the area (46.5%) with an average density of 31 inhabitants per sq. km.

With the exception of the Republic of Togo (24.6 inhabitants per sq. km) no State in the area has a population density comparable with that of the three States of former British West Africa (Ghana 21, Sierra Leone 32, Nigeria 38 per sq. km).

Liberia's density (12 per sq. km) is similar to that of the most thickly populated Republics of former French West Africa (Guinea 11, Upper Volta 16, Senegal 15.7, Dahomey 17.8 per sq. km).

The Congo (Léopoldville) has a population density of 6 per square kilometre. This includes Ruanda-Urundi.

NATURAL RESOURCES

These depend on the climate, i.e. both on latitude and on distance from the coast; suitability for different crops and also the difficulties involved in supplying extra provisions depend upon this factor.

In the North, vast pastures support nearly 2/3 of the cattle in Mauritania, North Senegal, North Mali, the Northeast of Upper Volta, Niger, North Cameroons, Chad and the North of the Central African Republic, which make up this region where extensive stock-raising is the rule.

Further South, cattle is exposed to dangers of epidemic diseases but where savannah, which has a better rainfall, exists, great numbers of cattle can be run. Under these conditions milk yields, varying according to the species and the breed, are always very low (200 to 700 litres per year).

Subsistence farming competes with stock-raising and also with commercial farming for export (groundnuts, cotton). Such cash crops are also sown in the forest region (palmoil, cabbage-palm, coffee, cocoa, sweet bananas) and along the coasts (copra).

The food balances available are not recent and show serious omissions. For meat production, we have had to make do with estimates reached by applying to the number of head of livestock the ratio between animals slaughtered and number of livestock recorded in the former Belgian Congo by FAO (cattle: 12.3%; pigs: 31%; sheep and goats: 10%) and by taking the carcass weights for the same region as a yardstick (cattle: 160 kg; pigs: 55 kg; sheep: 13 kg; goats: 10 kg).

Allowing for consumption by livestock and non-nutritional utilizations, this would give the following food availabilities in vegetable products:

in calories $\times 10^{11}$

Country	Apparent consumption	Deduction of other utilizations	Food availabilities
Former FWA	175,74	4,6	171,14
Togo	15,94	0,8	15,14
Cameroons	40,36	1,86	38,50
Former FEA	73,67	20,00	53,67

in animal products:

Country	Apparent consumption			
	Final calories		Primary calories	
	Total ($\times 10^{11}$)	per head/day	Total ($\times 10^{11}$)	per head/day
Former FWA	1,79	2 285	12,53	2 427
Togo	0,36	3 654	2,52	4 164
Cameroons	0,74	3 388	5,18	3 771
Former FEA	1,97	3 030	13,79	3 690

These figures should be taken with very serious reservations. It is obvious that food production consumed on the farm does not figure in these statistics, nevertheless we are led to assume that calorie requirements should on average be easily met. The needs for protein, on the other hand (in spite of the part played by game and fish which do not figure in the tables) are far from being met in most cases.

The figures published for 1958 by the Foreign Agricultural Service of United States Department of Agriculture (Food Balances in Foreign Countries FASM 108. Feb. 1961) give a similar impression. Moreover, they enable us to observe the extent of the differences existing between the diets of the countries studied and those of the other countries in the region (see Table, p. 119).

It should be noted that the differences observed between the figures obtained by the two methods are to be explained by the defects of the first method only in the case of the whole of former French West Africa, where the method using the most incomplete data gives results inferior to those obtained by using more complete data.

For Togo, the Cameroons and the Republics of former French Equatorial Africa, it is, paradoxically, the method using the most incomplete data which gives the highest figures. The differences seem to be spread over the chief items of the diet.

In any case, the conclusion is still similar: a relative abundance of final calories, serious insufficiencies in protein, especially of animal origin, causing a very low level of nutrition in primary calories.

POPULATION

Of the 88 million inhabitants of the region, 33.4 millions are to be found in the countries studied, 13.6 in the Congo (Léopoldville) and Ruanda-Urundi and 41 in the States not included in the annex to the Rome Treaty.

Population density varies greatly in the chief countries studied: from 0.7 inhabitants per square kilometre in the Islamic Republic of Mauritania to 24.6 in Togo, with 2 in Niger, Chad, Gabon, the Central African Republic and the Congo (Brazzaville), 3.4 in Mali, 9.5 in the Cameroons, 9.6 in the Ivory Coast, 11 in Guinea, 15.7 in Senegal, 16 in Upper Volta and 17.8 in Dahomey.

Except in a few big towns, where, however, it represents a small minority, the population of non-African origin presents no problem (Dakar 15.5%, Thiès 7.4%, Yaoundé 7%, Saint-Louis 5.6%). This part of the population amounts to only 1.3% in Senegal, 0.5% in the Ivory Coast, 0.4% in the Cameroons, 0.2% and less in the other countries.

Table of the chief agricultural products in West and Central Africa

in '000 tons

Product	Production (a)				Imports (b)				Exports (c)				Apparent consumption (d) = (a + b − c)			
	Former FWA	Togo	Cameroons	Former FEA	Former FWA	Togo	Cameroons	Former FEA	Former FWA	Togo	Cameroons	Former FEA	Former FWA	Togo	Cameroons	Former FEA
Cereals	3 370	158	440	686	210	4	26	20	—	1	—	—	3 580	161	466	706
Sugar	—	—	—	5	105,1	2,6	5,5	8,7	—	—	—	—	105,1	2,6	5,5	13,7
Manioc	1 082	233	650	1 360	—	—	—	—	—	—	—	—	1 082	233	650	1 360
Other tubers	1 455	260	173	299	12,7	0,2	1,5	2,2	—	—	0,1	—	1 467,7	260,2	174,5	301,2
Pulses	—	5	17	6	0,5	—	—	0,2	—	—	—	—	0,5	5	17	6,2
Sweet bananas	119	—	—	—	—	—	—	—	111	—	—	—	8,4	—	—	—
Cocoa	50	6,9	60	2,7	—	—	—	—	46,3	6,9	54	2,7	3,7	—	6	—
Meat	11,5	3,2	31,7	42,2	0,4	—	0,5	1,8	0,2	—	1,1	2,1	11,7	3,2	31,1	41,9
Milk and milk products	150	41	16,5	165	58	1,5	2	12,5	—	—	—	—	208	42,5	18,5	177,5
Eggs	7,8	0,1	0,5	1	0,5	—	—	0,1	—	—	—	—	8,3	0,1	0,5	1,1

Consumption in calories per head per day

Product	Former FWA without Guinea	Guinea	Liberia	Ghana	Togo	Nigeria	Cameroons	Former FEA	Congo (Léopoldville) and Ruanda-Urundi
Wheat	50	10	15	90	15	10	50	25	25
Maize	155	190	215	315	395	255	305	60	180
Millet	990	230	265	280	480	445	510	885	105
Rice	230	680	850	55	90	45	25	50	55
Other cereals	5	—	—	5	—	20	—	—	—
Total cereals	1 430	1 110	1 345	745	980	775	890	1 020	365
Sugar	60	30	40	85	20	30	15	30	15
Potatoes, sweet potatoes, yams, manioc, etc.	550	605	565	1 055	1 000	1 290	890	770	1 400
Bananas and plantains	55	90	95	220	150	95	220	155	345
Pulses (including groundnuts)	155	195	45	100	145	155	145	205	260
Other fruit and vegetables	10	25	40	25	20	30	40	20	20
Vegetable oils	135	300	375	275	285	250	230	280	185
Total vegetable products	2 395	2 355	2 505	2 505	2 600	2 625	2 430	2 480	2 590
Meat	25	25	20	65	30	25	20	25	25
Fish	10	10	10	20	10	10	20	10	25
Milk and cheese	20	10	5	10	5	15	5	60	10
Eggs	Negl.	Negl.	Negl.	5	Negl.	5	Negl.	Negl.	Negl.
Total animal products	55	45	35	100	45	55	45	95	60
Total ration final calories	2 450	2 400	2 540	2 605	2 645	2 680	2 475	2 575	2 650
Total ration primary calories	2 780	2 670	2 750	3 205	2 915	3 010	2 745	3 145	3 010

Negl. = negligeable.

Urbanization is proceeding rapidly:

Between 1930 and 1955 Dakar grew from 47 400 to 185 000 inhabitants (231 000 in 1959), Bamako from 19 400 to 116 000, Abidjan from 9 500 to 113 300 (128 000 in 1959). In 22 years, Duala has increased its population from 26 000 to 119 000 inhabitants.

Brazzaville (99 000 in 1959) and Bangui (80 000 in 1959) are already well set for the 100 000 mark.

Available information on birth and death rates is fragmentary. Nevertheless, monographic investigations carried out at various places in the region would seem to indicate that among the sedentary population the birth rate approaches and often exceeds 50% (59% in Niger and the Ivory Coast, 65% in Guinea and 71% in the Cabrais country). Among the nomadic hardsmen, the rates seem to be lower, in the region of 35%, while in the large urban centres the birth rate appears to be at an intermediary level about 10% below that of the neighbouring agricultural population.

Death rates are still very high and vary greatly (from 23% to 42% according to the figures in the inquiries used). The result is a rate of growth of from 5% in the equatorial region, where birth and death rates often cancel each other out, to nearly 30%, which is a very high rate.

For the purposes of our calculations for 1975, we have assumed a rate of growth of 25% outside the equatorial region, where we have chosen a rate of 5%.

The population would thus increase from 31 millions (excluding Guinea) to 45 millions by 1975.

LIVING STANDARDS – LEVELS OF NUTRITION

A survey based on 1950/51 data by M. Heis de Balsac shows us that agricultural conditions in the British territories are not greatly different from those in the neighbouring regions included in our survey:

Regions	Agricultural product as % of the territorial product	Self-supply and domestic marketing as % of the agricultural product	Individual agricultural income in $
I. Ivory Coast, Upper Volta, Dahomey and French Togo	62	80	48
II. British Gold Coast and Togo	66	64	60
III. Nigeria and British Cameroons	69	88	36
IV. Cameroon	50	74	50
Average of the four regions	66	80	43

The tables which we have based on figures published by the FAS, United States Department of Agriculture, show that the same is true as regards nutrition, Ghana (formerly the Gold Coast) also appearing at the head of the nutrition levels, with 3 205 vegetable calories per head per day as well as coming first in individual agricultural income.

Variations in meat consumption (in kilogrammes per head per annum) are considerable. The estimates presented to FAO, ECA centre on the marketing of livestock and meat in Africa and are generally lower than those we have noted (5 kg on average for West and Central Africa, as against 6.3 kg given by FAS). Variations from country to country are no less remarkable:

Countries in the survey	
Mauritania	13 kg
Senegal	12 kg
Niger	10 kg
Mali, Togo, Cameroons	8 kg
Chad	7 kg
Dahomey	6 kg
Ivory Coast and Central Africa	5 kg
Upper Volta and Guinea	3 kg
Gabon	2 kg
Congo (Brazzaville)	1 kg
Other countries in the region	
Ghana	9 kg
Portuguese Guinea and Gambia	6 kg
Nigeria	5 kg
Congo (Léopoldville) + Ruanda-Urundi	3 kg
Liberia	2 kg
Sierra Leone	1 kg

Although the total figures suggest small calorie deficits, cases of serious deficits are revealed by the food investigations. The investigations by Masseyef in the South of the Cameroons are the only ones known.

With 1516 calories for the Butouri villages as a whole, the deficit can be estimated at 28% (25% in the savannah region, 44% in the forest region and 27% in the intermediary region). Masseyef admits that these figures are probably short of the truth, but not by more than 10%.

Inquiries into consumption show both the extreme variety of the products eaten and the importance, in the villages of the southern region, of roots, tubers and fruits (plantains rich in starch) which account more than 80% of the actual calorie intake (Ivory Coast inquiry).

In this region, seasonal variations are relatively small: in the village of Bongokssou (Ivory Coast), the average ration per person per day varies from 1917 final calories, from August to November, to 2168 from April to July, in a yearly average of 2061 (3009 primary calories), and from 23 g of animal protein (August-November) to 26 g at other periods, in a yearly average of 25.

It must be noted that in this region, where commercial production is important, 30% of the diet by value is purchased, even though practically all the roots, tubers and plantains are produced by consumer families. The result is a meat consumption (in calories) 4 to 5 times higher than the average for the region.

Seasonal variations are much more considerable in dry areas where cultivation along rivers yields no harvest in the dry season. Platt and Miss Grand have recorded variations of from 1400, before harvest, to 3000 calories after harvest, in an average diet of 1800. The findings of the Pales mission in former French West Africa provide substantial confirmation of these figures.

The example of Bougoussou shows, however, that the population have some purchasing power and can buy extra food which tends to make their ration comparatively richer in the pre-harvest period than after the harvest of vegetable produce. In rural areas of Sudan, in a bad season, when the granaries are empty, gathering of food plants and the hunting of animals of every kind has a similar effect upon the diet.

The extreme variety of situations, underlined by the differences recorded in food investigations concerning the same population, according to whether it lives in a village or in an encampment, obliges us to be very wary in forming conclusions.

Social groups and age groups often have very different levels of nutrition, and while caloric resources seem very generally satisfactory, undernourishment of children even in calories is often very serious right up to adolescence.

Thus, Nicol's investigations in Nigeria showed that the average consumption, in calories per head per day and by age-group of children in the North and South of the country was as follows:

Age	North Nigeria		South Nigeria	
	Calories	% of requirement	Calories	% of requirement
1 to 3 years	1 000	83	900	75
4 to 6 years	1 350	83	1 217	76
7 to 9 years	1 650	83	1 433	75
10 to 12 years	1 967	85	1 783	78
13 and above	2 617	113	2 383	94
Average	2 150	103	1 750	88

Nutritional habits vary with the very different ethnic groups and this sometimes gives rise to real disasters: the Ashanti workers employed in the rubber plantations of Liberia refuse to eat rice, the staple cereal in that contry's diet.

Périssé's investigations in 1954-58 show the variations in consumption in five villages of Togo, and deal with the following populations, spread over 500 kilometres, from the North to the South of Togo:

Village	Area	Population
1. Bombouaka	Savannah in the extreme north	Mobas
2. Sahoudo	Cabrais country (about 150 km southeast of (1)	Cabrais
3. Akaha	About 150 km south of (2)	Emigrant Cabrais
4. Kouma Adame	About 150 km south of (3)	Ewés
5. Attitogon	Extreme southeast of Togo	Ouatchis

The diet of the Mobas is based on millet; voandzu peas, groundnuts and other pulses also play an important part.

The Cabrais, in their mountain home, add yams in large quantities to millet and pulses.

For the Cabrais emigrants in central Togo, yams are more important than millet, which is partly replaced by maize.

Roots, tubers and plantains form the basis of the diet of the Ewés in the forest area of the Southwest, while maize is the most important cereal, rice being used to bridge over before the harvest in February.

The Ouatchis chiefly consume manioc and no yams; maize is the only cereal.

If we rearrange these data certain differences disappear but those which remain are significant.

Origin of the vegetable calories in the diet of different ethnic groups

as %

Ethnic groups	Calories from:			Total
	Cereals	Roots, tubers and plantains	Pulses	
1. Mobas	68,8	4,4	19,6	92,8
2. Cabrais	54,4	20,1	12,2	86,7
3. Emigrant Cabrais	30,9	51,4	3,2	85,5
4. Ewés	23,1	64,6	3,7	91,4
5. Ouatchis	34,0	49,7	2,2	85,9

The consumption of meat is always low (5 to 6 kg per head per year for groups 1, 2 and 4). It rises to 9 kg per head per year among the Cabrais who have emigrated to less heavily populated areas and also have some game resources; it falls to a little more than 1 kg per head per year among the Ouatchis, the largest consumers of fish (17.2 kg per head per year).

The annual per capita consumption of fish, still significant (10.3 kg) among the Ewés, falls quickly as one goes inland (2.3 among the Cabrais emigrants, 0.3 among the Cabrais, and 0.2 among the Mobas).

However, we have been able to show (Economie Alimentaire du Globe, p. 239 et seq.) the importance of the fish market in native Africa and its sensitivity to economic conditions, drawing attention, however, to the fact that the "natives regard fish first of all as a condiment and not as a subsistence food". In spite of the considerable variations observed in the inquiries consulted, we can affirm that while there is sometimes undernourishment, especially of seasonal nature, in the area, there is always malnutrition.

The protein deficit is largest in the South, where roots, tubers and plantains do not con-

tribute to the diet the vegetable protein which millet and pulses provide.

It ought to be possible to remedy this vegetable protein deficit by stepping up the resources of local agriculture.

However, this is not the case for the deficits in animal products calculated below according to the norms accepted by ORANA.

Theoretical standard used by INH and ORANA

Categories of consumers		Grain units	Calories	Protein	
				Total	Animal
2 to 3 years		0,5	980	50	40
4 to 6 years		0,6	1 250	60	40
7 to 12 years	moderately active	0,8	1 650	80	45
	active	1,0	2 050		
13 to 20 years	sedentary	1,2	2 500	105	55
	moderately active	1,4	2 850		
	active	1,5	3 120		
Adults	sedentary	1,0	2 050	80	40
	moderately active	1,2	2 400	100	40
	active	1,3	2 675	105	45
Old persons	sedentary	0,9	1 875	70	35
	moderately active	1,1	2 230		
Pregnant women		+ 0,1	+ 150	105	50
Lactating women		+ 0,3	+ 600	115	65

This is clearly much more than the 65 g of total protein and especially the 7 g of animal protein (about a sixth) regarded as minima by the FAS of the United States Department of Agriculture.

Protein requirements and home production

Country	Requirements (in tons)	Production (in tons)	Deficit	
			Total (in tons)	as % of requirements
Senegal	42 500	8 950	33 550	78
Mali	48 400	18 900	29 500	60
Mauritania	8 600	6 600	2 000	23
Upper Volta	52 500	5 150	47 350	90
Ivory Coast	23 500	5 010	18 490	78
Dahomey	37 000	8 630	28 370	76
Niger	34 000	14 850	19 150	57
Chad	31 000	13 700	17 300	56
Togo	16 500	1 560	14 940	90
Cameroons	49 000	6 450	42 550	87
Former FEA (- Chad)	38 000	9 400	28 600	75

Expressed in tons of products, these deficits could be broken down as follows:

Fish — Milk

Country	Fish deficit (in tons)	Milk (tons of natural milk)			
		Approximate requirements	Production	Deficit	
				Total	% of requirements
Senegal	15 000	315 000	76 000	239 000	75
Mali	37 000	410 000	173 000	237 000	57
Mauritania	6 000	77 500	84 000	+ 6 500	+ 8
Upper Volta	—	450 000	66 000	384 000	85
Dahomey	20 000	200 000	12 500	187 500	93
Ivory Coast	40 000	310 000	16 500	293 500	95
Niger	—	290 000	27 500	262 500	92
Chad	—	260 000	145 000	115 000	45
Togo	—	140 000	8 000	132 000	95
Cameroons	—	410 000	52 000	358 000	87
Former FEA (- Chad)	—	224 000	24 000	200 000	89
Total of the countries investigated		3 086 500	684 500	2 402 000	

Meat

Country	Requirements (in tons)	Production (in tons)	Deficit	
			Total (in tons)	as % of requirements
Senegal	110 000	22 000	88 000	80
Mali	87 000	36 000	51 000	60
Mauritania	26 000	12 800	13 200	50
Upper Volta	215 000	14 350	200 650	92
Dahomey	77 000	9 750	67 250	87
Ivory Coast	112 250	12 250	100 000	89
Niger	140 000	32 320	107 680	77
Chad	127 000	47 600	79 400	63
Togo	68 000	8 200	59 800	88
Cameroons	138 000	27 500	110 500	80
Former FEA (- Chad)	57 000	7 500	49 500	87
Total of the countries investigated	1 157 250	230 270	926 980	

The meat deficit presents technical problems of transport, conserving and distribution, to which it need only be added that the export market value of 900 000 tons of meat is roughly comparable with the total income of the populations whose protein needs are not satisfied.

The milk deficit (about 20 to 25 million hectolitres, expressed as fresh milk) is also considerable, but an extra supply of 7 to 8 million hectolitres (or 70 000 to 80 000 tons of milk powder) would make it possible (see Veisseyre: Le lait et les produits laitiers dans l'alimentation des populations de l'Afrique noire) to meet the most urgent essential needs, those of pregnant and lactating women and of children under 14. The deficit in animal protein among African children after weaning is general and its consequences very serious.

In order to estimate the 1957 needs in the Republics of former FWA, in the Cameroons, in Togo and Chad, we shall assume an annual rate of population growth of 2.5%. With regard

to the development of resources, although there remains unexploited land capable of producing food crops, as well as unutilized shrub production, the share of self-supply must be expected to decline. The rural exodus is already causing the farmer, once he has become a town-dweller, to abandon land formerly cultivated and which is not taken over and exploited by the inhabitants of the village. The diet of the town-dweller is also modified by the cost of products bought on the market and by the new economic climate of demand. If the rate at which land is exploited does not keep pace with the rate of population growth, bigger deficits may result from the decline in production for self-supply. Foodstuffs, which account on average for a quarter of the total external purchases of the Republics of former FWA seem likely to become still more important in Africa's imports; even the farmer is giving up self-supply: " The African producer, increasingly taken up with crops for export, has called on imports to meet needs that he himself used to cover and which he now feels can be better satisfied by goods from abroad ".

" This dependence upon imports is still greater for the growing part of the population which is abandoning its traditional way of life " (Banque centrale, 1958). We have therefore attempted to calculate two hypotheses: the first (I) under which we estimate that local production will continue to meet needs for glucide as well as for lipide, the second (II) under which we have assumed that the fresh needs, not being met by the growth of local resources, will have to be covered by cereals imports.

As regards resources in animal products, it can hardly be hoped to increase them in 15 years, whereas they represent 22% of the milk and 30% of the meat requirements recognized by physiologists. We have considered it a fair estimate that, at best, the 1975 deficit would be of the same order, as a percentage, as that recorded in 1960:

Former FWA + Togo + Cameroons + Chad

in tons

Product	Estimated deficits in 1960	Possible deficits in 1975	
		Hypothesis I	Hypothesis II
Cereals	nil	200 000	2 000 000
Milk products: powdered milk	220 000	330 000	330 000
Meat	877 000	1 350 000	1 350 000

In addition, for former FEA (- Chad) the estimates are as follows:

Population 1960: 2 500 000
1975: 3 500 000

	Deficits 1960	Deficits 1975
Cereals	150 000 t	250 000
Powdered skim milk	20 000 t	20 000
Meat	50 000 t	50 000

or a total for the region studied of:

in 1960: 150 000 tons of cereals
240 000 tons of powdered skim milk
930 000 tons of meat
in 1975: 450 000 to 2 250 000 tons of cereals
350 000 tons of powdered skim milk
1 400 000 tons of meat

and on the same bases for all the countries of the region figuring in the list annexed to the Rome Treaty:

Region of the survey + Congo (Léopoldville) + Ruanda-Urundi

in tons

	Product	Region of survey	Congo (Léopoldville) and Ruanda-Urundi	Total
in 1960	Cereals	150 000	1 100 000	1 250 000
	Powdered skim milk	20 000	145 000	165 000
	Meat	50 000	350 000	400 000
in 1975	Cereals	450 000 to 2 250 000	1 800 000	2 250 000 à 4 050 000
	Powdered skim milk	350 000	145 000	495 000
	Meat	1 400 000	350 000	1 750 000

Using much lower hypotheses than ours to define the physiological requirements and noting the situation expressed by the table below, the FAS of the United States Department of Agriculture concludes that none of these countries shows a caloric deficit, and that animal protein is sufficient in the former Belgian Congo and Ruanda-Urundi, in Former FEA, with a per capita deficit of 1 g per day in Nigeria, 2 in the Cameroons and in former FWA, 3 in Guinea and Togo and 4 in Liberia.

Composition of the food ration in the countries in the area of the survey

per head/ day

Country	Population (millions)	Calories (number)	Protein (g)				Oils and fats (g)
			Animal	Pulses	Others	Total	
Nigeria	36,6	2 680	6	9	45	60	49
Former Belgian Congo (+ R-U)	18,3	2 650	7	15	27	49	37
Togo	1,1	2 645	4	10	34	48	65
Ghana	4,8	2 605	9	5	37	51	52
Former FEA	5	2 575	7	10	39	56	62
Liberia	1,3	2 540	3	3	36	42	55
Cameroons	3,2	2 470	5	7	39	51	51
Former FWA	17,2	2 450	5	8	46	59	27
Guinea	2,6	2 400	4	10	33	47	60

The protein deficit to be met by pulses would be nil in the former Belgian Congo (and Ruanda-Urundi), in Former FEA, in Guinea and in Togo; it would be 1 g per head per day in Nigeria, 2 in former FWA, 3 in the Cameroons and in Ghana and 7 in Liberia.

The per capita protein deficit remaining to be made up from other sources (for example by substituting cereals for roots and tubers) would be 2 g per day in former FWA, 3 g in Nigeria, 9 g in the Cameroons and in former FEA, 11 g in Ghana, 12 in Liberia, 14 in Togo, 15 in Guinea and 16 in the former Belgian Congo (and Ruanda-Urundi).

On the bases of calculation used by FAS, these 1958 deficits could be met by:

Powdered skim milk: 94000 tons, of which 52000 for use in the countries on the list annexed to the Rome Treaty;

+ pulses: 188000 tons, of which 76500 tons for use in the same countries;
+ wheat: 2700000 tons, of which 2000000 for use in the Rome Treaty list countries.

INFRASTRUCTURE

The infrastructure needed for internal transport is generally insufficient and cannot be used in certain seasons. As a result, in a continent of such vast dimensions as Africa, difficult problems would soon arise in the regular supply of imported provisions to consumers up country. Internal transport is generally very costly: 25 to 30 francs CFA (10 to 12 US cents) per kilo/ton by bus, and 100 francs CFA (40 US cents) by cart are recorded in the immediate "hinterland". Moreover, both forms of transport require a minimum of infrastructure, which however often disappears in the rainy season.

The same problems reduce the possibilities of transporting agricultural goods from the central production areas to the coastal towns. Traditional commercial routes sometimes using waterways (trading) handle only products which can pay high transport costs (fish from Mopti – meat) or capable (cattle on the hoof) of reaching consumption centres by themselves – often, however, at the price of terrible losses both in quantity and quality.

In July – September 1960, meat brought at Fort Lamy at 30 US cents per kg, carcass weight, could thus be sold for 35 in Kano and 68 in Brazzaville.

From Kano (35 US cents) the meat could go on to Lagos (47 US cents) and Accra (70 US cents) – From Zinda (24 US cents) it goes to Niamey (40 US cents) and from there to the coast.

Accra also receives meat from Mopti (30 US cents) which is joined at Korhogo (48 US cents) by meat from Mali (Bamako 40 US cents) and continues to Abidjan (64 US cents), etc.

Meat can only be supplied to Dakar (40 US cents) and Zinguinchor (48 US cents) from

neighbouring Mauritania and East Senegal, where it is very cheap (Tambacunda at 28 US cents).

Transport costs and their seasonal fluctuations do not explain everything. The income of consumers and its seasonal fluctuations influence demand and, consequently, prices, otherwise it would hardly be possible to explain why consumption is often at its highest at the time of the year when prices are also at their maximum.

Technical conditions for storage and, consequently, the cost involved are particularly onerous in tropical areas in the wet season.

These observations should incite to extreme caution in undertaking projects which might risk disorganizing trade channels which, although inadequate, do at least already exist. Simultaneous action should therefore be taken to reduce transport and storage costs, so that extra deliveries do not hamper local production by competing with it instead of supplementing it.

POSSIBLE FUTURE DEVELOPMENTS

Not only do food deficits appear during the process of development; they also tend to increase for a period which we have called the "negative phase" of development, when population and needs grow faster than the labour force available for production. Confining ourselves to this demographic aspect, it would seem that the "negative phase" reaches its lowest point towards the fifteenth year, rises to the original level in about the twenty-fifth year and attains the level of the developed countries in about the forty-fifth year.

To this phenomenon must be added the consequences of urbanization and its influence on eating habits, not only in the towns as such, but also in areas for which they are more or less a model. There is a reluctance to consume local products as a result of the example seen in the towns. Combined with this is the conviction of higher social status which goes with the purchase of new goods.

Millet and sorghum are replaced by rice and maize, or even wheat. If, as is the case with rice, the imported product is less expensive along the coast than rival local products, the process of change is naturally speeded up. We have chosen the example of millet, because the economic aspect is here linked with a nutritional one: when rice and, especially, maize or even wheat, replace millet, the diet suffers a deterioration which ought to be remedied by the additional consumption of rich proteins, often of animal origin and therefore expensive. If supplies from outside are not used simply to supplement local production but rather tend in part to take its place, the situation will be made worse instead of better.

Already imports by the Republics of former FWA have gone up from 35 934 million francs CFA in 1949 to 98 684 million in 1959; in the last few years food imports represented more than the deficit on the balance of trade (see Table p. 81).

In these conditions, supply programmes will have to distinguish carefully between gifts, loans and commercial supplies at special prices or otherwise. Gifts should be confined to programmes of aid to vulnerable groups which can be directly reached with the aid of the Governments concerned. If gifts or supplies at special prices were granted to these Govern-

Trade balance of former FWA

in million francs CFA

Year	Imports			Exports (d)	Balance	
	Total (a)	Food			in value (e) = (a − c)	as % of total imports (e) / (a) = (f)
		in value (b)	as % of total imports (b) / (a) = c			
1956	69 403	15 963	23	62 410	6 993	10,1
1957	80 423	19 302	24	62 613	17 810	22,1
1958	91 703	21 275	23,2	76 622	15 081	16,4
1959	98 684	25 362	25,7	80 228	18 456	18,7

ments, care would have to be taken that certain of these products are not sold at prices which discourage local production; the differences collected by the Governments could be used to finance nutritional programmes or investments of other kinds. It is indeed important, especially in this region, to bear in mind the serious problems presented by the deficit of public budgets during the take-off stage and "negative phase" of development.

Taxable wealth is scarce and difficult to bring within the purview of the fiscal authorities and recourse to indirect taxation, which is necessary for technical reasons, can have an inhibiting effect on development itself, so that any new source of funds, however limited, which could be devoted to essential investments, may not be disregarded. The utilization of such "counterpart" funds could have a twofold effect: it would prevent local production being discouraged by abnormal competition and improve its productivity by mechanization. For reasons of technical convenience, the programmes will tend to concentrate on urban populations; great care must be taken to see that they do not over-accelerate urbanization out of proportion to industrialization, which must on no account be confused with economic development.

ANNEX No. 4

Regional Survey

SOMALIA

by
Professor A. Maugini
Istituto agronomico per l'oltremare
Florence

CONTENTS

SOMALIA

INTRODUCTION

This survey deals with vast territories of East Africa, whose shores are washed by the Gulf of Aden and the Indian Ocean, and which, with the exception of a few mountainous ridges in Migiurtinia, and others along the northern coast, on the Gulf of Aden, are mainly composed of plains, or else are broken up at short intervals by low-lying plateaux.

Roughly speaking, these territories are situated between the 14th degree of latitude North and the 3rd degree South. They rise gradually from the coastal regions towards the mountains of Ethiopia and Kenya and, except for small areas between the frontiers of Ethiopia and Kenya, are almost entirely within the boundaries of the Somali Republic.

The majority of the sparse population living here belong to the ethnic group of the Somalis. Their chief activity is cattle-raising, which best satisfies their proud and independent nomadic character.

In drawing up the present report, I have had the benefit of the very competent collaboration of Dr Ugo Funaioli, of the Ministry of Agriculture and Forests, attached to the Overseas Agronomics Institute, who has an excellent knowledge of the country, where he lived from 1952 to 1957. I have also been aided by M. Massimiliano Mariani, agricultural expert of the Institute. I would like to express to both my gratitude for the help they have given me in collating and working up the documents and in the rearrangement of the material.

I. – FOOD REQUIREMENTS

This account will be confined to a consideration of the following products: wheat and flour, sugar, products derived from milk, and wine, of which surpluses are anticipated in the EEC countries.

The calculation of nutritional needs in Somalia concerns the products in their unprocessed state. However, according to the demands of the particular social strata of the country, supplies may be distributed in the form of products which have been processed in varying degrees. In this case the amounts calculated should be proportionally reduced.

ESTIMATE OF FOOD CONSUMPTION

a) *Population and social structure*

Because of the serious natural and human obstacles which still exist, the total population of Somalia can only be estimated very approximately, as follows:

Total mean population	1 903 584
Vulnerable population (40% of the total population)	761 000
Pastoralists and farmer-pastoralists	1 473 694
Farmers	272 385
Other occupations	157 504

Among the population groups here shown, the pastoralists lead a nomadic life, while the others may be regarded as sedentary, even if more or less precariously so. The sedentary population is concentrated especially in the coastal areas, along the two chief rivers, and in a few intermediate territories. The rest of the country is inhabited by pastoralists distributed almost evenly, especially during the rainy season.

For administrative purposes, Somalia is divided into seven regions, themselves subdivided into numerous districts.

b) *Diet of the population*

The diet of the Somalis depends first of all upon their chief activity. From the nutritional angle the following types can be distinguished:

a) Pastoral or mixed population
b) Agricultural population
c) Inhabitants of urban areas
d) Fishermen
e) Hunters.

Except for a very small urban sector, the population lives on food products available locally.

The products most widely consumed are: milk, meat, butter, sesame oil, maize, doura, beans, fresh fruit, tea, sugar and some spices.

The least widely consumed products are: bread, pasta, fresh vegetables, fresh fish, dates, fresh manioc and preserves.

Products consumed only by certain groups of the population are: fresh fish and other sea-food, game.

The average daily ration per inhabitant in Somalia can be calculated on the basis of the investigations so far carried out by eminent scientists (Tedeschi, Tortorano, Camis, Visco, Ferro-Luzzi and Lipparoni). The data below refer exclusively to the protein content and the total caloric value of this ration – factors of great importance for the purposes of the present survey.

Group a): Pastoralists or farmer-pastoralists

Diet A: 8 months of wet season, therefore good pastures and ready supplies of water.

Animal protein	159.3 g
Vegetable protein	0 g
Calories	3 208

Diet B: 4 months of drought and pasture and water shortages.

Animal protein	28.8 g
Vegetable protein	33.3 g
Calories	1914

Group b): Stable agricultural population

Animal protein	37.8 g
Vegetable protein	56.0 g
Calories	2647

Group c): Inhabitants of urban areas

Animal protein	18.3 g
Vegetable protein	47.2 g
Calories	1935

Group d): Fishermen

Animal protein	78.0 g
Vegetable protein	21.0 g
Calories	1397

Group e): Hunters

Animal protein	112.0 g
Vegetable protein	30.0 g
Calories	1743

The above diets may be attributed to the following population groups:

	inhabitants
a) Pastoralists and farmer-pastoralists	1 473 694
b) Stable agricultural population	272 385
c) Inhabitants of urban areas	120 000
d) Fishermen	12 000
e) Hunters	6 000

c) *Sources of food supplies*

Somalia's economy at present is based chiefly on agriculture and cattle-raising. These two activities provide practically all the food: both are however subject to wide fluctuations, chiefly because of two elements: rainfall and the flooding of the main rivers from which water is drawn for irrigation. Besides agriculture and pastoral activities, fishing supplies the coastal population with considerable volumes of food. Hunting, on the other hand, is practised on a minor scale by small groups usually held in contempt by the rest of the population.

Agriculture

The distribution of land in Somalia is estimated as follows:

Land capable of use for agriculture	8 078 000 hectares
Land capable of use for stock-raising	28 159 000 hectares
Barren land	27 420 000 hectares

The area actually cultivated (or temporarily fallow) is evaluated at 816 000 ha (10% of the arable area).

Agricultural production is chiefly concentrated in the southern part of the country, along the two rivers Giuba and Uebi Scebeli and in the region which they delimit.

Cattle, in fact, form the main basis of the local food supply. Numbers of livestock are estimated as follows:

Goats	4 562 000 head
Sheep	2 998 000 head
Camels	2 500 000 head
Horned cattle	1 075 000 head
Horses	900 head
Asses	24 100 head

Data on livestock production is almost impossible to obtain, but we possess estimates for agricultural production which enable us to make an approximate evaluation.

The main crops are: bananas, doura, maize, sugar-cane, sesame beans, manioc. The quantities concerned are still rather small, exported only in part, and chiefly intended for home consumption.

Annual imports of food products, some of which are for the European population living in the territory, are quite small. The products most in demand are wheat flour, rice, pasta, dates, preserved foods, tea, some spices and fats. The constant growth of imports of certain of these products despite the decline in the European population reflects the demand of the Somalis for more sophisticated foods as a result of an improvement in general living conditions.

ESTIMATE OF FOOD NEEDS

This evaluation is based on (1) the protein content of the daily food ration; (2) the total caloric value of this ration.

The basic principle is that the average daily ration necessary in the region should contain at least 2500 calories and 70 grammes of protein, of which at least half should be of animal origin.

On the basis of the principles and data noted above, the food deficit of the population of Somalia is estimated at the following total annual amounts:

Population suffering from food deficiency	1611694 inhabitants
Animal protein	11699.4 t
Vegetable protein	3006 t
Number of calories	134 865 132 080

The possible solutions to the problem of remedying these deficiencies are of course numerous. In this survey, however, the products already chosen, i.e. wheat, milk and sugar, are alone considered. We shall outline a theoretical calculation from which it would be possible to deduce the quantities of these products necessary to remedy the deficiencies.

In this connexion it is intended to compensate for deficiencies in animal protein by means of milk, and in vegetable protein by wheat. These two products will make up for the lack of calories in the food ration. Any remaining deficiency in this sector would be made good by sugar.

The average amounts attributed to these three products are as follows:

i) Milk (whole and fresh from European cattle):
35 g of protein per litre
Caloric value 700 cal/kg.

ii) Wheat (soft, whole, dry):
105 g of protein per kg
Caloric value 3100 cal/kg.

iii) Sugar (common refined saccharose):
Caloric value 4000 cal/kg.

On the basis of these data, the requirements for products, including 10% extra for marketing losses and errors, might be the following:

Population suffering from food deficiency:
1611694 inhabitants.

	Hypothesis I	Hypothesis II
Milk	57466 t	57446 t
Wheat	3249 t	19448 t
Sugar	28694 t	16060 t

These hypothetical needs can naturally have only a broadly approximate significance and serve as a general guide. Moreover, when it comes to passing from the calculation of hypothetical needs to the practical application of measures to meet these needs, we are forced to note that in actual fact the conditions in which the major part of the Somali population lives and conducts its activities would hardly permit action on any significant scale. This applies particularly to the whole of the pastoral population, who, as we have seen, represent about 80% of the total. This group has firmly-rooted habits and convictions and a naturally suspicious character, which shuts their minds off from the general movement of progress. Moreover they are continually on the move to distant areas with their flocks and often impossible to reach. Similar observations can be made with regard to the hunters, even if they are not very important numerically. This survey will therefore be confined to that part of the population of relatively fixed abode and habits, i.e. the urban workers and the fisher folk.

As we have seen, the group in question is a relatively small one, but its way of life and its position lend themselves best to contact with the outside world.

The total number of persons concerned can be estimated at about 132000; their diet, especially in the case of urban workers, is very deficient.

The needs of the pastoral and hunter groups may be regarded as potential until the time, which is certainly not very near, when they, too, will have evolved towards a way of life based on wider contacts and exchanges.

In the context of a balanced policy of aid to the population, the pastoral groups will always receive help from their Government in years

when water and pasture are short. The hypothetical needs concerning them, and which have now been estimated, could serve as a guide for the Government's action in such an eventuality. Similar observations might be made with regard to a possible policy of laying up food reserves for use by the Somalia Government in coping with the periodical crises which occur in agriculture as a result of repeated droughts, plagues of parasites, etc.

The requirements already calculated, which refer only to the stable groups of the population, come to the following (including 10% for losses and waste):

Population suffering from food deficiencies: 132 000 inhabitants:

Milk	22 987 tons
Sugar	4109 tons

It is known that part of this stable population is in greater need than the rest. This is the population not gainfully employed, estimated at about 50% of the total.

For this part of the stable population, we obtain the following amounts:

Population suffering from food deficiencies: 52 000 inhabitants

Milk	9194 t
Sugar	1643 t

DEVELOPMENT OF POPULATION AND PRODUCTION UP TO 1975

Only one year after the birth of the new Republic of Somalia, it is quite difficult to predict how this country will develop in its various spheres of activity, in the near future.

The Italian administration drew up vast development schemes for every sector of Somalia's economy: agriculture, transport, livestock breeding and handicrafts. In many cases work is being continued with the help of international organizations.

This vigorous economic boost has resulted in a general improvement of living conditions for a great part of the population in all strata of society. It is reflected in the permanent change in traditional ways of living, particularly among the urban population, and in a greater demand for the essentials of life.

For the period up to 1975 prospects in the different sectors of the economy are as follows:

The rural economy at the moment presents vast opportunities for growth through the diffusion of applied techniques and the adoption of a vigilant economic policy. The pastoralists, on the other hand, being more closely bound to their traditions and hostile natural environment, will remain less amenable to progress. The growth of production and the population trend will be increasingly subject to the political vicissitudes that the country will experience during the next few years while its structures are in process of change; aid contributed by more developed countries during these years will take the form of offers of financial assistance, the carrying out of big public works projects, the training of administrative and technical staff, etc. The upshot of all this will be freer circulation of currency, greater well-being of the population and higher consumption. Appreciable modifications in the social structure are to be anticipated, as a result of the promotion of workers from one group to another, to the probable detriment of sectors connected with agriculture and to the advantage of urban workers.

As to population growth, from the rare data available we can assume an increase of about 1.5%. By 1975 the population would thus amount to 2 380 000 inhabitants, whose occupational breakdown will probably differ from the present one, first because of the increase in the sedentary in comparison with the semi-nomadic population, and secondly because of the greater diversification of the labour market consequent upon the country's general development.

If we now consider what the food situation could be – the most notable deficiencies and the foreseeable evaluation of these deficiencies in 1975 in the different sectors studied for which a forecast is possible on the basis of the factors already described and a good knowledge of the country – it can be concluded that the problems will remain essentially the same in spite of population growth, the parallel increase in food production, and the important structural modifications which may take place.

We regard as well-founded the forecast that food needs, as calculated for 1961, will remain unchanged during the whole of this fifteen-year period. Their distribution over the different groups of the population will certainly vary, and this as a consequence of an improved organization of the territory, which will make it possible to assist the now too isolated populations of peripheral regions. There will also be the vulnerable groups of the population, who will be in great need.

In order to draw up the above statement of the situation and to give it some concrete value, in the absence of reliable documentation, we have had to resort to hypotheses concerning problems of fundamental importance, such as the size and structure of the population, the present

average level of nutrition – both quantitative and qualitative – among the native population, the foodstuffs available on the spot, i.e. to make a choice from among various possibilities, relying on personal knowledge and experience. The probable food deficiencies in calories and in protein for the present period and for 1975 have been estimated on the basis of the hypotheses formulated, which must be regarded as only partially consistent with the real state of affairs. It seems unnecessary to dwell any longer on the significance of the figures we have quoted: they serve merely to give a general, very approximate idea of the size of the food deficiencies. Moreover, the fact that we have found it advisable to formulate three different forecasts, applying respectively to the total population, the sedentary population most easily accessible to possible food aid in the future, and, finally, to the vulnerable groups alone, may help provide a corrective to our present limited knowledge of the problem examined.

It should, however, be borne in mind that the intention originally defined of remedying food deficiencies by means of certain products which it was thought that EEC had available, cannot be entirely realized in practice: deficiencies may, in fact, be remedied by means of various products, for example, in the case of animal protein, by according greater importance to the consumption of fish, eggs, etc. These observations, as well, may make it easier to appreciate the significance to be ascribed to this report.

II. – TRANSPORT – SUPPLY AND STORAGE OF FOOD

In the context of international transport, initial considerations are the situation of Somalia in relation to the Mediterranean, and the Suez Canal dues, the importance of which should not be underestimated in the study of a realistic economic policy.

On the whole, the condition of road transport may be regarded as fairly satisfactory, but the bed of many roads creates serious difficulties during rainy periods and causes damage to goods in transit, especially to perishables.

Besides the axial routes, traditional roads and tracks are still much used for trade employing the most primitive means of transport.

Harvest centres usually have quite modest transport facilities. The same is true for ports with overseas traffic. There is no means of preserving perishable goods. Better facilities exist, however, for dry goods, but damage is still very extensive. The biggest ports are artificial, tie-up is difficult and only a limited tonnage can be handled.

The distribution of foodstuffs is in the hands of private undertakings which would have little difficulty in coping with a big increase in traffic. For cereals, the Italian administration has created a good commercial organization with capacious silos.

Regions periodically exposed to famine: a large part of the country is exposed in time of drought, etc. to invasions of parasites, animal diseases, and the like, which decimate harvests and flocks. However, it is not easy to indicate the most vulnerable areas. It is the Government's responsibility to study the problem of food supplies to cope with this scourge.

Problems of preparation and administration: no particular difficulties are foreseen in this sector.

III. – EFFECTS ON THE ECONOMY OF DEVELOPING COUNTRIES

The feature of Somalia's commercial economy so far has been a trade balance in constant deficit. The balance of payments has been negative for the Sterling area and positive for the Dollar area (because of exports to this area) and the area of the Italian Lira (thanks to exports and subsidies from the Italian State). It is difficult today to make predictions about the possibility of stabilizing the country's balance of trade in a permanent surplus position because of the poverty of the territory and the difficulties involved in stimulating its development.

If it is asked what the consequence for the economy of Somalia of any supply of food pro-

ducts by EEC would be, it can be said that such supply could, without any doubt, have favourable effects in every sector of the country's life, especially if the serious food deficiencies of certain groups of the population are reduced and their capacity to work is increased in consequence.

The import of such products should therefore be seriously considered. From these observations, it may be asked whether such imports could in any way harm local production. For wheat and milk, the reply is in the negative; for sugar, the opposite is true, since the possibility of meeting the total need exists locally. As soon as this aim is reached, imports from the EEC countries should cease.

As to differential trade, prospects are virtually non-existent, because of the poor range of products which Somalia has to offer for export.

IV. – DEMAND FOR EEC PRODUCTS AND CONDITIONS OF TRADE

The present situation and future prospects of Somalia's economy give no indication that the country will be able to purchase products from the EEC under normal commercial conditions for the time being. On the other hand, the supply of food products which are in surplus production in the EEC countries and which could at least partly offset the food deficiency from which the whole territory of Somalia suffers, would be highly desirable.

The most suitable policy would be to combine food aid through EEC surpluses with programmes of economic development in the territory. This would be a move in the direction of agreements on important payment facilities or even on a policy of partial gifts.

These approaches would bring two of the country's fundamental requirements nearer to solution: the execution of economic development programmes, and the elimination of the most serious food deficiencies, which would seem to deserve particularly close attention in the eventuality of a policy of gifts pure and simple being adopted towards Somalia, where food deficiencies, although easily discernible, do not assume the same dramatic proportions as in other countries.

In this respect, it might be useful to make some reference to projects and programmes which can be regarded as of prime importance in Somalia's present state. Hydraulic works should occupy the first place, since they can serve to develop agricultural and pastoral production. The same is true of road building programmes and particularly of schemes to organize seaports, whose present lack of efficiency is to be deplored.

The social services, which have a large place in the programmes – schools, infirmaries, hospitals, etc. – will also repay close attention, even if concrete results in increasing production cannot always be expected from them. They embody important duties, which no Government can afford to neglect, but which must be kept within the limits of what the country can actually afford.

Some kind of action, inspired by the greatest generosity and possibly even by a complete gift, could be undertaken on behalf of several of the categories in the vulnerable classes, particularly for infants and pregnant and lactating women. Intervention of this kind would be of great significance and would soon have important effects for the future of Somalia.

ANNEX No. 5

Regional Survey

ETHIOPIA

by
Professor A. Maugini
Istituto agronomico d'oltremare
Florence

CONTENTS

ETHIOPIA

INTRODUCTION

The territories and populations to be discussed in the following pages comprise the State of Ethiopia, whose political frontiers almost coincide with the geographical limits of the mountainous plateau which arises from the low plateaux of the eastern triangle of Africa. The State of Ethiopia is bounded in the North and West by the low Sudanese plateaux; in the Southwest, South and East by the low plateaux which continue into the territories of Kenya, the Republic of Somalia and French Somaliland. In the East and Northeast the limit is the Red Sea, which, except in the most northerly part, is only reached via the long and deep Dankalie depression.

This geographical unit which, as a political entity, covers an area of 1180000 sq. km, comprises a remarkable range of natural environments varying according to the climate, which is closely related to altitude, topography and vegetation. Furthermore, but not quite parallel with the above, an equally remarkable variety in the appearance and conditions of the human population is to be noted. This is due to the presence of populations belonging to differing ethnic and religious groups. Some are warlike, and others peace-loving; all are engaged in agricultural or pastoral activities, or a mixture of both. The feature they have in common is their social backwardness, which is due mainly to their isolation from the outside world and the consequent impossibility of keeping up with its advance.

The particular mountainous configuration of the country has led the Abyssinians themselves to distinguish three broad zones of climate and altitude to which correspond typical living conditions. These are: the "quollà", situated at an altitude between 600/800 and 1600/1800 metres on the periphery of the country, in the valleys of the chief rivers and along the Great Rift Valley. Then comes the "voinà degà", a zone situated between 1600/1800 and 2500/2600 metres with more or less flat relief, followed by the "degà", from 2500/2600 up to 3300/3500 metres of altitude.

The intermediate zone or "voinà degà" is the most thickly peopled. It has a better climate and, consequently, plants can grow there practically uninterrupted the whole year round.

The following study examines the food supply of the peoples of Ethiopia. However, in view precisely of the considerable heterogeneity of the populations themselves and of their environments, it may to some extent reflect the nutritional situation in corresponding regions in the neighbouring countries.

Thus, as regards the environment and the mentality of their population, several parts of the Ethiopian plateau greatly resemble certain mountainous regions of the native reserves in Kenya, although in the latter country, the effects of the example and the progressive influence exercised by the neighbouring European-farmed areas may be observed.

The condition of the peoples of the northern and western lowlands of Erithrea, Beghemder and Gojjiam, are similar to those of the Sudan. Again, the populations of the plains of Gemu Gofa, Sidame and Ogaden live under conditions similar to those of the neighbouring populations of Kenya and the Republic of Somalia.

In preparing this report, I had the advantage of the outstanding co-operation of Sig. Giuseppe Rocchetti, an official of the Ministry of Agriculture and Forestry seconded to the Overseas Agronomics Institute in Florence, who is very familiar with the problems of East Africa – having lived there a long time in the past – and recently again visited several regions of Erithrea, Somalia and Kenya. I also had the benefit of the collaboration of Sig. Massimiliano Mariani, agricultural expert with the Institute.

I wish to thank them both for the help they gave me in collating documents and ordering and elaborating the subject matter.

I. – THE COUNTRY'S FOOD NEEDS

We will begin by describing the present food position of the populations of Ethiopia: staple foods, availabilities and their importance. We will then indicate the minimum complement considered necessary to bring the present rations to a qualitative and quantitative level

ensuring the different classes of the population adequate nourishment and greater working capacity.

Finally, we will consider the possibility of filling out the present resources with basic foodstuffs – cereals and flour, sugar, milk and milk products – surpluses of which it is thought can be produced by the EEC countries. We will also give some forecasts for the next fifteen years up to 1975.

ESTIMATE OF FOOD CONSUMPTION

Total food consumption in Ethiopia varies, as in all developing countries with a predominantly subsistence economy, both in time and in place. This is particularly the case for the northern regions, which are more easily subject to periodical drought. Food intake itself differs according to the occupational breakdown between farmers, pastoralists and farmer/pastoralists in the countryside, and workers, employees, tradespeople and marginal elements in the rare urban centres of any size. It is impossible at present to express the individual consumption of each region or of each class of the population. For this reason we will confine ourselves to giving an overall view of the current situation.

a) POPULATION AND SOCIAL STRUCTURE

Eighty-five per cent of the population of Ethiopia is grouped in the elevated regions of the high "quollà" and the "voinà degà" and engaged in agriculture and stock-breeding by old traditional methods. The way of life is practically the same for all; its feature is a closed family organization based, to all interests and purposes, on a subsistence economy. Only small quantities of what is produced are bartered or sold to procure the money needed to purchase other goods and services.

With the exception of the capital, Addis-Ababa, the majority of the population lives scattered throughout the territory. Urban centres of any importance are few in Ethiopia and account for scarcely one million inhabitants in all.

The dispersion of the population throughout this vast territory and the still primitive organization of government offices and administrative departments (as regards our present concern, there is still no statistical service) make it impossible to indicate the exact numerical importance of the population and difficult to arrive at a sufficiently credible estimate.

Between 1937 and 1958 seven estimates of Ethiopia's population were made by various institutes and organizations. The results were contradictory, often obviously so, both in the most recent estimates, which concern years very close together or even, in some cases, the same year, and in the excessive differences between the estimates of distant and most recent years, which would point to a 4% rate of population increase – a very improbable state of affairs.

In view of this situation, we thought it advisable to accept as the basis for this study the FAS estimate of 18 380 000 inhabitants in 1958. Assuming a 1.5% rate of natural increase, the population of Ethiopia would be 18 953 000 (18 950 000 in round figures) in 1960. This last figure will be taken as a basis in calculating the forecasts below.

b) FEEDING OF THE ETHIOPIAN POPULATION

To the eye of a visitor, even if he is not a doctor, the average state of chronic undernourishment of the people seems evident. It is manifested in thinness (independently of the characteristic tall and slim build of the two chief races) and an appearance of exhaustion. We may add the low capacity to work.

The staple food of all Ethiopians living on the plateaux and in the middle "quollà" is "angera", a sort of flour cake of teff (Eragrostis abyssinica) or other cereals (wheat, barley). The "Gallas" tribes frequently use the starch of the false trunk of the "ensete" banana plant to prepare another typical item of food, the "coccià", which is rich in carbohydrates and poor in proteins and fats. In addition to these two basic foods there are fresh vegetables and pulses – among which particular mention may be made, for its nutritional value, of the chick-pea of Abyssinia (Cicer americum) – milk, animal and vegetable oils and fats and meat (beef, mutton, goat and poultry). A special beer made by fermenting cereal flour, or honey prepared with water, is drunk. The Ethiopians are also familiar with tea.

Among the pastoral populations, the food is mainly meat and milk preparations. When they can obtain cereals they consume them either as flour cooked in milk or, more simply still, after roasting.

This short description shows how predominantly vegetarian is the average diet of the populations of the "voinà degà" and of the "high quollà", and its composition from different groups of foodstuffs which are rendered tasty by the widespread use of spices. This diet, although fairly well-balanced chemically, and although supplying a certain quantity of vitamins, nevertheless presents, in the majority of cases, a

deficiency in animal protein and water-soluble vitamins. Finally, its gravest defect is perhaps its low caloric content.

Many inquiries have been undertaken into the quantitative composition of these rations. As a basis of evaluation for this study, the researches on the matter conducted by the United States Foreign Agricultural Service and the Ethiopian Ministry for External Trade and Industry were taken into consideration. From the angle of the most important elements in the composition of the daily food intake, i.e. the total value in calories and the vegetable and animal protein content, the respective results may be summed up as follows:

Vegetable protein : 54 g Animal protein : 22.5 g Total calories : 2 205	}	FAS Inquiry
Vegetable protein : 61.7 g Animal protein : 16.8 g Total calories : 2 808	}	Inquiry by the Ethiopian Ministry of External Trade and Industry

There are no great differences between these two sets of results, but both suffer from the uncertainty of the initial estimates. Of the two food rations calculated, the greater interest attaches to the first: it must, of course, be interpreted as a fairly rough and approximate average.

In conclusion, it may be said that the average food ration of the Ethiopian population has a sufficient energy value for the present low working capacity, but that it presents a deficiency in animal protein and perhaps even in water-soluble vitamins. It is this which makes the state of undernourishment so evident.

c) THE SOURCES OF FOOD SUPPLY

Ethiopian agriculture is mainly carried on in the areas of high and medium altitude which are more favourable to human life and whose climatic conditions make for more stable agricultural production. Quantities marketed are very modest because of the family nature of most farms.

The main crops are traditionally the following: cereals (particularly Teff, then wheat and barley), some plants which are rich in starch ("ensete" banana tree, yams, potatoes, etc.), oleaginous plants (niger (neuk), sesame, saffron, sunflowers); fruits (bananas, papaw, lemons); coffee; fibre plants (sisal, hemp) and sugar-cane.

As regards production of the various crops, estimates are available which are broad approximations and often disagree with each other. According to a study by the United States Foreign Agricultural Service, the chief agricultural products are cereals, milk, seed vegetables, the meat of domestic animals (particularly bovine), vegetable oils, grapes, fish, etc. On this point it should be noted that in Ethiopia, too, total production has increased to some extent in the last twenty years. The relevant production index (100 = agricultural production in the 1935-38 period) probably rose to 158 in 1960.

However, this increase is due more to the extension of the area under cultivation than to any rise in unit output.

The uncertainty so far noted in the returns concerning population and agriculture are also found in the total estimate of the livestock population.

Estimates in this sector for the years preceding and immediately following the last war differ widely, in ratios varying from 1:3 to 1:4. Post-war estimates are considered more trustworthy by the international statistical bodies. For 1958 the FAO yearbook gives the following numbers for Ethiopian livestock (in 1 000 head): bovine 21 220; camels (figures are lacking); sheep 19 000; goats 14 000; horses 1 001; donkeys 3 509; mules 1 009; poultry 50 000.

The average annual quantities of foodstuffs imported are of the order of a few dozen or hundred tons. They consist of cereals and flour, powdered milk and other milk products, fresh fruit and vegetables, raisins, alcoholic beverages, dates, spices and stimulants (tea) and sugar. Whereas the first group (preserves, flour, alcoholic beverages etc.) are intended for the European population resident in the country, the others (dates, spices, tea, and also sugar) are mainly to meet the needs of the indigenous population.

It should, however, be observed that in recent years a gradual increase in imports of cereals, flour and powdered milk has been observed, and that this increase is obviously intended for the Ethiopian population. Mention may also be made of the ex gratia import of 46 000 tons of wheat sent by the American Government to combat grave shortages in various regions of the empire.

External trade in foodstuffs appears small, not only in absolute, but also in relative value, if the volume of exports and imports is related to the total population. A superficial examination of the Ethiopian trade balance with abroad might give the impression that the country is

normally self-sufficient as regards food products, and even that it has a surplus of cereals and oil plants. However, this impression is in evident contradiction with the real food situation of the mass of the population.

ESTIMATE OF FOOD REQUIREMENTS

The average food intake of the Ethiopian population has, therefore, a calorie value approaching 2 500 per day, which may be considered appropriate for the requirements of African populations in general given their present working capacity.

In the case of Ethiopia, however, account must be taken of other factors which obviously increase the calorie needs of its population. The first of these is the fresh, almost temperate, climate of the plateau on which the majority live; immediately after this comes the custom of wearing cotton clothes of a low protective power ("sciammà") and, for some people, European-type clothes. The topography of the most thickly populated areas also requires a major expenditure of energy. They are flat, but their inhabitants must daily cover steep gradiants in moving from one locality to another or from their dwellings to the fields they farm.

In its study on food in Ethiopia (48), the United States Interministerial Food Committee, although noting a food intake giving an average of 2 500 calories per day and per head, indicated that there was a deficiency of 400 calories per day, and this not only to cope with the higher requirements of the environment but also to improve the food level of the mass of the population so that it could work more intensely.

It is thought that the evolution of the Ethiopian population, particularly the most isolated, whether sedentary or nomadic (the majority) will necessarily be very slow. For this reason, we think that it is advisable to base calculations of the supplementary food requirements on a current average deficiency for the whole estimated population of 18 950 000 inhabitants, on an average deficiency of 300 calories and 7 to 10 grammes of protein per day and per head.

The quantities of cereals, sugar and milk required to fill these hypothetical deficiencies for the whole population have been calculated on this basis.

The calculations concerning the food requirements refer to products with the following characteristics:

	calories/kg	protein content
Non-durum wheat	3100	10.5%
Sugar	4000	-
Whole milk	700	3.5%

If these products have to be supplied after various processes have been carried out (reduction to powder, concentration, dehydration), the corresponding conversions would have to be made.

Assuming equal energy value (300 cal/day/head) we give the quantities to be imported according to the following two possibilities of supplementing the diet: *a)* with the emphasis on cereals and sugar, *b)* on a milk basis.

If the food products required are calculated according to these two possibilities, adding 10% for losses at the commercial stage, they can be considered with reference to the total population of Ethiopia (hypothesis I). The result, however, will be that the estimates obtained will have only theoretical value, since there is no possibility of reaching all the inhabitants scattered over such a very vast territory.

On the other hand, it can be supposed that only a part of the population is really in an urgent situation of food deficiency.

Attention will principally be given to the indigenous population of the urban centres often living in conditions of partial or total unemployment and also most easily accessible in the event of any direct aid action. It will then be possible to make an estimate of food needs relating only to this sedentary part of the population, who are thought to suffer most from undernourishment (20% of the total population) (hypothesis II).

It is well known that within this last section of the population there is an element which suffers from greater food deficiency than the others. This is the "vulnerable population", as it is generally called (estimated at about 40% of the total). It consists of children, pregnant and lactating women, etc.

It will then be possible to take this section of the sedentary population as the sole reference in calculating food requirements (hypothesis III).

The results of the calculations relating to the three hypotheses which we have just formulated can be set out as follows:

Hypothesis I: Deficiencies relating to the total population of Ethiopia

Population in 1960: 18 950 000 inhabitants

Amounts necessary (including 10% for losses):

a) Minimum solution:	
Non-durum wheat	390 000 t
Sugar	82 500 t
Natural milk	1100 000 t

b) Satisfactory solution, with complete provision of animal protein:

Non-durum wheat	178 000 t
Sugar	55 000 t
Natural milk	2 200 000 t

Hypothesis II: Deficiencies of that part of the population which can be reached most easily and continuously (20% of the total)

Population considered: 3 790 000 inhabitants

Amounts necessary (including 10% for losses):

a) Minimum solution:

Non-durum wheat	78 000 t
Sugar	16 500 t
Natural milk	220 000 t

b) Satisfactory solution, with complete provision of animal protein:

Non-durum wheat	35 600 t
Sugar	11 000 t
Natural milk	440 000 t

Hypothesis III: Deficiencies of the vulnerable groups (40%) of that part of the population considered under hypothesis II

Population considered: 1 520 000 inhabitants

Amounts necessary (including 10% for losses):

a) Minimum solution:

Non-durum wheat	31 200 t
Sugar	6 600 t
Natural milk	88 000 t

b) Satisfactory solution, with complete provision of animal proteins:

Non-durum wheat	14 240 t
Sugar	4 400 t
Natural milk	176 000 t

TREND OF POPULATION AND PRODUCTION

The State of Ethiopia, which is still partially isolated from the rest of the world because of the difficulties of its internal communications and the consequent traditionalism of the scattered masses of its population, is still far from the degree of social, productive and economic progress already attained by other African countries, particularly those in the Mediterranean basin.

The brief five-year period of Italian administration, from 1936 to 1941, which, as is well known, injected an improvised contribution of intellectual, productive and financial energies and a determination to renew the country, made the initial contribution to the awakening of the population and to its emancipation. This work has been progressively resumed in the last ten years thanks to United States aid and to the Point IV Program, which includes Ethiopia in its field of operations. To this must be added various bilateral agreements with other countries and with international financial bodies for credits and technical aid for a few limited sectors of activity, whether in the study and inquiry stage or in the production stage. Ethiopia, of course, also has the advice and active help of the United Nations, through FAO, UNESCO and WHO.

The territory of the Ethiopian State without doubt includes areas which, from the angle of climate, soil and social conditions, offer the most interesting possibilities of economic development. There are potential resources which could be progressively opened up in the course of the years ahead.

The aims of the 1957-61 Five Year Development Plan, which was worked out precisely to coordinate the various programmes in the different sectors of activity (roads, ports, electric power, agriculture, industry) are:

To orientate economic policy, in particular credit and fiscal policy. The aim is thus to mobilize the greatest possible share of the national income to promote the inflow of foreign capital, whether public or private, with a view to investments along the lines of the programme laid down by the Plan itself;

To give priority in investment policy to the provision of basic facilities, such as transport and energy, the lack of which is the chief obstacle to more intense development;

To raise the general level of education and health, and in particular to prepare the technicians required to carry out the various development projects;

To speed up the development of agriculture, which is the basis of the country's economy;

To step up the expansion of industrial production, based on local supplies of raw materials and on the growing volume of availabilities on the internal market.

Agreements have been concluded with foreign governments for the financing of projects of considerable importance for the country's economic development. Large-scale industrial and agricultural schemes have been carried out or are at the projection stage and some are of such dimensions that all the economic sectors of the country would be transformed by them. This would provide basic structures

of great importance for Ethiopia's future. The Five Year Plan has stimulated the creation of infrastructures and medium and small industries which, in their turn, have aroused a beneficial enthusiasm for a better life in broad strata of the city and rural population.

As regards population growth, if we accept the hypothesis that the rate of increase will be maintained at 1.5%, the Ethiopian population will have risen by 1975 from its present 18 950 000 inhabitants to 23 490 000.

In theory, overall agricultural production should, by 1975, show a higher increase than that of the population, but serious doubts may be entertained as to the chances of this actually happening.

It may be presumed that the increase in the agricultural population and normal imports will be such that they will improve the average food intake for the whole population, but that they will not be sufficient for all requirements. If we attempt to form an idea of the future trend, we can imagine that the calorie deficiency will fall from the 300 calories per day and per inhabitant considered necessary in 1960 to bring the average intake up to normal, to 100 calories in 1975.

It is here possible to return to the hypotheses formulated when estimating present flour, sugar and milk needs to bring the rations up to the required level.

As regards hypothesis II, it is foreseen that in 1975 the proportion of the population which is sedentary, and consequently can be helped, might rise to 40% (instead of the present 20%).

The shortfall in food in 1975 would then be as follows:

Hypothesis I: Deficiencies relating to the total population of Ethiopia

Population in 1975: 23 500 000 inhabitants

Amounts necessary (including 10% for losses):

Non-durum wheat	106 700 t
Sugar	44 000 t
Natural milk	627 000 t

Hypothesis II: Deficiencies of that part of the population which can be reached most easily and continually (40% of the total population)

Population considered: 9 400 000 inhabitants

Amounts necessary (including 10% for losses):

Non-durum wheat	42 700 t
Sugar	17 600 t
Natural milk	251 800 t

Hypothesis III: Deficiencies of the vulnerable classes (40%) of that part of the population considered in hypothesis II

Population considered: 3 800 000 inhabitants

Amounts necessary (including 10% for losses):

Non-durum wheat	17 100 t
Sugar	7 100 t
Natural milk	100 500 t

If these figures expected for 1975 are compared with those indicated for today, and hypothesis I excluded in both cases, we note that the food deficiencies to be made good under hypotheses II and III, and the quantities of products which would have to be imported to complete this ration are more or less equal.

By contrast, the differences are remarkable if we consider the number of inhabitants who would benefit – more than twice as many in 1975 compared with the present figure. These figures therefore reflect the forecasts which have been made on the favourable progress of Ethiopia and its population from all angles: production, organization, public health and social facilities.

In order to make the above survey possible at all and to give it a certain concrete value, it has been necessary, in the absence of all reliable documentation, to have recourse to a certain number of hypotheses on problems of basic importance, such as number and structure of the population, present average food level of the indigenous population from the angle both of quantity and quality and of foodstuffs obtainable on the spot, i.e. to make a choice between the various possibilities by calling on personal knowledge and experience. On the basis of the hypotheses thus formulated and which can be considered as conforming only partly with reality, the probable calorie and protein deficiencies in the dietary at present and in 1975 were calculated.

It therefore does not seem necessary to dwell any longer on the significance of the figures which we have quoted: their only purpose is to give a brief and very approximate idea of the magnitude of the food deficiencies. And, moreover, the fact that it has been considered advisable to formulate three quite different forecasts relating in turn to the total population, to the sedentary population more easily accessible for food aid and, finally, to the vulnerable groups alone, may to some extent compensate

for our present limited knowledge of the problem studied.

Account must, however, be taken of the fact that the aim previously fixed of making up the food deficiencies with certain products which we think EEC might have available, cannot in practice be achieved completely. The deficiencies can in fact be made up by various products, for instance, as regards animal protein, by greater consumption of fish, eggs, etc.

These considerations may make it easier to achieve a proper understanding of the significance to be attached to this report.

II. – TRANSPORT, STOCKING AND DISTRIBUTION OF FOODSTUFFS IN ETHIOPIA

Transport of goods from and through Ethiopia at present operates via about 30 points on the frontiers, the railway stations of Addis Ababa and Asmara and, for maritime transport, the ports of Jibouti, Massawa and Assab, which have the greatest annual turnround of goods traffic. Jibouti has been declared a free port for goods in transit to Ethiopia. For the subject of this study, the ports naturally present the greatest interest. In this respect, we must first consider, in addition to the not unimportant distance between them and Mediterranean harbours (2 500 to 3 000 miles) that traffic must pass through the Suez Canal. The factor which may determine the choice of one or other of the three ports of access cannot be the length of the sea voyage but, since the transport problem is very serious in Ethiopia, the situation of the port in relation to the regions for which the food products are intended. In fact, there are only two railway lines (Massawa-Asmara-Argodat and Jibouti-Addis Ababa). Their itinaries are difficult and rolling stock is in a poor condition, so that traffic can only be handled slowly.

The road network consists mainly of tracks practicable only in the dry season, and is inadequate on the whole to the needs of the country. If the ratio between the area of the country and its communications is considered, we find one km of usable road or railway for 211 sq. km, and one km of road, track and railway per 57 sq. km. Even allowing for the fact that the main body of the population is concentrated in one half of the territory and that the ratios we have just seen need therefore to be divided by 2, they are still exceedingly high. In 1951, a special body, the Imperial Highway Authority, was set up to maintain the present communications network and expand it in accordance with the economic development plans. Similarly for the chief ports, particularly Assab, considerable extensions are planned for the near future.

THE STOCKING PROBLEM

The exact dimensions of the present warehouse facilities in the chief ports, cities or road-transport nodal points on the plateau are unknown to us.

It is believed that there are no large wheat silos. Should any such exist at a mill or a pasta factory, it can certainly not be used as a distribution centre. The programme of the Ethiopian Grain Board is to build silos and depots for wheat, pulses and oil-seeds, with the precise aim of bringing order into the grain trade (both internal and external) and into internal stocks.

It is thought that for two other products (sugar and powdered or condensed milk) the port warehouses are adequate for the short period during which these goods are held before being transported up to the plateau. The same is presumed to be true of the government warehouses (military stores) and of private storehouses in the large centres. But here, too, it is impossible to give locations and capacities.

THE DISTRIBUTION PROBLEM

Goods unloaded in the three ports are transported to the plateau over the two railway lines and the axial roads Massawa-Asmara and Assab-Addis Ababa and distributed in Asmara or Addis Ababa or neighbouring centres. From here, distribution continues via the network of regular markets at which practically all the population of the surrounding regions congregate. For the actual distribution of foodstuffs it would be possible to call on state or private organizations already existing, such as the National Coffee Board and the Ethiopian Grain Board and, naturally, also the army and police. Valuable advice could moreover be obtained from FAO and Point IV technicians, the latter drawing on their experience in the distribution

of 46 000 tons of wheat sent by the United States to attenuate the famine in several regions of Ethiopia in 1958 and 1959.

REGIONS SUBJECT TO PERIODICAL SCARCITY

In the whole extent of the vast territory of Ethiopia, which is so varied in its natural conditions, it is easy to discover local scarcities due to exceptional meteorological conditions or parasites. Although it is difficult to foresee and pinpoint the regions where this will happen, a basic organization should be provided to control food depots and have an emergency plan available in advance for the speedy dispatch of supplies to the regions affected and at the time when needed.

III. – INCIDENCE ON THE ECONOMY OF THE DEVELOPING COUNTRIES

In the light of all these considerations it may be said that imports of food products from EEC, even taking into account the categories of the population for which this extra nourishment is planned, cannot have a negative effect on production. Rather would they be an incitement to increase it, for a great number of persons would derive benefit from this imported food. Such persons would have a greater capacity for work and would wish to continue consuming these foods: they would consequently feel the need to work more to procure them. Increasing demand would send up prices and thus further boost the expansion of production.

These considerations of a general nature naturally apply to the three products whose importation is envisaged here. For cereals and milk no doubt arises at present, whereas some perplexity might be felt in the case of sugar for it has so far been produced by a single mill situated almost in the geographical centre of the country. But the output of this plant is inadequate, as may be seen from the limited area it supplies, and the fact that it does not manage to cover all demand, even within that area.

The productive capacity of the Ethiopian country on the medium and high plateaux is very considerable; relatively small investments of capital and labour would be sufficient to increase present production in appreciable proportions. This could affect not only food and industrial products for the home market but also these same products for the external market. In this way, exports will expand. However, during the initial period there is no hope of improvement in the trade or payments balances, for imports of manufactured products, of machines, of vehicles and capital will have to be stepped up considerably.

Without forgetting cattlebreeding, the various agricultural and industrial crops grown today in Ethiopia will need to be improved in quantity and in quality. This applies in particular to coffee, on higher exports of which the country must count to improve its trade and payments balances. The first task of the other crops will be to supply the home market, which is large numerically but still too poor. A concentrated effort of good will and drive at work will be needed, plus an influx of capital.

Above all, it will be a question of good will on the part of the Ethiopians. The natural environment is favourable, and foreign capital will probably be forthcoming if guarantees and favourable conditions are offered. Work can improve in quantity and quality on the express condition that the Ethiopians are able to eat better and are given the proper advice. The evolution of a part of the population in the course of five years of Italian administration is really significant in this respect. The sine qua non is that the directing classes should continue on the road of renewal and progress.

IV. – DEMAND FOR EEC PRODUCTS AND CONDITIONS OF TRADE

The above survey may give a rough idea of the Ethiopian economy, of certain aspects of human settlement, of the country's potential resources and of the prospects offering to its population in the matter of food.

The difficulties which would have to be overcome should it be desired to develop food aid programmes on any considerable scale, have also been set out. They are to be found in the long distances between the places where it

would be possible to off-load the products and the centres of population, in the limited road network, which poses not a few problems, and, above all, in the dispersion of the population over this vast territory.

As we have seen, Ethiopia has already been helped in the matter of food by the United States and it is being accorded special attention by many nations which are showing a very lively desire to collaborate with it in the work of raising the economic and social level of the country and its inhabitants. There may be a simple explanation for this interest if we think of the importance of Ethiopia, this mountain bastion with its 20 million inhabitants, on the east African chessboard.

The prospects of co-operation between Ethiopia and EEC in the food sector will be evaluated in the appropriate place. This presupposes a thorough knowledge of the agreements already made and of what is being put in hand in the way of international aid to developing countries. Speaking very generally, it would seem possible to venture the following opinion. Given the particular situation of the country, which knows that it is being helped by different nations, it is hardly probable that it will resort to free trade to procure food in short supply. Ethiopia, which belongs to the dollar area, has few assets for which there is great demand, whereas it is obliged to obtain supplies of several essential commodities from abroad.

Furthermore, the country's exports are limited and could offer fairly little for possible differentiated trade. They are confined practically to relatively modest quantities of coffee, hides, oil-seeds and pulses.

Supply, for long-term payment and at low interest, of foodstuffs which could be sold on the internal market, with the profits accruing to special schemes and important projects, would certainly be more in harmony with what the Ethiopian Government can do and would like to do. This would amount to facilitating the financing of specific sectors of activity – financing which is a basic need in a developing country. In this case, therefore, the provision of foodstuffs, which is of such importance to improve the physical condition of the population and thus their output, would also assume the significance of veritable capital loans, which could even be used for long-term financial investments.

In a more direct way the allocation of food aids could be connected more specially with the launching of economic development programmes for the agricultural, industrial and tertiary sectors. This would also be equivalent to a form of long-term financing in the shape of foodstuffs for the needs of the workers. Such arrangements, by increasing the volume of capital available to the local authorities, would promote and accelerate the country's evolution and its economic and social advancement. In Ethiopia today there should be no lack of programmes of this sort, that is to say of programmes capable of determining relatively rapid production increases.

ANNEX No. 6

Regional Survey

TURKEY

by
Professor H. Wilbrandt
Institut für Ausländische Landwirtschaft
der Technischen Universität
Berlin

CONTENTS

LIST OF TABLES

TURKEY (1)

I. *CONSUMPTION, REQUIREMENTS AND PRODUCTION*

Two factors have determined the food needs of Turkey in the past and will continue to determine them in the future: growth of population and per capita consumption. Account must also be taken of the self-sufficiency of the rural population, of agricultural production for the market, and of the purchase of foodstuffs by those strata of the population comprising the monetary sector of the economy, particularly in the large cities.

GROWTH OF POPULATION

After the first world war, the population of Turkey was probably 12 or 13 millions. Statistics give the following figures:

TABLE 1

Population from 1927 to 1960

	in millions
1927	13,6
1937	16,7
1947	19,6
1955	24,1
1960	about (provisional fig.)

Source: Publication No. 372, 1955, page 27. Census of the population made by the Statistical Office.

It is probable that the 1927 census did not cover the whole population. If this was so, the annual increase between 1927 and 1937 was first a little more than 200 000 inhabitants and then rose to 250 000 and more. Between 1937 and 1947 annual growth increased to more than 350 000 - 400 000. The rate of growth probably gradually reached 1.5 to 2%. From 1947 to 1955 the annual increase was more than 600 000. At the present time, it is estimated at about 750 000, a rate of 2.5 to 3%. There are no exact statistics of births and deaths, but it is probable that among the rural population the number of births is at least as high as previously. In the better-off and more cultivated sectors of the urban population, the birth rate is lower, but so far these are only a small minority. The masses have no notion of birth control.

On the other hand, the number of deaths has declined considerably, and for 40 years there have been no losses due to war. Infantile mortality has fallen markedly, thanks to the development of medical assistance and hygiene. Malaria has been eliminated in vast areas and greatly reduced in others.

Table 2 shows the breadth of the base of the age pyramid, that is to say the effect of recent population growth on the general structure of the population.

(1) In preparing this regional study, the author had the help of M. W. Kock, M. E.G. Jentzsch and M. H. Meliezck.

TABLE 2

Pyramid of ages

Age groups	1955 (according to census)	1960 (probable figures)
From 0 to 9 years	7,2 millions	7,5 millions
From 10 to 19 years	4,8 »	5,9 »
From 20 to 29 years	4,3 »	4,6 »
From 30 to 39 years	2,5 »	3,5 »
From 40 to 49 years	2,3 »	2,4 »
From 50 to 59 years	1,6 »	2,0 »
From 60 to 69 years	0,9 »	1,3 »
From 70 to 79 years	0,4 »	0,6 »
From 80 to 89 years	0,1 »	0,2 »
	24,1 millions	28,0 millions

Source: Publication No. 372, 1955, page 27. Census of the population made by the Statistical Office.

The occupational breakdown has evolved as follows:

TABLE 3

Occupational distribution of male and female population above the age of 15 (1)

in millions

Sector of the economy	1927	1935	1945	1955	1960 (2)
Agriculture, fisheries	4,2	5,6	7,3	9,6	11-12
Industry, crafts, trade, transport (including workmen), liberal professions, administration, army, etc.	0,8	1,4	1,9	2,3	2,5-2,6
Not available	3,8	2,5	2,2	2,6	?
	8,8	9,5	11,4	14,5	16-17

Source: Publication No. 372. 1955. page 27. Census of the population made by the Statistical Office.
(1) The occupational groups here include workers and their families.
(2) Provisional figures.

The proportional increase in non-agricultural workers and their families is higher than that of the population at large. However, as the share of the non-agricultural population continues to be extremely low, population growth in absolute figures has mainly benefited agriculture. The total population over 15 has increased in the agricultural sector by about 7 millions since 1927, whereas in all the non-agricultural professions it grew by only about 1.7 million. It is probable that agriculture has absorbed more than 75% of the increase in the population above 15 years.

In conformity with what has just been set out and also with a special enquiry by samples (1), the percentages of village population has fallen by only about 9% between 1927 and the present day, and the percentage of the population not living in villages has increased by about 20%.

Agriculture and the rural way of life have maintained their predominant importance, but in any event, the increase in the city population already reflects the strong structural modifications taking place.

TABLE 4

Distribution of village and urban population

Year	Population living in the villages		Population living in the cities	
	%	millions	%	millions
1927	75,8	10,3	24,2	3,3
1955	71,3	17,2	28,7	6,8
1960 (probable figures)	70,0	19,6	about 30,0	8,4

Sources: for 1927 : Tarim Istatistikleri 1928-1936
Publication No. 93
for 1955 : Population Census of Turkey,
Publication No. 372
Central Statistical Office of Turkey.

Domicile in the country does not necessarily imply an agricultural occupation, nor city life a non-agricultural one. There are craftsmen or traders living in the country and farmers living in the cities. It is probable that the number of persons living in a self-subsistence economy represent 75% or more and that those not so living represent 25% or less. The gradual change-over from subsistence economy to market economy (purchase of extras) is going on probably slower than the increase in non-agricultural employment.

(1) Tarim Istatistikleri 1928-1936, Publication N°. 93. For 1955: Population Census of Turkey, Publication N°. 372. Central Statistical Office of Turkey.

TABLE 5

National income of Turkey (1948 to 1960)

(nominal figures in corresponding values and real figures on the basis of 1948 prices)

Economic sector	1948 at factor cost	1960 at factor cost				Percentage of total income		
		Nominal figures		Real figures		Nominal		Real
	in '000 million Turkish pounds	in '000 million Turkish pounds	1948 = 100	in '000 million Turkish pounds	1948 = 100	1948	1959	1959
Agriculture	4,7	19,1	406	7,4	157	53,2	42,5	41,6
Industry, crafts (total)	1,2	10,1	840	2,8	233	13,7	22,5	15,7
Commerce, transport, banks, Liberal professions	1,8	10,4	578	4,3	239	20,6	23,2	24,2
Public services	0,9	3,6	400	1,6	178	10,0	8,0	9,0
Others	0,2	1,7	850	1,7	850	2,5	3,8	9,5
Net national product at factor cost	8,8	44,9	510	17,8	202	100,0	100,0	100,0
Indirect taxes	0,9	5,2	578	1,7	189	—	—	—
Net national product at market prices	9,73	50,1	515	18,5	191	—	—	—
Depreciation	0,34	2,2	646	0,8	236	—	—	—
Gross national product at market prices	10,1	52,3	518	19,3	191	—	—	—

Sources : National Income of Turkey 1948-1959, Publication No. 409, Ankara 1960.
Monthly Bulletin of Statistics No. 92, Ankara, October/November 1961.

NATIONAL INCOME

Since the first attempts in 1933/34 and in 1935/36, methods of calculating the national income have been improved and adapted to the international methods worked out during the post-war period. The figures are not completely comparable.

In the years between 1948 and 1960, the Turkish currency depreciated considerably. For a better understanding comparison must therefore be made on the basis of 1948 prices.

Between 1948 and 1960, the gross national product increased by about 90% on the basis of 1948 prices. Production rose in all sectors of the economy. Its real growth in industry, handicrafts and commerce is below the nominal increase, for the price rise was greater in these sectors. In agriculture, there is no appreciable difference between the nominal percentage and the real percentage in total income.

The development of the industrial and handicraft sector, where production has more than doubled, is manifest. The expansion of commerce, transport, banks and liberal professions has been almost as great. By contrast, agriculture succeeded in stepping up overall production by scarcely 60%. We thus perceive the gradual change-over at present going on from a purely agricultural structure towards an economy which is also based to an already appreciable extent on handicrafts and industry, trade and transport. But agriculture still remains preponderant.

The per capita development of the national income and of the gross national product in nominal and real prices is as follows:

TABLE 6

National income and gross national product per head

in Turkish pounds

Year	In nominal prices		On the basis of 1948 prices	
	National income	Gross National product	National income	Gross National product
1948	440	502	440	502
1960	1 613 (1)	1 880 (1)	604 (1)	696 (1)

Sources : National income of Turkey 1948-1959. Publication No. 409. Ankara 1960 for the year 1948.
Monthly Bulletin of Statistics No. 92. Ankara. October to November 1961 for the year 1960.

(1) Provisional figures. After the currency devaluation of 1960, a dollar was worth 9 Turkish pounds on the official market and about 20 to 50 % more on the black market. This gives clues to the national income and the gross national product when purchases are made in dollars.

Even the trend towars real prices, corrected to allow for inflationary factors, shows a not unimportant increase in the national income and gross national product.

The degree of accuracy of the statistical calculations is, however, not undisputed. It is probable that the actual increase, for the population as a whole and per head, is smaller than shown by the statistics. But even when numerous deductions are made overall growth remains impressive.

Unfortunately, the enquiries do not distinguish between monetary income of wage earners and non-monetary income of persons living in autarky, i.e. the majority of the agricultural population. One is reduced to conjecture. It may be granted that the working population in the monetary sector of the economy has increased its income in greater proportion than the mass of the agricultural population, which is still tilling the land in accordance with ancient traditions. The gap between high and low incomes has doubtless widened further.

STRUCTURE OF CONSUMPTION IN THE CITIES AND IN THE COUNTRY

Statistics of consumption are incomplete, and it can only be estimated on the basis of the production and external trade figures. Production and consumption statistics are indissolubly linked, but there is no exact breakdown of agricultural production between products placed on the market for internal consumption or for export and, products consumed on the spot in the farms. No statistics of agricultural and non-agricultural family budgets are available. Statistics of rail and road transport and coastal shipping are in some cases not even kept. It is therefore impossible to do more than estimate the complex situation of con-

sumption broken down into groups of income deriving from products marketed and products consumed. Only the consumption of the main foodstuffs such as cereals, meat, milk products, eggs and sugar repays closer examination.

In Turkey the traditional staple food of the population, in particular the less well-off classes, consists of cereals in the most diverse forms. On a general average, nearly 70% (1) of the total calorie intake is obtained from wheat and a lesser proportion from maize and barley. In previous times, this percentage was doubtless higher.

TABLE 7

Direct consumption of cereals (1939 to 1959)

in kg ' per head ' p.a.

Year	Wheat	Maize	Rye	Maslin	Barley	Spelt	Total
1939	172	30	14	3	1	2	222
1945	91	40	17	6	17	6	177
1950	141	26	16	4	9	3	199
1955	192	32	14	1	—	—	239
1959	195	30	20	1	—	—	246

Source : Agricultural Statistics, page 18.

Statistics of cereals production and consumption are based on estimates. Any statistics which show an increase in the per capita consumption of cereals in the last 10 years must be approached as cautiously as the figures of absolute consumption in Table 7. We have certain data based on lessons learned by the National Office for Agricultural Products (Toprakofis) as regards the proportion of sales on the market and quantities consumed direct by producers. According to these figures, commercial requirements — which do not quite coincide with direct consumption of bread, etc. — have risen over the last ten years from about 1.2 - 1.3 million to about 1.5 - 1.7 million tons. This corresponds to approximately 30% of total consumption (2).

In Turkey, meat production is roughly equal to consumption. Statistics give only the number of animals slaughtered in communal abattoirs and their carcass weight.

(1) 1957/58 = 69 % according to Production Yearbook 1959.

(2) If, by making certain deductions, we get nearer to the real production figures, which are probably too high, shown in the agricultural statistics. This point will be discussed further at a later stage.

TABLE 8

Statistics of meat consumption (1939 to 1959)

(exclusively from slaughtering in communal abattoirs)

in '000 t

Year	Oxen. veal and buffalo	Sheep and lambs	Goats	Others	Total
1939	24	31	11	3	69
1945	28	32	10	4	74
1950	36	40	9	4	89
1955	68	52	15	2	137
1959	69	56	17	2	144

Source : Agricultural Statistics, Publication No. 402, Central Statistical Office, Ankara.

The number of oxen, calves and buffalo slaughtered has therefore almost tripled, that of sheep and lambs almost doubled, and total slaughtering has more than doubled in 20 years. If related to the city population, consumption according to Table 8 would seem to have risen from 15 to 19 kg per head in the last two decades. In reality, the quantity and the rate of progress are doubtless a little smaller, for the rural population also buys meat in towns.

In addition to slaughtering in the communal abattoirs, account must be taken of livestock killed in the country, particularly small animals (goats, sheep, lambs, poultry etc.). It is not possible to verify the volume and the increase in meat consumption from slaughtering on the land, which is not covered by statistics. Following the general rise in the standard of living and incomes, consumption has without any doubt increased in country districts (1).

Even at the higher level, which is probably between 12 and 16 kg per head, meat consumption is low and covers only a small part of total food requirements.

The documentary material available on the production of milk and eggs – in both cases purely for internal requirements – do not give a clear picture.

TABLE 9

Estimated production of milk and eggs (1939 to 1959)

Year	Production of milk in million t	Production of eggs in million units
1939	2,9	1 020
1945	1,8	851
1950	3,2	920
1955	3,5	1 118
1959	4,4	1 304

Source : Agricultural Statistics. Publication No. 402. Central Statistical Office. Ankara.

According to the figures in Table 9 above, which are based on estimates and reflect a slow progress in yield per cow, a reduction in the output of sheep and goat's milk (increase in the production of milk per cow from 500 to 600 litres, fall in the milk yield per sheep and per goat of about 20 to 30%) and a considerable increase in the number of cattle, the production of milk has risen about 50% in the last twenty years.

It has been assumed in Table 9 that the production of eggs per hen has declined (1939: 60 units; 1959: 50 units). This fall was largely offset by the increase in the number of birds. The indications concerning the trend of milk production and the consumption of eggs certainly bring out an increase in total consumption, but consumption per head is thought to have declined. The statistics do not show the manifest expansion of consumption per head (in cities and in the country) which has followed the development of incomes in the last ten years.

Sugar supplies are ensured by national production in a growing number of mills which process sugar beet. The sugar statistics, based on the information supplied by the mills, and showing that consumption has risen from 6 to 10 kg in the last ten years, are worthy of credence. All the sugar is placed on the market, if we consider quantities returned to beet producers as being marketed.

The endeavour to obtain from production and consumption statistics a picture of the food situation as close as possible to reality on the basis of these few contradictory figures yields unsatisfactory results which call for critical comments. In this connection, several hypotheses may be adopted:

a) Because of increasing incomes and rising living standards, nutritional rules similar to those in numerous other countries apply in Turkey. The first stages of development, marked by poverty and famine, and in which any higher increase first results in greater

(1) The fact that the FAO figures concerning urban and rural food consumption show, not an increase, but a decline in consumption between 1949/50 and 1958/59 (see Table 10), which would lead to the conclusion that there had been an even greater decline – not registered statistically – in per capita meat consumption in rural areas, is in contradiction with observations made in these areas. The reduction in the percentage of products of animal origin in the calorie intake shown in the FAO statistics (see Table 11) appears unlikely and must result from an under-estimation of meat consumption in conjunction with an over-estimate of the increase in that of cereals.

consumption of cereals, seem generally to have been successfully overcome. At present an increase in the consumption of meat, fats, milk, eggs, vegetables and fruit is evident, while that of cereals may very well even be falling. During the last ten years, living standards and incomes have clearly progressed in all strata of society (1).

b) Consumption of secondary calories per capita is, without any doubt, lower in Turkey than in the richer countries with a high food level, even though in our day the nourishment of the major part of the population has improved compared with what it was in the past.

c) In comparison with the national income, which today is still low per capita, and with the general state of progress, and also in relation to other countries with similar economic and consumption structures, consumption as shown in the statistics is disproportionately high.

d) The heavy import requirement which has developed over recent years could hardly be explained if total consumption per head had reached more than 5 000 primary calories per day, or about 500 kg grain units per year (2) (3).

In the light of these general comparisons, it is probable that the actual consumption of foodstuffs per capita is in the aggregate between 10 and 15% below the statistical figures. The most important deduction must doubtless be made in the figures for direct consumption of cereals shown in the statistics and not in the consumption of products of animal origin. A per capita cereals consumption about 20% below the statistical figures is doubtless nearer to reality. On the other hand, the consumption of primary calories has probably increased in the last ten years. It is in line with the critical considerations set out above that the FAO estimate of total food consumption differs from the official Turkish figures and shows a lower per capita consumption of cereals. Food consumption is shown in Table 10, which reveals a remarkable increase in the consumption of fruit and vegetables, while the defective data concerning consumption of meat and milk also influence this Table.

Using the figures available, FAO has furthermore calculated the consumption of secondary calories, of protein of all kinds and of purely animal protein per head and per day. On the basis of this information, an attempt has been made to make a fresh assessment of total consumption by converting the secondary calories into primary calories (4). But the calculation of the primary calories is theoretical. The increase in the consumption of food products of animal origin reflects only partly an increase in vegetable production from the soil by human labour. A substantial share of the production of milk, meat, eggs and fats is not due to the conversion of fodder produced on the fields and grassland worked by the peasants, but, as explained in detail in the note (5), to the utilization of pastures, steppes and waste products otherwise unusable.

As regards the different diets in city and country and among sections of the population with differing incomes and living standards, only conjecture is possible. It is probable that in the country the per capita consumption of cereals and also of milk and milk products (yogurt, cheeses) in producing households is higher, and that of meat lower, than in the towns. For sugar, which the farming population buys as an extra, the contrary is probably the case. On the other hand, in country areas a grape concentrate similar to raw sugar is consumed. It is not covered in the statistics or else is shown there under the heading

(1) There is no doubt that the consumption of meat has gone up, even if this does not appear in the statistics. The trend of cereals consumption as it emerges in Table 7 could indicate that, parallel with the general increase in the consumption of meat, eggs and milk, the direct consumption of cereals per capita had also increased. This is hardly likely. The trend of cereals consumption which follows from Table 7 would only be understandable for the poorest sections of the population, who, before the economy began to expand in 1950, were not even able to cover their calorie requirements by the direct consumption of cereal products.

(2) This would be the case if Turkish statistics and not the estimate supplied by FAO had been taken as a basis in calculating the primary calories indicated in Table 11.

(3) The grain unit = 100 kg of grain or equivalent, according to the conversion key (see FAO – Technical Conversion Factors).

(4) Consumption of meat, eggs, milk and animal fats as shown in Table 10 has been converted into animal calories. Assuming that 7 vegetable calories are required to produce one animal calorie, the vegetable calorie requirement has been calculated and then expressed in grain units. It is not easy to convert the production of meat, milk, eggs, etc. into the fodder units required for their production, and the method is not without its critics. The relation may vary between 1:3 and 1:20. We do not here wish to go into details of the problems which arise. An average 1:7 ratio between animal and vegetable calories appears reasonable. It is used, for instance, by Professor Cépède and will serve as a basis in the remainder of this study.

(5) These reflections yield interesting results so far entirely neglected in the discussion of Turkish food problems. If it is desired to indicate an order of magnitude, we can reckon a fodder requirement of about 70 million grain units for the 3.9 million oxen and 1.3 million horses, i.e. the draft animals, statistically counted in 1959. For a 1959 production of 4.4 million tons of milk, about 346 000 tons of meat and 65 000 tons of eggs, the feed requirements of the cattle can be estimated at a little over 80 million grain units. In the aggregate, this gives an approximate requirement of about 150 million grain units for livestock raising. Since we are here assuming very low fodder standards the actual consumption of fodder is more likely to have been higher than lower. Of these figures, 3 million tons only appear in the balance sheet of the cereals used to feed cattle. The remainder, i.e. 12 million tons or more, would therefore be the fodder value of the small quantities of beetroot leaves or other forage obtained from the fields (straw, lucern, sainfoin, etc.) and the production of generally little appreciated fodders from grassland, pastures and, particularly, steppe.

TABLE 10

Annual consumption of food per inhabitant from 1934/38, 1948/53 up to 1958/59

in kg per head

Year	Cereals	Tubers	Sugar	Pulses and nuts	Vegetables	Fruit	Meat	Eggs	Fish	Milk	Fats
1934/1938	193	6	5	10	32	55	15	2	1	95	8
1948/1950	188	16	6	9	56	62	14	1	1	79	7
1951/1953	197	28	8	11	67	66	14	1	2	84	7
1958/1959	149 (1)	39	10	14	77	89	13	2	2	85	8

Sources : Food Supply, Time Series, Rome 1960.
State of Food and Agriculture 1960.

(1) There is probably a printer's error at the source and the figure should be read as 194 kg, which corresponds to the quantity shown in FAO Table 11.

TABLE 11

Calorie and protein content of per capita nutrition, 1934 38, 1948 53 up to 1958 59 (1)

Year	Secondary calories	Protein (total) in g	Animal protein in g	Primary calories (2)
1934/1938	2 550	83	17	4 450
1948/1950	2 530	81	15	4 235
1951/1953	2 700	87	17	4 580
1958/1959	2 850	90	15	4 480

Sources FAO The State of Food and Agriculture 1960, p. 177 and Food Supply, Time Series, Rome 1960.

(1) Information from the "Food Balances" of the "Food Supply, Time Series" and of the "State of Food and Agriculture 1960". If the generally admitted conversion figures in the FAO Food Composition Tables are used, the values obtained are about 10 % less.

(2) Our own calculations : 7 primary calories for one secondary calorie

"fruit". Consumption of fish is almost entirely confined to the coastal cities or to towns in the interior which are easy to supply. Consumption of fats – in particular margarine – is doubtless higher in towns than in the country (where sheep's fat and melted butter from cow, buffalo or sheep's milk are more usual).

No reliable statistics are available concerning the elasticity of consumption and demand in relation to different incomes and living standards. In any case, elasticity is greater than in rich countries. Differences between the consumption in the rich and poor classes are considerable.

THE TREND OF AGRICULTURAL PRODUCTION HITHERTO

The figures relating to land utilization as they appear in statistics are not the result of inquiries based on surveying but of probably exaggerated estimates. A glance at the trend of land utilization over the last 25 years shows that exploited arable areas and fallow land have more than doubled, whereas grassland and pasture have fallen by a third (see Tables 12 and 13, both of which are valid as reflecting the general trend). It is probable, however, that the political objectives pursued during the last ten years have led to adjustments in an upward direction of the data – which already lacked a sound basis – concerning productive and cultivated areas, and, consequently, the volume of crops statistically reported. Intensive crops – vine, fruit, sugar-beet, cotton, horticulture and olive-growing – have really expanded considerably.

Table 13 also brings out the main changes which have taken place in production in the last 30 years. On the annual average, wheat, in which there has been no fundamental change, represents about 60%, and barley about 25%, of total cereals production during this period. All cereals for which individual statistics are available appear in Tables 14 and 16.

In view of the predominant importance of cereals in the country's food supply, it is essential to note that, according to the statistics, areas sown have increased more than threefold since 1928/32 and that since hectare yield remains the same to all intents and purposes, total yield has hardly tripled. The areas under cereals have been increased largely by using the traditional methods, but 40 000 tractors have also been imported and there has been a transition from the small peasant farm based on animal traction (oxen) to new forms of farming using tractors to turn up pasture land. Even if all the necessary corrections are made to the statistics, the increase in overall production remains considerable. If this were not the case, how would it be possible today to provide a population of 28 millions with better food supplies than those available 40 years ago to half the number of inhabitants ?

Another important feature of the Turkish cereal economy is the specially wide variations of crops resulting from meteorological conditions in certain years. If the autumn rains are sufficient, if ploughing can be done early enough, and if spring rains are favourable, record figures are achieved, in excess of national demand, although this has greatly increased. On the other hand, if the distribution of rain or the total rainfall is unfavourable or if winter sets in early and makes it impossible to complete the autumn ploughing, there is

TABLE 12

Utilization of land 1934-59

in million hectares

Year	Arable area under plough	Fallow	Grassland and pasture	Vineyards	Fruit and vegetables	Olives
1934 (1)	6,8	3,7	44,3	0,35	0,43	0,35
1948	9,5	4,4	38,3	0,54	0,69	0,28
1959	15,0	7,9	29,0	0,78	0,71	0,54

Source : Turkish agricultural statistics.
(1) Excluding the vilayet of Iskenderum (Alexandretta), attached later.

TABLE 13

Areas cultivated, yields and production of the chief agricultural products in Turkey 1928/32, 1934, 1948, 1949 and 1959

Year	Cereals			Dry vegetables			Sugarbeet		
	Area million hectares	Yield kg/ha	Production million tons	Area million hectares	Yield kg/ha	Production million tons	Area million hectares	Yield kg/ha	Production million tons
1928/1932	5,4	973	5,0	0,4	750	0,3	0,014	7 700	108
1934	5,9	950	5,6	0,5	800	0,4	0,025 (1)	17 000	446 (1)
1948	8,1	1 120	9,0	0,4	907	0,4	0,037	19 800	730
1949	7,5	711	5,3	0,4	797	0,3	0,041	20 000	820
1959	17,7	790	14,0	0,4	1 104	0,6	0,164	21 000	470

Year	Tobacco		Cotton			Grapes	Peaches	Lemons	Oranges
	Area '000 hectares	Production '000 tons	Area '000 hectares	Yield kg/ha fibre	Production 000 tons fibre	Production '000 tons	Production '000 tons	Crop '000 units	Crop '000 units
1928/1932	—	—	165	—	—	—	—	—	—
1934	—	—	253	245	62	1 195 (2)	12,6 (3)	37 (3)	367 (3)
1948	106	83	298	195	58	1 331	6,2	129	266
1949	127	100	305	341	104	1 750	8,2	88	309
1959	176	121	624	312	195	3 224	81,2	607	1 101

Source: Summary of Agricultural Statistics 1939-59, Ankara 1960.
(1) 1935. (2) 1937. (3) 1939.

danger of a poor harvest. Statistics show that in recent years wheat crops have fluctuated between 8.5 million tons in 1958 and 4.9 million tons in 1954 – a difference of more than 3.5 million tons. These variations in the production of certain cereals are offset by the surplus or deficit in the crops of others. Barley, which comes immediately after wheat from the angle of quantity, and maslin, spelt and rye present crop variations due to climate which are similar to those of wheat. On the other hand, the yield graph of maize, which is frequently cultivated under other climatic conditions, in particular in the coastal regions, looks quite different. 1954, when crops of wheat and other cereals were poor, was a record year for maize. However, Table 14 shows that the statistical gap between certain harvests, such as the extremely bad 1954 harvest, and the excellent 1958 harvest, can be as much as 5.3 million tons.

As regards pulses, the areas cultivated and the crops do not show any substantial changes.

Although they are not shown in Table 14, oleaginous plants, as much as pulses, play an important part in feeding the country. They supply a large proportion of the oil consumed – cottonseed oil, sunflower oil, sesame oil and olive oil for direct consumption and as the raw material for making margarine – but some are also exported (olive oil, and also oilseeds and oilcake).

Under the guidance of the Turkish Sugar Company, which is exemplary from the technical and management point of view, the area under sugar beet has increased almost fivefold since 1948 and more than tenfold since 1928/32. Hectare yields have been stepped up. After a relatively short take-off period, production, which is stimulated by the guarantee of high and stable prices for sugar beet and by the advisory and promotion activities of the Sugar Company, now makes an important contribution to feeding the Turkish population, and the by-products stimulate livestock conversion, of which the majority of Turkish peasants previously knew nothing.

NATIONAL PRODUCTION AND DEMAND AND PRESENT EXPORT SURPLUSES

As in most countries, national production coincides only partly with national demand. Climatic advantages and the requirements of the world market have led to the development of productive sectors which initially served only for export. The traditional Turkish export products which can be attributed to these factors, i.e. raisins, hazel-nuts, figs and tobacco, account only for a small fraction of crops in the regions with particularly favourable climate. Intensive farming makes it possible to obtain high yields in the aggregate and per hectare. As sales on the home market have been and still are very low, 80 to 95% of production is exported.

The "sultana" grapes without pips, which are exported in the form of raisins, come from the hinterland of Ismir and represent only about 10 to 15% of the total grape harvest, which, outside the regions growing sultanas, does not yield grapes suitable for export as raisins. It is estimated that in good years total grape production for various uses, almost exclusively within the country – consumption in a fresh state or as concentrates, etc. but very rarely as wine – can today attain, on twice the area, a volume three times greater than in the past. With 50 to 100 kg per inhabitant, grapes are by far the chief fruit consumed within the country.

The situation is different with tobacco. Production, which has always been for export and home consumption, has been expanded by 80% in the last 30 years.

Cotton was originally grown for export, but an important textile industry has since developed. Production has been stepped up vigorously and today covers home needs, with surpluses for export. Cottonseed increases production of oil and oilcake.

To cover national demand and profiting by lessons gradually learned in the matter of methods of cultivation, intensive development of peach-growing has recently been pushed forward and production greatly expanded in a restricted area favourable to this fruit. But even when harvests are very good, production per head of the whole population is no more than 3 to 4 kg. In practice it is concentrated in restricted areas where per capita consumption of the fruit is high. So far the peaches have hardly found markets outside Turkey, but production in good years has recently been above what the national market can absorb.

The same applies to lemons and oranges. Since 1939 the lemon crop has increased sevenfold and that of oranges threefold. The latter already runs into hundreds of thousands of tons. Nevertheless, it has so far been used almost exclusively within the country.

Citrus fruits are perhaps the Turkish food product whose consumption has increased the most. However, as in the case of peaches, the day is not far distant when thought will have to be given to developing exports, the more so as a large proportion of the trees planted will be in full yield in the coming years.

TABLE 14

Total production and consumption of cereals in Turkey 1939-41, 1945, 1950-59

in 000 tons

Year	Existing stocks		Production	Imports		Total availabilities	Exports	Availabilities within the country	Fodder, seed, losses	For feeding of the population		Surplus carried over to the following year	Surplus Toprakofis stocks carried forward
	Total	According to Toprakofis statistics		According to official statistics	According to figures of purchases by Toprakofis					Total	per inhabitant (kg year)		
1939	1 262	not available	7 791	—	not available	9 053	50	9 003	3 652	3 891	222	1 456	not available
1940	1 456	not available	7 809	—	not available	9 265	119	9 146	3 601	3 986	224	1 555	not available
1941	1 555	not available	6 438	—	not available	7 993	10	7 983	2 990	3 997	222	992	not available
1945	1 384	not available	3 812	—	not available	5 196	21	5 175	1 855	3 356	177	60	not available
1950	10	85	7 304	204	not available	7 518	3	7 515	3 235	4 175	199	100	232
1951	100	232	10 200	96	95	10 396	165	10 231	4 442	5 089	236	695	477
1952	695	477	11 614	8	29	12 317	715	11 602	5 194	5 243	238	1 160	603
1953	1 160	603	13 671	—	—	14 831	883	13 948	5 747	5 341	236	2 855	856
1954	2 855	856	9 096	—	—	11 951	1 547	10 404	4 756	5 522	235	120	295
1955	120	295	11 918	344	305	12 382	253	12 129	5 714	5 789	239	620	103
1956	620	102	11 263	151	233	12 034	340	11 694	5 511	5 917	239	259	73
1957	259	73	13 919	482	689	14 660	—	14 660	6 490	6 119	241	2 043	601
1958	2 043	601	14 401	73	405	16 517	187	16 330	6 571	6 388	246	3 361	408
1959	3 361	408	13 359	—	150	16 720	543	16 177	6 152	6 620	246	3 995	107
1960	3 395	107	15 215	(1)	326	(1)	(1)	(1)	(1)	(1)	(1)	(1)	199
1961	(1)	199	12 690	(1)	373	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)

Source: Republic of Turkey. Summary of Agricultural Statistics 1939-59, Ankara 1960.

Note: The statistics of the source do not show whether or not the stocks existing and the surplus stocks, at the beginning and end of each harvest year, include those held by Toprakofis, but this can be assumed. In this case it is possible to imagine in theory total stocks greater than those organized by Toprakofis and also including quantities held by peasants, dealers, millers, etc. However, in practice there are contradictions which cannot be explained here. Probably only the Toprakofis figures are based on actual facts.

(1) No figures available.

As against this export surplus of varying importance for the products mentioned above, an import surplus can be noted for only a very small number of foodstuffs which can also be produced in Turkey.

Mention has already been made of the fact that sugar, which used to be imported, has been replaced by the home product and that export problems now arise. On several occasions in recent years large quantities of oil and fats have been imported from the United States. But these imports are attributable less to a national requirement in the strict sense than to special circumstances which we will discuss later. The same is true of imports of frozen poultry from the United States, which have been authorized on occasion in recent years.

As meat is almost exclusively produced for home consumption and none is imported, the meat supplies of the Turkish population are in purely theoretical relation to the questions occupying us here, if it is considered that it will be possible sooner or later to produce greater quantities of meat by using cereals and other products for feeding cattle. It is possible to imagine increasingly large imports of cereals as raw materials for Turkey's meat supplies. As the Moslem population mainly consumes beef, mutton and poultry meat, the chief openings are for the fattening of the respective animals. Future prospects for poultry breeding are good.

For milk and milk products, production and consumption also balance out. Only the export of oilcake might be influenced by expanding home requirements.

Cereals are the only product of interest from the angle of food supply for the population and for which there has long been alternation or combination of imports and exports. Because of the overriding importance of cereals as the chief product and staple food of the population at large, it is important to study the supply situation, which is made more difficult by the considerable divergences between harvests. Table 14 summarizes the official cereals balance-sheets.

The balance-sheet of external trade in cereals is closely influenced by poor harvests, sales by producers, and purchases of cereals by Toprakofis to cover non-agricultural requirements. For a long time it seemed that, all in all, the surplus of production was keeping pace with the increasing needs of the growing population. The hopes entertained at the beginning of the 1950/60 decade that Turkey could become a country with a structural surplus of cereals have not materialized. In the years with bumper harvests it has been possible to export; in years when harvests were poor there has been recourse to imports. However, export and import are not related to the harvest situation in the sense that one excludes the other. The main product is soft wheat, with durum wheat as an accessory crop. In general durum has a greater export value than non-durum so that it sometimes pays to export durum and import soft wheat. In this case an export of durum corresponds to an import of non-durum. The important thing, as regards the supply situation, is the balance between exports and imports.

However interesting this outline of the general structure of cereals production, of consumption for various uses, of stocking, or of the interplay of imports and exports may be, the available official balance-sheet (see Table 14) can nevertheless not eliminate the doubts expressed above concerning the unconvincingly high per capita consumption of cereals. These doubts are further strengthened by the fact that in certain years cereal consumption is supposed to have risen strongly in relation to earlier years although there was no sign of any economic expansion which would have favoured this. More thorough study of the figures of consumption, of imports, of exports and of stocks at the end of the year, as well as of poor harvests, brings out contradictions between the statistical figures and the real state of affairs. Since the figures for external trade are trustworthy, these contradictions concern consumption and production statistics. The official cereals balance-sheets supply important clues as to the facts, but, failing a profound critical study of all elements, they do not constitute a sufficiently solid basis to appraise the situation in the cereal sector.

The fact that, after the 1961 cereals harvest which, at scarcely 13 million tons, was below that of the previous years, unsatisfied demand, estimated initially at only 300 000 and 400 000 tons, rose in a few months to more than a million tons again strengthens the doubts expressed as to how far production and consumption statistics correspond with reality. Furthermore, increasing contradictions emerge between the growth of production and that of requirements. This is not surprising when the order of magnitude of the supplementary requirements is considered. Thirty years ago it was relatively easy to obtain, on good arable land which was gradually being opened up, a total of 60 000 to 80 000 tons of cereals per annum, enough to cover an increased consumption of about 250 to 350 kg of cereals per head. Nowadays the annual population increase is 750 000, and it will soon be a million. Consumption per inhabitant, including consumption of coarse grains, has increased. Even if it is admitted, by applying corrections

to the statistical data, that per capita consumption is 4 grain units – a figure substantially below the official estimate – the annual increase in requirements comes to 300 000 tons. Moreover, it is of secondary import that – as was always the case – a portion of these requirements does not involve the production of cereals but of other plants for direct use as food and for feeding livestock. A growing percentage of overall needs for cereals and grain units has to be met by the various productive sectors from land already under cultivation. As farming methods have in the main not changed substantially and produce no better results, an increase in import requirements is the natural consequence.

PROBABLE DEVELOPMENT OF REQUIREMENTS UP TO 1975

Many factors which help to determine the trend cannot be foreseen. Any forward estimate is therefore fraught with sources of error and uncertainties.

Assuming that the present marked rise in population (see Table 1) continues, there will be 40 to 45 million people in 1975. It would therefore seem that the rate of population growth has not yet attained its peak and may well reach 3% or more. It must, of course, be expected that, as in other countries, the development of culture and well-being will reduce the frequency of births in the social strata which it affects. For some time now the Public Planning Office, set up in 1960, has been giving thought to the question of birth control.

Efforts are likely to be made to reduce the birth rate more drastically and sooner than would normally be the case. But it is impossible to foresee when and how far these efforts will bring tangible effects. We can only base ourselves on the United Nations forecasts [1] which assume a population of 40 millions in 1975.

Compared with the situation shown in Table 2 there will be a further increase in the age groups able to work and, consequently, in the labour potential.

The burden of bringing up children, which today falls on a still comparatively small number of adults, will decrease relatively without this involving any material aggravation of the task of caring for the old. A further sharp increase in the total working population is to be expected (perhaps 23 - 24 millions in 1975) and a more than proportional expansion of the number of non-agricultural workers (perhaps up to between 4 and 4.5 millions) (see Table 3). However, the largest fraction of the working population in absolute figures (hardly less than 18 millions) will still have to find a living on the land.

The rural population is hardly likely to fall much below 65% before 1975. Since non-agricultural workers living in the country will perhaps be more numerous than today, a proportion of 65% is also assumed for the self-sufficiency of the farming population.

It may be assumed that the overall national income in real prices will continue to grow. On the other hand the further increase of per capita national income depends, first on the volume of population increase, secondly, on the productive employment of persons able to work, i.e. the total labour potential, and, thirdly, on the size and judicious choice of investments – in short on productivity in the years ahead. If population increases as rapidly as in the past, a fairly small or even a very small growth rate of income is to be expected. If the growth of population flags, income may increase by a few per cent even on a per capita basis. Here it is assumed that between 1960 and 1975 per capita income will rise 30%. This would correspond to a national income of 33 600 million Turkish pounds in 1975, as against 17 800 million (1948 prices) in 1960. It is then probable that the per capita money income (particularly of the non-rural population) will increase more than the per capita income in agriculture, which is largely non-monetary.

If we accept these premises, it is possible, taking into account the margins of error due to the absence of statistics and to the uncertainty concerning the future trend, to forecast an order of magnitude for the structure of consumption, demand or requirements for 1975 (see Table 15). We begin by postulating the present structure of food supply, the maintenance of existing urban and rural eating trends and habits and a slow development of the conversion industry (use of cereals and other farm products to produce meat, eggs, milk and fats). Parallel with the present per capita consumption of cereals as shown in official Turkish statistics (starting point I in Table 15) we have assumed consumption figures as adopted by FAO which are lower and probably nearer to reality (starting point II in Table 15) and, in both cases, a slight fall in cereal consumption up to 1975. For pulses and tubers, a slight fall in future consumption is also postulated. For the other foodstuffs, the assumption is that consumption will increase in step with the presumed growth of income.

[1] The Future Growth of World Population, p. 73.

The supplementary per capita expenditure required for the additional consumption in 1975 is 64%. This extra spending would be possible with a consumption elasticity in relation to income of about 0.6% and a 30% per capita growth of income. This appears a reasonable hypothesis if we consider the relatively high proportion of income spent on food at this stage of development. The extra consumption assumed in Table 15 for the population as a whole should therefore not be too far off the mark.

Table 15 shows that cereals requirements for direct consumption will have to rise from 4.9 (6.2) (1) million tons to 6.7 (8.7) (1) million tons, those of sugar from 271000 to 482000 tons and of milk by 1.6 million tons to 4 million tons, etc. As it must be admitted that the consumption of cereals as shown in Turkish statistics (starting point I) does not tally with the real state of affairs, no account will be taken of it in the discussion below. With the help of other Tables, this will be shown again for purposes of comparison.

The extra food needs as calculated in theory for 1975 give rise to various questions in relation to the different products which are more or less difficult to solve.

The extra requirements for sugar, fruit and vegetables should not entail any difficulties. The technique of production is known and currently applied, and all the factors of production are available. It is sufficient to continue along the familiar road. Improvements are possible, and there is no reason to fear that production might be unable to cover requirements. Quite the contrary: for sugar, the problem to be solved consists either of limiting production in the light of the trend of requirements and the reduction of costs; or – if this fails – of covering losses on export by finding uses for excess production. Fruit and vegetables give rise to a multitude of questions: improvement of production, standardization for export, presentation, organization of external trade, and finally various procedures for exploiting surpluses through sales abroad. These problems need not be gone into here. Similarly, if national requirements were to increase more than foreseen, there would be no difficulty in meeting them.

The situation is quite different with the main product, cereals. If it is assumed that 35% of the cereals are marketed, the figures above indicate (now only alternative I) that, of the 1.8 million extra tons of cereals for direct consumption in 1975, about 600000 tons will be for consumers who are not self-suppliers. To this increase in cereals requirements for direct consumption must still be added, for instance, 5% for losses and the amounts required for seed and livestock feeding. The quantity needed for seed will doubtless not change materially, for as will be seen immediately below, the cultivated area will not increase. On the contrary, the development of maize-growing in place of wheat will on the whole tend to reduce seed requirements.

Matters are more complicated as regards fodder grains. The statistical estimate of cereals used for livestock feeding so far includes quantities fed to draft animals and, in a lesser but unknown proportion, those converted into livestock products (2). In Table 17 the total quantity of fodder required in 1960 and 1975 (3) has been calculated on the assumption that the number of draft animals remains stationary and that fodder needs for them consequently do not increase either. Requirements of meat, eggs, milk and fats have been calculated for 1960 and 1975 according to the method described in footnote (4) at the bottom of page 113. Calculated on the basis adopted, the total amount of cereals needed to cover the extra requirements in foodstuffs of animal origin in 1975 is about 4.7 million tons.

It may be disputed whether it is right to express the whole of the requirements of foodstuffs of animal origin in terms of grain units needed for conversion. It can be admitted that the present steppe and similar pasture cannot produce more fodder to increase the output of foodstuffs of animal origin, and that it is therefore necessary to produce the extra quantities on fields and natural and cultivated grassland. Since steppe pasture is today exploited to the maximum, and even overexploited, this supposition should not be far off the mark. The fodder basis of the necessary livestock products is therefore only partially grain and probably to a greater extent grass, hay, beet, tubers, green maize, etc. Only the production of eggs and poultry meat depends in the main on grain conversion. The quantity of grain units calculated as an overall requirement therefore corresponds only in part with the direct grain requirement for livestock feeding, but in any case to grain units contained in various other fodders produced by human labour. If we assume – in order to give an order of magnitude – that half the extra fodder

(1) Under the hypothesis of starting point I (Table 15).

(2) See footnotes 4 and 5 on page 113.

(3) The 3.6 million tons calculated theoretically for 1960 are little higher than the figures indicated in the statistics, i.e. 3 million tons for 1959. Since these latter figures must also include the quantities of cereals used to feed draft animals, this lends greater force to the supposition that the statistical data are much below the real consumption of coarse grains.

TABLE 15

Approximate comparison of essential food requirements in 1960 and 1975 (forecasts)

	1960	1975
Population in millions	27,5	40,0
Percentage of rural population	70,0	65,0
Percentage of self-suppliers	75,0	65,0
Rural population in millions	19,2	26,0
Urban population in millions	8,3	14,0
Self-suppliers in millions	20,7	26,0

Product		Requirements in 1960						Requirements in 1975 (3)					
		Rural		Urban		Total		Rural		Urban		Total	
		kg/head	total in '000 t	kg/head	total in '000 t	kg/head	total in '000 t	kg/head	total in '000 t	kg head	total in '000 t	kg/head	total in '000 t
Bread grains for direct consumption	(1)	230	4 416	220	1 826	227	6 242	220	5 720	210	2 940	217	8 660
	(2)	180	3 456	170	1 394	176	4 850	170	4 420	160	2 240	167	6 660
Pulses		14	269	14	115	14	384	13	338	11	154	12	492
Tubers		43	806	33	271	39	1 077	39	1 014	30	420	36	1 434
Sugar		9	173	12	98	10	271	11	286	14	196	12	482
Meat fish		14	269	17	139	15	408	17	442	20	280	18	722
Eggs		1	19	5	41	2,3	65	1,3	26	6	84	3	110
Milk		101	1 939	50	410	85	2 349	121	3 120	60	840	99	3 960
Fats		6	115	11	90	8	205	7	182	13	182	9	364
Fruit		99	1 901	67	549	89	2 450	120	3 120	80	1 120	106	4 240
Vegetables		69	1 325	96	787	77	2 112	83	2 185	115	1 610	96	3 845

Source: The State of Food and Agriculture. Rome 1960. Summary of Agricultural Statistics 1939/1959. Ankara 1960. Personal calculations.
(1) Starting point I: Average consumption in recent years according to Turkish official statistics.
(2) Starting point II: Consumption according to FAO statistics.
(3) Estimates.

TABLE 15a

Food costs in 1960 and 1975 assuming the retail prices shown in the statistics for 1959/60

Product	1960			1975		
	Per capita consumption kg year	Price in kurus kg	Total cost in kurus	Per capita consumption kg./year	Price in kurus kg	Total cost in kurus
Bread grains	176	90,83 (1)	15 986	167	90,83	15 169
Pulses	14	200,00 (2)	2 800	12	200,00	2 400
Tubers	39	53,03	2 068	36	53,03	1 099
Sugar	10	223,00	2 230	12	223,00	2 676
Meat fish	15	640,00 (3)	9 600	18	640,00	11 520
Eggs	2,3	597,30	1 374	3	597,30	1 792
Milk	85	141,70	12 044	99	141,70	14 028
Fats	8	1 213,45 (4)	9 708	9	1 213,45	10.921
Fruit	89	98,00 (5)	7 921	106	98,00	10 388
Vegetables	77	65,00 (6)	5 005	96	65,00	6 240
Total per capita			68 736			77 043
Population in millions			27,5			40
Total food cost (in '000 million kurus)			1 890			3 082
Increase in demand between 1960 and 1975 (7)	in '000 million kurus			1 192		
	index (1960 = 100)			164		

Source : Monthly Bulletin of Statistics No 93. November 1961. p. 48.

(1) Wheat flour. — (2) Composition unknown. here an average of chick-peas and dry beans. — (3) Meat = equal parts of beef and mutton (663) and a reduction for 1/3 of fish and offal. — (4) 1/3 butter (milk price of 187 20 % supplement to offset processing costs) = 3 060.00; 1/3 olive oil 525.11; 1/3 "Vegetaline" 528.26. — (5) 50 % grapes. 136,76; 50 % melons. 60. — (6) Approximation to tomato prices. — (7) Population estimated at 40 millions in 1975 (1960 = 27.5 million).

TABLE 16

Approximate energy and protein content of per capita food intake in 1960 and 1975 (forecasts)

		Calorie content			Protein content		
		Total in cal.	of which : animal origin		Total in g	of which : animal origin	
			in cal.	in %		in g	in %
Starting point I : Cereals consumption according to Turkish official statistics							
	1960	3 175	360	11	98	16	16
	1975	3 185	420	13	98	20	20
Starting point II : Cereals consumption according to FAO statistics							
	1960	2 685	360	13	83	16	19
	1975	2 705	420	16	83	20	24

Source : Personal calculations (according to Table 14).
Note : The calorie and protein contents of the food were calculated by using the conversion factors applied in the FAO Food Balances for Turkey. If the conversion factors adopted in the FAO Food Composition Tables are applied. the resulting calorie and protein contents are about 10 % smaller.

TABLE 17

Calculation of cereals requirements for 1975

1) Extra coarse grain requirements for an expanding processing industry

	Unit	1960					1975				
		Meat	Eggs	Milk	Fats	Total	Meat	Eggs	Milk	Fats	Total
Calories per kg of food (1)	calories	1 420	1 450	650	7 340	—	1 420	1 450	650	7 340	—
Consumption of foodstuffs (2)	'000 tons	346 (8)	65	2 349	205	—	613 (8)	110	3 960	364	—
Secondary calories	'000 million calories	491	94	1 505	1 526	3 616	870	160	2 574	2 672	6 276
Primary calories (3)	'000 million calories					25 312					43 932
Requirements in grain units (4)	million tons					72					12,5
Coarse grain requirements (5)	million tons					3,6					6,3

2) Total cereal requirements in 1975

Requirements	Unit	1960	1975	Extra requirements
Direct consumption	million tons	4,9	6,7	1,8
Coarse grains	million tons	3,6	6,3	2,7
Total (direct consumption + coarse grains)	million tons	8,5	13,0	4,5
Seed (6)	million tons	2,8	2,8 (9)	—
Losses (7)	million tons	0,6	0,8	0,2
Total requirements	million tons	11,9	16,6	4,7

(1) Weighted average according to 1954/55-1956/57 consumption shown in FAO Food Balance-Sheets. Calculation of calories based on FAO Food Composition Tables. 1954. — (2) See Table 15. — (3) Secondary calories multiplied by 7. — (4) On the basis of 3 500 cal per kg of coarse grains. — (5) Assuming that the share of coarse grains in the requirements in grain units for cattle feeding is 50 %. — (6) 17.7 million ha ; 160 kg per ha. — (7) 5 %. — (8) Consumption of meat fish with 15 % deducted for consumption of fish. — (9) It is assumed that any production increase will take place on the same farming area.

grain units which will be necessary up to 1975 would be provided as fodder in the form of grain, the result would be an extra requirement in this form of 2.7 million tons of fodder grain. In all, therefore, extra requirements of between 6 and 6.5 million tons of cereals are to be expected.

In order to avoid any misunderstanding, we would like to point out once again at the conclusion of this forecast of requirements up to 1975, that the arguments set out above are not based on the physiologically desirable food intake of a human being evaluated in calories and animal and vegetable protein: the starting point has been the probable present food situation and the foreseeable increase, in the light of general economic development, higher incomes and prosperity, of demand and of requirements to be covered through the market or by family self-sufficiency. Table 18 compares food requirements calculated according to this method and the consumption which appears physiologically desirable. In the context of the great problems connected with the trend of requirements and production, it is idle to speculate here whether physiological needs in the matter of food could be completely satisfied through increased production or whether the extra quantities lacking must be imported. The basis of any realistic estimate must be the satisfaction of requirements in the light of economic evolution and the development of purchasing power. Even if the FAO figures are taken as a basis, it would seem that, today already, not only the desired but also the actual calorie consumption attains and exceeds physiological requirements. The same is true to an even greater degree of total protein and of animal protein. It is only as regards protein from pulses that there is no satisfactory concordance between physiological requirements and the consumption considered probable. However, this lack is not as serious as it would be if accompanied by a deficit in animal protein. Moreover, it would be relatively easy – assuming that the statistical calculations give a realistic picture of the situation and outlook – to eliminate it by an appropriate pattern of production.

PRODUCTION POTENTIAL AND COVERAGE OF REQUIREMENTS UP TO 1975

The extra requirements foreseeable up to 1975 must be confronted with the possibilities of production. It follows from what has been said above that fresh areas of steppe and pasture are not available for conversion into ploughland and that erosion has already caused serious damage and threatens to cause even more on a not inconsiderable part of the pasture recently converted, in particular on slopes and land of poorer quality, as well as in forests cleared for farming. In some areas farm land brought under the plough will have to be returned to steppe and forest. This is difficult. It will sometines be possible in the future by anti-erosion measures, terracing, contour or strip ploughing, or other means, to ensure the productivity of areas recently brought into cultivation.

However this may be, any further extension of ploughland by the procedure so far applied is hardly conceivable. But this means that the methods hitherto used will not suffice to cover the presumed extra cereal requirements up to 1975. In years of drought it is already necessary to reckon with the danger of a notable part of production being lost. Certain disaster years may result in the loss of millions of tons of cereals and thus provoke food scarcity.

On the other hand, it must not be concluded from this that 1975 requirements cannot be covered from domestic production. The major part of the arable land exploitable in Turkey cannot be irrigated, but dry farming offers possibilities of improving production, although it is true that their effects are fairly limited. The present average crop is 1000 kg per ha. However, because of lack of water and nutritive substances, land must be laid fallow almost every two years. Under these conditions the average annual yield of non-irrigated land is around 600 kg per ha. Even if production techniques are improved, it is hardly possible to expect a 20% increase. To apply these techniques to all farms takes time and intense effort in the field of advisory services and measures to encourage production.

The most important key to obtain this extra production – if need be even beyond the 1975 requirements – is to utilize the possibilities of irrigation, which, in the main, have not yet been exploited, and use the irrigated land for alternative crops with modern farming techniques. In many areas the existing climatic conditions permit the production of 3000 to 4000 kg of cereals or equivalent. The high yield cereals are particularly maize and rice; sugar and fodder beet are among the most important tubers, and luzerne and other intensive crop plants among high productivity fodder. The 1959 FAO Country Report on Turkey estimates the total area which could be irrigated at 4 - 5 million hectares. According to statistics, the area so far irrigated is between 1 and 2 million hectares. However, only the minor part of this land is regularly irrigated, and a considerable proportion is provided with extra water by more or less primitive methods. In accordance with old traditions of production the major part of the irrigated land is used for cereals, and the yield is hardly higher than on

TABLE 18

Comparison of the energy and protein content of the food with physiological requirements

		Unit	Physiological requirements according to norms		Absolute consumption	Alternative B [4] in % of the physiological requirements according to norms		Absolute consumption	Alternative A [3] in % of the physiological requirements according to norms	
			FAO/NRC (1953) [1]	FAO/FAS (1961) [2]		FAO/NRC	FAO/FAS		FAO NRC	FAO FAS
1960	Energy content	cal/per head day	2 585	2 440	2 685	104	110	3 173	123	130
	Total protein	g/per head day	60	65	83	138	128	98	163	151
	of which animal	g/per head day	18	7	16	89	229	16	89	229
	Protein of pulses	g/per head day	—	10	8	—	80	8	—	80
1975	Energy content	cal per head/day	2 800	2 440	2 700	96	111	3 183	114	130
	Total protein	g per head/day	65	65	83	128	128	98	151	151
	of which animal	g per head day	20	7	20	100	286	20	100	286
	Protein of pulses	g per head day	—	10	7	—	70	7	—	70

[1] Calculation of the energy requirements according to FAO "Calorie Requirements" (Rome 1957) assuming:
for 1960: average annual temperature: 15° C; demographic structure of a "young population" with a high rate of increase; average weight per person: 60 kg; 10% supplement to compensate waste.
for 1975: average annual temperature: 15° C; young population with a lower rate of increase; average weight per person: 65 kg; 15% supplement to compensate waste.
Physiological protein requirements based on the normalization of the Nutrition Advisory Committee (in 1953) which is a part of the National Research Council. USA: one g of protein per 1 kg of physical weight, of which at least 30% of animal protein.
[2] Energy requirement based on FAO calculations (Second World Food Survey. Rome 1953); protein requirement based on the norms adopted by the "Nutrition Advisory Committee" of the National Research Council. USA. which are used by the FAS of the United States Department of Agriculture (USDA) in "World Food Deficit 1961"; 65 g protein. of which at least 1 10 of animal origin and up to 1 4 of the difference of dry vegetable origin.
[3] Based on the cereals consumption assumed by FAO.
[4] Based on the cereals consumption following official Turkish statistics.

non-irrigated land. The increase in hectare production made possible by the combined influence of climate, irrigation, alternative cropping, intensive cultivation with appropriate seeds, and the use of chemical fertilizers and insecticides, has so far been obtained only in very small areas.

Some of the unused potential could be exploited with permanent irrigation by relatively simple measures. Another part, however, will require growing investments. FAO estimates the expenditure at an average of $ 1000 or 6000 Turkish pounds per ha (1). The costs of exploiting hydraulic potential in Turkey vary from one project to another. We may postulate that for the complete irrigation of the first million hectares, which are already more or less properly irrigated or could be so irrigated without difficulty, 2500 Turkish pounds per hectare are required, for the second million, 3500 pounds, and for the remainder 6000 Turkish pounds, as estimated by FAO.

Improvement of irrigation facilities on land already partially irrigated, and even in many other areas, first requires trenches and concrete canals for irrigation and drainage, and levelling of ground, in short, work calling for a large amount of manual effort and little mechanical labour and equipment. This doubtless still applies to a great extent to the second block of one million hectares. But where it is a question of creating new irrigation facilities, including canals of sufficient size and earth-removal work, machinery will doubtless play a greater part.

The more extensive the irrigated areas, the more necessary it will be to carry out projects which, in addition to manual work, involve considerable capital investment for the building of large dams and canals, etc. However, it would then be easier to pursue several objectives simultaneously: irrigation, power production, regularization of water courses, flood protection, etc.

If we begin with the hypothesis already mentioned of an extra cereal need of 6 to 6.5 million tons for direct consumption and for the production of foodstuffs of animal origin, and if we assume further that only a minor part of this extra quantity will result from the use of better methods of production on the non-irrigated land and the major part from the application of new farming methods on land with better irrigation or provided with extra water, the question then arises of what has to be done to exploit the production potential so far unused on non-irrigated land and on land which cannot be irrigated.

The problems here posed lead up to the great development tasks facing Turkey in the agricultural sector. It would be too far from our subject to examine how much time would be needed sufficiently to expand advisory and educational services and the like, how fast cooperatives for the supply of the means of production and credits and for the utilization of products could be established and developed, and whether and in what quantities capital and production media can be procured, etc. It may be expected that much will be achieved in this field in the next 15 years. On the other hand the scope of the effects of all the promotion measures on agricultural development must not be overestimated. If it proved possible to raise the yields obtained on the non-irrigated land by 10% on the average this would already be a very satisfactory result. However, this average production of about 1 to 1.2 million tons is no more than a fraction of the estimated extra need of 4.7 million tons of cereals.

From the point of view of the existing production potential, the balance of the extra requirements can be covered by stepping up production on irrigated land in correlation with all the measures necessary to obtain a production of 30 or 40 grain units per ha from such land. For this, several conditions must be fulfilled in practice. If we assume that it will be possible in the next 15 years to produce 2.5 tons of grain, or 25 grain units, per ha on irrigated land, it will be necessary, in order to cover requirements of about 4 - 5 million tons which cannot be met on the non-irrigated land, effectively to irrigate about 2 - 3 million hectares of land whose average production hitherto has hardly exceeded 6 grain units. Thus the extra irrigated land needed far exceeds the areas which can be opened up at relatively low cost by small schemes, and the cultivation of some of the land to be irrigated will call for considerable financial outlay. The FAO report (2) is based on the assumptions that in the coming years, irrigation will spread gradually to 50000, 100000, and then 150000 hectares per year, and that, in 1975, 2.3 million extra hectares of irrigated land will be under crops. In view of the many uncertain factors involved in the requirements projection, the gap between the area of extra irrigated land as it follows from our calculations and that envisaged in the FAO project might well be bridged.

In view of the considerations here set out, the total extra food requirements assumed for 1975 can be covered by stepping up home production.

(1) The official exchange for $ 1000 is 9000 Turkish pounds. The calculations are therefore made on the basis of more favourable costs when the work is carried out by national manpower.

(2) See FAO Mediterranean Development Project, Turkey, Country Report, Part IV, p. 3.

There remain considerable irrigation potentialities to be exploited later. It is true that an economy based on irrigation will not only require large investments for irrigation plant and agricultural production media, and above all education and advisory services and new institutions, but also a reorganization of the systems of farming irrigated land. On the consumption side, it will mean the partial replacement of wheat by rice and maize; it will also call for a total reorganization of cattle-raising.

II. *REGIONAL PARTICULARITIES IN PRODUCTION, SURPLUSES AND REQUIREMENTS*

In order to judge the possibilities of using farm surpluses, the internal structure of the market must be known. The chief producing regions are sometimes very far from consumption centres. From the plain of Adana, the high plateau of Anatolia and from Thrace, the cereals are mainly transported to the three large cities: Istanbul (over 1.5 million inhabitants), Ankara (over 600 000) and Izmir (about 400 000). Smaller quantities are dispatched to about 20 fair-sized cities with over 50 000 inhabitants and to various supply centres (army, hospitals, etc.) comprising a large number of consumers. The 5 to 6 million people living in these sectors account for the major part of the food marketed. Numerous towns of greater or less importance, whose population is in part self-sufficient and in part procures supplies on the market, must be added.

In former times, it was difficult to use surpluses in one region to cover requirements in another, as the country had not been opened up from the transport point of view. This situation has changed. Although its density is low, the railway network covers a large part of Turkey and links important production and consumption regions. All coastal cities can be reached by sea, and for some time now a modern road network has opened up vast internal regions to hauliers.

There is no pronounced region of structural famine and it is relatively easy, given the present state of the transport system, to cope with local deficits. As in the past, a drought year can create supply difficulties in the cities. In view of the climatic conditions, particularly influenced by the effects of erosion, it is possible to imagine years with extremely bad harvests over vast regions and even the whole country. However, it would require catastrophic harvests such as have not been seen for many years for even the really productive rural regions to need cereals of foreign origin.

Until the thirties trade was the intermediary between producer and consumer, but before the second world war, Toprakofis, the office for agricultural products – the State organ already mentioned – was set up to regularize the cereals market throughout the country. The first need was to underpin producer prices, which when supplies were plentiful after a harvest used to fall too low, by purchasing in the chief producing regions, thus protecting the peasants against exploitation and slumps. Today, the country has more than 200 collection centres, mainly near railway stations, where cereals are accepted at the same price irrespective of the distance from the market provided they comply with certain quality standards. Immediately after the harvest extra payments are made to encourage the peasants to deliver promptly. Purchases are mainly of wheat, followed by rye, maize, oats and barley. Since Toprakofis is prepared to purchase any quantity of cereals at the minimum prices fixed, the market price never falls below this minimum.

The cereals are cleaned, stored and transported as required to the different consumption centres, where they are handed to bakers and other entitled persons in the form of flour after passing through mills which belong to the organization and others working under contract.

In years when national production is insufficient, that is to say almost every year since 1954/55, the regular supply of bread grains to the city at stable prices is a more important task than the protection of producers. However, until recent times Toprakofis had not yet succeeded in regulating the whole cereals market. Bread grain requirements are covered fully by Toprakofis only in the three large cities mentioned. In the other consumption centres they are met only in part. However, Toprakofis also supplies less important localities, down to 2 000 inhabitants, which are badly situated in relation to the producing regions. But this does not alter the fact that in times of scarcity open market prices for supplies through the market and not through Toprakofis can rise notably higher than the desired level of stabilization. Only if Toprakofis were in a position to cover all commercial requirements on the national markets could the "grey market" be eliminated.

Apart from the stocks organized by private persons, compensation between good and bad harvests is mainly effected by using the stocks held by Toprakofis. Private cereals stocks are not registered, either by exhaustive enquiries or by spot checks. If the harvest is good, the peasant stores some of his cereals in the farm or in underground silos and does not dispose of it until he sees that the next harvest

will be favourable. The total stocking of cereals by the peasants runs to great quantities, even though in individual cases it is only a matter of a few hundred kilos. One effect of the sale or retention, a short time before the harvest, of cereals stocked by individuals – in addition to the peasants there are traders and millers who keep stocks – can be to ease or aggravate the market situation materially.

In order to fulfil its stocking task, Toprakofis has silos and warehouses for about 2 million tons of cereals in the consumption and production centres. Its purchases have been as follows:

TABLE 19

Cereals purchases by Toprakofis

in '000 t

1950/51	552	1956/57	474
1951/52	1 192	1957/58	956
1952/53	1 532	1958/59	1 125
1953/54	1 932	1959/60	619
1954/55	578	1960/61	578
1955/56	1 091		

Source Information supplied by Toprakofis to the au[illegible].

In addition to the known figures of Toprakofis stocks, the harvest surpluses mentioned in Table 14 and carried on to the following year include stocks held by consumers, traders and millers (1). Toprakofis carries out the imports mentioned in Table 14 and directs the exports also mentioned there.

The quantities of cereals imported in recent years – nearly 700000 tons, and probably 1.4 million tons in 1961/62 – have been handled by Toprakofis at the same time as the home-grown cereals. The prices of the imported cereals have been adapted to the national level fixed, i.e. for imports made below the national prices a system of levies has been applied to profits and, if imports have had to be made above the national prices, the losses have been charged to the control operations as a whole. The cereals imported are stocked mainly in the ports of entry before being dispatched to consumption centres, mixed or not with home-grown cereals. Imported wheat is mainly delivered to consumption centres near the ports. It is therefore used in Istanbul, Izmir and in other ports or in centres close to the coast. If necessary, the wheat is also dispatched by coastal steamer, rail or truck to places further from the ports. The result is to make it somewhat dearer. For instance, the price of transport by rail from Izmir to Bendirma (300 km) is 29 Turkish pounds per ton, i.e. 10 piastres per ton/km. By road the rates vary between 12 and 22 piastres per ton/km. Maritime freight rates are lower. The cost by rail or truck as far as Ankara is probably around 50 Turkish pounds per ton or about 10% of the internal price.

Costs for on and off loading, losses and operational overheads must be added to transport costs in the strict sense. In the regions furthest from the ports, the total increase in the price of imported cereals delivered to the consumer is therefore not inconsiderably higher, but even if it attains 15 to 20% of the internal price, it is not prohibitive. At least all the densely populated western and coastal regions and all the large cities can be supplied with grain from abroad.

Expenditure and receipts of Toprakofis, i.e. the balance of outlay for the purchase, stocking, transport and import of cereals, losses, administration, general overheads, etc., are included in a budget and covered by receipts from sales. The sales price of grain or flour on the different markets is not established following the cost price of grain imported or transported over a more or less long distance. Just as producer prices are the same in more than 200 centres, consumer prices are not established in the light of the cost price in each particular case but according to criteria which take the maximum possible account both of the requirements of public administration, i.e. of the coverage of general costs, and of the need to maintain price stability in the chief consumption areas. Profits and losses stemming from the import or export of cereals also go into the "kitty" of the general accounts. Losses incurred in one field are as far as possible offset by profits in other sectors. In this way, Toprakofis has also imported rice which yielded considerable profits, although sold clearly below the national price level. The aim sought, i.e. to cover expenditure in the management and organization of the cereals market as a whole, is not always attained.

If cereals surpluses from EEC were to be imported into Turkey, Toprakofis would be the appropriate partner, just as it has been up to the present when surpluses were acquired from the United States. It has the necessary organization, transport and stocking facilities and also financing possibilities.

The adaptation, from the angle of quantity and prices, of imported cereals to the general organization of the cereals market will not change the fixed level of national prices to the detriment of producers. If imports are

(1) The volume of private stocking cannot be ascertained statistically. The estimates are contradictory.

made below the national price, Toprakofis registers profits from levies. If imports have to be made at prices above those fixed for the internal market, losses for Toprakofis and also for the State Treasury, i.e. for taxpayers, may occur. In the same way as those imported so far, cereals from EEC would be dispatched to the various deficit regions as needed. As in the past, this would primarily mean the cities near the coastal regions, with a total population of 2.5 to 3 million, whose cereals supply is inadequate. The bread grains consumed in these regions alone amount to about 400 000 to 500 000 tons. If other consumption centres in the interior of the country, which could use EEC cereals – among them possibly the capital Ankara – are included, the number of consumers to be considered in these regions comes to over 5 millions. The requirements would grow correspondingly.

All in all, if we confine ourselves to the aspects discussed here – organization, transport, stocking, distribution, etc. – favourable conditions exist for the use of foreign cereals surpluses in Turkey.

III. *SHOULD NEEDS BE COVERED BY USING SURPLUSES OR BY DEVELOPING AGRICULTURAL PRODUCTION?*

From the requirements and distribution angles, there are considerable possibilities of using agricultural surpluses in Turkey. The question of whether and how far this may be desirable will, however, only be partially answered by calculations of overall requirements and more by the concordance or imbalance of production and requirements in the various regions, but, in the last analysis, the answer must be in terms of longer-term economic factors and development priorities.

Independently of short-term measures required by fluctuations in harvests, the coverage of the growing structural cereals requirements by imports or production depends on many factors and circumstances. Account must be taken inter alia of the following considerations:

1. In the first place, there are fundamental differences between the attitude of the self-supplier and that of the population which must buy food. The farmer's household, particularly in regions specializing in products for marketing – citrus fruits, cotton, tobacco, tea, raisins, figs, hazelnuts etc. – is only partly dependent on the market. If an increase in production or higher prices procure increasing incomes for producers of market goods, and if they cease to provide for their essential requirements themselves, rules for food supply similar to those governing foodstuffs purchases by other categories of the population may become applicable.

It is hardly possible to evaluate uniformally how far increased production is consumed or sold by self-suppliers of foodstuffs, at least as a general rule. Often the chief aim of higher production is to sell more, i.e. to procure more income; self-supply takes second place. On this point we know too little about the attitude of the Turkish peasants in different production branches and regions. However, it can be assumed with some degree of certainty that the increase in consumption among the self-sufficient farming population estimated earlier in this report can only be expected if it is based on their own production of foodstuffs and fodder. It would be contrary to the structure of self-sufficing peasant farms, generally having little or no connection with the exchange of goods for money, if they were to buy considerable quantities of foodstuffs or even of fodder for consumption on the farm itself. It is only for consumer who are not self-sufficient, that is to say for buyers of foodstuffs, estimated at 25% (in 1976, 35%) of the population, that there can be any question of utilizing surpluses. The volume of surpluses which might be used is therefore reduced to about 1/3 of the forecasts previously made for the whole population.

2. However, this ratio may change if the agricultural population increases more rapidly than production. In this case, individual needs may cause a fall in production for the market. This seems to be the present situation, and it would explain the rapid increase in grain imports. Up to the present it has not caused difficulties in the general development of the country because these acute needs are covered without payment in foreign exchange by importing surpluses from the United States of America (see Section IV). Nevertheless, in the long term a reaction to this state of affairs is to be expected from many angles. On the one hand, those responsible for directing the economy, i.e. the Government, cannot count on permanent supplies of foodstuffs without payment in foreign exchange. Since the possible need to pay for food imports is a serious obstacle to industrialization (see point 3 of this Section), the Government will do everything to develop agricultural production. On the other hand, these efforts from above will be accompanied by equivalent efforts from below, that is to say from the mass of producers. If the latter restrict the sale of their products, they can also only buy a correspondingly reduced quantity of industrial products. Such a regression of living standards, which up to now have been advancing all too

slowly, must stimulate or even force the peasants to produce more. In this situation, as already set out briefly elsewhere, new production methods assume importance despite the fact that, because of the conservative attitude of the peasants, they have so far found little welcome. The Government, too, has an interest in the internal economic circuit becoming wider, since industrialization will not advance without its main stimulus, i.e. demand from the 70 to 75% of rural population. All in all, it is probable that the combined efforts of Government and producers will achieve a considerable increase in agricultural output. In this connection the improvement of the food of the rural population will probably not receive priority among development objectives. This will not be the case only when it is a question of using surpluses: the Government and the peasants should equally endeavour to place on the market the largest possible share of the country's increased agricultural production.

3. The increase in domestic agricultural production implies a balanced and systematically executed development programme which provides, first for implementing those schemes which are easiest and can be carried out at least expense, and then for more difficult and costly projects. To achieve these things requires time, capital and manpower.

4. A notable proportion of the investments in irrigation projects is for manual work. It may be supposed that in the projects to be carried out first the major part of the investments, which are relatively small, will be for such work, and that as costs increase the share of mechanical labour will also rise.

5. Already an important fraction of the population shown in the census as working in agriculture has little or no productive activity for two-thirds of the year, and sometimes even the whole year. FAO considers that there are two million agricultural workers in concealed unemployment. In view of the growth in the proportion of persons of working age up to 1975 (see Table 2 and the remarks above) and also of the need to find work on the land for the major part of the population increases (see Table 3 and the remarks above), it is to be expected that concealed unemployment in agriculture will increase notably. The question of whether and how this manpower could be used to exploit agricultural production potential is of considerable importance for the country's future development.

6. If a distinction is drawn between national and foreign investments, manpower costs will be covered in the main by national capital. A notable percentage of the costs of providing machines also falls under the national head, and the same largely applies to such materials as cement, chemical fertilizers produced in the country, pesticides, some motor fuel and, finally, administration, programming, etc. However, as the irrigation schemes get more complicated and production systems work more intensely, a growing percentage of costs, which will then also be higher per unit of area, will be for imports of machinery and spare parts.

7. In this situation, it is important for Turkey to make a very sober assessment of the costs of agricultural promotion measures. The reference here is primarily to costs in foreign currency and not to national costs. Using the example of a large irrigation project, Table 20 shows the possible relation between foreign currency expenditure and foreign currency receipts stemming from increased production thanks to irrigation.

If the orders of magnitude in Table 20 are close to reality, there will be a favourable ratio between the foreign currency saving from producing, on the irrigated land, the approximate 5 million extra tons of cereals needed in 1975 and the foreign currency requirements for the irrigation of this land, which then produces roughly the equivalent annual quantity of cereals. This is also true if current foreign exchange outlay needed to obtain this extra production is added. The same may be said as regards the ratio between total investments of about 12 000 million Turkish pounds and the value of extra production, estimated at between 3 400 and 4 000 million Turkish pounds annually.

The time factor does not appear in such a favourable light. The execution of such a large programme is a long-term business. During the initial and still slow increase in production, surpluses could do urgent service in covering any deficit then to be expected.

In the following section we will examine the question of whether and how far judicious use can also be made of the surpluses as capital participation in these agricultural development programmes.

TABLE 20

Comparison between costs and production surpluses with complementary irrigation

1) Presumed expenditure for irrigation

Area	Turkish pounds per ha	Total costs			
		in million Turkish pounds	of which: foreign currency		
			in %	in million Turkish pounds	in $ million (3)
First million hectares	2 500	2 500	20	500	55
Second million hectares	3 500	3 500	25	875	97
Third million hectares	6 000	6 000	25	1 500	167
		12 000		2 875	319

2) Value in foreign currency of the extra annual production thanks to irrigation based on a yield increased by 2 tons of cereal value per ha

Area	Extra annual production	Value in foreign currency (2)	
		in million Turkish pounds	in $ million
One million hectares	2 million t (2)	1 260	140
Two million hectares	4 million t	2 520	280
Three million hectares	6 million t	3 780	420

(1) Official parity $1 = 9 Turkish pounds.
(2) Assuming a price of $70 per ton.

IV. *UTILIZATION OF SURPLUSES TO STIMULATE GENERAL DEVELOPMENT*

We will now examine briefly the complicated question of whether and how far surpluses can be made to serve general development once the food gap has been reduced.

Co-ordinated development of industry, agriculture and infrastructure

In Turkey the probelm is to develop the economy as a whole, i.e. industry, agriculture and all sectors of the infrastructure. If the potential production reserves were less in agriculture and more in rich petroleum, coal, mineral and other deposits which would make it possible to develop other branches of production to a point where available manpower could be used more fruitfully and profitably than in agriculture, an economic structure based mainly on these potentialities would be conceivable. However, the situation is different. Possibilities of industrial development due to particularly favourable natural conditions are slight. The general development of the economy nevertheless demands the creation of numerous industries to serve the country's various needs. Without further industrial development, it is impossible to imagine a favourable trend of the economy, with improved living standards as its final objective. The building up of the requisite industries, which is in the foreground of Turkish development programmes, necessarily means importing machines, industrial plant and industrial raw materials. The breakdown of imports shows that their centre of gravity is moving more and more in this direction.

TABLE 21

Breakdown of imports 1934/1938, 1950, 1955, 1959

in % of the value of all imports

Year	Investment goods	Consumer goods	Raw materials
1934/1938	40,6	26,4	33,0
1950	46,0	20,6	33,4
1955	54,3	14,6	31,1
1959	45,6	10,2	44,2
1960 January-August	52,5	9,7	37,8

Source: Monthly Bulletin of Statistics, No. 86, Ankara, March 1961, p. 95.

Only a small fraction of the labour force, whose total numbers are already considerable and constantly growing, can be employed in industrial development. In the immediate future at least, the major part of the population increase can only be absorbed by agriculture (see Table 15).

Although these data already confirm the importance of industrialization and, equally, of intensive agricultural promotion, the latter appears quite essential from the point of view of industrial expansion when we consider the external trade situation. The trading account, which had been fairly well balanced in former times and even showed a high surplus during the war, has run into structural deficit during the recent years of intense development of industry and transport.

TABLE 22

External trade balance 1934/38, 1943 47, 1956, 1957, 1958, 1959, 1960

in '000 Turkish pounds

Year	Exports	Imports	Balance +
1934/1938	117 734	106 472	11 262
1943/1947	353 189	280 618	72 571
1956	853 972	1 140 553	— 286 581
1957	966 608	1 111 951	— 145 343
1958	692 358	882 275	— 189 917
1959	990 636	1 315 950	— 325 314
1960	1 721 168	2 213 749	— 492 581

Source: Monthly Bulletin of Statistics, No. 85, Ankara, March 1961.

For ten years export receipts have on the average been covering only 75% of the growing imports. The country has had the benefit of large-scale aid and numerous loans, and for many years imports have been kept in check. The establishment of national industries has largely made it possible to substitute home production for imports, particularly of consumer goods, and also to some extent of foreign capital goods. But the industrial build-up is only just beginning, and we may expect that it will be intensified. Other important investments inevitably entailing imports are therefore necessary, and it is not yet possible to foresee when these imports will be completely met by export receipts. Foreign capital is necessary.

Commercial agricultural imports as an obstacle to industrial build-up and as a stimulus to agricultural production

Faced with the crucial problem in the development of the Turkish economy, i.e. the scarcity of the foreign exchange needed to build up industry, the question must be asked whether and how imported foodstuffs and farm surpluses could help to remedy the shortage of foreign currency in the interest of general economic development.

As long as farm imports in the form of surpluses supplied at world market prices from EEC or other regions compete with imports of capital and production goods needed to

build up industry, all Turkish Governments will come down in favour of giving priority to industrial growth and the imports which this requires and will endeavour to produce at home what is needed to feed the growing population. It is impossible to satisfy both sets of import requirements. With the limited resources available, only one solution is possible, and it is clear which sectors must obtain priority.

If national production is inadequate and imports of foodstuffs only possible to the detriment of the industrial build-up, it may be imagined that nourishment corresponding to physiological needs will first be provided outside agriculture, that is to say for professions and sectors of the population which are playing an active part in the development process and which must be able to furnish their utmost thanks to good food. This means industrial workers and a notable part of the city population. The total percentage of the population which will thus be favoured because of the need to secure high yields, those consumers "privileged in the interest of development" is doubtless lower than the percentage of city dwellers in the total population. Today it is perhaps 15%, or 4 millions, and in 1975 it may well be 20%, or 8 millions. If food shortage imposes the optimum and most efficient use of imported foodstuffs, the supply to the rest of the non-farming population of foods rich in calories or of high physiological value must come second to other economic development requirements.

If production, in particular of cereals, remains below the requirements to cover minimum needs, it will be chiefly necessary to import bread grains to feed a privileged section of the population irrespective of the prices and conditions laid down. In fact, in such a situation, when requirements cannot be covered by home production, only the most economic way can be considered, even if this means to some extent neglecting physiological imperatives, for instance those adequate protein supplies which are provided in full measure by animal protein. This being so, it is unlikely that it will be possible to import higher value foodstuffs, such as products based on meat and milk. There is no outlet for sugar, since home production is more than adequate. Cereals are the only surplus products which could perhaps be used for direct consumption; on the other hand they can hardly be utilized as fodder to obtain food products of animal origin.

As will be explained below, such critical situations would set in motion powerful stimulants and more intensive efforts for the complete utilization of agricultural potential in order rapidly to balance the penury of foodstuffs by increased farm production and to liberate the scarce foreign exchange for industrial development. In the long run, therefore, we cannot expect food imports against payment.

Surpluses not payable in foreign exchange help over food shortages, but hamper agricultural development

On the other hand, if cereals were offered in the form of non-reimbursable aid or long-term loans, such an offer could have the effect of easing pressure to intensify and speed up agricultural development programmes. In this way, through neglect of agriculture, it could lead to a structural and growing import requirement. If such aid were granted in addition to other loans made available for the import of the means of production needed to develop industry and on the condition that it is used only to buy cereals, this effect could be further intensified. Such a situation is conceivable if a surplus country granting aid was aiming at reducing its own excess stocks or even giving priority to this purpose. The free gift of surpluses by the United States seems hitherto to have something of this sort about it. If those concerned could chose freely between aid in the form of grain and in the form of industrial investment goods, it is evident that they would prefer the latter.

Use of surpluses in accordance with a rational multi-purpose programme

Satisfactory development of the Turkish economy is only conceivable if, while ensuring the maximum possible self-sufficiency in food and, as far as feasible, larger exports of farm products, national industrial production for home use and export is developed strongly in all fields in the light of the conditions proper to the country. Utilization of the surpluses following an appropriate programme can make an essential contribution here. The first precondition is that even when surpluses are used, no effort is spared to step up agricultural production.

No vigorous increase in industrial and agricultural production is possible unless internal and external investments are much higher than hitherto. Failing adequate export receipts, investments to be paid for in foreign exchange can only be financed through loans abroad and other help. The foreign exchange needed for these purposes can never be covered by supplies of farm surpluses, even as gifts. However, although it is vital to import foodstuffs, imports of surplus farm products free of charge or payable at long term make free for industrial investments foreign exchange not required to purchase such products.

The possibility of compensating for the inadequate formation of home capital for investment on the spot is quite another matter. In so far as home food production does not completely cover requirements, surpluses from EEC and other regions can make a useful contribution, on condition that they are either offered free of charge or on a long-term and low-interest loan basis for sale on the national market and the counterpart funds thus constituted used for development. In this way, at the same time as they fill a food gap, the surpluses will be transformed into national capital and made available for investment. We will here do no more than pose, without attempting to answer, the question of whether such funds are actually necessary to complete the formation of national capital, i.e. whether it is really impossible to increase the voluntary or compulsory formation of the latter, or whether, in view of the degree of development already reached, this capital contribution does not release an excessive share of the national income for consumption to the detriment of capital formation.

In this connection, counterpart funds are sometimes used in Turkey to stop gaps in the national budget instead of financing supplementary development projects. The effect is similar to that of inadequate capital formation. Moreover, there is a grave risk, with insufficient formation of national capital and the unproductive use of counterpart funds, that credits supplied in the form of surpluses may end by being tantamount to subsidies without security.

Generally speaking, in any dynamic development, capital is such a scarce factor that it is very desirable to be able to call on supplementary amounts of it even if the country spares no effort to accumulate internal capital. Turkey is no exception to this rule.

All development projects which have to be financed from internal capital can be encouraged by using counterpart funds obtained from the utilization of surpluses. At the same time, without using foreign exchange, or by using it to a minimum, but by employing the desirable high proportion of indigenous labour, earth-moving work, canals, irrigation and drainage can be financed (possibly also dams, as shown by the example quoted above of the exploitation of 3 million hectares of land suitable for irrigation). The share of the national contribution to many projects to promote education, schools and scholarships is perhaps still higher. In each project, even when it is a question of a plant built with machines from abroad, a certain part of the expenditure covered by national capital consists of wage charges, some of which go in turn to feeding to workers. It is not essential that in each specific project the share of expenditure represented in the last analysis by outlay for food which can be covered by using surpluses and the share of counterpart funds made available for this purpose should tally. In the aggregate, however, the value of the contributions from counterpart funds to finance development schemes and the amounts obtained by the sale of surpluses should balance out.

V. *EXPERIENCE WITH IMPORTS UNDER PUBLIC LAW 480*

The lessons learned in importing cereals and other foodstuffs from the United States under Public Law 480 can also serve in the possible use of EEC surpluses. The main theoretical considerations on the usefulness and effects of deliveries of farm surpluses for the Turkish economy have been tested in practice here.

It was a happy coincidence that the problem of growing cereals requirements in Turkey to feed an ever-increasing population should have arisen at the same time as the problems of using grain surpluses in the United States. Practically all the cereals imported in recent years (see Table 14) have been supplied by the United States under Public Law 480. As soon as home production of cereals ceased to cover requirements, the Turkish Government opened discussions with the responsible departments in the United States, with the aim of covering by such deliveries the requirements to be expected on the basis of forecasts. The United States was and still is prepared to furnish these supplies. If, in the deficit years, Turkey had been obliged to purchase the cereals she needed on the world market, this would have further aggravated foreign exchange difficulties or curbed national development. A smallish fraction of American supplies was furnished as a gift for various purposes and another part against payment in national currency, the counterpart of which the United States spent in Turkey on embassy buildings and other purposes. The bulk of the supplies was furnished as a loan, which means that the Turkish Government, which is only committed to pay for the cereals when the loan falls due, sells them at short term in the country and uses the counter-value, in agreement with the United States, for objectives connected with Turkey's economic development.

In addition to wheat and rice, already mentioned above, imports to Turkey under this law have included milk products (powdered milk, mainly as a gift to improve children's feeding) and poultry. Imports of non-durum wheat on credit have made it possible to export durum wheat. This exchange, carried out under the conditions mentioned, procured welcome foreign exchange

receipts. On the American side it is considered that further supplies of cereals under Public Law 480 could result in the development of a Turkish cattle and meat exporting industry. Finally, in recent years, considerable quantities of vegetable oil have been imported into the country. This has reduced the scarcity of fats and made it possible to export olive oil, which is considerably dearer, thus bringing new foreign exchange into the country. Requests to the United States in recent years, particularly for supplies of oil, but also for various other products, were not exclusively determined by requirements but also by the desire of the Turkish Government to reinforce the counterpart funds for use in attaining the most diverse objectives of government policy. United States efforts to reduce surplus stocks were also a decisive factor. The urgency of the requirements was therefore not the determining factor in the supply of these surpluses, either on the Turkish or on the United States side. The principle of giving or receiving surpluses only if the greatest possible efforts are made both to increase agricultural production and to accumulate national capital, while using the counterpart funds exclusively for carrying out new productive development schemes, does not always seem to have prevailed.

Supplies in the framework of Public Law 480 are made as a complement to other development aid, which is limited. The Turkish Government is not free to ask for other aid from the United States in place of surplus goods supplied under Public Law 480. In these circumstances, supplies under that Law, even if, like poultry, they do not correspond to absolute and very urgent needs, are welcome. If the Turkish Government were free to choose the type and utilization of all development aids granted – including American deliveries under Public Law 480 – it would probably have done everything in its power, as explained above, to buy, where possible, means of production and raw materials serving the development of the economy and not cereals or foodstuffs. The pressure for complete use of agricultural production potential would then have become greater. Except in the event of disastrous crop failures, it would be unreasonable to expect any other attitude.

In Turkey it was expected in the post-war years and up to 1955/56 that the development of areas under cereals, partly with the aid of 40 000 imported tractors, would make the country a structural cereals exporter or at least enable it to cover internal requirements. There was but little ground for this expectation. It was already known before the 1959 FAO report that growing consumption could no longer be met by bringing more steppe under the plough, and that only the promotion of productivity – a very painful, wearisome and costly process – could lead to the success desired. Knowing this, the job should have been tackled long ago. It is conceivable that confidence of being able to overcome and balance out any deficit situation due to inadequate harvests by imports in the form of gifts or long-term loans of cereals gladly supplied by the United States, hobbled initiative in this direction and made it possible to put off the necessary decisions. This is even more understandable if account is taken of the other advantages offered by the American surpluses – immediate inflow of foreign currency, for instance through the "exchange" of durum wheat for surplus soft wheat, or through the equally lucrative bartering of olive oil for cottonseed oil; availability of counterpart funds which could be put to various practical uses, including the covering of budget deficits; easing of the compulsion to press forward with the formation of national capital or the collection of taxes – all facilities happily complementary to each other.

Aids granted under Public Law 480 are considered less as commercial purchases to be evaluated at world market prices than as deliveries payable in the long term, sometimes even in national currency, and in respect of which it may even be hoped that the United States will grant further facilities for later settlement. Price and transport conditions are thus not of prime importance. On the other hand, it is public knowledge that the United States are in any case obliged to make use of their surpluses in order to keep their own markets stable. This fact strengthens Turkey's position when it comes to negotiating on the conditions laid down by Public Law 480, but does not always make for the optimum development of the country.

It may be supposed that the readiness with which the United States agreed to supply surplus cereals under Public Law 480 on the conditions described above is partly responsible for the fact that the launching and pursuit of large-scale projects for the systematic increase of agricultural production has not been tackled with the same drive as would have been forthcoming if cereals had had to be imported against foreign exchange, or if the alternative had been offered under the United States aid programme of importing either cereals or means of production to develop industry.

On the other hand, there is no doubt that the import of surplus cereals has already made it possible on more than one occasion to cope with acute crises.

VI. *CONCLUSIONS TO BE DRAWN CONCERNING THE POSSIBLE UTILIZATION OF EEC SURPLUSES IN TURKEY*

The various aspects of the use of EEC farm surpluses in Turkey may be summed up as follows:

1. In the last three decades, agricultural output has increased to the point that it is adequate, if cereals are left out of account, to ensure better nourishment for a population which has doubled in numbers. However, in recent years it has been necessary to import 500 000 and, most recently, more than 1 million tons of cereals annually. Supply, which today is still largely based on direct consumption of cereals, is adequate in carbohydrates, i.e. in calories, but hardly so in protein, particularly of animal origin.

2. If present demographic growth continues, the population, which is at present 28 millions, should reach 40 millions in 1975. Standards of living, consumption and purchasing power will rise. The non-agricultural sector of the population will expand a little. The improved level of nutrition will lead to increased consumption of cereals, meat, eggs, milk and milk products equivalent to about 70 to 80 million grain units, of which scarcely 20 million represent direct consumption of cereals, and the rest fodder requirements, only partially cereals, for livestock conversion.

3. In the long run, home production could suffice to cover all requirements of the principal food products if a vast overall programme is applied to this end. So far, cereals supplies remain inadequate. Initially, the deficit will probably continue to increase.

4. If Turkey wishes to improve its economy, it will endeavour to develop industrialization and infrastructure in order to be able to supply the population with essential goods and services of national origin. For this, it needs foreign capital goods and raw materials on a vast scale. It is hardly probable that even the export of special agricultural products and mineral ores, and services like tourism, will earn sufficient foreign exchange to cover these import needs. Any payment in excess of what is earned under these heads made for imported food which could be produced in Turkey cramps and limits the build-up of industry and thus hampers economic expansion.

5. The volume of capital goods imports is one of the chief bottlenecks to industrial advance. On the other hand, the development of agricultural production, particularly on irrigated land, depends less on imports of means of production; it is mainly conditioned by the profitable utilization of agricultural manpower so far only partially employed and by the increase to be expected in the labour force. Only a small fraction of the latter can find profitable employment outside agriculture; the major part will have to remain on the land. The extent to which agricultural output can be increased materially depends on the possibility of turning this extra manpower to productive use in stepping up farm output and implementing other development projects.

6. The efforts made so far to put the agricultural potential to full use are insufficient. High priority must be given to efforts in this direction, since they are the basis of industrialization and an integral part of the whole range of objectives to be attained.

7. It is difficult to forecast whether and how far the increase in farm production will eventually keep pace with growing requirements. Various considerations justify evaluating the share of the expected extra cereal requirements which may have to be covered by imports (1) at an annual average of 1.5 to 2 million tons of cereals, or one third of the total. This opinion is based on the expectation that in 1975 about 65% of the rural population will still be largely self-sufficient. It would be incompatible with the structure of autarkic agriculture to increase consumption by purchases additional to production on the farm. On the other hand, a large percentage of fodder requirements expressed as grain units can be produced with less effort and at less cost in the form of tubers, lucerne and green fodder than as cereals.

8. If Turkey were obliged, as a result of disastrous shortages or the structural insufficiency of agricultural production, to import foodstuffs payable in foreign currency, this would slow down industrial development and would probably lead to greater and lasting expansion of agriculture.

9. It should not therefore be expected that Turkey will become a regular purchaser of farm surpluses from EEC, the United States or other regions against payment in foreign exchange at world market prices. If payment for such surpluses is made at the full price and in foreign currency, structural imports will be far from attaining the level indicated in point 7 above, or might even cease. Only in disaster years would imports be held indispensable even if industrial development were to be strongly curbed because of the resultant outflow of foreign exchange. Efforts are therefore being made to balance out good and bad harvest years by appropriate stocking.

(1) This can vary more or less with good or bad harvests.

10. If it is left to Turkey to receive either external aid – with or without repayment – in the form of farm surpluses or capital goods, we must expect the same drive to develop home agricultural production and thus speed up industrialization as anticipated under point 8 above. Aids in the form of farm surpluses cannot be placed on the same footing as measures in favour of industrial development, such as the supply of machines, plant and raw materials of foreign origin. The latter are impossible without deliveries from abroad, whereas farm surpluses can be replaced by greater home production.

11. Farm surpluses offered in the form of unpaid aid or long-term credits, particularly if these are repayable in national currency, can bridge the food gap until such time as measures to increase production bear full fruit.

12. The possibility of being able to cover any food deficit by importing surpluses without immediate payment in foreign exchange can result in the development of home agricultural production not being pushed ahead with all the drive, power and sacrifices required. If this is the case, such aid is not in the interest of the long-term economic development of Turkey but contributes to retarding the indispensable measures of self-help.

13. As long as the domestic capital available is not adequate to develop industry, infrastructure and agriculture, and cannot be increased sufficiently to permit the speediest possible economic expansion, and as long as agricultural production, even when it has been pushed up, does not cover requirements, the farm surpluses can make an effective contribution to the general economic build-up far in excess of mere food aid. They can effectively supplement inadequate national capital formation and provide further investments. The preconditions are:

a) That the surpluses be provided free of charge or by means of long-term credits,

b) That they be sold within the country in accordance with the practice hitherto applied to surpluses from the United States, that the receipts go to a counterpart fund, and that the capital thus constituted be of complementary nature, i.e. that everything be done to make use of the possibilities of voluntary or compulsory capital accumulation in the country,

c) That the counterpart funds be used under a development programme for the maximum expansion of the economy solely to make up for the lack of national capital for supplementary investments (in particular for projects requiring a great deal of manpower, such as rural improvement schemes, irrigation, roadbuilding, etc.). These credits should only serve to create new jobs or to cover part of the expenditure on the labour to be employed.

Such supplies of surpluses could sometimes make a particularly important contribution to the development of the economy when they are linked with deliveries of investment goods from abroad.

14. As the economy develops, with consequent increase in agricultural production, the share of farm surpluses in the total promotion of the economy by foreign aid should decline. It is in the interest of the Turkish authorities, in their economic programmes, to endeavour as soon as possible completely to replace this share by home production and thus be able to reserve all external aid for industrial development.

15. True, the presumed extra food requirements concern not only cereals but also meat, eggs and other products. For this reason, there is a need for different sorts of fodder, among which grain occupies a leading place. Without any supplementary cost to the national economy Turkey can herself turn out the conversion products from the imported cereals. Quite apart from the more complicated procedure for the supply of farm surpluses in the form of conversion products, the tendency will therefore be to seek, in the place of the necessary conversion products, deliveries in the form of surpluses, of the raw material – grain – needed to produce them.

16. Sugar production in Turkey is at present in excess of requirements. Present capacity is even sufficient to cover 1975 requirements, and sugar surpluses could therefore not be put to use. Thus, it is solely for cereals that there exists a prospect of utilizing such surpluses within the limits of the quantities and conditions mentioned above.

17. For special uses, i.e. as extra food for children and expectant mothers, supplies of powdered skim milk are desirable. The proper use of such milk depends on the existence of appropriate institutions. Distribution must more often than not be free of charge. It is therefore essentially different from general operations to provide extra food while making productive use of the counterpart funds.

18. Since it is not only EEC but also the United States, at least, which is interested in the supply of farm surpluses to Turkey, it would be advisable to come to an arrangement as regards the principles of such supplies and their judicious use in overall development.

ANNEX No. 7

Regional Survey

INDIA

by
Professor H. Wilbrandt
Institut für Ausländische Landwirtschaft
der Technischen Universität
Berlin

CONTENTS

I. *STRUCTURE OF CONSUMPTION, REQUIREMENTS AND PRODUCTION*

Food requirements and their trend result from the numbers and growth of population and from per capita consumption and its development, which depend, on the one hand, on natural conditions but even more on income per head of population.

Population growth

Since 1901 there have been population censuses every ten years.

TABLE 1

Population in the territory of the present Indian Union (1891-1961)

Year of census	Population in millions	Growth in %
1891	235,9	—
1901	235,5	0
1911	249,0	+ 6
1921	248,1	— 1
1931	275,5	+ 11
1941	312,8	+ 13
1951	356,9	+ 14
1961	438,0 (a)	+ 23

Source Census of India, 1951, Part I A, Report, p. 122.
(a) provisional figure.

During the first three decades, between 1891 and 1921, India's population grew very slowly. It then gradually speeded up so that it almost doubled in 70 years. It is probable that the peak growth rate has not yet been reached.

This vigorous upsurge is accounted for by the reduction of the death rate thanks to the progress of medicine and hygiene and by a birth rate which has remained unchanged or has declined only slightly. Population statistics are partly based on estimates.

TABLE 2

Birth and death rates from 1881-91 to 1956-61 (1)

per 1000 yearly

Year	Birth rate	Death rate
1881 - 1891	48,9	41,3
1891 - 1901	45,8	44,4
1901 - 1911	49,2	42,6
1911 - 1921	48,1	47,2
1921 - 1931	46,4	36,3
1931 - 1941	45,2	31,2
1951 - 1956 (2)	41,7	29,9
1956 - 1961	39,6	21,6

Source: Kingsley Davis: The Population of India and Pakistan, p. 85.
(1) Up to 1941, these figures refer to India before partition, and from 1941 onwards to the Indian Union.
(2) *Source:* Third Five Year Plan

Whereas the birth rate has shown only a slow decline which is, however, worthy of note (10% over the last 60 years), the death rate has been reduced by somewhat more than 50%. In the same way, infantile mortality also declined from 14.6% in 1947 to 9.8% in 1956. The gap between the birth rate and the death rate is today almost three times what it was 70 or 80 years ago.

India has thus entered on the phase characteristic of developing countries in which population increase takes place by leaps and bounds. It will only be able to master this phase by rapid economic progress and the development of education. In the industrialized western countries, and also in Japan, it was only from the time when rural population declined appreciably in relation to total population that the birth rate fell – as a result of high living standards – sufficiently to ensure that the growth of population would be no more than moderate. Since India's present population is more than 80% rural – this figure includes both farming population and other categories – the country is still very far from this stage of development. In its Five Year Plans the Government has provided for increasing credits

(1) In preparing this regional study, the author was aided by M. W. Kock, M. E.G. Jentzsch and M. H. Meliezck.

to adapt the birth rate to the reduced death rate (1). Because of the difficulties of effective birth-control propaganda throughout the country, no tangible effect is yet to be seen.

Occupational breakdown by sectors

The following breakdown by occupations has been given for 1950/51:

TABLE 3

Occupational breakdown of the working population (1950/51) (1)

Economic sector	Population	
	in millions	in % of the total
Agriculture, forestry, fisheries	103,6	72,3
Mining and industry	15,3	10,7
Trade, transport, telecommunications	11,1	7,7
Administration, other services	13,3	9,3
Total	143,3	100,0

Source: Report of the National Income Committee, Delhi 1954.
(1) More recent figures on occupational breakdown are not available, but it is hardly probable that the situation has changed greatly in the meantime.

The high proportion of persons engaged in agriculture shows the weak impact of the present industrialization of the country on the structure of employment. This percentage is even greater than in 1900, and has only begun to decline in the last few years.

TABLE 4

Share of agricultural population in total population (1)

Year	Percentage of total population	Year	Percentage of total population
1872	65,00	1921	72,98
1891	61,06	1931	67,00
1901	66,50	1941	75,00
1911	72,20	1951	70,00

Source: B. Mamoria. Agricultural Problems of India; the calculation is based on the Census of India. 1901-51. p. 36.
(1) These figures, up to 1941, concern India before partition and, for 1951, the Indian Union. Since the separated territories have a similar structure, it is hardly likely that the partition provoked any material changes.

It is estimated that the chief causes of the growth in the numbers of agricultural population observed up to 1941 are the decline of formerly developed home industries following imports of industrial products during the colonial period, and the rapid increase of population during these years unaccompanied by any corresponding expansion of the industrial sector.

According to the data of the Labour Enquiry, tenant farmers make up one third of the families registered as agricultural labour. According to the census figures, their number is not so high. Because they overlap in many places, it is impossible to make a clear distinction between the different categories. Leaving out of account those which do not own land, two thirds of the households work less than 2 arable hectares. The other farms are broken down into categories varying between 2 and 10 hectares. Only 4% of the households farming one third of the agricultural area have more than 10 hectares. Nevertheless, two hectares situated in a region where natural conditions are favourable and yielding several crops annually can procure higher incomes than 10 hectares of poor soil in a drier region. This is why the dimensions of a farm cannot be taken as a yardstick for directly deducing its income.

National income

In the first ten years following independence, national income progressed only slightly.

The nominal rate of increase, which is 29% (25% at constant prices) during the nine years, corresponds to the rate of increase of national revenue in the first stage of industrialization, which is often low. Although industrial production increased 41%, or nearly twice as much as agricultural production, it accounts for less than one fifth of national income. The share of agriculture (about 50%) continues to be very considerable; it represents the work done by 70% of the population. The average per capita income, which is extremely low – only 289 rupees or 61 dollars – and which, calculated for a nine year period at constant prices, has not increased by more than 12%, is understandable if one considers the relatively small contribution made by this important percentage of the population. Statistics show the per capita income of the farming population as about 40% of that of the remaining population.

(1) Expenditure under the Family Planning Programme, which is mainly for the establishment of advisory centres and clinics, has risen from 7 million rupees under the First Plan to 30 million under the Second. 250 million rupees have been provided for in the Third Plan. See Third Five Year Plan, A Draft Outline, Delhi 1960, p. 109.

TABLE 5

Trend of internal income by economic sectors

Economic sector	Income				
	1948/49		1957/58 (1)		
	in '000 million rupees	in %	in '000 million rupees	in %	Index (1948/49 = 100)
Agriculture, forestry, fisheries	42,5	49,0	53,3	46,9	126
Mining, industry	14,8	17,1	20,9	18,4	141
Trade, transport	16,0	18,4	20,2	17,8	126
Other services	13,4	15,5	19,2	16,9	143
Total national income	86,5 (2)	100,0	113,6	100,0	129
National income at 1948 49 prices	86,5	—	108,3	—	125
Nominal per capita income in rupees	246,9	—	289,1	—	112
At 1948/49 prices in rupees	246,9	—	275,6	—	112

Source: India 1960, A Reference Annual, Govt. of India, 1960, p. 184.
(1) Provisional results.
(2) Add 200 million rupees (income from abroad).

Trend of consumption, production and imports

Consumer habits are determined by low income and the possibilities of production existing in the various regions. The size of the country and the inadequate transport network make trade difficult and costly. Only a small part of the foodstuffs, particularly the cereals produced in the country, are transported over long distances. In the dry regions of Central India, millet is the staple food, whereas in the Punjab, the principal wheat growing area in the Northeast, wheat is mainly consumed. In all regions where rain is plentiful and it is possible to grow rice, as in the coastal areas of southern India, and the provinces in the Northeast, rice is the staple food. But plant foods constitute a high proportion of all dietaries (see Table II).

Per capita consumption can only be calculated approximately. The available statistics are based on estimates, and the inquiries delimited by region. It would be desirable to break down income into shares in kind and money shares in order to appraise the trend of consumption, which is not always the same among consumers living in conditions of self-supply and those who buy their food. For lack of documentary material, we are reduced to conjecture.

Food intake, at about 2000 calories per person per day, is low. According to the estimates of the Food Enquiry Commission in 1945, 30% of the population do not get enough food in normal times, and in most cases the composition of their food is insufficiently varied. The chief elements lacking are fats and foods containing vitamins A and C (1). The low protein content, particularly of animal protein, is as important a factor as the small number of calories. Although it is not improbable that actual consumption may be higher, there is no documentary material from which it could be concluded that the consumption figures shown in Table II have materially changed.

The low share of foodstuffs of animal origin is accounted for by the level of production, low return from work and religious and traditional taboos. The general rule which prevails in many countries and according to which rising living standards automatically increase the share of animal food, as can be seen inter alia in Japan and the Federal Republic of Germany, applies to India only with certain provisos and concerns only eggs, milk, cheese and fish. The Hindus eat no beef and the Muslims, who are much fewer in number, no pork. The sector of urban population which does not observe the taboos and has sufficient income for the extra expenditure on animal products is small (only 20%) and cannot influence the general situation to any material extent.

We will come back later and in more detail to the various branches of production (see Table III).

(1) R.N. Mitra, Economics of Nutritional Problems in India, in: The Indian Agricultural Economics, No. 3, Volume XX, Sept. 1960, p. 15 et seq.

No adequate statistics are available on the extent and trends of meat consumption. Slaughterings of beef cattle and buffalo in municipal abattoirs declined (1) from 4.8 million units in 1938 to 2.5 million in 1948. This is the result of the exodus, after the partition of India, of a great number of the Muslims who consume beef. Meanwhile, a law has been issued forbidding the slaughter of cattle. It is hardly possible to expect any noteworthy increase in meat consumption in the near future. We have no documentation on the amount of pigmeat consumed.

Consumption of poultrymeat and eggs is low but worthy of note; these products do not come from animals considered sacred or impure. So far consumption has not been recorded statistically. The total number of poultry shown rose from 73.5 millions in 1950/51 to 94.7 millions in 1956/57.

Consumption of fish per capita is low, and the increase in fish production seems to be offset by the growth of population. According to official production figures in recent years, landings rose in the five years 1953-57 from 0.8 to 1.1 million tons, an increase of 38% (2). The fishing fleet at present building permits the hope that deliveries of fish will increase, and this is important in the coastal cities. National fisheries supply nearly a third of total production. The Third Plan will extend the area of the fishing waters, which was 240 000 hectares in 1958/59, by adding 81 000 hectares. Thus, total production of fish, which was 1.4 million tons at the end of the Second Plan, will rise to 1.8 million tons in 1965/66, an increase of 30% (2). In view of the low consumption of meat, fish production, which amounts to about 3 kg per head of population, assumes some importance, particularly as regards protein content.

Consumption of milk and milk products is also low. Although India, with 203 million head of cattle in 1956 (3), had twice as many animals per inhabitant as EEC, cattle-raising makes only a poor contribution to human food supplies because methods are primitive and fodder insufficient for an excessive cattle population. But since the breeding of cattle is almost the only source of animal protein, its importance is nevertheless considerable. One third of the animal population is made up of draft animals, and more than 50 million stray cows have been counted. The contribution of beef-cattle breeding to agricultural production is only 16%, whereas livestock production accounts for about two-thirds of agricultural output in EEC. Cattle-raising in India is not, as in the western countries, an organic, integrated branch of farming. The use of the existing cattle is generally uneconomical, and milking capacity per cow was estimated at only 220 litres in 1956. For the period between 1948/52 and 1956 a 13% increase in milk production to 19 700 million kg is reported, while butter and ghee (4) rose 12% to 599 000 tons (5). These figures, arrived at by adding together regional estimates, indicate a slight upward trend of production.

The beginnings of an increase in production can be observed in the dairy farms recently created by the large cities and in the change-over to the breeding of milk-producing buffalo strains. However, from the point of view of quantity, there is hardly any difference. The problems of processing, refrigeration and transport in the hot climate, and also inadequate fodder, militate against any rapid increase in production in the next few years.

Butter and ghee, obtained mainly from buffalo milk, which is richer in fats, account for almost 23% of the production of fats and oils. However strongly the increase in production may speed up as the result of improvements – the effects of which are slow – in dairy farms situated near the cities, annual production, which is at present between 1 and 1.5 kg per person, is insignificant.

The production of sugar-cane increased by 42% during the period between 1948/52 and 1959/60 and amounts to 76.2 million tons, corresponding to nearly 7.5 million tons of refined sugar equivalent (6) (see Table III). This process has led since 1955 to a decline in sugar imports while per capita consumption has slowly increased. However, at 14 kg per inhabitant it is less than 50% of consumption in the three EEC countries France, the Netherlands and the Federal Republic of Germany. The reasons for this low consumption are to be found in low purchasing power in relation to relatively high sugar prices and to some extent in distribution difficulties. According to the estimates, the production of sugar in 1961, at 3 million tons, will be more than 50% above the 1958/59 sugar harvest, which was 1.92 million tons. Demand has not increased to the same extent. Sugar surpluses which cannot be used in the country, and will amount to

(1) Report on the Marketing of Cattle in India, Ministry of Food and Agriculture, New Delhi 1956, p. 24.
(2) Third Five Year Plan, loc. cit., p. 171.
(3) Abstracts of Agricultural Statistics, India 1957, Ministry of Food and Agriculture, Delhi 1959, p. 105 et seq.
(4) Melted Butter.
(5) FAO Production Year Book 1960, Rome 1960.
(6) The actual production of refined sugar was only 1.92 million tons in 1958/59. The remainder consists, above all, of "gur" (raw sugar obtained by primitive manual labour); a very small part, about 4%, of total production is absorbed as sugar-cane for cattle feed.

approximately 1.4 million tons at the end of 1961, are piling up. Since the Indian price of sugar is almost double the world price, it is very difficult to export (1).

Although per capita intake of fats and vegetable oils has doubled since the pre-war period, consumption of fats per inhabitant is low. By comparison with the EEC countries France, the Netherlands and the Federal Republic, less than one quarter of the amount of vegetable fats consumed in these three countries is consumed in India (see Table II). If an extraction rate of 34% (2) is taken as a basis, we obtain an oil production of 2.7 million tons; about half of this is for human consumption, and the rest for processing in artisan or large-scale industry.

Production of oils (3) processed mainly for food was 1.6 million tons in 1958, or a little less than 4 kg per head. The 24% increase since 1950 has not sufficed to cover the growing needs of the population, and net exports have given way to net imports. The groundnuts required to manufacture "vanaspati", a solid fat which is particularly cheap, show the largest increase.

More than 70% of the calories consumed are in the form of cereals, consisting on the average of more than 50% of rice whose protein content is low. In the typical rice-growing regions, this proportion is particularly high. Inadequate protein intake due to the consumption of cereals with little variety, above all rice, is made up for by relatively high consumption of pulses, which have a high protein content.

According to statistics, a relatively low proportion of the cereals produced (1958/59: 558 888 tons (4)) is used for fodder. These statistics at best concern only probable transactions on the market, while cattle feeding on farms is not included. Rice accounts for about 50%, the various types of millet for 20%, wheat for 10%, and pulses for 10%, of food cereals production (5). The remaining 10% is made up of the spelt types. Only small shifts in production have been noted in recent years.

As a result of differing amounts of rainfall due to the monsoon, the production of food cereals on the territory of the Indian Union since 1945 has fluctuated by more than 10% from year to year.

Until 1952 the level of production was definitely lower than before the war. Growing imports during this period, aimed at balancing supplies for the increasing population, could only partly halt the continual decline in daily rations, which in 1916/20 were estimated at 555 grammes per head and subsequently fell to 385 grammes. According to the available statistics, production increased at the end of the First Five Year Plan, imports declined and per capita supplies improved. In the course of the following years it became clear that, contrary to what had been supposed, this production increase was due less to the initial effects of the agricultural promotion programmes under the First Plan than to good harvests. Nevertheless, in the last five years, increased production has made possible higher per capita consumption despite population growth (1959/60 about 460 grammes). Requirements were, however, not entirely covered by national production, and imports have been considerable in recent years. In 1959 they passed the five-million ton mark (this includes some stockbuilding).

On the whole, a trend for overall agricultural production to increase may be observed. This growth is most rapid and considerable with regard to sugar. There has been a real boom in the production of sugar, which is very lucrative, and the structure of which is favoured by technical methods of cultivation not comparable to those of any other agricultural product. But the output of wheat, rice, millet, pulses, oil-seeds and jute has also increased, whilst that of tea and tobacco has not changed to any material extent.

India is an importing country as regards the chief foodstuffs and an exporting country as regards special products. In recent years agricultural exports have accounted in value for 40 to 50% of total exports. The chief products exported are tea, cotton, and nuts (6) along with tobacco and oil-seeds. Although efforts to step up agricultural exports have been made in the setting of the Five Year Plan, no noteworthy increase was observed on the whole in the years before 1959.

---

(1) See «Neue Zürcher Zeitung», No. 211, 3 August 1961.

(2) Weighted average of oil-seed production 1959/60. Technical Conversion Factors for Agricultural Commodities, FAO, Rome 1960, p. 172 et seq.

(3) The Fats and Oils Economy of India, Foreign Agricultural Service US Dept. of Agriculture 1960, p. 12.

(4) FAO Production Year Book, 1960, p. 253.

(5) The Indian statistics give a total of food grains (cereals and leguminous).

(6) As in the case of the cashew nuts, we are here dealing with nuts imported from Africa and transformed in India, some of which are reexported.

II. *FORECASTS OF REQUIREMENTS UP TO 1976* (1)

Population trend in the agricultural and non-agricultural sectors

All estimates so far advanced concerning the population trend have fallen short of reality, and all the more so the earlier they were made. This same remark may also be valid for future estimates.

Table I recapitulates for the period 1951 to 1961 the figures supplied by various authors whose estimates are closest to the development hitherto. Future evaluations shown in this Table are confined to the rate of growth foreseen by the authors on the basis of the 1961 population census: the figures are consequently 3 to 9% higher than the official estimates and imply that the population may be expected to rise to 490 millions in 1966 and 600 millions in 1976. This is equivalent to an increase of 11.2% during the first five-year period, of 11.1% during the second and of 11.0% during the third. Simply on the basis of the population increase foreseen, and supposing that per capita consumption does not change, it may be deduced that overall requirements will increase by about 25% in the next ten years and by more than 40% in the next 15 years in relation to the present situation.

The Indian Government hopes to be able to reduce the proportion of agricultural population to 60% (2) before the end of the Fifth Plan in 1976. But since, as has been pointed out, population increase has been considerably higher than the figures foreseen in the Five Year Plans, it is hardly possible that it will succeed. In the following we will assume that the proportion of agricultural population will be 65% in 1976. If we suppose a total population of 600 millions, the agricultural population will increase by 84 millions to 390 millions in 1976. Thus it will be even more difficult to provide further productive work for persons engaged in agriculture and who at the present time are active only a few months a year.

As will be pointed out below, it is probable that the birth rate will only fall to a moderate degree in the course of the next ten years following improving living standards and the decline of the proportion of agricultural population. In view of the outlook for increased per capita income, shifts in the structure of occupations, and the general level of education, it is hardly possible to expect any material changes.

All projections of the future development of the population depend on how far efforts to introduce birth control are successful. Despite great endeavours to intensify the birth control programme (3), it is hardly possible to expect any considerable effect on the population as a whole during the coming years.

Desirable consumption from the angle of physiological requirements

The future trend of consumption as a whole results from numbers of population and consumption per head. The Indian food committee (NAC) (4) has recommended a balanced daily ration based on physiological food criteria for an "adult equivalence" (5) which comprises 2 700 calories and an adequate intake of elements known as "protective foods", i.e. foodstuffs with a sufficient content of animal protein, vitamins and mineral substances. Estimates of food consumption are so far contradictory. For this reason the NAC ration has been confronted with the three most important suppositions made in recent times and which are based on estimates or on sample inquiries. The gap between present annual consumption of foodstuffs and the quantities of various products recommended is considerable (see Table V). The deficit in protective food recurs in all categories, the share of these foods in total intake corresponding to only a quarter or a half of the quantities recommended. Sugar supplies are better, but consumption of sugar is low. The actual consumption of vegetables is difficult to appraise, since only small quantities of these products pass through the market. It is probable that quantities consumed are higher than indicated, and it may be supposed that the consumption of fish, meat and eggs is less than a quarter of the recommended daily ration.

The calorie deficit is made up for by a high consumption of cereals, but animal protein requirements are not satisfied and the consequence is an unbalanced diet. According to statistics, the quantities of cereals – so far insignificant – used for livestock feeding even

(1) 1976 has been chosen as the last year of the Fifth Five Year Plan.
(2) Third Five Year Plan, A Draft Outline, Delhi 1960, p. 4.
(3) See footnote (1) p. 146.
(4) Nutritional Advisory Committee of the Indian Council of Medical Research.
(5) The food requirements of all persons, such as women, children and old people, are calculated as a percentage of a working adult and converted into an adult equivalence. Various authors give 85 % as the proportion of the adult equivalence in the population as a whole, and this proportion is the basis of the calculations which follow. It should nevertheless be noted that the differences are much smaller when expressed in calories. The following adult equivalences can be proposed: children under 10: 0.79; adolescents (10 to 20): 1.06; male adults: 1; female adults: 0.875; working men: 1.13; working women: 1; pregnant or lactating women: 1.36; old persons: 0.81.

fell in the post-war years. If cereals used for cattle-feeding on the farm itself and, in all probability, not covered by statistics, are included along with all other forage, harvests from meadow and pasture, etc. which cannot otherwise be used, fodder requirements for conversion to livestock products may have been equivalent so far to about 500 million grain units (1). If it is assumed that about half the requirements in grain units is obtained by calling on agricultural products otherwise unusable and fodder crops or areas under fodder and existing pasture, we obtain a current fodder requirement amounting to 20 million tons of coarse grains. This is 30 times more than the consumption shown in the statistics (2).

Table VI gives the overall consumption which would result from the NAC recommendations for India's present population and for the 1976 population. However, it does not completely bring out the enormous differences between actual and theoretical food requirements. Population growth and the low per capita cereals requirement result in a relatively small rise in overall consumption for direct use. But to this must be added the coarse grain requirements for livestock conversion. If it is considered that consumption per adult will be ten times higher than at present for meat and eggs and will have almost doubled for milk, the result according to Tables VII and VIII, and on the basis of the method described above, is that cereals requirements for direct consumption and the increased consumption of foodstuffs of animal origin will have to go up 60% in order to guarantee to the 600 million inhabitants in 1976 a food level in conformity with the NAC recommendations. If it is assumed that the extra fodder requirements following the higher consumption of products of animal origin recommended can continue to be based in the future on higher yields from areas under forage, that is to say mainly meadowland and pasture, the present requirements for food cereals and coarse grains will have to go up about 50%.

Income and real requirements

This "ideal" calculation has only theoretical value when estimating the actual supplementary food needs which must be expected in 1976 compared with the present day. In practice, the expansion of per capita requirements depends on the trend of living standards and the volume of demand and consumption resulting therefrom. An improved structure of consumption, that is to say a greater intake of high quality foodstuffs (sugar, fats, milk and milk products, beef, veal and pigmeat, poultrymeat, eggs, fruit and vegetables) depends primarily on the trend of per capita income. If it is desired to forecast the actual trend to be expected in consumption per capita, it is necessary first to examine the trend of incomes, not only for the population as a whole but also per head, and then the share in the total increased consumer expenditure which goes on foodstuffs.

The increase in real per capita income between 1949/50 and 1959/60 was 2% (see Table IX). In the course of the Third Five Year Plan an annual increase of 5% in the national income is to be achieved. With the national savings rate of 11% assumed under the Plan (Second Plan: 8%) and an investment rate of 14% of the national income during the Third Five Year Plan, and 16 or 17% under the following ones, the total extra spending on higher individual consumption works out at 4% per year. If population increase were 2%, this would be about 2% per capita. It may be anticipated that by 1973/74 income per inhabitant will be twice that of 1950 (3).

We cannot examine here whether these objectives are attainable or not. On this point, account must again be taken of the increase in population.

In 1961 the actual population was higher by 7 millions, i.e. about 1.7%, than envisaged by the Plan. It is probable that the total at the end of the Third Plan will be about 10 millions more than foreseen. Even if the total estimated income increase is achieved, the actual increase in per capita income will remain below the figures written into the Plan because of the greater population growth.

Moreover, the objectives of the Second Plan in the various fields have not been reached. According to provisional estimates of the 1960/61 harvest, production of cereals for human consumption was 7% below the objective fixed. Investments were covered up to 90%. Exports fell by 7% in value in the years 1952/58 despite the promotion measures adopted. In recent years the trade balance has shown a constant deficit, and only 70% of imports were covered by exports in the period 1952 to 1960. The

(1) One grain unit = 100 kg of grain or equivalent according to the conversion key (see FAO – Technical Conversion Factors).
(2) The consumption of meat, eggs, milk and animal fats as it appears in Table VI has been converted into animal calories. Assuming that it takes 7 vegetable calories to produce one animal calorie, the vegetable calorie requirement has been calculated and then expressed in grain units. To convert output of meat, milk, eggs etc. into the fodder units required to produce them is not an easy matter and the method is not universally accepted. The ratio can vary from 1:3 to 1:20. We will not go into details of the problem here. An average ratio of 1:7 between animal and vegetable calories seems reasonable. This relation is used, for instance, by Cépède and will serve us as a basis in the remainder of this paper.
(3) Third Five Year Plan, loc. cit., p. 44.

consequence is that foreign exchange reserves, particularly in the form of Sterling balances, are almost exhausted.

In view of the fact that the real state of affairs diverges from what was foreseen in the Plan, conclusions as to actual later developments should not be drawn simply on the basis of the objectives fixed in the different Five Year Plans. Future developments are fraught with imponderables which are difficult to foresee. Among these the estimated foreign exchange requirement of $5000 million which has only been partly covered ($2000 million in the Second Plan) is probably not the most serious factor of uncertainty.

In the final result, it must be expected that the income envisaged as available for extra per capita consumption will not completely materialize. The more the general trend of national product and income falls behind the objective fixed, the more it must be expected that the dynamism of the demand and consumption trend will weaken. Moreover, the higher the growth of population with general income continuing to increase to a given extent, the less the rise in per capita income. This is why it is advisable when making forecasts to take into consideration several alternative growth rates for income, and also, where necessary, for population.

As regards the probable per capita food consumption, the rules on income elasticity furnish criteria of appraisal. Nevertheless, the available statistical material is insufficient to serve as a basis for calculations concerning the elasticity in relation to income of spending on food for human consumption. Bhattacharjee (1) has endeavoured to estimate the increase in requirements in cereals purely for human consumption on the basis of future consumer expenditure calculated in this way. After considering a great number of data, he estimates the increase in food cereals requirements at 11.1% in the period 1951/52 to 1955/56. The fact of forecasting only food cereals without taking account of other foodstuffs presupposes that most food has so far consisted of cereals, which is true.

But this prior estimate procedure ignores the possibility of improved and more varied food which could be gradually achieved. Estimates concerning the elasticity of expenditure on food in relation to incomes up to 1971 made by C.M. Palvia (2) give us a fuller picture of the situation. He considers that, on average, the Indian population will probably be able to reach an elasticity of 0.8 of spending on all food in relation to incomes.

Indicators which go further into details of demand for various foodstuffs and which, on the average, are closer to the 0.85 elasticity of spending in relation to rising income, may be obtained from the estimates of the 1952 National Sample Survey, which diverge a little from the figures given by Palvia.

(1) J.P. Bhattacharjee, Forecasts of Cereals Requirements for Human Feeding in the Indian Union, "Agrarwirtschaft", No. 2, February 1960.
(2) Coale and Hoover, Population Growth and Economic Development in Low Income Countries, Princeton N.Y., 1958, p. 125.

TABLE 6

Elasticities in relation to income spent on food, as shown in the National Sample Survey 1952 (1) (2)

	Urban population	Rural population
Food cereals	0,52	0,75
Pulses	0,75	0,76
Meat, eggs, fish	1,03	0,90
Vegetable oils	0,85	0,90
Vegetables	0,75	0,95
Fruit and nuts	1,49	0,97
Milk and milk products	1,35	1,37
Total foodstuffs	0,81	0,85
Share in total expenditure in %		
Food cereals	21,3	41,2
Total foodstuffs and stimulants	55,1	67,3

Source : Coale and Hoover, loc. cit., p. 125.
(1) It is not possible to indicate an (probably differentiated) income elasticity of expenditure on foodstuffs purchased as extras or consumed by the producer.
(2) For the rural population the figures available do not show whether the reference is only to the elasticity of actual spending or whether elasticity in relation to the consumption of the self-supplying agricultural population is included. Here we assume that the latter is the case.

According to this estimate the elasticity of expenditure in relation to incomes is high for all foodstuffs, both absolutely and relatively. Here, as in the high shares of expenditure on food, particularly cereals, the low level of income makes itself felt. For the rural population the level is even lower, elasticity of spending in relation to income is consequently even higher for cereals, and for meat, eggs, fish and fruit, on the other hand, initially lower than among the urban population. This difference corresponds to a poorer economic situation in rural areas often observed at this stage in developing countries. Income elasticity, which in cities is lower for cereals and higher for processed products, already corresponds to somewhat higher incomes. However, the proportion of urban population is so small that it cannot influence total consumption to any appreciable extent.

In accordance with the above it must be expected that the foreseeable increase in incomes will go hand in hand with a growing demand for cereals for direct consumption. This trend also reflects the so far not completely satisfied requirements for basic foods, that is to say grain. Elasticity for the urban population – slower growth of requirements, and then decline in overall food cereals needs, growing consumption of conversion products and of the corresponding coarse grains – points to the general trend to be expected in the future. The NAC standards already envisage an average cereals consumption per adult (176 kg) lower than the present (198 kg). Once this stage has been reached, a negative elasticity for income spent on cereals consumption results.

We have no clues by which to judge whether farmers' own production and the population buying extra foods will increase to the same extent, or whether and how far an elasticity in relation to incomes, which applies mainly to the population in the monetary economy, is also valid, as a "consumption" elasticity dependent on the volume of production, for a rural population which is doing productive work and achieving higher incomes in cash and in kind and in the main supplies its own food. This is an important question since the overwhelming part of the population is in this category. We can only suppose that the reaction is similar here.

An increase in per capita consumption in conformity with the recommendations of NAC would increase fodder requirements for conversion expressed in grain values – irrespective of whether this actually means cereals or other fodder substances including, for instance, pasture which can be used only for rudimentary cattle-raising – from 40 - 50 to 90 - 100 tons. To this must be added the increase in consumption of cereals, fruit, vegetables, sugar, fats, etc. (see Tables 6 and VI). Expressed in monetary terms, this consumption increase, including that of cereals for human food, corresponds to at least a threefold growth of per capita outlay on food. If the income elasticity for expenditure on food were 0.8, only a fourfold increase in per capita income could permit such consumption. The increase in income would have to be more considerable in relation to the foreseeable growth of population, i.e. four or five times higher than today's, in order to permit consumption in conformity with the NAC standards. An increase of this order in the national product and income as a whole is beyond the bounds of all probability.

As against this, the income increase which may be expected in practice will probably not entirely change the present structure of consumption by 1976. Thus, it is probable that the growth of consumption will follow the present structure of consumption, although it will rise because of the growing number of consumers. A volume of consumption based on the structure of consumption up to now calls for a substantially smaller increase in the requirement in terms of cereals values, even if the population increases strongly.

It is true that the growth of national income – in cash and in kind – will result in improved feeding and will reduce the gap between actual consumption and the NAC recommendations, but it is not yet possible to say how far. This is why the forward estimates of 1976 consumption (see Tables 7 and VI) are based on two alternative hypotheses according to which there would be more or less considerable reductions in the recommended consumption of conversion products, vegetable fats and vegetables and a corresponding rise in the consumption of cereals. Per capita consumption multiplied by the population figures expressed in adult equivalence gives a rough estimate of total consumption for 1976. This is composed with 1959/60 consumption.

Under hypothesis I, per capita consumption of oils and vegetable fats and of fish, eggs and meat was reduced by 50%, and that of milk and milk products, fruit and vegetables by 25%. The consumption of cereals and pulses is consequently higher, so that the calories and the protein content are only slightly lower, but the share of animal protein falls nearly 40%. The foreseeable development of incomes precludes the attainment of such a consumption structure.

Under hypothesis II, an even weaker growth of purchasing and consumption power is assumed. This is closer to the foreseeable trend but is probably still too high. Under this hypothesis, the per capita consumption of the categories

TABLE 7

Food consumption in 1959/60 and 1976

in million tons

Item	Average effective consumption	Consumption recommended by NAC	Effective consumption desirable		
			according to NAC	under hypothesis I	under hypothesis II
Cereals	61,3	52,9	74,0	81,6	86,7
Pulses	11,0	11,3	15,8	15,8	15,8
Cereals and Pulses	72,3	64,2	89,8	97,4	102,5
Fruit and vegetables (including nuts)	13,5	48,9	68,3	51,0	40,8
Milk and milk products	22,6	37,6	52,5	40,8	35,7
Sugar	5,8	7,7	10,7	10,7	10,7
Vegetable oils and fats (1)	1,8	7,7	10,7	5,1	3,1
Fish, eggs and meat	1,5	15,0	20,9	10,2	5,1

Source: FAO Production Year Book 1960; Food Situation in India 1939-53, Ministry of Food and Agriculture 1954, p. XXXII.
(1) Pure fat.

mentioned above is again reduced by a similar percentage, and the consumption of cereals and pulses correspondingly raised. Thus we get a decline of only 12% in calories, but the animal protein content is reduced to less than 50%. In relation to present consumption, however, hypothesis II allows a material improvement in intake of calories and protein in general, including animal protein.

Coverage of requirements by home production and imports of surpluses

Consumption of vegetables and fruit will only increase strongly if consumer habits change radically as a result of higher incomes and better knowledge of rational dietaries. The volume and pace of such change are difficult to foresee. In view of the relatively high proportion of irrigated areas, it would seem that demand coming from consumers could easily bring production up to the level required. Manpower needs for labour-intensive market gardening are, of course, a special question.

These same preconditions hold for an increase in the consumption of milk and milk products. To this must be added the difficulties mentioned which prevent rational beef-cattle raising despite the existing production possibilities.

If the presumed consumption per head of vegetable oils and fats is attained, it may be asked whether the increase will be covered by higher production or to the detriment of the export of oil-seeds.

In view of the religious taboos on beef (for the Hindus etc.) and pork (for the Muslims), any increase in the consumption of meat in accordance with hypothesis II could be based to a great extent on poultry, to which should be added eggs. The production of poultry and eggs is particularly profitable if the modern grain feeding method is adopted.

As regards sugar – one of the intensive crops grown mainly for the market – the increase which has taken place in recent years, although it cannot be fully exploited within the country, brings out impressively that in this case the satisfaction of requirements to an extent desirable from the physiological angle is a problem not of production but of purchasing power.

It is technically possible to cover the increased needs for direct consumption of cereals and pulses. The same applies to the production of more fodder grains and other forage of equivalent value in grain units with a view to obtaining conversion products.

If it is desired to ascertain the necessary global production (cereals and pulses) on this basis, the coarse grains and equivalent fodder requirement for an increased production of conversion products should first be calculated

(see Table VIII). Applying the ratio mentioned earlier (1 animal calorie = 7 vegetable calories), the moderate increase in animal production considered possible (hypothesis II) would alone require an increase of 30 million tons of grain equivalent or 15 million tons of cereals for fodder. If account is taken of likely progress in reducing the number of surplus unproductive cattle, and also of a greater utilization of sugar-cane for livestock feeding (following marketing difficulties), some hope may be entertained that 50% of fodder requirements will be covered by forage other than cereals. However, it is very optimistic to suppose, as some have done, that half the fodder requirements can be obtained in this way. Even if this were possible an increase of about 15 million tons of grain equivalent requires that this aspect of fodder production should receive hardly less attention than the increase in cereals production itself.

The total cereals requirement comprises the requirements for coarse grains (15 million tons), those for direct consumption shown in Table VII (103 million tons) and an amount to cover losses and seed (some authors mention the figure of 12.5% of production). In order to cover this total requirement for cereals and pulses of 135 million tons, the 1959/60 production would have to be increased by some 59 million tons. The annual growth rate would need to be between 3 and 4%, as against 2 to 3% in the last ten years. If the calculation of increased production has to include all or part of the extra fodder requirements consisting of products other than cereals, which are estimated to be around 150 million grain units, the picture would be correspondingly changed.

Here we must be content with only a few remarks on the possibilities of stepping up production. The extra production as a whole can be achieved by bringing new land under the plough, by extending the irrigated areas and using them more intensively, and by improving yields.

There is still land to be opened up. 23 million hectares are recognized as waste land suitable for cropping. But clearing is costly and the task is far beyond the possibilities of the peasant equipped with his primitive tools. The tractor stations run by the State have so far had only limited success. If it is assumed that in future planning periods the objective of 530 000 hectares fixed for the Third Plan will be attained, it would be possible to count on about one million hectares being brought under the plough by 1976. There are considerable further areas whose yield could be increased by soil improvement measures, better water supply, the introduction of dry farming, etc. During the Third Five Year Plan alone, these measures are to be applied to 25 million hectares or 19% of the cultivated area. If the increased areas were purely for the production of cereals and pulses and every other possibility were excluded, an average yield of 12.6 quintals per hectare would have to be obtained on a cultivated area increased by less than 1% to about 107 million hectares, in order to cover the requirements in cereals and pulses. This means that the present average yield (8.1 quintals per hectare) would need to be stepped up by about 56%. This is a very considerable increase in yield and, although it is not impossible in view of experiences in other countries, it would not be easy to achieve under Indian conditions.

It is therefore extremely important to be able to count mainly on the land already exploited and capable of improved yields if irrigated.

The Third Plan provides for the irrigation of 8 million further hectares, bringing the total irrigated area to 36 million hectares (28% of the cultivated area, or 60% of the area irrigated or suitable for irrigation [1]). We assume that the expansion of the irrigated area will continue in the same way in the course of the Fourth and Fifth Plans despite higher costs, and that there will be new progress in obtaining two or three annual crops on irrigated soil. An expansion of the area harvested to 30% of the irrigated land in 1976 by planting several crops (as against about 12% in 1959) is considered possible. This would correspond to a new increase of 7 million hectares in crop areas thanks to irrigation.

If we further consider that modern farming methods make it possible to step up yields moderately in the dry districts, but on the other hand substantially in the irrigated areas, the technical conditions for that increase in yields which is indispensable but difficult to achieve appear in a favourable light.

The difficulties of providing irrigation facilities are less serious than those involved in utilizing them to the full. According to inquiries carried out by Indian authorities, about 50% of the water siphoned off is lost before it reaches the fields, and half of the remainder is wasted by seepage in the fields without any advantage for the plants [2]. So far the average increase in yield obtained by irrigation is estimated at no more than 500 to 600 kg per hectare. True, new irrigation schemes have to be run in for several years before they are likely to increase production appreciably. If the introduction of modern techniques and the sowing, in places, of high-yield varieties were to succeed, the

[1] Second Five Year Plan, loc. cit., p. 324.
[2] Report on India's Food Crisis, loc. cit., p. 47.

increase in yield could be many times higher than anything achieved so far. And this would be all the easier when two crops can be obtained annually in irrigated areas.

True, this demands the harmonious combination of a number of factors. Improved methods of cultivation presuppose the more rational use of mineral and organic fertilizers, antiparasite products, appropriate high-yield seeds, good crop rotation, etc.

An appreciable increase in yields is expected from the use of mineral fertilizers. On this point India is still in the first stage of development. Consumption is growing, and fertilizer plants are being built. The more rapid increase in demand necessarily results in extra imports, mainly of nitrogen. If the objective of the 1965/66 plan is achieved, the production of nitrogen fertilizers, at one million tons of pure nitrogen, will be five times the 1958/59 consumption. The production of phosphoric acid (P_2O_5) at 400 000 to 500 000 tons, will make it possible to multiply consumption by 13. Although conditions for the use of fertilizers are different in EEC and India, it is instructive to note that despite the increase mentioned, consumption in India will be only 24% of that in EEC for nitrogen and 11% for phosphoric acid.

A further obstacle to the introduction of modern techniques is the problem of traction. As herds are too numerous, draft animals are generally underfed and incapable of carrying out the intensive work of drawing the traditional primitive plough through the heavy soils which predominate in the country. The rapid introduction of tractors for ploughing runs up against general economic obstacles and also the scarcity of capital. In 1958 India had only 20 980 tractors, and, in 1951, 931 000 iron ploughs, as against 31.8 million wooden ploughs.

The difficulties met with in increasing livestock production – milk, meat, eggs, etc. – are probably even greater than in the field of vegetable production.

The intense effort put forth by the State to increase agricultural output is reflected in the grant of increased promotion credits. True, promotion expenditure in agriculture has not grown in the same way as in other sectors. Nevertheless, budgeted spending for agriculture and irrigation under the Third Plan is almost equal to the combined total under the two preceding Plans (see Table 8).

TABLE 8

Breakdown of public funds committed for the three Five Year Plans

Sector	First Plan		Second Plan		Third Plan	
	'000 million rupees	%	'000 million rupees	%	'000 million rupees	%
Agriculture and irrigation	7 410	31	9 490	20	16 750	23
Other sectors	16 150	69	38 510	80	55 750	77
Total	23 560	100	48 000	100	72 500	100
Indices :						
Agriculture and irrigation	100		128		226	
Other sectors	100		238		345	
Total	100		204		308	

Source : Second Five Year Plan. New Delhi 1956. p. 51 ; Third Five Year Plan. A Draft Outline. New Delhi 1960. p. 26.

If the available agricultural production potential from the technical and economic angles, input and output ratios and ways of increasing production are considered, it appears possible to cover the growing food needs. However, all this is only one aspect of the great and complex problem of increasing farm output and food supplies. Any increase in production presupposes that men act as the situation demands. The essential problem in this respect is still to awaken in the peasant a positive attitude to economic life and progress. Efforts to change the aims and scale of values and, at the same time, the social and economic behaviour of the

rural population by endeavouring, with the help of Community development projects and, recently, large-scale package programmes, to inculcate a spirit of co-operation for progress are among the most arduous of tasks. Endeavours are being made to achieve this result by large-scale advisory compaigns, based in some cases on a co-operative organization of village life which may even reach down to joint exploitation of the land. It is planned to cover the whole of the country with a network of advisory centres by 1963. Illiteracy, the caste system and the multiplicity of languages set limits to the chances of these endeavours being successful. Locally, definite improvements in output have been obtained; in other cases, there have been setbacks, and many things are still no more than potentialities. The judgment of a delegation of experts: " In India, community development is not a programme but only a synthetic statement of efforts " points to the experimental and still insufficiently mature character of these endeavours (1). No appraisal can be made of the extent and pace of the beneficial impact on agricultural production.

We must therefore keep in mind the possibility of error involved in any forecast. Only " specialist speculations " can be advanced. It is impossible to prophecy whether and, in particular, when production will keep pace with the expected demand. Nevertheless, if individual income rose fairly appreciably, the long-term growth rate of production would have to go up more strongly than hitherto in order to cover the resulting requirements. This is true not only of cereals but also of other products which are indispensable to meet the increased demand for conversion products.

The difficulty of judging is also reflected in the opinions formulated by specialists of agricultural economy. The report of the Ford Foundation gives 28 million tons as the deficit in food grains at the end of the Third Plan (2) if present growth rates of production continue. On the other hand, the American Wheat Utilization Commission, which was instructed in 1959 to evaluate the future possibilities of marketing American wheat, supposes that the cereals deficit can be covered in 1965/66 and that a slight improvement in the individual ration is also possible (3). However, this estimate is based on the postulate that population will increase by 10 millions less than assumed here. It is further assumed that the production plan for food grains – 100 million tons in 1965/66 – will be achieved. Table IX shows that the trend of production hitherto provides an extremely shaky basis for this development. The annual production increase would have to be almost 5%, instead of 2 to 3% in the last decade (4).

The question arises, however, whether requirements will increase as expected if there is no corresponding rise in production.

In forecasts we must not forget that, even in 1976, the major part of the population will still be employed in agriculture and will itself be providing for its essential food needs. In order to simplify matters, the hypothesis was advanced in Section II, point 3, that the increase in incomes and their consumption elasticity depending on production by these self-suppliers follow similar rules to those governing income elasticity of wage-earners. This assumption calls for certain comments. If the production of foodstuffs increases, it is possible that self-supply will grow more strongly than the consumption of food purchased outside, since it does not involve any monetary outlay for processing, packaging, transport and marketing of the agricultural product.

If he calculates it at all, the self-supplier reckons his consumption at producer prices without taking any account of the work required on the farm for processing, etc. If individual production is consumed, the results may be similar to those of a fall in food prices for purchasers on the market. In detail therefore it is conceivable to apply to self-supplying peasant households the rules which govern price elasticity and which result in greater consumption. Other special points concerning increase in production and its utilization for self-supply and sale cannot be considered here.

More important than these particular points is the fact that in general no increase in food consumption is to be expected in self-supplying peasant households if the food in question does not come from their own production. What then would be the basis for increased consumption? It is only when, for instance, a farm develops a specialized production for the market and uses the money earned to purchase foodstuffs which it does not produce, that the situation changes. But we then no longer have self-supply in the pure state, and the rules of consumption in the monetary sector increasingly apply.

Since agricultural production is closely linked with agricultural self-supply, it is necessary to divide the calculation of requirements so far made into self-supply by producers outside the market and demand by purchasers of foodstuffs on the market. This breakdown is of great importance if we wish to get some idea

(1) Report on India's Food Crisis, loc. cit., p. 107.
(2) Report on India's Food Crisis and Steps to Meet It.
(3) Report of the Wheat Utilization Mission to: Japan, India, Indonesia; Washington DC 1961, p. 11.
(4) Third Five Year Plan, loc. cit., p. 148.

of the possible use of imported foodstuffs and in particular of surpluses. It confines the utilization of surpluses against payment essentially to the non-agricultural monetary sector of India's population. The rural section of this population, that is to say those living in the country but not farming, will often be in an intermediate position in this connection. If it is assumed, for lack of precise figures, that per capita consumption, its composition and its trend are similar for purchasers of food and for self-suppliers, the volume of present effective demand, which is important for the eventual utilization of surpluses, is reduced to less than one third of the volume of requirements hitherto mentioned. If the changes so far expected in the future breakdown of occupations are taken as a basis, it could rise to two-fifths of the growing overall volume.

The key position of cereals in food supplies and in the utilization of surpluses

Within the expected increase of requirements for various foodstuffs, cereals for direct consumption take pride of place. Among products intended for conversion, grain is an important raw material along with a great number of fodders generally obtained on the farm. Other forms of fodder are difficult to transport over long distances. In addition to the raw material input, animal conversion products entail other costs for labour and transport, commercial services, etc. In this respect the necessary conditions are present in India and livestock products for food can therefore be obtained in the country on the basis of home or imported raw materials. From the angle of the economy as a whole, only the expenses on fodder are to be considered as a financial burden. It is therefore more economical and cheaper to produce foodstuffs of animal origin in the country than to import them. Consequently, home-produced or imported grain will play a dominant role in India's future food supplies. According to the trend of food imports so far (see Table IV), it would appear that, apart from grain and some powdered skim milk, no other agricultural product or foodstuff will be imported in sufficient quantities to be worth mentioning here.

Imports of cereals have generally varied between 2 and 3.5 million tons in the three years 1955-57. This amounts to about 2 to 5% of total production. Table IV does not reveal completely whether and, if so how far, imports, which have risen to 5 million tons in recent years, have been used for consumption or stockbuilding. If it is assumed that in future the rate of growth of agricultural production will first rise gradually, and that supply to the market will initially lag behind the increase in non-rural demand, requirements for imported cereals are more likely than not to exceed the present level in the years ahead. The improvement, desirable in itself, in the food supply of agricultural self-suppliers is left out of account in this connection. Even for the urban population it is only possible to speak of improved purchasing power and not of any attainment of the objectives recommended by the NAC.

In the long term the production reserves of Indian agriculture are great. As shown by the example of isolated enterprises, a good farm run on modern lines can achieve record yields and several harvests annually on some land. However, it is unlikely that the promotion measures already introduced or planned will suffice in the near future to narrow the gap between production and growing consumption on the farm. But it is too early to forecast, on the basis of facts and of trends which are beginning to emerge, the degree of success which aid to agriculture is likely to have.

The trend of prices also merits attention in any forecast concerning production and demand. We will not examine whether the price relation between products of primary necessity for the peasant and farm products stimulates output and helps to overcome the obstacles hindering its growth. In any case, variations in the price structure influence developments. Let us confine ourselves to mentioning that the trend of food grain prices is guided by State action, inspired by social criteria, to ensure stability. In view of the considerable variations in the quantity offered on the market – which in itself is small – the chief need is to obviate extreme fluctuations. Efforts to improve production, less through the stimulus of high prices than by State advisory activities, are often considered at this initial stage by the Indian peasant as further interference by the long arm of the authorities and rarely as aid aimed at increasing production and raising his income thanks to modern methods. Here again, all sorts of problems influence the issue. If indifference to economic problems persists, high prices and the favourable effect of a more modern agricultural technique do not incite to greater, but to lesser, effort.

Summing up, we may with reservations make the following points on the foreseeable relation between cereals supply and demand:

a) Increased consumption on the farm and higher agricultural production are indissolubly linked, i.e. the former is hardly conceivable without the latter.

b) Requirements are increasing strongly in the non-agricultural sectors.

c) India's agricultural production reserves are considerable. The natural conditions for doubling total production of cereals and other foods in the 15 years ahead already exist, but this will not be easy to achieve.

d) Imports of cereals – up to the present about 5 million tons almost entirely for non-agricultural consumption – could well rise rather than decline if harvests are average in the coming years.

e) The comprehensive promotion measures may be expected to speed up the growth of agricultural output, which has so far been very slow. If things go according to the Plan, production should soon cover all requirements. However, it is not yet possible to say how far or when agricultural production will effectively catch up with the growth of demand. The present pace of production seems at least to indicate that it will continue to lag far behind the objective of the Plan in the near future.

f) In the long term the development of demand for cereals will largely depend on the efficacity of the promotion measures and the purchasing power of the non-agricultural population.

g) Since the probable growth of purchasing power will be rather below the figures envisaged in the Plan, consumer habits will change less, the share of wheat and rice in direct consumption will remain high, and total cereals requirements will grow only slightly faster than population. There are good reasons for hoping that the cereals deficit will remain below the 10-million ton limit.

h) If purchasing power should rise above the figures in the Plan – this is hardly likely in the near future – and if consumer habits change in consequence, the demand for cereals for direct consumption and for fodder will grow to such an extent that local production possibilities will probably be initially inadequate. In this case there could be a cereal import requirement of the order of 10 to 20 million tons.

Transport, stocking and distribution as factors limiting the use of surpluses

All cereals trade is in the hands of the State, or is directed by the State. There are ceiling prices to prevent increases and to cushion fluctuations. Private traders' possibilities of action are limited. Cereals are bought at the fixed guide price, stocked, processed and sold in the form of grain or flour. As far as possible differences between surplus and deficit regions are ironed out. The regulations necessitate a widespread control system. As with all systems of State control, producers and traders look for better market opportunities by illegal means, and certain quantities of cereals escape this control.

Imports of these goods and their distribution in the various regions are matters for the central Government. The provincial Governments in their turn draw up the distribution plans for the areas depending on the various collection centres.

The main production centres for wheat and rice are in the Northwest and Northeast and also the South of the country, while in the central regions, which are at a disadvantage from the agricultural point of view, mainly millet is grown. These very densely populated regions are traditionally distress areas stretching in a belt of more than 200 km from the area north of Bombay to the eastern appendix of Assam province and including further fragments of Rajastan, Madhya, Pradesh, Orissa, Uttar Pradesh, Bihar and West Bengal. Because of unfavourable atmospheric conditions, famine spots have occurred in recent years in almost all regions of the country. The surplus and deficit areas are often more than 1000 km distant from each other.

The chief bottleneck for cereals production and trade embracing the whole country is the transport problem. The rail network is not dense and great distances separate large areas from the nearest station. Investments in the railway system under the first two Five Year Plans were intended essentially to improve rolling stock and existing plant.

It is only in the course of the Third Plan, which provides for total expenditure of 12 200 million rupees (1), or 10% of all investments, for railways, that more new lines will be built. The fact remains that the capacity of rail transport is advancing by leaps and bounds. It was 91.4 million tons in 1950/51, 162 millions in 1960/61 and is to reach 235 millions in 1965/66 (objective of the Plan).

Despite these advances, rail transport will continue to be a bottleneck in the years 1960/70.

The road network is only in its infancy. The number of trucks – 150 000 in 1960/61 (estimate(2)), as against 81 900 ten years earlier – is relatively small. The Nagpur plan drawn up in 1943 is intended to promote the development of road transport by bringing into service 197 000 km of hard-surface and 333 000 km of non-asphalted roads. This plan was to be more than completed by 1961. Plans are on foot for a second scheme of works to create

(1) Third Five Year Plan, loc. cit., p. 246.
(2) Third Five Year Plan, loc. cit., p. 249.

the necessary preconditions for the provision of an efficient road transport system. In 1981 there should no longer be a single village more than 2.4 km from a practicable road in any important agricultural area.

Despite a certain flexibility in the system, the inadequacy of transport makes it impossible to take sufficient account of disparities in local supply. Mukherjee and Kaminga (1) consider, on the basis of an inquiry carried out among consumers, that the attempt to establish such a complete distribution system in so vast a country often exaggerates, instead of ironing out, the differences from region to region.

The seaports have transshipment capacity for considerable cereals imports. In Calcutta, Bombay, Cochin and Madras, turnround is between one and two days. It is only in monsoon periods that there are longer delays in off-loading. Some of these ports have been enlarged in recent years.

The situation is less favourable as regards storage capacity. Up to the present there is only one modern silo, at Hapur. Most grain stores are sheds, uncovered depots or underground dumps. There is only a small number of concreted and properly ventilated silos in which grain can be mixed. Where new silos have not been built as part of American supply operations, serious losses are caused by insects and climatic conditions.

All in all it must be expected that the multiple technical and organizational difficulties presented by transport, stocking and distribution will disappear only by degrees in the course of the coming years. The cost of transport over long distances, even where this is possible from the technical point of view, will nevertheless remain high. The use of relatively large quantities of imported cereals will therefore probably remain confined to the heavily populated coastal towns and to some areas within reach of transport.

The distribution of considerable tonnages over vast regions hardly seems feasible under normal conditions of profitable operation during the years ahead even if transport and stocking facilities are improved. This is shown by the defects of the equalization arrangements between surplus and deficit regions.

In so far as cereals imports and, consequently, supplies of surpluses are intended to remedy food deficits in the monetary sector, that is to say mainly in the larger cities which are insufficiently supplied by national production, only those consumption centres which are badly situated in relation to the ports are seriously affected by the defects of the transport system. Here limitations of tonnage and costs may constitute serious obstacles. About 15 million people live in such cities of more than 100 000 inhabitants. However, New Delhi, for instance, with 1.4 million inhabitants, is 1 300 km from the port of Bombay and is relatively well situated in relation to the main producing regions. On the other hand, 11 million people live in the cities with more than 100 000 inhabitants which are well placed in relation to the large ports (2). After disaster harvests it is very difficult, if not impossible, to supply foreign cereals to the rural areas suffering from famine.

For any systematic utilization of surpluses aimed at eliminating food deficits in the framework of an adequate price policy which takes account of the interests of producer and consumer, a well-organized system to regulate the cereals market in India is indispensable. Such a system would be the appropriate support and partner of the suppliers. The question of whether the cereals market arrangements, which have been made more flexible in recent years, correspond to these requirements, that is to say how far improvements and changes are called for, need not be examined here.

The technical and organizational difficulties, costs of transport, stocking and distribution and the varying distances between needy and surplus regions, reduce the regions which lend themselves to systematic utilization of surpluses still more considerably than was apparent from earlier considerations on this point. Since, as indicated above, the non-agricultural population will probably not rise to 40% by 1976, as envisaged in the Plan, but only to 35%, the figure of about 130 million persons at present in the non-agricultural sectors of the economy will increase to 210 millions. The majority of these will be living far from the coast, but in cities and villages which, being close to the agricultural producing regions, can easily be supplied. There is little chance of regularly utilising surpluses in these places. The number of potential consumers of surpluses therefore comes down to hardly more than 10 to 20% of the total population at the present time and in the future.

III. *USE OF SURPLUSES AND GENERAL ECONOMIC DEVELOPMENT*

Easing of the trade balance

There have been discussions in India on the question of whether priority should be given

(1) P.K. Mukherjee and K. Kaminga, Food Administration in Punjab and U.P., Delhi, 1959.

(2) 1951 census.

to industry or agriculture. As against the idea of balancing imports of food products by structural industrial export, it is possible to conceive of intensifying agricultural production with the aim of ensuring a high degree of self-sufficiency.

In theory, industrialization could in many respects yield tangible success more rapidly and more easily than would the introduction of more up-to-date methods among millions of peasants whose education is most often of low standard and who initially show little understanding of all that is expected of them.

For the 10 to 20 years ahead such discussions will be of only theoretical and academic interest. The structure of expenditure under the Five Year Plans shows that development efforts have been concentrated more and more on the expansion of industrial production and the improvement of infrastructures. Since the beginning of the Second Plan, industrial investments have been given relatively higher priority than agricultural investments. However, greater resources have also been provided for the latter (see Table 8). Industrialization must redress the structure of an economy so far one-sidedly concentrated on agriculture. This economy must gradually be based on greater division of labour and thus become more productive. As everywhere, the aim is to raise the national income and the living standards of the population. However, there will be a long period of development between the beginning of industrialization and the achievement of an economic structure in which industrial products in excess of the ever-growing requirements of the internal market increasingly determine the structure of exports and make it possible to import foodstuffs.

In order to master this great task of general development the use of surpluses must assume essential functions which go beyond the provision of food. The introduction of industry initially requires considerable imports of capital goods which the proceeds of national exports are not sufficient to pay for. As is generally the case at this stage of development, the trade balance shows a large deficit, and will continue to do so for a fairly long time. Industrial build-up at the pace desired therefore depends, on the one hand, on the possibility of making maximum use of export income to pay for these capital goods and, on the other, on the procurement of further foreign capital in the form of loans or any other sort of aid. In the foreseeable future, therefore, to impose any charge on the trade balance to pay for food which can be produced in the country is tantamount to reducing imports of production goods or stepping up demand for foreign capital.

This being so, there is no call to choose between imports of food on a commercial basis and home production. At a later stage it may be possible to discuss this option anew. For the present, the crucial question is to free commercial import trade totally, or at least to the maximum extent possible, from the need to include food imports. An endeavour must even be made to export farm products in order to reinforce import potential. This implies using all available ways and means to promote national agricultural production with the aim of complete self-sufficiency. From this angle farm surpluses provided without payment in foreign exchange can be of decisive value for as long as national production is not increasing sufficiently. If, however, efforts to increase agricultural output in the coming 10 to 15 years produce only indifferent results or fail completely, a serious setback to industrialization is to be feared.

Productive utilization of the expanding manpower potential for agricultural and industrial development

Such a setback would moreover not be due solely to the need to slow down the pace of industrial expansion and consequently curb general development. In a predominantly agricultural country, an agriculture which is producing and selling more is the chief buyer of industrial products. The interdependence of industrial and agricultural advance and the multiplying effects which are fully effective only if efforts to promote industry and agriculture are linked, demand co-ordinated action.

From this angle, too, there is no reason to choose between the development of industry, of agriculture or of infrastructure. The industrial production media – mineral fertilizers, tools, machines, pest control products, as well as properly functioning transport facilities – are as indispensable in increasing agricultural output as is farm production in supplying the cities, and the peasant as a buyer of industrial products.

Furthermore, the productive employment of a great part of manpower for the development of agricultural production – whether it is a question of bringing new land under the plough, of irrigation or of labour-intensive crops – is all the more important since the increase in manpower in the years to come can only be partially absorbed by the expanding non-agricultural sector of the economy. For the period of the Third Plan up to 1965, the increase in manpower is estimated at 15 millions, and it is hoped to give employment to about 10.5 millions in the non-agricultural sector (1). The

(1) Taking into account the investment programme.

remaining 5 millions must be taken over by agriculture. If this number is exceeded – and in the course of the Second Plan jobs created were 2 millions less than forecast – agricultural underemployment, which is already high, could be even greater in the future than has been supposed. The solution of this problem will subsequently depend less on the progress of industrialization than on the success of development programmes absorbing much manpower and aimed at improving agriculture and infrastructure (soil improvement, building of dams, roads, etc.). The number of workers who are not fully integrated into the production process is so high that no bottleneck is to be feared either in industrialization or in improvement work in agriculture or infrastructure even if labour is in demand in all quarters. On the contrary, work will be provided for idle manpower.

Reinforcement of domestic capital accumulation

In addition to a multitude of scientific skills and experience, considerable investments are required for such a many-sided and dynamic economic development. In order to invest, capital must be accumulated, that is to say people must save. The more the country's economic strength grows with time the higher it will be possible to set the targets aimed at by increasing savings and investment funds, and the more easily will the weight of investments be borne. In the immediate future, however, i.e. at the present low level of national product and income, the formation of domestic capital remains inadequate despite all efforts, and this even if the income available for personal consumption is severely cut down. Voluntary or forced saving, that is to say the accumulation of domestic capital, is therefore a serious bottleneck. Every possibility of promoting the formation of capital in the country facilitates development, and it is here that the utilization of surpluses can help. Let us begin with the example of increased agricultural output.

Even if agricultural development projects demanding neither machines nor means of production could be carried through successfully, there would be payment for work supplied, with which food, clothing and the other vital needs of labour would be procured. An agricultural activity producing so much that the surplus output can feed all the workers needed for the development of production and cover their different requirements corresponds to the ideal of a pilot farm which had gradually developed by its own means. This is already difficult to achieve in the framework of a village community. If such development is spread over a long period, it is possible that even agricultural production which was initially primitive might be capable of bearing the main burden of such development projects by using its own surpluses. If, in addition to its own capital, made up of agricultural surpluses, the enterprise can call on outside capital, and if development is methodical and has the benefit of occupational guidance and international experience in practices, techniques and science, it will be able to achieve, in shorter time, greater progress and a stronger production increase than could have been expected if it worked solely with its own resources.

If, in the initial stages, agriculture in the backward countries is often hardly in a position to find the funds needed for this progress in the framework of agricultural plans, this will be even more the case when it comes to mobilizing capital for the simultaneous speedy and organically co-ordinated development of trade, industry and infrastructure.

In view of abundant manpower, insufficient agricultural production and the limited possibilities of financing the indispensable development projects by voluntary savings and without recourse to foreign capital, price levies or taxation, agricultural surpluses from abroad assume a second exceptionally important and even key function. These surpluses must be used to reinforce the formation of home capital for labour and wage-intensive development schemes. When the surpluses, received without immediate payment, i.e. in the form either of gifts or of long-term credits, preferably at low interest rates, are disposed of to the consumer for payment, "counterpart funds" are constituted. These can be used methodically as national capital for development schemes in different fields of the economy. They therefore replace entirely or in part the capital formation required at this stage of development, which must be mobilized mainly in agriculture but which is still inadequate for speedy progress on all fronts.

Labour-intensive development schemes specially favoured

The development projects requiring a considerable volume of labour and in which the share of expenditure, especially for feeding the workers, is particularly high, and which are therefore very suitable for the utilization of surpluses include schemes for clearing arable land, building dams and canals, providing plant for irrigation and drainage, and soil improvement. In addition, there is a whole range of measures to improve infrastructure, in particular road-building.

The projects under the First Plan produced detailed studies on potentialities of this kind.

What determines the effectiveness of using foodstuffs is the high proportion of wages expenditure in the projects. In a study on six large and medium irrigation projects, Dandekar (1) arrives at the following average percentage of wage costs in relation to the whole project.

Share of labour costs in overall costs

Earth dams	60%
Stone dams	50%
Concrete dams	30%
Canals	80%

The average share of labour costs in overall projects varies between 42 and 46.2% according to the degree of mechanization of the building work. In the execution of other projects it is admitted that labour costs represent the following average percentages:

Large irrigation projects	40–50%
Small irrigation projects	60–70%
Clearing of waste land	10 %
Earth-moving	66 %
Reafforestation and building of forest roads	90 %
Roadbuilding (average)	67 %
Unmade roads	70 %
Asphalted roads and bridges	25–30%
Water supply	35 %
Housebuilding	50 %

In all development projects under the First Plan considered as a whole labour costs represented 60%, of which 33 to 50% was for food cereals. It is therefore possible to cover about 25% of the total expenditure on such projects from surplus production. If these figures are taken as a basis for projects under the Third Plan, it is theoretically possible that about 2 250 million rupees out of 9 000 millions total expenditure which will be incurred for large and medium-size irrigation schemes and roadbuilding could be covered by the direct use of cereals surpluses or their countervalue.

At the wholesale price of 429 rupees per ton (2) of wheat this would correspond to 5.3 million tons of cereals for the period of the Third Plan, or a million tons annually. This quantity gives interesting indications of magnitude.

The costs of importing means of production required to use this extra manpower in agriculture and infrastructure play only a secondary role and therefore compete only to a limited extent with foreign capital goods which constitute one of the predominant components of expenditure on industrial build-up. However, if these surpluses are to be used productively in the general development of the economy, foreign exchange is necessary to purchase indispensable means of production from abroad. Where such foreign exchange is not produced by exports, surpluses as development aid must be accompanied by foreign exchange aid.

By this more or less direct method cereals surpluses can be utilized profitably in a great number of schemes with the aim of making financing by home capital, taxation, etc. less onerous. The counterpart funds could be used with maximum profit in all types of educational schemes, which means not only building schools for the various disciplines but also meeting the costs of housing teaching staffs, and for scholarships, boarding establishments, etc. All things considered there exist conditions and restrictions of various kinds.

Conclusions

a) More surpluses must not be used than are necessary to cover the real deficit in cereals supplies, which defies all efforts to increase national production, and taking into account a reserve for equalizing harvests. The circle of consumers to be considered in the utilization of surpluses is between 10 and 20% of the total population. This is the upper limit to the profitable use of these surpluses.

b) The surpluses must be made available either in the form of long-term loans at relatively low interest or as non-repayable subsidies.

c) Surpluses must either be used directly to feed persons employed on development schemes in the form of partial coverage of expenditure in kind, or sold. The counterpart funds thus built up form the proceeds of sales are then used on a wider basis to reinforce the formation of internal capital. If efforts to build up national capital slow down because of the constitution of counterpart funds, the productive aim is not achieved. This is the second limiting factor.

d) Only economically profitable and sound projects should be carried out, and then in the framework of a co-ordinated development plan. Their main purpose can be to increase agricultural production but they can also have other aims.

e) In addition to this reinforcement of national capital, production goods needed to carry out the projects must be provided by using the country's own supply of foreign exchange, and by loans or services made available under foreign aid schemes. Like d) above, this

(1) V.M. Dandekar, Use of Food Surpluses for Economic Development 1956.

(2) 16.– rupees/maund (37 324 kg), Agricultural Situation in India, Nov. 1960, p. 1047.

marks a wide limit to the profitable utilization of the surpluses. The developing countries – India included – attach considerable importance to this requirement (1).

f) The appropriate means must be found to mobilize for production hitherto unemployed manpower with the help of the strengthened national resources.

g) Agricultural production must be stepped up and progressively take over from surplus aid. If efforts to increase agricultural production are abated because of reliance on permanent deliveries of surpluses, the latter do more harm than good.

h) Along with this promotion of development through the use of surpluses, foreign capital or aid must be made available in sufficient quantity to give adequate support to schemes which merit priority and which cannot be undertaken without large outside investments. Here, too, if the above conditions are fulfilled, deficiencies in home capital can be made up by using surpluses.

i) Aid in the form of surpluses can therefore never replace foreign exchange aid, but it can have a complementary effect which diminishes as development progresses, that is to say, as success is achieved in stepping up agricultural production and shifting the emphasis to industrialization and infrastructure. It therefore constitutes a typical productive component of aid in the first stages of development, but must increasingly fade into the background.

For the countries with excess production, i.e. the United States above all and, in future, EEC also, it follows from these considerations that productive surplus utilization in India is possible and sensible if account is taken of all the conditions and if the limits traced out are not exceeded. However, surpluses can only be utilized on a considerable scale in the form of loans or non-repayable subsidies. It would seem that in India the productive use of surpluses has not yet reached its peak. It is not yet possible to foresee whether deliveries of surpluses to India by the United States of America and EEC can lead in future to regular commercial disposal of surpluses payable in foreign exchange.

In any case, when crops fail, it is absolutely necessary to import foodstuffs, even if they have to be paid for. In other circumstances priority goes to other imports. The same is true of aid services and loans abroad if the Indian Government is free to use them for industry, infrastructure and agriculture. The clearer this freedom of choice becomes, the more India will endeavour to replace current food imports by increased home production. If no such freedom of choice exists and EEC or the USA insist on delivering farm surpluses with an eye to the regularization of their own internal markets, such deliveries then cease to have the character of development aid, and this all the more so in proportion as their volume exceeds the productive share in total aid based on the criteria referred to above.

IV. *SUMMARY AND CONCLUSIONS CONCERNING THE UTILIZATION OF EEC SURPLUSES*

1. The food situation in the different regions of the country varies greatly. Average food consumption is rarely above and often below 2 000 calories, and is thus among the lowest in the world. Consumption of food rich in animal protein, which is particularly important from the physiological angle, such as meat and fish, and of fats, fruit and vegetables, is minimal. The growth of agricultural output in recent years has not kept pace with expanding requirements stemming primarily from population increase and higher per capita consumption. As a consequence, annual imports of cereals, which a few years ago were between 2 and 3 million tons, have now risen to 5 million tons.

2. India's future food requirements will be primarily determined by the booming population with its annual rate of increase of over 2%. No automatic narrowing of the gap between the birth rate and the reduced death rate as a result of higher living standards and improved education can yet be discerned. Nor is it possible to expect that the introduction of birth control will have any radical effect in the near future. For this reason it is assumed that the rate of population increase will continue to be over 2%. The total population must be expected to rise from 438 millions in 1961 to 490 millions in 1965 and about 600 millions in 1976.

3. The trend of cereals requirements depends to a large extent on the future increase in per capita income. The stronger the rise in individual income available for consumption spending and, with it, in individual purchasing power, the more fodder grain requirements increase following higher consumption of conversion products, while direct per capita consumption of cereals tends rather to fall. Total cereals requirements increase strongly. A smallish rise in purchasing power has only a

(1) See S.R. Sen, Impact and Implications of Foreign Surplus Disposal on Underdeveloped Economies in Agricultural Situation, Volume 15, No. 8, Nov. 1960, pp. 974-981.

minor effect on consumer habits. The proportion of wheat and rice for direct consumption remains high, while total cereals requirements increase at a slower pace.

4. The production reserves of Indian agriculture are great. The agricultural promotion plans at present in train may be expected to speed up the growth of agricultural output. But the bottleneck of all promotion efforts – how to get the rural population to adopt a positive attitude towards progress – will not be overcome easily and quickly. This is why it is difficult and hazardous to estimate whether and how far agricultural production will be able to attain the objectives of the Plans. Assuming that these are largely but not completely attained, it is probable that the present 5-million ton import requirement will continue to grow in the years ahead. In the long term the cereals deficit will only increase if purchasing power expands strongly with a corresponding sharp rise in fodder requirements. However, it may be supposed that, as a result of the promotion measures, production will later grow faster than demand, with imports correspondingly declining.

5. At the present stage of development, the investments required to build up industry, agriculture and infrastructure have priority over consumer expenditure. The creation of new jobs for the growing population demands the investment of national and foreign capital in the various branches of the economy. Even with an increase in the national product, the total share of individual incomes available for consumption will therefore continue for a long time yet to rise only slightly. Population increase will slow down the growth of per capita income even more.

6. Since the industrial build-up calls for large quantities of foreign capital goods, it is also impossible to count on any improvement in the external balance, which is already in deficit, or on any attenuation of foreign exchange shortages.

7. In such a situation commercial imports of food products are a curb on the build-up of industry. It may be expected that everything will be done to reduce to a minimum the necessary imports by achieving maximum possible yields in home agricultural production, and/or to expand imports of industrial goods by stepping up exports of foodstuffs.

8. The presumed food requirements over a long period, which increase particularly in bad harvest years, can only be covered by imports on a commercial basis at the price of a slowdown in industrial development. Food surpluses from abroad, in the form of loans on favourable conditions or as gifts, can help to overcome these difficulties and they have a general encouraging effect upon the economy.

9. As regards deliveries of surpluses, the need is almost exclusively for cereals, and then for powdered skim milk for children.

10. The desirable increase in home agricultural production should not be hampered by deliveries of surpluses. Only those imports which cannot be dispensed with despite all efforts to step up production should be considered.

11. It is not possible to remedy the food deficiencies of the total population by supplies of surpluses. Only between 10 and 20%, i.e. that part of the non-agricultural population which is relatively easy to supply via importing harbours and is inadequately supplied from national production, constitute potential consumers for surpluses. The farming population covering its own essential needs, and also people living far from the ports in regions with excess production, are largely outside the question of surplus utilization.

12. An efficiently working market organization is indispensable to watch over procurement of the surpluses and their utilization in the needy regions in a way calculated not to disturb the market.

13. The overcoming of food shortages is not the only thing that can be achieved by utilizing surpluses. It is also possible to use them to promote overall economic development.

14. By selling food surpluses in the country, it is possible to accumulate counterpart funds which supplement the inadequate formation of home capital. Higher availabilities of capital for investment permit greater and speedier general economic development and the productive employment of a large part of the growing labour force. For each development project, a certain share of the total expenditure can be met by imports of surpluses and by the corresponding counterpart funds. In this respect, labour-intensive projects in agriculture and infrastructure are particularly well suited to the productive utilization of surpluses. Purely for roadbuilding and the large and medium scale irrigation schemes under the Third Five Year Plan, about five million tons of cereals (1 million tons p.a.) can, in theory, be utilized in this way. The total volumes are even greater. Moreover, the use of the surpluses to supplement the accumulation of national capital will only be effective if it does not impede efforts to step up the formation of home capital.

15. Deliveries of surpluses alone and unaided are not sufficient as a development contribution

from abroad. But as development aid dovetailing with the whole complex of promotion measures they will be useful for a fairly long time provided they are in proper proportion to other aids. As development advances, the appropriate share of surplus aid should diminish. The sooner it is possible to do without it, the better will be the outlook for the subsequent economic development of India.

16. All in all, the volume of surpluses which can be used productively as development aid for the double purpose of improving food supplies and strengthening national capital formation, is limited by several factors. It should increase in the next five years but hardly reach a peak amount of 10 million tons of cereals. It is probable, although not absolutely certain, that by 1976 it will fall below the present level of 5 million tons.

17. The quantities of powdered skim milk which can be put to productive use are determined by other factors, i.e. institutional conditions for the appropriate utilization of the surpluses in India and the readiness of foreign countries to make these foodstuffs available free of charge for those sections of the population which are in danger.

18. The extent to which food surpluses suitable for productive utilization in India can or should be supplied by EEC or other surplus regions need not be examined here.

TABLE I

Future demographic outlook according to various authors

millions of inhabitants

Authors	1951	1956	1961	1966	1971	1976
Central Statistical Office (1)	362	391	431	480	528	568
Coale and Hoover, average fecundity (2)	357	384	424	473	524	569
Coale and Hoover, high fecundity (2)	257	384	424	473	532	601
UN estimate (3)	357	386	417	456	503	
Agarwala (4)	357	386	423	472	526	754
Outlook, taking account of the provisional results of the 1961 census (5):						
Coale and Hoover, average fecundity			438	488	542	587
Coale and Hoover, high fecundity			438	488	548	620
Agarwala			438	488	543	596

Source: Personal calculation.

(1) Third Five Year Plan. A Draft Outline. New Delhi. 1960. p. 5; other indications in the report of the Ford Foundation.

(2) Coale and Hoover. Population Growth and Economic Development in Low Income Countries. New York. 1958. p. 239; average fecundity corresponds to a growth rate reduced by half from 1956 onwards; high fecundity corresponds to an unchanged growth rate.

(3) The Future Growth of World Population. UN. New York 1958. p. 18.

(4) S.N. Agarwala. India's Population. Some Problems in Perspective Planning. Bombay 1960. p. 18.

(5) As a hypothesis, the growth rates according to the above authors have been taken on the basis of 438 million population for 1961.

TABLE II

Annual food consumption in India compared with other countries, and calories and protein content of daily rations

Annual individual consumption

in kg

Country	Year	Cereals (2)	Pulses + nuts	Cereals + pulses + nuts	Vegetables	Potatoes + starchy tubers	Sugar (3)	Meat (4)	Eggs	Fish (5)	Milk (6)		Fats oils (net fat weight)	Average content of daily rations		
											Fats	Protein		cal.	Protein (g)	
															total	of which protein of animal origin
India	pre-war (1)	139	22	161	—	8	13	3	—	1	3	2	2 (7)	1 450	52	8
India	1949/50	112	23	135	16	8	12	1	—	1	2	2	3 (7)	1 640	43	5
India	1951/53	121	24	145	16	11	11	1	—	1	2	2	3 (7)	1 750	47	6
India	1954/56	130	27	159	16	10	14	2	—	1	2	2	4 (7)	1 880	50	6
India	1957/58	124	24	150	16	11	14	2	—	1	3	2	4 (7)	1 820	47	6
India	1958/59	143	30	173	16	12	14	2	—	1	3	2	4 (7)	2 080	57	—
Japan	1959	151	18	169	72	66	14	6	4	23	1	1	4	2 210	68	18
Germany (FR), France, Netherlands (on average)	1957/59	86	4	91	50	125	32	50	12	6	7	8	25	2 920	85	47

Source: FAO Production Year Book. Rome. 1959.
(1) India and Pakistan.
(2) Indicated in units of flour and ground rice.
(3) White sugar without syrup and honey.
(4) Carcass weight. animal fats deducted.
(5) Edible weight according to estimates.
(6) Including milk used for butter manufacture.
(7) Not including butter.

TABLE III

Areas cultivated, yields and production for the chief agricultural products

(1948/52 to 1959/60)

Year	Cereals		Rice (paddy)			Wheat			Millet			Pulses (1)		
	m. ha	m. tons	m. ha	kg/ha	m. tons	m. ha	kg/ha	m. tons	m. ha	kg/ha	m. tons	m. ha	kg/ha	m. tons
1948/52	78,4	56,1	30,0	1 110	33,4	9,3	660	6,1	32,5	360	12,0	13,3	440	5,8
1956	86,5	71,8	32,1	1 340	43,1	12,4	710	9,8	34,9	400	14,0	18,2	420	7,7
1957/58	88,4	68,6	32,2	1 180	37,9	13,5	700	9,4	35,2	430	15,3	17,1	480	8,2
1958/59	88,2	76,6	33,0	1 400	46,3	11,9	660	7,9	36,1	460	16,7	17,0	440	7,4
1959/60	88,2	76,5	33,0	1 360	44,7	12,6	790	9,9	35,1	440	15,5	17,9	550	9,9

Year	Oil-seeds			Sugar-cane			Cotton (fibres)			Jute + Roselle		Tea	Tobacco
	m. ha	kg ha	m. tons	m. ha (3)	kg/ha	m. tons	m. ha	kg/ha	m. tons	m. ha	m. tons	m. tons	m. tons
1948/52	15,8	367	5,8	1,7	31,71	53,9	5,7	0,9	0,5	0,7	0,7	0,3	0,2
1956	20,0	390	7,8	2,0	34,05	68,1	8,1	1,0	0,8	1,1	1,0	0,3	0,3
1957/58	19,9	392	7,8	2,1	33,29	69,9	8,1	1,0	0,8	1,0	1,0	0,3	0,3
1958/59	20,2	426	8,6	1,9	37,68	71,6	8,1	1,0	0,8	1,1	1,2	0,3	0,2
1959/60	20,7	377	7,8	2,1	36,29	76,2	7,8	0,9	0,7	1,0	1,0	0,3	0,3

Source : Production Year Book 1959 and 1960. FAO. Rome.
(1) Dry beans. dry peas. chick peas. lentils.
(2) Linseed. rapeseed. sesameseed. cottonseed. groundnuts. less castor oil.
(3) Total cultivated area ; harvested area not indicated.

TABLE IV

Production and consumption of food grains in the Indian Union (1) *1945-1957*

Year	Food grain products			Net imports	Stock variations (4)	Available for consumption	Population in millions	Consumption per head day (6)
	Index (2)	Gross	Net (3)					
		in million long tons (5)						
1945	105,4	60,6	53,0	1,8	—	54,8	330,9	463
1950	100,0	57,9	50,6	2,2	— 0,9	52,8	352,4	417
1952	91,1	52,9	46,3	3,9	+ 0,6	50,2	362,3	385
1955	144,4	67,1	58,7	0,7	— 0,7	59,4	378,3	437
1959/60	132,0	76,5	67,0	5,1 (7)		73,2	429,0	460

Source : J.P. Bhattacharjee "Der Verbrauch an Nahrungsgetreide in Indien" Agrarwirtschaft. ("The consumption of food grains in India". Revue of Agricultural Economy) 8th Year, 1959. p. 310-315.

(1) The pulses are considered with the cereals.

(2) Basic index: 1950 = 100.

(3) Net production has been calculated by deducting 12,4 % for seed. cattle-feeding. losses. etc.

(4) The 1947-57 variations refer only to government stocks. They have not been taken into account in the calculations.

(5) British long ton (lgt) = 1 016 metric tons.

(6) Original data in ounces. 1 ounce = 28 3495 g.

(7) Real imports ; Agricultural Situation in India. Delhi. January 1961.

TABLE V

Annual effective foodstuffs consumption per adult equivalent (AE) (1) and volume recommended by NAC

Product	Average annual consumption in kg/AE				Effective consumption as percent of recommended NAC consumption (= 100)		
	NAC recommendation	Effective consumption according to					
		Ford a) Foundation Report	Food b) Situation in India	FAO c) 1958/59	Ford Foundation Report	Food Situation in India	FAO 1958/59
Grain	145	172	143	168	119	99	116
Pulses	31	24	22	30 (5)	77	71	97
Vegetables	103	51	(17) (3)	18 (5) (4)	50	(17)	17
Vegetable oils	21	9	3	5	43	14	24
Milk and milk products	103	34	52	62 (5)	33	50	60
Meat, fish, eggs	41	9	4	4	22	10	10
Fruit and nuts	31	6	19	19 (5) (4)	19	61	61
Sugar	21	7	14	16	33	67	76

Sources: a) Results of an enquiry covering a representative sample 1945/48 in "The Ford Foundation Report on India's Food Crisis and Steps To Meet It" 1959. p. 239. – b) According to "Food Situation in India 1939-1953", p. XXXII; indicated here for 1952-53. – c) According to FAO Production Year Book 1960. converted into adult equivalents.
(1) As the word indicates, the adult equivalent (AE) corresponds to the German concept of "Vollperson" (full adult age). The bases of the calculation differ very little. – (2) 1950/51. – (3) According to the average structure of consumption as revealed by the statistics of the preceding years. – (4) Calculated according to the data on utilizable calories. – (5) Calculated according to the data concerning the quantities of fats and protein. based on a 5.6 % fat content and a 3.7 % protein content.

TABLE VI

Consumption of foodstuffs per adult equivalent (AE) in kg/year and total 1959/60 and 1976

	1959/60		1976					
Total population	429 millions		600 millions					
Adult equivalents	365 millions		510 millions					
	Effective average consumption	NAC recommendation	Effective consumption desired					
			according to NAC		under Hypothesis I		under Hypothesis II	
Total calorie content	2 287		2 896		2 655		2 550	
Protein content in grammes	62,2		80		69		67	
of which animal in grammes	6,1		22,6		14,0		10,0	
	kg AE	million tons	million tons	kg/AE	million tons	kg/AE	million tons	kg AE	million tons
Grain	168	61,3	52,9	145	74,0	160	81,6	170	86,7
Pulses	30	11,0	11,3	31	15,8	31	15,8	31	15,8
Grain and pulses	198	72,3	64,2	176	89,8	191	97,4	201	102,5
Fruit, vegetables incl. nuts	37	13,5	48,9	134	68,3	100	51,0	80	40,8
Milk and milk products	62	22,6	37,6	103	52,5	80	40,8	70	35,7
Sugar	16 (1)	5,8	7,7	21	10,7	21	10,7	21	10,7
Vegetable oils and fats (2)	5	1,8	7,7	21	10,7	10	5,1	6	3,1
Fish, eggs and meat	4 (3)	1,5	15,0	41	20,9	20	10,2	10	5,1

Source: FAO Production Year Book 1960; Food Situation in India 1939-53, Ministry of Food and Agriculture 1954. p. XXXII.
(1) White sugar without syrup and honey.
(2) Net fats.
(3) Edible weight excl. animal fats.

TABLE VII

Calculation of cereals requirements 1959/60 and 1976

in million tons

	1959/60		1976		
	FAO	NAC	NAC	Hypothesis I	Hypothesis II
Extra grain requirement for increasing (1) conversion production	40,3 (5)	96,6 (5)	91,9	49,8	29,9
Total fodder grain requirements (2)					
Fodder grain consumption 1959	—	—	0,6	0,6	0,6
Extra requirement through increasing conversion (3)	20,2 (4)	48,3 (4)	46,0	24,9	15,0
Total	20,2	48,3	46,6	25,5	15,6
Total requirement of cereals and pulses					
for direct consumption	73,2	64,2	89,8	97,4	102,5
for livestock feeding	20,2	48,3	46,6	25,5	15,6
Total	93,4	112,5	136,4	122,9	118,1
Seed and losses (12.5% of the necessary production)	13,6	15,5	19,6	17,1	13,5
Total	107,0	128,0	156,0	140,0	131,6

Source : Personal calculation.
(1) The calculation of the increase in requirements as it results from the increase in production intended for conversion is shown in Table VIII.
(2) 1957-1959/60; *Source :* FAO. Production Year Book 1960. On the probable lacunae in this estimate see loc.cit.
(3) The starting point is the hypothesis that half the increase is obtained by means of higher yields on fodder areas. therefore in a form other than cereals.
(4) Here : theoretical requirements in coarse grains, using the same method as for 1976.
(5) Requirements.

TABLE VIII

Calculation of the extra grain unit requirements through increasing conversion – 1976

	NAC			Hypothesis I			Hypothesis II		
	Meat, eggs	Milk milk products	Total	Meat, eggs	Milk, milk products	Total	Meat, eggs	Milk, milk products	Total
Calories per kg of food	1 510 (1)	830	—	1 510 (1)	830	—	1 510 (1)	830	—
Extra consumption 1976 in '000 tons	14,5 (2)	29,0	—	6,5 (2)	18,2	—	2,7 (2)	13,1	—
Secondary calories in '000 million calories	21,895	24,070	45,965	9,815	15,106	24,921	4,077	10,873	14,950
Primary calories in '000 million calories (sec. cal. × 7)	—	—	321,755	—	—	174,447	—	—	104,650
Fodder grains in million tons GU (3 500 cal./kg secondary cereals)	—	—	91,9	—	—	49,8	—	—	29,9

Source: Personal calculation.
(1) Under the hypothesis of a breakdown by halves, 50 % poultry and 50 % eggs.
(2) Under the hypothesis that fish represents a quarter of the total consumption of meat, eggs and fish.

TABLE IX

Development of the food cereals production aimed at and attained and per capita income

1949/50 – 1975/76

Year	Production of grain and pulses a)		Population b)			Per capita income at 1948/49 prices c)	
	million tons [1]	1949/50 = 100	million tons	1949/50 = 100		Rupees	1949/50 = 100
1949/50	54,0 (51,2) [2]	100	(355)		(100)	248,6	100
1950/51	50,0	93	362	100		246,3	99
1951/52	51,2	95				250,1	101
1952/53	58,3	108				256,6	103
1953/54	68,7	127				268,7	108
1954/55	65,8	122				271,9	109
1955/56	65,8	122				273,6	110
1956/57	68,8 (65,7) [3]	127				283,5	114
1957/58	62,5 (64,3)	116				275,6 [7]	101
1958/59	73,5 (69,2)	136					
1959/60	71,8 (72,1)	133				299,0 [8]	120
1960/61			438	121	(123)		
1965/66	100,0 [4]	185	490 [9]		(138)	(378) [9]	
1973/74						497,2 [10]	200
1975/76	173 [5]	320	600 [6]	166	(169)	(537) [9]	
	(192) [8]	(356)					
	(237) [5]	(440)					

Source: a) Second Five Year Plan, 1956, p. 256 and Agricultural Situation in India, Volume XV, No. 5, Aug. 1960, p. 547 and Volume XV, No. 10, Jan. 1961, p. 1295.
b) Third Five Year Plan, A Draft Outline, Delhi, 1960, p. 145.
c) India 1960, A Reference Annual, Delhi, 1960, p. 183.

[1] Data between brackets is from FAO, Production Year Book 1959 and 1960: Paddy has been converted into husked rice, assuming an extraction rate of 68 %. – [2] 1948/52. – [3] 1956. – [4] Objective of the Third Five Year Plan. – [5] See Table VII. – [6] See Table I. – [7] Provisional figure. – [8] Calculated according to the data in "Die Weltwirtschaft", Kiel 1961, p. 47. – [9] Extrapolation, counting 4 % annual increase. [10] Calculated according to the figures from the Third Five Year Plan, A Draft Outline, Delhi, 1960, p. 4.

ANNEX No. 8

Regional Survey

TANGANYIKA

by
Professor H. Wilbrandt
Institut für Ausländische Landwirtschaft
der Technischen Universität
Berlin

TANGANYIKA [1]

With little more than 9 million inhabitants on an area of 937 000 sq. km2 and a population density of 10 inhabitants to the sq. km, Tanganyika comprises about 40% of the total population of the four territories of East Africa - Tanganyika itself, which became independent in 1961, the British Crown Colony of Kenya, Uganda, which is to acquire independence in 1962, and the island of Zanzibar. The population is more than 98% of African origin and consists of a great number of tribes. There are about 140 000 non-Africans (approximately 115 000 of them Asiatics). The feeding of the non-African population may be ignored in view of the fact that it bears no relation to the subject dealt with here. The inadequacy of statistics on the food supplies of the African population allows only very rough and ready data concerning the food situation. However, a brief picture of the overall position in so far as it is of interest from the angle of surplus utilization can give an idea of the way the problem presents itself here.

1. The population of Tanganyika, a country almost equal in area to Germany (F.R.), France, the Netherlands, Belgium and Austria combined, lives in widely dispersed settlements of the traditional tribal type. In the fertile regions on the banks of Lake Victoria, around Kilimanjaro, in the Southwest and in the Tanga region, population density is above average, while elsewhere vast areas are almost desert. A great number of small rural localities can be considered as local centres. In 1957 less than 300 000 persons were living in 11 towns of more than 10 000 inhabitants spread throughout the country. Nevertheless, the population of the towns has almost doubled since the war. Only three cities, including the capital, Dar-es-Salaam (129 000 inhabitants), and Tang (30 000), are situated on the coast. The country is penetrated only at wide intervals by railways and metalled roads; towns and the populated regions are separated from each other by great distances.

2. The major part of the tropical land consists of more or less wooded steppe on which rainfall is relatively low. In parts not infested by the tsetse fly, and where water is not too scarce, this land is suitable for cattle-raising. Only a relatively limited area of the country lends itself by nature to more intense farming, and part of it is cultivated by the traditional form of primitive agriculture: " shifting cultivation ". If in other days the agriculture practised by the Africans was mainly for natural self-supply, the production of " cash crops " (coffee, tea, cotton, pyrethrum, cashew nuts, pulses and oil-bearing plants) has been progressing quite markedly for some time. Only the growing of sisal, which is by far the main foreign currency earner, goes on largely in non-African specialized plantations. These also employ the major part of the agricultural manpower.

3. The total active African population in 1959 included about 430 000 wage-earners of whom approximately 220 000 were employed as farm and forest labourers, mainly on the sisal plantations. Only agriculture employs female labour (about 20%); in the other sectors the labour force is almost exclusively masculine. About 130 000 persons work in public and other services, commerce, transport and communication. Hnadicrafts and industry, mining and construction employ only about 40 000 persons or roughly as many as the domestic servants working for private persons. With their direct dependents the male workers, who are hardly 400 000 in number, represent a population of about 2 million persons. This part of the African population, the small number of self-employed Africans, the few African farmers who sell part or all their production, and the major part of the non-African population live in the monetary sector of the economy or are more or less closely linked with it. The remaining six-and-a-half to seven million inhabitants, roughly three-quarters of the total. It is probable that in practice this number is even higher : many wage-earners leave their family to continue its habitual mode of rural life and many others themselves live in the country and go to work by bicycle, bus, or on foot. Often a member of a small or larger family community is a wage-earner but is fed by this community or takes food prepared by it with him to work.

[1] In preparing this regional study, the author was aided by M. W. Kock, M. E.G. Jentzsch and M. H. Meliezck.

In the non-monetary sector, that is to say in the rural settlements of traditional type, what is consumed is produced and what is produced is consumed. Where production for market predominates, the situation is different. If a member of the family is in paid employment, or if market production brings in money, this income makes it possible to buy on the market a few extra consumer goods for a fairly large family group. Thus, small amounts of money from income obtained in the monetary sector reach a great number of family groups widely disseminated throughout the country. Consequently, the dividing line between the monetary and non-monetary sectors of the economy and way of life is not a sharp one.

4. On the whole, the agricultural population feeds itself with its own production. Here too, however, there are intermediate situation and exceptions. Thus, the sisal plantations generally practise single-crop farming. Consequently, they are not sources of self-supply in foodstuffs for the wage-earners they employ, at least when these do not themselves cultivate a small piece of land or do not belong to farming families. These workers mainly purchase maize to supplement their rations. Some of the African producers of other important cash crops (coffee, tea, pyrethrum, cotton, oil plants and pulses, cashew nuts, etc.) also produce the food they need, whilst others buy all or part of it.

For the mass of the poor African population, the food they grow or purchase on the market consist of millet and sorghum, maize, manioc, bananas, pulses, fruit, vegetables, and a little rice. As income improves, there is a tendency to replace the maize and the millet by wheat which, near the Equator, grows well only at farly high altitudes, and the production of which is consequently limited, and a trend for sugar consumption to increase (it rose from 20 000 tons in 1950 to 46 000 in 1959). Consumption of livestock products also tends to rise. The coffee growers of Kilimanjaro are the chief buyers, not only of cattle raised in the country, but also of animals imported from Kenya to produce milk and cover meat requirements.

In principle the rules of feeding habitually applying in European countries, i.e. that increased income is reflected in greater consumption of livestock products and sugar, hold in the main for Tanganyika also, but with some variants due to the special local situation. However, the figures available are inadequate to permit a complete appraisal.

In 1958, the USDA-FAS (1) calculated with all pertinent reservations the average calorie and protein content of food over the country as a whole :

TABLE 1

Average calorie and protein content of food in Tanganyika in 1958

per head

	Consumption	Deficit in relation to nutritional standards
Total calories	2 175	200
Animal protein (in g)	9	0
Protein from pulses (in g)	14	0
Other vegetable protein (in g)	41	0
Total protein (in g)	64	0

Differences in food intake are considerable according to regions and tribe and according to whether the income is obtained in cash or in kind.

It is not possible to say with certainty what is the total consumption of the various food products in the monetary and non-monetary sectors.

The official statistics mainly indicate production and export of the principal cash crops. As regards production for self-supply and sale, the World Bank has endeavoured to give estimates in its report (2). These figures, which diverge to some extent from those published by USDA-FAS, show almost 30 million grain units or more than 3.00 grain units per head. For 1958 (3) USDA-FAS estimates meat consumption at 150 000 tons or 12.9 kg per head. According to the evaluations of the World Bank, there is no calorie deficit (see Table 2).

The value of vegetable food supplies is estimated by the World Bank on the basis of producer prices at 53.5 million pounds or 6 pounds per head of the population on the average. Of this figure, the part marketed represents about 9 million pounds or 17%. To the vegetable food must be added some consumption of livestock products (meat, eggs, milk, butter, etc.) (see Table 3).

(1) USDA-FAS. The World Food Deficit, p. 19, Washington 1960. USDA-FAS- The World Food Budget, p. 42 et seq., Washington 1961.

(2) International Bank for Reconstruction and Development, The economic development of Tanganyika, p. 226 et seq., Dar es-Salaam 1960.

(3) *USDA-FAS*, Food balances in foreign countries. Part II: Western Asia and Africa, p. 29, Washington 1960.

The gross national product (GNP) at factor costs (1) has been evaluated by the Statistical Office at about 178 million pounds in 1959. The share of agriculture amounts to about 41 million pounds for that part of its production which is marketed and, according to estimates, to about 55 million pounds for self-supply. After deducting the value at the production stage of cash crops, which is around 30 million pounds, the total value of internal consumption (self-supply and products marketed) can be estimated at 60 or 70 million pounds. We thus obtain for vegetable food which contains other food elements a per capita value of about 7 pounds. If account is also taken of the value of animal feeding, the value is probably around 8 pounds.

In addition to these producer values, the consumer in the towns who buys on the market naturally pays supplements for transport, processing and marketing. The high percentage of total average consumer expenditure represented by foodstuffs, which is probably over 60% and often rises even to 80 or 90%, corresponds to the low standard of living.

5. In relation to this global volume of food consumption, in quantity and in value, rail consignments from the producing regions of all types of cereals and of flour, which were 130 000 tons approximately in 1959 and 1960 (2), are very low. They mainly go to the non-agricultural population living at a distance from the producing regions and independent of the market, but consist to some small extent of exports of maize, millet and pulses to the neighbouring territories of Uganda and Kenya. Fairly small quantities of oleaginous products and meat are also sent to these countries. On the other hand, certain quantities of wheat and wheat flour, meat, butter, cheese, oil and fats, as well as sugar, etc. are imported from these territories. With the exception of the sugar, the consumption of which is much more widespread, these imports are mainly for the richer food supplies of the non-African population, which differ from the traditional nourishment of the Africans. As a consequence, the requirements of the main food products, which are structurally increasing because of population growth and improving incomes of a part at least of the population, are on the whole covered by internal production. The large deficit so far noted in self-supply in sugar will be covered shortly by the establishment of a new sugar mill in the Kilombero valley.

6. Exports of farm products represent more than 70% of total Tanganyikan exports valued at about 45 million pounds to countries outside East Africa. However, only a very small part of these exports comprise food products normally consumed in the country (for instance, cereals, wheat, products based on manioc, meat or meat products); the greater part consists of the cash crops mentioned above, i.e. sisal, cotton, coffee, tea, cashew-nuts, hides, castor oil seeds, groundnuts, pyrethrum, etc. Although not negligible, imports of food products, which represent about 8% of global imports valued at about 35 million pounds, are not of very great importance. Tinned milk, sugar, rice and beverages head the list (see Tables 5 and 6).

7. The tendency to export mainly agricultural products whose cultivation is favoured by the tropical climate of the country is becoming stronger. The external trade balance of Tanganyika alone has for some years shown high surpluses. Even if increased imports of capital goods which would speed up the economic development of the country are assumed, there will probably be no reason to expect any shortage of foreign exchange in the coming years in view of the progress of exports of agricultural products, at least as regards Tanganyika alone. However, the territories of East Africa have a common currency, and the trade balance of Kenya, which is more advanced, has a heavy deficit. The number of fields in which the economies of the territories of East Africa are interdependent make it essential to judge against a wider background. But we do not intend to dwell on this point. It is sufficient to point out that more intense economic development in Tanganyika will necessarily mean greater foreign exchange requirements for the import of capital goods, but that following this development imports of consumer goods, which have hitherto represented 40 to 50% of all imports, would need to be partly replaced by home production and that the expanding export trend would have to be maintained. It does not seem therefore that in the near future shortage of foreign currency will be the bottleneck to progress in Tanganyika, as is the case in many other countries.

8. On the other hand, domestic capital formation is doubtless increasingly falling behind the investments which are becoming necessary in view of the speedier pace of general development. If it were possible to make up for the inadequacy of home capital by counterpart funds from the sale of surplus food products, this could be a matter for congratulation. However, Tanganyika has no structural food deficit which in itself could justify imports of surpluses or make such imports indispensable. This possibility of helping to strengthen internal capital by imports of surplus food is excluded.

(1) Tanganyika, Statistical abstracts 1960, p. 23, Dar-es-Salaam 1960.
(2) According to information communicated by letter by the East African Railways and Harbours Administration (see Table 4).

9. The production reserves of African agriculture in Tanganyika are very large and are only beginning to be cut into. There is need for schemes for vocational training, advisory services, organization, supply of production media, irrigation etc., i.e. for agricultural promotion in the widest sense, and these can only bear fruit if their action is combined. The structural utilization of surpluses can only help in this connection under special conditions which so far do not exist in Tanganyika, that is to say when capital requirements go hand in hand with food needs which cannot be met by home production. However, the progress of agricultural output will probably make it possible to more than cover internal requirements and to increase exports of tropical products, and perhaps even of meat.

10. In the foreseeable future there are consequently hardly any possibilities here for productive utilization of surpluses to cover a structural food deficiency and thus to strengthen the supply of internal capital, but it is nevertheless true more or less extensive regions of this big country quite often experience catastrophic shortages due to drought or floods. In the future it may well be as indispensable as in the past to supply these disaster regions with emergency cereals, particularly maize, even if they are relatively inaccessible. In 1960/61 more than 9 000 tons of maize amd 300 tons of powdered skim milk were supplied under the United States Aid (PL 480) Program to combat the consequences of a catastrophic drought.

Thus, it might be that in individual years, and until such time as systematic increase in internal stocks can fill the gap, it will be seen as a political necessity and a humanitarian duty to supply maize to overcome crises and save human lives. However, as we have already indicated, even in years of great shortage the quantities needed would be relatively small.

11. Moreover, the supply of powdered skim milk to furnish extra protein to the vulnerable elements of the population (children, etc.) may continue to be an imperative duty even if, according to the statistics reproduced above, the protein requirement is covered on the overall average.

12. The common feature of these tasks is that it is a question of limited quantities, the need for which is felt either irregularly (cereals in years of shortage) or regularly (powdered skim milk), supplied by one country to another as free help and not as loans to be distributed to the population of the receiving country by the government-generally without payment. We cannot therefore expect any increase in internal capital availabilities from them. Tanganyika represents the type of developing country in which deliveries of food surpluses to overcome a structural deficit in food products are hardly feasible but in which food intake in certain strata of the population and in certain regions leaves much to be desired, particularly during years of scarcity and is, on the whole, at a relatively low level. There are, therefore, certain possibilities of using surpluses as emergency help, and this may even be a necessity in some circumstances.

TABLE 2

Production of important foodstuffs

Annual average 1957-1959

Product	Volume		Equivalent in GU (1)		Conversion coefficient (3) for calculation GU	Calorie content		Conversion basis (4) for calculating calorie content cal kg
	in '000 long tons	in kg per head (2)	in '000 GU	in GU head (2)		in '000 million calories	in cal head day	
Manioc (5)	620	70	6 200	0,70	1,00	2 108	656	3 400
Other roots and tubers	120	14	300	0,03	0,25	108	34	900
Maize	600	68	6 000	0,68	1,00	2 100	654	3 500
Millet (6)	970	111	9 700	1,11	1,00	3 298	1 027	3 400
Beans and peas	210	24	3 150	0,36	1,50	735	229	3 500
Bananas	670	76	3 350	0,38	0,50	469	146	700
Fruit	240	28	1 200	0,14	0,50	96	30	400
Vegetables	90	10	180	0,02	0,20	18	6	200
Total	—	—	30 080	3,42	—	8 932	2 365 (7)	—

Sources : International Bank of Reconstruction and Development, The economic development of Tanganyika. Dar-es-Salaam 1960. p. 227. *FAO*. Technical conversion factors for agricultural commodities. Rome 1960. p. 119 et seq. *FAO*, Food Composition Tables, Rome 1954.

Note : The figures concerning food products in Table 2a are derived from other sources and can only be compared with those of the above Table with reservations.

(1) GU = grain unit.

(2) For a population of 8 8 million.

(3) According to the equivalences normally adopted in Germany (FR) for the GU (see Table in "Technical conversion factors").

(4) According to the values adopted by the FAO in the "Food Composition Tables"

(5) In dried roots.

(6) Varieties of millet and sorghum.

(7) At the intake level (15 % deducted for kitchen losses).

TABLE 2a

Production of important foodstuffs

Annual average 1957 - 1959

Product	Volume		Equivalent in GU [1]		Conversion coefficient [3] for calculating GU	Calorie content		Conversion basis [4] for calculating calorie content cal kg
	in '000 long tons	in kg per head [2]	in 000 GU	in GU/head [2]		in '000 m cal	in cal/head/day	
Rice	19 [5]	2	190	0,02	1,00	67	21	3 500
Wheat	6 [5]	1	60	0,01	1,00	21	7	3 500
Sugar [6]	22 [7]	3	390	0,04	1,75	84	26	3 800
Groundnuts [8]	15 [5]	2	230	0,03	1,50	59	18	3 900
Oil-seeds [9]	114 [10]	13	2 280	0,26	2,00	296	92	2 600
Total	—	—	3 150	0,36	—	527	140 [11]	—
Plus total from Table 2	—	—	33 230	3,78	—	9 459	2 505 [11]	—

Sources : FAO Production Year Book 1960, Rome 1960 ; *Tanganyika*, Statistical Abstracts 1960. Dar-es-Salaam 1960. pp. 60 and 86 ; *East African Office*. Statistical Digest 1960, London 1960. p. 16.

(1) GU = grain units.

(2) For a population of 8 8 million.

(3) According to the equivalences normally adopted in Germany (FR) for the GU (see Table in "Technical conversion factors").

(4) According to the values adopted by the FAO in the "Food Composition Tables".

(5) According to FAO statistics.

(6) White sugar.

(7) According to Statistical Abstracts 1960. pp. 60 and 86.

(8) With the shell.

(9) Soya. cotton. sesame. sunflower. copra and castor seed.

(10) According to FAO statistics and the Statistical Digest. p. 16.

(11) At intake level (15 % deducted for kitchen losses).

TABLE 3

Value of production and share in market production for important foodstuffs — 1958

Product	Value of production		Value of market production		% of market production to total production
	in £EA '000 (1)	in £EA per head (2)	in £EA '000 (1)	in £EA per head (2)	
Manioc	7 280	0,8	730	0,1	10
Other roots and tubers	1 590	0,2	160	0,0	10
Maize	8 920	1,0	2 230	0,3	25
Millet (3)	18 670	2,1	2 260	0,3	12
Beans and peas	5 360	0,6	1 610	0,2	30
Bananas	6 700	0,8	670	0,1	10
Fruit	3 600	0,4	1 080	0,1	30
Vegetables	1 440	0,2	290	0,0	20
Total	53 560	6,1	9 030	1,0 (4)	17

Sources : International Bank of Reconstruction and Development, The economic development of Tanganyika. Dar-es-Salaam. 1960. pp. 228 and 231.
Note : The data concerning food products are derived from other sources and are only comparable with the figures in the above Table with reservations.
(1) £1EA = 20s. EA = £1 = $2.80.
(2) For a population of 8.8 million.
(3) Varieties of millet and sorghum.
(4) Divergences in relation to the total are due to round figures.

TABLE 3a

Value of production and share in market production for important foodstuffs — 1958

Product	Value of production		Value of market production		% of market production to total production	Basic price [3] in £EA per long ton
	in £EA '000 [1]	in £EA per head (f)	in £EA '000 [1]	in £EA per head [2]		
Rice	665	0,1	660	0,1	100 [4]	35 [8]
Wheat	162	0,0	160	0,0	100 [4]	27 [8]
Sugar	1 232	0,1	1 230	0,1	100 [7]	56 [8]
Groundnuts	645	0,1	485	0,1	75 [4]	43 [8]
Cashew nuts	780 [9]	0,1	780	0,1	100 [9]	26 [8]
Oil-seeds [10]	5 000	0,6	4 000	0,5	80 [4]	44 [11]
Total	8 484	1,0	7 315	0,8 [12]	86	—
Plus total from Table 3	62 044	7,1	16 345	1,9 [12]	26	—

Sources : Tanganyika. Statistical Abstracts 1960. Dar-es-Salaam 1960 – *East African Office*, Statistical Digest. London 1960 – *FAO*. Production Year Book 1960. Rome 1961.
[1] £EA 1 = 20s. EA = £1 = $ 2.80.
[2] For a population of 8.8 million.
[3] 1958 prices.
[4] Evaluation according to the volume of production marketed in 1958 or 1959 (Statistical Digest. p. 16).
[5] See Statistical Abstracts. p. 63.
[6] See Statistical Digest. p. 16.
[7] Quantities used in calculating excise (Statistical Abstracts. p. 85).
[8] Retail price less excise and consumption taxes.
[9] Production marketed only (Statistical Digest. p. 16).
[10] Soya. cotton. sesame. sunflower. copra and castor seed.
[11] Weighted average (prices from Statistical Abstracts, p. 63, Statistical Digest. p. 16; except some estimates according to FAO statistics).
[12] Divergences in relation to the total are due to round figures.

TABLE 4

Cereals transported by the East African Railways and Harbours Administration in Tanganyika (1)

1959 and 1960 averages

Product	Volume in '000 t	Share of total production (2) in %
Wheat and wheat flour (as wheat)	6,2 (3)	100
Rice and rice flour	16,8	88
Maize and maize flour (as maize)	75,4	13
Barley	0,4	—
Oats	0,1	—
Other cereals	31,8	3 (4)
Total cereals	130,7	8 (5)

Sources: Information communicated by letter by the "East African Railways and Harbours Administration", Nairobi, 1961. *FAO*, Technical conversion factors for agricultural commodities, Rome 1960. p. 287.
(1) On the railways of East Africa, on certain secondary lines where transport is done by truck and on the ship services on the lakes of East Africa.
(2) Average for 1957-59 (see Tables 2 and 2a).
(3) Without loading in the ports of Dar-es-Salaam and Tanga.
(4) In relation to the production of millet.
(5) Including barley and oats.

TABLE 5

Balance-sheet of external trade in food products 1959

in £EA '000 (1)

SITC group	Imports		Exports		Total external trade		
	Net import (2)	Interterritorial trade (3)	Domestic export (4)	Interterritorial trade (3)	Imports (5)	Exports (6)	Balance
Part 0: Food products (7)	2 343	2 331	11 269	1 033	4 674	12 302	— 7 628
Part 2, division 2: Oil-seeds	—	10	2 799	199	10	2 998	— 2 988
Part 4: Animal and vegetable oils and fats (8)	143	309	130	335	452	465	— 13
Part 1: Beverages and tobacco	274	2 056	66	365	2 330	431	+ 1 899
Part 0, division 8: Animal feeding	—	25	747	25	25	772	— 747
	2 760	4 731	15 011	1 957	7 491	16 968	— 9 477
Total of all groups	34 456	8 100	45 287	2 574	42 556	47 861	— 5 305

Sources : Tanganyika. Statistical Abstracts 1960. Dar-es-Salaam 1960. p. 30 et seq. and p. 61. *East African Office.* Statistical Digest 1960. London 1960. p. 5 et seq. *East African Statistical Department.* Quarterly Economic and Statistical Bulletin No. 51 (Nairobi) March 1961. p. 17 et seq.

(1) £1 EA = 20s. EA = £1 = $ 2.80.

(2) "Net imports": direct imports from abroad (except Kenya and Uganda) including re-exports and imports in transit from Kenya and Uganda. exclusive of imports in transit to Kenya and Uganda. For products intended for food. re-exports may be ignored (about 1 % by value).

(3) "Interterritorial trade": imports of products originating in Kenya and Uganda for consumption in Tanganyika or exports of products originating in Tanganyika for consumption in Kenya and Uganda.

(4) Exports of national products; exports abroad (except Kenya and Uganda). of goods produced in Tanganyika.

(5) Net imports + imports in interterritorial trade.

(6) Exports of national products + exports in interterritorial trade.

(7) Without division 8 (animal feeding).

(8) Excluding beeswax.

TABLE 6

Tanganyika's external trade in the main foodstuffs (1959)

in '000 t

Type of goods	Imports		Exports		Total external trade	
	Net import (1)	Interterritorial trade (2)	Domestic export (3)	Interterritorial trade (2)	Imports (4)	Exports (5)
Meat and meat products	—	0,4	4,7	0,2	0,4	4,9
Fish and fish products	—	—	0,9	—	—	0,9
Milk (in tins)	3,8	0,0	—	0,0	3,8	0,0
Cereals and cereals products	6,9	23,4	28,8	12,8	30,3	41,6
Butter and ghee	—	0,5	0,0	0,4	0,5	0,4
Pulses	—	2,6	11,6	4,9	2,6	4,9
Sugar and sugar wares	20,2	4,9	—	2,1	25,0	2,1
Manioc and manioc flour	—	—	13,9	—	—	13,9
Cashew nuts	—	—	33,7	—	—	33,7
Oil-seeds	—	0,2	56,1	8,1	0,2	64,2
Oils and fats	0,2	3,1	1,5	3,0	3,3	4,5

Sources : Tanganyika, Statistical Abstracts 1960, Dar-es-Salaam 1960, p. 30 et seq. and p. 61. *East African Office,* Statistical Digest 1960, London 1960, p. 5 et seq. *East African Statistical Department.* Quarterly Economic and Statistical Bulletin No. 51 (Nairobi) March 1961, p. 17 et seq. *Tanganyika Ministry of Natural Resources,* Annual Report of the Department of Agriculture 1959, Part I, Dar-es-Salaam 1960. p. 39.

(1) "Net imports": direct imports from abroad (except Kenya and Uganda) including re-exports and imports in transit through Kenya and Uganda without imports in transit to Kenya and Uganda. For products intended for food, re-exports can be ignored (about 1 % in value).

(2) "Interterritorial trade": imports of products originating in Kenya and Uganda for consumption in Tanganyika or exports of products originating in Tanganyika for consumption in Kenya and Uganda.

(3) "Domestic export": exports abroad (except Kenya and Uganda) of goods produced in Tanganyika.

(4) Net imports + imports in interterritorial trade.

(5) Exports of national products exports in interterritorial trade.

(6) In grain equivalent.

ANNEX No. 9

Regional Survey

AFGHANISTAN

by
Professor H. Wilbrandt
Institut für Ausländische Landwirtschaft
der Technischen Universität
Berlin

AFGHANISTAN (1)

Afghanistan is one of the developing countries with an almost exclusively agricultural and backward economic structure, an extremely low national income and living standards, and food consumption in keeping. It could furnish a particularly striking example for the calculation of considerable calorie and protein deficits. But unfortunately no evaluations of per capita supplies of calories, protein and animal protein are yet available.

The statistical data on economy, numbers, structure and growth of population, agricultural production, supply to the market, food, etc. are incomplete. We have therefore abandoned any idea of an analysis based on figures, which in any case would be unrealistic. Nevertheless, an account of the special characteristics of Afghanistan may help to determine how far agricultural surpluses, in a country with such a structure, can make a useful contribution to the elimination of deficiencies and the development of the economy.

1. This land of between 700 000 and 800 000 square kilometres probably has about 12 million inhabitants. The death rate is still very high, expectation of life low, and the rate of growth is not statistically established : it seems to be between 1% and 1.5% per annum. Medical facilities and living conditions from the health and hygiene angle are primitive for 90 to 95% of the population. Population pressure is beginning its upward thrust, but it is still far from the maximum annual increase of 2.5% and more which may have to be expected at a later date.

2. About 90% of the population lives in the country, mainly from farming and cattle-raising. In addition to Kabul, the capital (250 000 inhabitants), there are a few fairly large and medium-size cities. The urban population is hardly more than 5% of the total, and the number of workers in industry is insignificant. Only a small part of the national income is accounted for by the monetary sector of the economy, the major part being produced by self-sufficient peasants who supply most of their own wants and acquire the remainder by exchange on a market where division of labour is but little developed.

3. The country consists mainly of arid mountainous and steppe regions situated at various altitudes, with little water, and with dry heat in summer and cold in winter. Only a small proportion of the total area is exploited for agriculture, and this is only partly irrigated. Land which is easily cultivated and suitable for irrigation – i.e. can be irrigated at small expense – is mainly exploited. Other land could be won for farming, principally by irrigation. However, large water supply projects demand considerable investments. Irrigation farming in theory permits high and relatively sure yields, whereas on non-irrigated land yields are necessarily lower and more uncertain. The wide fluctuations in harvests are not due solely to varying meteorological conditions but also to the primitive techniques of farming which so far make only minimum use of modern methods of breeding, upkeep, pest control, and of fertilizers. In the southeastern region, situated between the 30th and 38th parallels, which is touched by the fringes of the monsoon, subtropical crops grow (citrus fruits, sugar-cane). Cotton still flourishes at altitudes between 1500 and 2000 metres, but mainly, however, on irrigated land in the northern territories at altitudes of 500 to 800 metres. Sugar beet is also grown here. Cereals are harvested even at 3000 metres. The dry regions of mountain and steppe in the North are the land of the Karakul sheep. Cropping and pasture husbandry are generally separate. The small output of meat is not based on converted agricultural products but on natural pasture. Thus there is no link between the prices of cattle and meat on the one land of cereals and other crops on the other.

4. Food supply is mainly based on cereals for direct consumption. Conversion products (meat, eggs, milk, butter, etc.) are consumed in very small amounts by the mass of the poor population, in greater quantities by the better-off, and in large quantities by the rich minority. The situation is similar for sugar.

5. The large grain-producing regions are mainly in the North and Northwest of the country, that is to say at a distance of 500 to 800 km from Kabul, the main consumption centre, situated in the Southeast and so far only to be reached by truck (by camel until recently) over very bad roads. This city can cover only a part of its cereals requirements in the immediate hinterland. To the price fluctuations connected with the harvests must be added other important price differences related to transport costs between the surplus and deficit regions. The Supply Office, an organ of the State, is responsible for regulating the cereals market, which means purchasing cereals at fixed prices in the surplus regions and thus protecting producers against falling prices and poor sales,

(1) In preparing this regional study, the author was aided by M. W. Kock, M. E.G. Jentzsch and M. H. Meliezck.

and above all supplying the Kabul consumption centre at proper prices. Even if this mission were fulfilled in exemplary fashion, it could not prevent grain prices sometimes falling to half that of Kabul in the surplus regions in the event of a good harvest and, conversely, inadequate supplies to Kabul when harvests are bad. This would be inevitable even if purchase prices were increased in the North and a corresponding rise in the price of bread accepted in the capital.

6. The difficulties met with in supplies of cereals, flour and bread to Kabul in particular have led since 1953 to the use of surplus US cereals and then also of surplus Soviet cereals. If we assume that the market must supply a population (including Kabul, a few other medium-sized cities and the army) totalling 700 000 consumers with an individual annual consumption of about 200 kg of cereals, these groups would require about 140 000 tons. The first American deliveries were 10-12 000 tons annually in 1953 and 1954. Later, deliveries of 40 000 tons yearly were made and finally even of 50 000 in 1960/61. In this same year a further 40 000 tons of wheat came from USSR.

It is not very clear whether and, if so, how far, these extra requirements, which have been increasing only in recent years in those sectors of the population supplied by the market, are due to poor harvests or to the needs of a growing agricultural population still using primitive production methods. The development of the towns does not seem to have been an essential factor of change, but growing employment of manpower which has to be supplied with food in large-scale roadbuilding projects can doubtless mean increasing requirements.

Whether they come from the USA or the USSR, these deliveries represent very high transport costs in addition to their market value. From the United States to Karachi the distance by sea is 8 250 miles, after which the railway journey to Peshawar is about 1 700 km, with a further 300 km by road to Kabul, involving at least 3 transshipments and possibly also temporary storage. From the Russian frontier to Kabul it is about 500 to 600 km by truck over the worst of roads, without counting transport costs in Russian territory from the producing region to the frontier, which are unknown. There could naturally not even be any question of transporting perishable products over such distances (1). It may therefore be assumed that total transport costs from the United States to Kabul and other utilization centres add 30 to 40 % to the fob value of deliveries of American cereals. (2) Transport costs for supplies from USSR are probably also very high. In both cases these costs therefore represent such a high charge that this utilization of surpluses really becomes quite uneconomical. It is only when very serious famine has to be coped with and decisions are made irrespective of any cost calculation that this combination of expenditure can and must at times be ignored.

7. Deliveries from the United States have been made in the framework of the relevant laws, particularly PL 480. The Afghan Government has been urged not to sell the cereals imported at a price above the one agreed, that is to say to use them to stabilize prices and avoid any rise. Where deliveries were not made gratuitously as emergency aid (3), the counterpart funds should serve partly to cover the expenditure of the American mission in the country, but above all be employed as loans to finance development projects under the joint responsibility of the United States and the Afghan Government. Although counterpart payment have been calculated, under the Afghan system of multiple exchange rates, at rates favourable to Afghanistan, substantial counterpart funds have been built up.

8. Programmes to expand agricultural production play a considerable role in development projects in hand. Comprehensive schemes are being worked out to step up long-term production. The results, however, are so far minimal. On the one hand, the great project to irrigate the Helmand Valley, financed by Afghanistan and the United States, has so far yielded only a fraction of the expected results. On the other hand, the efforts to increase production in various parts of the country have not yet got beyond the stage of tests and demonstrations limited to certain areas.

There can be no doubt, however, that with a total volume of cereals production of about 4 million tons according to statistics, a lasting production increase of only 5 % can and should represent twice or three times the American surpluses and the Russian deliveries of cereals to supply Kabul and other consumption centres. Possible production reserves, if methods of cultivation were improved (particularly on irrigated land which already exists but is badly farmed) and better farming techniques used, amount to at least 100 %. Even if present efforts have only relative success, the chief problem is not to eliminate deficiencies but to guide the factors of production properly and to organize the market. With the present transport costs,

(1) In addition to wheat, the United States also supply powdered skim milk for infant's feeding.

(2) For the Financial year 1960/61 transport costs from the United States to the Afghan frontier under the heading of PL 480 deliveries amounted to 26.5 % of the value of the supplies. The share of these costs for transport by land from the Pakistan port to the Afghan frontier is about half the total.

(3) A part of the supplies of cereals and powdered milk consisted of gifts.

Afghanistan will never be able to export cereals: in many cases, receipts would not cover these costs. Should higher hectare yields be achieved, it would be necessary, once requirements stemming from the increased consumption of bread and food grains are covered, to reduce the area under cereals and use the land thus made available for other exportable products of a high specific value, such as cotton, oil-seeds, etc.

9. If an attempt is made to obtain a picture of the present overall situation and the probable future trend, the following conclusions do not seem wide of the mark :

a) The requirements of the non-agricultural population (500 000 to 1 million inhabitants) which have to be covered via the market by home production or from abroad represent a very low proportion of total requirements compared with other developing countries. They alone need be considered in relation to surplus utilization. The non-agricultural population which has to be supplied through the market is growing only slowly.

b) The deficiencies in the supply of this category of population in the last ten years are not due to the run-down of production reserves but to a combination of circumstances : increased requirements of the rural population for self-supply; development of the towns; growing needs of the army and the labour force working on roadbuilding; hitherto mediocre implementation of the agricultural development programme; organizational and transport difficulties. If efforts at promotion begin to bear fruit there will, on the whole, not be any shortage of cereals in the country. The coming completion of the modern Salang road over the Hindu-Kush, built with Soviet help, will considerably improve and cheapen transport facilities. Price differences between the surplus and deficit regions will become less marked; there will no longer be any dead ground where cereals have no market value, and the incentive to produce will become greater. It will then be easy to organize the market more efficiently (1).

c) In view of the great distances over which haulage has to be effected, the ratio between the value of surplus goods and transport costs is quite uneconomic and will continue to be an incentive to explore more rational means of meeting deficiencies than the use of surpluses. This will be most particularly the case if the exporting countries do not endeavour to expand the use of their surpluses, as the United States has hitherto done, but compare the costs of these with the effectiveness of other forms of development promotion.

d) Given the low level of total production and of the national product, reckoned both globally and per head, internal capital formation for development is inadequate. When it is not financed by creating money, then resort is almost exclusively to price levies and manipulations of exchange rates, which differ for residents and non-residents, and only to a small extent to individual savings. It should be complemented, particularly at this stage, by the counterpart funds. There are sufficient projects which could make use of more home capital. However, import requirements payable from export income are also great, and they grow – and even become pressing – as efforts to industrialize are stepped up. This penury of foreign exchange must of necessity become worse in the present phase. As long as foreign aid is available, either to pay for outside capital goods required or in the form of surplus cereals, and variations in deliveries of surpluses do not lead the countries granting foreign exchange aid for the purchase of equipment goods to reduce or increase this aid, the endeavour will probably be to retain both. The surplus cereals reduce the need to advance along the road of increased agricultural production, which is so difficult to tread, precisely in this phase of modernization, and bring in counterpart funds. Both results are welcome. But if it comes to a choice between equipment goods and surplus cereals, a decision must be expected in favour of the first, with intensified agricultural promotion as a consequence.

e) In view of the small proportion of urban population – which may be considered a long-term feature – the large agricultural production reserves, the unusually high costs weighing on the supply of surpluses, and also the large requirements for foreign capital goods, Afghanistan is in that category of countries where anything more than short-term utilization of farm surpluses in small quantities is not be expected if economic development is even tolerably effective and is encouraged by other countries. The system of surplus utilization seems likely to be replaced more rapidly than in many other countries by a more effective type of aid.

(1) The fact that the closing of the southeastern frontier with Pakistan precludes the arrival of further surplus supplies from USA and EEC should only be mentioned as one further point, since there is reason to suppose that this difficulty will not prove lasting.

ANNEX No. 10

Regional Survey

SAUDI ARABIA

by
Professor H. Wilbrandt
Institut für Ausländische Landwirtschaft
der Technischen Universität
Berlin

CONTENTS

SAUDI ARABIA [1]

The food needs of Saudi Arabia and their probable future trend are determined by numbers of population, income, purchasing power and the present state and future evolution of production and external trade. The natural conditions of the country set limits to the extent to which the population can be self-sufficient in food supply.

POPULATION AND NATIONAL INCOME

Up to the present there has been no population census in Saudi Arabia, and statistics are based on estimates. These range between 13 and 12 millions. Those given by Lipsky [2] who assumes a population of 4 millions in 1959 are probably close to reality. About a quarter of this figure is made up of city dwellers with non-agricultural occupations, another quarter of peasants, and the other half of nomads engaged in animal-breeding [3].

Annual population growth was estimated in 1943 at 1.2% [4] and is probably between 2 and 3% today [5]. Since the death rate is still relatively high, the peak point of growth has probably not yet been reached. If we assume a growth rate of 2.5%, the population figure should rise from 4 to about 5 millions in the coming 10 years.

Per capita income is low and cannot be calculated exactly. It is estimated at something between 200 and 270 rials [6] (46 to 60 dollars). The differences between the income of a tiny upper class and those of the mass of nomads and fellaheen, as well as of the rest of the poor population, are great. Appraisal of the goods in kind produced by the nomads and the sedentary fellaheen for their own consumption in the non-monetary farming and cattle-raising sector, which comprises about three quarters of the total population, is a further difficulty in evaluating their incomes and comparing the per capita income in kind with income in other countries [7].

CONSUMPTION OF FOODSTUFFS

In accordance with the breakdown of occupations in the monetary and non-monetary sector and the scatter of incomes, food consumption habits vary considerably in the different categories of the population. Average consumption — where it can be estimated — is about 1 800 - 2 000 calories per head per day [8]. Figures for total supply of foodstuffs are based on estimates, i.e. on supposed production for own account and imports which are not completely covered by statistics. As may be seen from Table 1, the staple foods are cereals and dates.

Nearly one third of total food consumption consists of cereals and dates. The consumption of milk and mutton, generally fat, is of considerable importance, first because of the high fat content of the milk, given as 5.7% for sheep's milk and 6.3% for goat's milk, and even more because of the enrichment of the food with animal protein which these two commodities make possible.

If it is assumed that protein content is 40 g per kg of milk and 200 g per kg of meat, the overall average is a supply of 15 g of animal protein per head per day.

This is much above the minimum standard which the Americans have adopted as a basis for their food calculations. However, it hardly reaches the minimum standards established by ORANA in Dakar and INH in France and by physiologists studying foodstuffs in the Federal Republic of Germany.

---

(1) In preparing this regional study, the author was aided by M. W. Kock, M. E.G. Jentzsch and M. H. Meliezck.

(2) Lipsky, G.A., Saudi Arabia, its people, its society, its culture, New Haven, 1959, p. 24.

(3) Dequin, H., Die Landwirtschaft Saudi Arabiens und ihre Entwicklungsmöglichkeiten, Berlin 1961 (The Agriculture of Saudi Arabia and its development possibilities), an unpublished thesis, p. 59.

(4) Boesch, H., The Middle East, Berlin 1959.

(5) Dequin, H., loc. cit., p. 167.

(6) 1 rial = 0.89 DM or 0.225 dollar.

(7) Lean, O.B., Middle East Economist, New York, 1960.

(8) Dequin, H., loc. cit., p. 310.

TABLE 1

Estimated average consumption of the chief foodstuffs

Product	kg per head/year	cal per head/year
Cereals, total	47,5	455
Wheat	(23,5)	(238)
Sorghum	(13,7)	(132)
Rice	(6,5)	(63)
Barley and maize	(3,8)	(22)
Dates	53,0	463
Milk products, obtained principally from sheep's milk (expressed in milk units)	90,0	206
Sugar	12,4	142
Meat, mainly mutton	9,0	71

Source: Dequin. H.. loc. cit., p. 309.

The average figures quoted conceal essential differentiations in feeding. Milk and dates are the chief nourishment of the nomads, who consume more meat than the other categories of the population. Consequently, their food is richer in animal protein but is estimated to contain less than the average number of calories. Sometimes we hear of veritable famine rations. On the other hand, the staple food of the sedentary fellaheem is millet, with sorghum and pearl millet predominating. Their consumption of meat is lower but the calorie intake is probably better.

No data are available concerning the food supplies of the city population.

There is no need to stress that the sometimes unsatisfactory rations available to the poor classes of the population contrast with adequate or even over-abundant food supplies among the rich classes, who represent only a small part of the total population.

FOOD PRODUCTION AND IMPORT

The arable area cultivated in Saudi Arabia was estimated in 1956 at between 210 000 and 400 000 or 0.14 - 0.26% of the whole country. The steppe pastures and semi-desert areas which are often poor and can be used only for a part of the year, are estimated to cover 93 million hectares, or 59% of the country.

With an annual average production of 69 000 tons, sorghum is the most important cereal species in Saudi Arabia. Its climatic requirements best correspond to the natural conditions. The area under wheat is greater but the quantity produced is smaller than that of sorghum. The climate is generally unfavourable for wheat-growing, and the national production of about 37 000 tons of wheat covers only approximately one third of consumption. About 60 000 further tons are imported. As regards rice, the proportion is even more unfavourable, although higher yields are possible in irrigated areas. Of the 26 000 tons annual consumption of the country, only 4 000 tons are home-produced. Barley-growing furnishes about 23 000 tons, and around 3 000 further tons are imported. Barley is mainly used as fodder but also for food in the interior of the country. The large production of dates – almost 200 000 tons – is sufficient for internal requirements.

In the five years from 1953 to 1957 alone, imports of cereals and of milk products have more than doubled while those of fruit and vegetables have multiplied six times. On the other hand, imports of meat and meat products are only a little higher than before. The considerable expansion of total imports of foodstuffs reflects population growth, the rise in purchasing power and the unsuitability of the climate for the production of cereals, fruit and vegetables. The relatively small increase in imports of meat bears witness to the lack of refrigeration plant for its storage and transport and most probably, albeit to a lesser extent, an increase in home production.

In the animal-breeding sector sheep occupy the first place. There are about 3.5 millions of them, and 2 million goats [1]. As far as can be judged from the statistics, livestock population has not increased since 1950. 1.6 million sheep and 500 000 goats are slaughtered each year. From these figures it is possible to deduce the consumption of home-produced meat.

EXTERNAL TRADE

Before the export of petroleum began, the volume of trade was extremely low. In 1938 exports, consisting mainly of hides, camels, dates and a little coffee, were roughly equivalent to imports, both being between 14 and 15 million dollars in value. At that time the chief imports were probably consumer goods. Whereas in most developing countries the transition from a conservative, stagnating and traditional economy to a dynamic economic development leads to a heavy deficit on the trade balance, the opposite has been the case in Saudi Arabia. The great event in the recent economic development of the country was the discovery of oil on a large scale. Initially the import of transport, processing, purification and loading plant and

[1] Dequin, H., loc. cit., p. 292.

of every sort of ancillary installation probably led to a considerable deterioration of the trade balance. However, since the investments for this new economic branch were, so to speak, financed exclusively by foreign oil companies, particularly the predecessors of Aramco, no foreign exchange difficulty resulted for the country. Then the export of oil began, and afterwards snow-balled. In 1957, out of total exports worth about 900 million dollars, more than 99% were accounted for by petroleum. If account is taken of the devaluation of the dollar since 1938, the export of the goods which formerly constituted the main source of earnings seems to have declined to a quarter and even less. The continual growth in home purchasing power for goods consumable in the country but which in other days were exported, and also the suppression — thanks to the manna which petroleum has poured out over the country — of the compulsion to export any and every home product in order to be able to maintain small imports, are probably the chief factors in this structural transformation.

In 1957 goods, not covered by exact statistics, of a value of just 300 million dollars (1) were imported. Despite the multiplication of the volume of imports in relation to earlier times — twentyfold in comparison with 1938 — there remained an export surplus of roughly 600 million dollars, since exports had increased 60 times. This is double the amount of imports and 40 times the amount of external trade in 1938.

TABLE 2

Home production and imports of the chief foodstuffs in Saudi Arabia 1956

Product	Home production in tons	Imports	
		in tons	value in '000 dollars (1)
Wheat	37 000	57 800	2 760
Sorghum (2)	69 000	5 000	100 (3)
Barley	23 000	2 700	16
Rice	4 000	22 000	1 643
Dates	191 000 (4)	13 000 (5)	3 275
Vegetables	60 000	12 000	2 700

Source: Dequin, H., loc.cit., pp. 54, 276 and 309. Federal Statistical Office, Regional Report on Saudi Arabia, Wiesbaden 1959.
(1) Fob values for the country of origin.
(2) 1949.
(3) Estimates.
(4) 1953.
(5) 1957.

Of total imports in 1957 about 55 million dollars were spent on food, beverages and tobacco. This is hardly more than 1/6 of all imports but almost four times as much as total external trade before the second World War. Imports of foodstuffs, in so far as they can be evaluated in quantities, break down as above.

The greater foodstuff imports reflect the growth of population only to a secondary extent; they are due mainly to the increasing internal purchasing power of the population in a richer monetary sector thanks to petroleum exports.

FORECAST OF THE FUTURE TREND OF REQUIREMENTS AND PRODUCTION

A forecast of the development of Saudi Arabia's food requirements in the coming years is only possible as an order of magnitude and an indication of the trend. At the best, only approximate evaluations can be made as regards numbers and growth of population, the occupational breakdown, incomes in cash and in kind and transformations thereof and the consequent present and future food consumption.

It is to be expected that the oil wealth, which so far has mainly profited only a small ruling class, will in time bring new occupational and income opportunities to a growing part of the population. The changes which have taken place so far in the structure of employment — Aramco has more than 25 000 Saudi Arabians on its payroll — are working in this direction. The proposals made in the 1960 World Bank report for a number of development projects in industry, agriculture, communications and infrastructure, have been welcomed by the Government. For the years 1960-62 initially larger funds have been made available from public sources than the World Bank recommended.

Whether the estimates given at the beginning concerning food consumption as of today are close to the mark or not, it can in any case be expected that the increased purchasing power of a growing part of the population will lead to an improvement and expansion of consumption, i.e. extra consumption in calories and animal protein and thus of vegetable and, even more, of animal foodstuffs. The pace and scope of this development cannot be foreseen. The supposition that (a) the mean daily consumption of primary calories, which is at present probably more than 3 000 (these

(1) As Saudi Arabia has no export statistics, estimates concerning external trade are based on a registration of deliveries to the country and of purchases from it as they appear in the statistics of the countries which are its partners in trade. (Table of statistics produced by the Federal Statistical Office, Wiesbaden).

correspond to the above-mentioned 1 800 to 2 200 final calories consumed on the average) would increase by 1 000 calories per head per day up to 1970, and (b) that, as pointed out at the beginning, the population would by then have gone up by one million, should indicate the ceiling of the possible growth of consumption. This extra amount would correspond to about 360 000 calories, or approximately one grain unit, per head per year. For the whole of the increased population, this would mean an approximate supplementary requirement of the order of 9 million grain units. According to this estimate, this extra requirement, up to 1975, should be of the order of 13 to 14 million grain units.

The possibility and the likelihood of extra agricultural production resources are limited. It is particularly the water factor which sets bounds to the expansion of production. Fertile land so far unused can only be brought under the plough if irrigation is further expanded, and the country itself lacks sufficient quantities of water. For this reason, no extension of the irrigated areas sufficient to produce within the country any considerable part of the maximum extra requirement indicated above can be expected in the near future. The utilization of existing possibilities, of which only a part has been scientifically explored, has scarcely begun. Any large-scale schemes for irrigation require the aid of the State. By using a part of the country's surplus foreign exchange and capital from oil income, adequate means of investment would be found for this purpose. But even if all possibilities are exploited to the utmost, it would probably be difficult to stimulate the growth of production sufficiently to keep pace with growing demand. It may therefore be expected that imports will increase in the coming years, but it is impossible to say what percentage of the maximum increase in requirements mentioned above will have to be covered by home production and what percentage by imports.

Even if it is assumed that the extra cereal imports would have to be of the order of 500 000 tons at least and 1 million tons at most, this supplement at present world prices would not cost more than 35–70 million dollars, i.e. 12 to 13% of the present export surplus. In order to ensure balanced nourishment corresponding to physiological food requirements — above all for the vulnerable sectors of the population — imports of animal origin rich in protein, particularly powdered skim milk, are necessary. Procurement of these products can increase but little the small part of the foreign exchange surpluses needed for food imports.

In future, Saudi Arabia will therefore probably be increasingly an importing country for such food products as cereals, vegetables and fruit (fresh, preserved or chilled) and also of powdered milk and perhaps even meat, depending on the degree of development of refrigerating chains and congealing plants. But these imports will be made on a traditional commercial basis, that is to say by using funds from the proceeds of exports. Saudi Arabia is not interested in food surpluses from EEC or other regions with overproduction on preferential and special non-commercial terms, such as gifts, payment in national currency, reduced interest rates, etc.

ANNEX No. 11

Regional Survey

LATIN AMERICA

by
Professor A. Maugini
Istituto agronomico per l'oltremare
Florence

CONTENTS

LATIN AMERICA [1]

OUTLINE OF LATIN AMERICA'S FOOD SITUATION

J. de Castro divides South America into ten areas from the nutritional point of view. These are:

1. Maize area in the extreme North
2. Manioc area of the Amazon basin
3. Manioc area in the jungle of northeastern Brazil
4. Maize area of northeastern Brazil
5. Maize area of west central Brazil
6. Potato area in the Andes region
7. Rice and beans area in southern Brazil
8. Manioc area of the Chaco
9. Maize area in northwest Argentina
10. Wheat area in the central region of the continent.

Most of these areas are part of a very vast region which includes almost the whole continent and which is considered as a sector of intense undernourishment, both qualitatively and quantitatively.

Only a limited region comprising some of the southern Brazilian states, Uruguay and a part of Argentina is considered as a sector whose food situation is less serious in that the diet is often adequate in quantity, although it sometimes presents deficiencies in certain nutritional elements. For the first region, the authors dealing with the question speak of chronic hunger.

The diet does not attain certain minimum quantities of calories and is badly balanced, because there are too many carbohydrates and not enough protein. According to statistics and official inquiries, the calorie value of the daily food ration fluctuates according to regions between 1500 and 2500.

Even if actual food supplies are put higher than the extremely low figures we have just seen, it must nevertheless be noted that even very recent food inquiries in certain areas have furnished proof that the calorie value considered as the necessary minimum is not yet attained, particularly among the rural population. Average consumption in calories for each State as shown by these inquiries can be indicated as follows: Brazil (1958) 2500; Chile (1950) 2450; Columbia (1957) 2050; Ecuador (1954–56) 2130; Mexico (1958) 2560; Venezuela (1958) 2120; Peru (1958) 1387.

In the second region, the number of calories available to the population is generally higher than needed (3000 in Argentina) and the protein deficiency is very limited (these are regions of industrial development and cattle-raising). However, for these regions, too, the majority of the authors of inquiries deplore the low consumption of milk, which could correct the vitamin and mineral salts deficiencies. Similarly, in the States of Central America, among which Mexico has already been mentioned, food levels are notoriously low, even if the total number of calories is relatively high. Diets here are rarely balanced. The most striking example in this respect are the island states of the Caribbean.

AVAILABILITIES AND CONSUMPTION OF MILK; CALORIE AND PROTEIN DEFICIENCIES

On the basis of the documents consulted, annual availabilities per head of milk and milk products expressed in terms of milk are the following: Argentina (1958) 140 kg; Brazil 58 kg; Chile (1958) 92 kg; Colombia (1957) 73 kg; Ecuador (1954–56) 76 kg; Mexico (1958) 78 kg; Paraguay (1958) 73 kg; Uruguay (1958) 182 kg; Venezuela (1958) 120 kg; Peru (1958) 45 kg.

The share accounted for by milk in the total daily calories available to these various populations [2] is low in almost all the States and ranges from a maximum of 303 calories (1956) for Uruguay to a minimum of 59 calories (1959) for Peru. This corresponds to a milk protein availability ranging from 6 kg p.a. (1956) for Uruguay to 1 kg p.a. (1959) for Peru [3].

---

[1] My thanks are due to Dr Aldo Mei of the Istituto agronomico d'oltremare, Florence, for his co-operation in research on documentation and in drawing up the general lines of this report, and also to Massimiliano Mariani, agricultural scientist in the same Institute.

[2] FAO – Production Year Book 1960.

[3] Argentina 4 kg (1959); Brazil 2 kg (1957); Columbia 2 kg (1958).

Despite the average availabilities just indicated, actual annual consumption per head expressed in litres is extremely low in certain regions: Andean region 8; Peru 11; Ecuador 26; Venezuela 38; Chile 14; Paraguay 66; Colombia 68 (1).

Since, according to most food specialists, at least half the protein intake should be of animal origin, 35 g per day of this type of protein must be considered necessary. Such an average daily quantity is attained only by Argentina (64 g in 1958) and Uruguay (65 g in 1958). The other countries are clearly below this figure: Brazil 20 g; Chile 27 g; Colombia 22 g; Venezuela 26 g; Paraguay 27 g; Mexico 17 g; Ecuador 13 g; Peru 13 g (2).

The difference between the normal requirement as calculated above and animal protein availability is particularly noticeable in the states of the Andes region and in Central America. Whereas total availabilities of animal protein of all origins (and not only from milk) for the populations of Mexico, Ecuador and Peru amount to 297 000 tons, the requirement for these populations is 596 000 tons (1958). The availabilities of the other deficiency countries (Brazil, Chile, Colombia, Venezuela, Paraguay) total 715 000 tons, as against requirements of 1170 000 tons.

The overall difference between protein availabilities and requirements for all the deficiency countries of South America and Mexico amounts to 745 000 tons (3).

All such data are only nutritional values or are obtained from different sources which are not always completely reliable; nevertheless, they give an idea of the orders of magnitude which, by and large, conforms with the impressions of those who have written on the food situation in these countries and with the results of certain spot-check inquiries in several territories of Latin America.

Moreover, it has been shown that vast rural areas exist (Central Venezuela and the Northeast of the Andean region) where the consumption of milk is practically unknown.

In Central America, the consumption of milk is about half as high as in South America. In fact, the annual consumption per inhabitant (production plus imports) is scarcely 90 kg over the whole area. Mexico's availabilities are even less (78 kg). For the other states of Central America, the following figures give an idea of the situation: Cuba 103 kg; Costa Rica 97 kg; Dominican Republic 53 kg; San Salvador 50 kg; Nicaragua 74 kg; Panama 44 kg; Guatemala 31 kg; Honduras 32 kg (4).

PRESENT IMPORTS OF MILK PRODUCTS

In most Latin American countries, imports of milk and milk products have increased in relation to the period 1945–52. In Brazil they have risen from 3 400 tons in 1952 to 12 000 tons in 1957, in Colombia from 700 to 2 500, in Peru from 6 200 to 13 400, in Venezuela from 29 500 to 39 700 (5). Argentina alone is not an importer but is among the exporters (in 1957 it exported 2 400 tons of condensed or dehydrated milk and 18 000 tons in the form of butter or cheese).

The imports of the majority of the Latin American countries are from the USA and the Netherlands. Imports from the latter hold first place in some countries, particularly for cheese (Venezuela and Peru). For dehydrated and powdered milk, imports from the United States are in the lead all over Central America and in the greater part of South America. The total amount of condensed and powdered milk imported for the whole of South America was about 80 000 tons, and of cheese 9 000 tons. Milk products from the Netherlands and Denmark appear in all statistics of South American imports.

A notable part of the consumption of powdered milk is covered by imports, since national production is non-existent or inadequate. The consumption index for powdered milk in Brazil has risen from 100 in 1951 to 270 in 1957. Again for Brazil, out of a total consumption of 38 000 tons of powdered milk in 1957, about 12 000 were imported.

The major part consisted of imports in the form of free deliveries (7 500 tons) (6).

Total imports of milk and milk products for several countries of Central America in relation to home production in 1958 are shown in the following Table:

(1) Acta Agronomica Palmira – Colombia, Vol. 10, 1960.
(2) Figures are from FAO World Food and Agricultural Situation 1960 and refer to 1958.
(3) The population figures used in calculating availabilities, various consumptions, deficiencies, etc., are the most recent available; they generally correspond to the figures we give. The present population (1961) was calculated on the basis of statistical forecasts which will be mentioned later.
(4) Food Balances in Foreign Countries – FAS – USDA 1960.
(5) FAO Year Book. Trade 1959.
(6) Boletín de Estadística Animal, São Paolo 1969, Volume 17.

Production and imports of milk and milk products

in tons of milk

Country	Production	Imports
Costa Rica	145 000	—
Cuba	765 000	26 000
Dominican Republic	147 000	16 000
San Salvador	103 000	30 000
Guatemala	128 000	14 000
Haïti	44 000	14 000
Honduras	121 000	8 000
Nicaragua	300 000	2 000

The milk imports of these countries come mainly from the USA, with the exception of the British Caribbean area, for which Denmark, Canada and New Zealand are the chief suppliers.

In some cases, imports of condensed, dehydrated and powdered milk fell sharply once war surpluses ceased to be supplied by the USA. Thus imports into the Dominican Republic dropped from more than 1 000 000 kg in 1950 to 127 000 kg in 1960 (1).

ESTIMATED REQUIREMENTS OF THE PRESENT POPULATION

According to the United Nations Demographic Year Book 1959, the population of Latin America in 1958 was as follows:

in '000 inhabitants

Dominican Republic	2 797
Guatemala	3 546
Honduras	1 828
Nicaragua	1 378
Puerto Rico	2 321
Argentina	20 248
Brazil	62 725
Colombia	13 522
Paraguay	1 677
Surinam	241
Venezuela	6 320
French Guiana	30
San Salvador	2 434
Haïti	3 424
Mexico	32 348
Panama	996
West Indies	3 119
Bolivia	3 369
Chile	7 298
Ecuador	4 048
Peru	10 213
Uruguay	2 700
British Guiana	532

If an average uniform milk consumption throughout Latin America equal to present consumption in Uruguay, i.e. capable of ensuring an annual ration of 180 kg of milk products to the whole population (1957) is chosen as the objective, the quantity to be imported would be around 14 million tons, only one third less than total availabilities, which are about 20 million tons.

Output in recent years has not developed equally in all regions (2). Some countries – Chile, Bolivia, Puerto Rico, Peru, Venezuela and Argentina – have experienced noteworthy increases in the production and per capita consumption of milk.

In others, for instance Mexico, the increase has not been sufficient completely to cover rising consumption as a result of population growth, so that consumption per head has declined. In Brazil, production has increased at roughly the same pace as population, so that the average per head has remained constant. A phenomenon which is common to almost all these countries is the fall in the per capita production of meat which, according to FAO, would indicate a trend to develop dairy cattle breeding to the detriment of meat production. On the other hand, there has also been an improvement in milk yields per animal, although there are no exact statistics to support this (2).

POPULATION GROWTH IN LATIN AMERICA UNTIL 1975

To obtain an idea of the demographic situation in Latin America in the years ahead, we must refer to the United Nations studies on population (3), which cover the period from 1950 to 1980.

These studies give total figures which are around 110 millions for South America and 52 millions for Central America and Mexico in 1950. Population growth over the last hundred years has been 391%, whereas the world average was scarcely 122%.

Between 1950 and 1955 the total population of Latin America rose from 162 to 183 millions, with a percentage increase of 124%, while world growth was only 78%. Birth rates in any case are high, and forecasts for the years between 1960 and 1975, although allowing for some reduction in rates of increase, give an

(1) Dirección General de Estadística, Rep. Dominicana – various publications.
(2) La expansión selectiva de la produccion agropecuaria en America Latina: FAO 1957.
(3) UNO – N.Y. – Asuntos Sociales 1955 – Estudios sobre Población.

overall figure for 1975 of twice the 1950 population. The medium forecast for 1975 gives a population of more than 303 millions for Latin America as a whole.

It is expected that the highest rate of increase will be in Mexico.

In the various countries of Latin America, the 1975 population is expected to be as follows (1):

	in '000 inhabitants
Continental Central America	
Mexico	53 300
Other countries	19 069
Caribbean Islands	
Cuba	9 600
Haïti and Dominican Republic	8 670
Puerto Rico	3 060
British possessions	4 826
Other islands	960
Total	27 116
Tropical South America	
Colombia	21 600
Venezuela	10 600
Guiana	1 298
Ecuador	6 440
Peru	15 700
Brazil	102 000
Bolivia	4 910
Total	162 548
Temperate South America	
Chile	8 790
Argentina	27 200
Paraguay	2 230
Uruguay	3 530
Falkland Islands	2
Total	41 752
Total Latin America	303 885

SIZE AND FOOD REQUIREMENTS OF THE VULNERABLE GROUPS UP TO 1975

The high percentage of young people in tropical South America in relation to total population, and the high annual percentage of births and, consequently, of pregnant or lactating women explain the importance of these "vulnerable groups" very clearly. A brief calculation gives the following result. The number of young people between 0 and 14 years in South America will be 56 million in 1960, 64 million in 1965, 70 million in 1970 and 77 million in 1975.

Annual births will increase by about 5 to 7 millions. Taking an average nursing period of 10 months, it is considered that the vulnerable groups in Latin America may be made up as follows (2):

in millions

Year	Young people	Pregnant and lactating women	Total
1960	56	7	63
1965	64	7,5	71,5
1970	70	8,5	78,5
1975	77	10	87

For Central America and Mexico, the following are the rough figures (3):

in millions

Year	Young people	Pregnant and lactating women	Total
1960	19	2,4	21,4
1965	21	3	24
1970	23	3,5	26,5
1975	26	4	30

The above figures, calculated approximately, are clearly higher than the percentage which is generally accepted as average for developing countries (40%). It is probable that in some regions the vulnerable groups represent almost half the total population. If account is further taken of that part of the population which is in a precarious condition of health following prolonged undernourishment, still higher percentages are arrived at. Without going further into the personal estimates of a whole number of authors and specialists on the milk and milk products requirements of the groups in question,

(1) G. Mortara: Os Estudios Demograficos e a Politica de população na America Latina. Rivista Brasileira de Estadística 1959.

(2) For this calculation the number of births expected for each year has been considered equal to that of pregnant and lactating women.

(3) The number of births has been calculated on the basis of an average birth rate of 40 per thousand.

we can put the average requirement in milk products expressed in terms of milk at 750 g per day.

In their treatise on human feeding, Trémollières, Serville and Jacquot (1) give the following figures, slightly higher than those indicated by FAO (2), for milk products requirements:

in g/head/day

Group	Milk	Cheese
Children from 3 to 5	750	10
Children from 6 to 9	500 – 750	30
Adolescents from 10 to 20	500	30
Pregnant women	750	25
Lactating women	1 000	40

In making rough calculations of the food needs of the underdeveloped regions, where the theoretical food optimum can only be attained very gradually, it is advisable to keep to cautious estimates. We will take this rule to heart and advance the following minimum requirements for the vulnerable groups of the population alone:

Milk requirements for the vulnerable groups

in '000 tons

Year	South America	Central America and Mexico	Total Latin America
1960	17 246,3	5 748,7	22 995,0 (1)
1965	19 573,1	6 570,0	26 143,1
1970	21 489,4	7 254,4	28 743,8
1975	23 816,3	8 212,5	32 028,8

(1) It should be pointed out that total milk production in Latin America in 1960 was 20 200 000 tons.

The real milk import requirements thus correspond to the difference and were 2 795 000 tons in 1960.

In 1975, if we assume a 30% production increase, the import requirement would be more than 6 million tons.

There is no need to dwell on the purely theoretical value of these figures, when we consider the size of the territories and the difficulties which would be encountered in transporting these products to the places of consumption.

VULNERABLE GROUPS IN THE ANDEAN AREA AND AVAILABILITIES THERE

An analysis of the food situation in the least fortunate countries shows that the existing availabilities are not even adequate for the needs of the vulnerable groups. If, among these countries, we take the group of Andean States (Peru, Bolivia, Ecuador) with populations forecast as below for the years shown:

in '000 inhabitants

	1960	1965	1970	1975
Bolivia	3 876	4 415	5 048	5 785
Ecuador	4 160	4 771	5 462	6 255
Peru	11 190	13 055	15 189	17 610

the vulnerable groups in this area total (3) 7 690 millions in 1960, 8 896 millions in 1965, 10 279 millions in 1970 and 11 860 millions in 1975.

The average requirements of these groups in Bolivia, Ecuador and Peru on the basis of a minimum daily consumption of milk and milk products of 750 g in terms of milk would therefore be 5 263 117 tons in 1960, 6 088 473 tons in 1965, 7 035 101 tons in 1970 and 8 116 687 tons in 1975. The total milk availability (production plus imports) for these same countries in 1958 (4) was Bolivia: 125 000 tons, Ecuador: 119 000, and Peru: 441 000, a total of 885 000 tons. Although it is not possible to evaluate exactly what these countries had at their disposal in 1960, we nevertheless have enough pointers to be justified in considering (5) that the increase in availabilities is quite small. In any case, probably no more than 800 000 tons was available in 1960.

The gap between requirements and consumption in the Andes region is one of the widest in Latin America.

(1) Trémollières, Serville, Jacquot, "Alimentation humaine", 1955.
(2) FAO – Annals.
(3) Calculated according to the minimum of 40 % already mentioned and applicable in a general way to the developing countries. It was not possible to calculate them analytically on the basis of births, as was done above for Latin America as a whole, since no rate of increase is available for Bolivia.
(4) FAS, Nov. 1960, USDA, Food Balances in Foreign Countries.
(5) Depart. Administrativo Nacional de Estadística, Bógota; Annuario de Commercio 1957, FAO; La Espansión Selectiva de la Producción Agropecuaria en America Latina, 1957.

In these countries, as in other parts of Latin America, demand is very low and sometimes less than availabilities (1).

This is the case particularly for high-cost products which are out of reach of the low wages and poor living standards of these countries. Some of the urban population are in fact supplied with bottled milk which is sold at a correspondingly high price. This, of course, does not exclude the possibility that in marginal areas, even where the framework of the economic environment is very poor, dairy animals may be found whose product is consumed on the spot, thus giving a consumption clearly above the average. This happens, for instance, in some regions of Ecuador, where a certain quantity of cheese is produced by family methods and consumed on the spot, thus escaping any statistical recording (2).

Relations between certain economic indices and average milk consumption: A pointer to average milk consumption on the outskirts of cities where family incomes are fairly high in comparison with Latin American averages is supplied by an inquiry carried out in Venezuela into 103 families living in a suburb of the Federal District (2). Of the group considered, 71 families consume powdered milk, 78 cheese and 52 milk. This is an area where the annual income per inhabitant is probably the highest in Latin America.

Venezuela has in any case the highest national average ($ 773 in 1956). The average for Latin America as a whole is $ 312 per head per annum (1956). For some other countries it was – again in 1956: Argentina $ 635, Cuba $ 395, Chile $ 334, Colombia $ 272, Brazil $ 250, Mexico $ 240, Paraguay $ 143, Ecuador $ 115, Haïti $ 98 (3).

If we remember the consumption figures quoted above, there is an obvious relation between the average per capita income and the consumption of milk products. The situation of Venezuela (which presents a high average income per inhabitant and a low milk consumption) is characterized, apart from the small local milk production compared with agriculture and stockbreeding, by the income gap between the city-dwellers engaged in industrial and tertiary activities, and the bulk of the population inland. This means, of course, that the high average per capita incomes are due to the existence of a very rich minority engaged in lucrative activities. This is doubtless also confirmed by the fact that Venezuela is the only country in Latin America where milk imports exceed national production (1958).

Among the States of Central America, a particularly high deficit situation for milk products exists in Haïti, whose inhabitants have a very low standard of living and consume very little milk (hardly more than 8 kg per head per year in 1958) (4).

From the point of view of average annual income per head, the other countries of Central America, with the exception of Cuba, can be considered on the same level as Mexico: milk consumption ranges from rather high averages to others which come close to the lowest in South America.

REMARKS ON THE TREND OF MILK PRODUCTION IN SOUTH AMERICA IN THE NEXT 15 YEARS

It is generally recognized that the raising of horned cattle for meat which has long been dominant in South America, is the activity best adapted to the standard of agriculture and makes it possible to use mediocre and sometimes very poor pasture without special investments or heavy operational costs. The same cannot be said of the breeding of dairy cows, which demands among other things qualified manpower difficult to find on the local labour market. Moreover, meat production is an essential pillar of the Argentine and Uruguayan economies in particular. The traditional meat exports bring very valuable foreign exchange to these countries, whereas the production of milk mainly concerns the internal market in other south American countries.

There is every reason to believe that even in the near future no important changes can be expected in the general pattern of stockbreeding, which is mainly directed to meat production for the internal market and export. This will be the case at least as long as prices remain favourable, but it does not exclude the possibility of an expansion of dairy-farming as the different countries develop their industry and agriculture. For instance, around Lima and in the neighbouring valleys the establishment of a few dairy enterprises was sufficient to multiply the number of dairy cattle breeders using new meadows and pasture.

In Colombia, a boost to breeding for milk production has been given in recent years by various national and international bodies. The many large areas of this country (particularly the valley of the Cauca) suitable for breeding dairy cattle make it possible to step up production further. At present Colombia is in third place, after Argentina and Brazil, for total milk output.

---

(1) FAS-USDA: The Dairy Products Situation in certain South and Central American Countries, 1955.
(2) Archivos Venezolanos de la Nutrición, December 1956.
(3) Boletín del Banco Central del Ecuador, Quito 1958.
(4) G.J. Brelonnes: L'insuffisance alimentaire en Haïti.

In Mexico, despite the progress made, the increase in milk production cannot keep up with demand, and imports have had to be expanded (from 80 000 tons in 1953 to 107 000 tons in 1958). A similar situation exists in Venezuela. For these two countries only a moderate increase in production may be expected because of the difficulties which the general industrial and agricultural structure presents for a speedier development of dairying. In Brazil, too, despite remarkable increases in recent years, it is also not possible to foresee increases which could basically change supply in the areas outside the cities. In fact, the noteworthy growth of output between 1937 and 1959 was concentrated on those States where production was already high (Minas Gerais and Sao Paolo).

In Argentina and Uruguay, any increase in production and, consequently, in exports (all to South America, at present, with the exception of cheese) is closely dependent, not only on general conditions of economic development, but also on the indices of industrial milk processing, which have been high in recent years (in 1958, 50% of Argentina's milk output was used by industry). The trend to replace beef breeding by breeding for milk production could increase more or less in intensity in the light of market prospects. The choice between the various possibilities offering will be made according to economic and profitability factors. In practice, conversion of the productive equipment of enterprises, which requires economic stimulus from outside and a good deal of self-financing, sets limits to the increase of production. The number of dairy cattle in Latin America as a whole is not given in the statistics. The few figures which exist for certain countries (1) seem rather to point to a reduction in the number of head in recent years. The following are the totals of dairy cows for certain countries:

in '000 head

Country	1951	1955	1957	1958
Argentina		19 191	17 623	17 710
Chile	1 237	1 306		
Colombia			7 858	7 026
Venezuela		2 820	2 885	3 013

This would seem to concord with the widespread trend to change over to more intensive systems of breeding, which make it possible to raise the very low average milk yield per animal. This trend is typical of most of the cattle ranches in the various countries. According to CEPAL, in 1975 Latin America will still be importing 1.21% of total milk consumed (2). In fact, Latin America, which is traditionally an exporter of agricultural products, has always been an importer of milk, the only important agricultural product – with wheat – for which CEPAL has so far never made complete self-sufficiency its aim.

CONCLUSIONS AND FORECASTS

In the Republics of Latin America present milk production is insufficient to meet animal protein requirements in accordance with the standards attained by the majority of advanced nations. Only Argentina and Uruguay export a few dairy products. With the exception of butter, all these exports go to the other Latin American countries.

The dairy products imports of most of these countries are limited and generally come from the USA and certain countries of Northern Europe, among them the Netherlands and Denmark. In a general way, these imports involve only insignificant quantities and have no marked influence on consumption. The limited use of milk as a food is not due only to the low availabilities of the product on the market but rather to the low incomes of the population, and in some cases to the lack of the habit of consuming milk. In any case, in special periods, that is to say when they were given free by the United States, the consumption of milk products increased.

Availabilities (production plus imports) are insufficient even if we only take into consideration the requirements held to be a norm for the vulnerable groups. Deficiencies are particularly serious in the Andes region and in certain areas of the Caribbean (Haïti and the Dominican Republic).

Population growth will increase these deficiencies in absolute figures. Milk and milk products requirements expressed in terms of milk (indicated in 1960 as almost 23 million tons) might well be of the order of several tens of millions of tons for the vulnerable groups alone (over 30 million tons). In the same period – up to 1975 – the growth of local production of milk and derived products will probably not exceed certain limits set by local situations difficult to change and by considerations of an economic nature. New dairy cattle breeding enterprises will be established as new agricultural land is opened up.

But these measures will be slow and gradual, and will not change the present situation basically in the next 15 years.

(1) FAO Year Book, Production 1960.
(2) CEPAL Doc. E/CN 12 and 1/13.

According to the most optimistic forecasts, dairy production should increase in Latin America at half the speed of other branches of production. In examining any programmes to supply milk products to the Latin American countries, the following points should not be lost sight of:

a) That the figures calculated for total population and vulnerable groups may be considered as reliable starting points for the various calculations which might be thought useful.

b) That the hypotheses formulated with regard to physiological requirements can vary greatly, either in a downward or in an upward direction, from the volume of global requirements (for instance if, instead of an average of 180 litres per year and per inhabitant, corresponding to consumption in Uruguay, an annual consumption of 90 litres, corresponding to the present average in Central America, were taken as a hypothesis, the global needs of Latin America would be reduced to half the quantities mentioned. The same may be said of the figures concerning the vulnerable groups).

c) That, leaving aside the figures on present availabilities and imports, which are from official documents, all the other figures and general considerations on the probable increase of dairy production are given to facilitate any later study of this matter.

ANNEX No. 12

ELEMENTS OF A SYSTEM OF EVALUATION OF THE POSSIBILITIES OF UTILIZING AGRICULTURAL SURPLUSES IN THE DEVELOPING COUNTRIES

By
Professor H. Wilbrandt
Institut für Auständische Landwirtschaft der
Technischer Universität
Berlin

CONTENTS

List of Tables

ELEMENTS OF A SYSTEM OF EVALUATION OF THE POSSIBILITIES OF UTILIZING AGRICULTURAL SURPLUSES IN THE DEVELOPING COUNTRIES (1)

A. *FOOD REQUIREMENTS AND UTILIZATION OF SURPLUSES FOR GENERAL IMPROVEMENT OF FOOD SUPPLY*

The standard inquiries carried out in various countries and other available estimates, supply the elements of a system of forecasts for the possible utilization of surpluses in the developing countries.

1. POPULATION INCREASE

The starting point is the existing level of population and its present and future trend. It may be desirable to consider various possible rates of growth. The annual increase in population can be indicated either by an arithmetical or by an exponential calculation. The method chosen will have to be applied throughout the whole estimate.

2. OCCUPATIONAL BREAKDOWN

The trend of incomes and of demand differs according to whether we are dealing with self-suppliers or not. It is therefore desirable to subdivide population structure and growth into self-sufficient farming population and the non-agricultural population buying its food.

3. PRESENT CONSUMPTION

The quantities consumed — in the aggregate and per inhabitant — as ascertained from statistics of production, external trade, etc. call for critical analysis, since the documentary material is not always reliable. Family budgets in town and country are an essential help here.

4. DESIRABLE REQUIREMENTS FROM THE ANGLE OF NUTRITIONAL PHYSIOLOGY

A great many requirement standards, such as the FAS-FAO norms used in American estimates and in FAO forecasts, the ORANA norms used by French specialists in nutritional physiology, or the NAC norms established for India by the Nutritional Advisory Committee of the Indian Council of Medical Research, can be taken as an objective for the diet to be provided. The combination of points 1 to 4 gives the overall and per capita food requirements which should be aimed at from the physiological angle for the present and for any particular future year. The consumption figures have to be broken down into calories and vegetable and animal protein. The figures thus found will be compared with the present consumption as under point 3.

5. DISPARITIES BETWEEN DESIRABLE FOOD CONSUMPTION AND PURCHASING POWER

The possibilities of achieving the consumption aimed at for the present and for the future must be checked. Present cash expenditure per head of the population buying its nourishment is compared with the per capita outlay which would be necessary to attain the physiological norms. Account must be taken of growing marketing costs, which rise concurrently with the standard of living. It can be deduced from Engel's Law that the extra monetary expense needed calls for a more than proportional growth of per capita income. This can be calculated as follows:

(1) In preparing this study the author was aided by M. W. Kock, M. E.G. Jentzsch and M. H. Meliezck.

a) *Present*

$$\text{Extra income necessary} = \frac{\text{Extra monetary expenditure per capita for food}}{\text{Percentage of expenditure on food}}$$

b) *Future*

$$\text{Rate of per capita income increase} = \frac{\text{Rate of increase of demand for food} - \text{Rate of population growth}}{\text{Income elasticity of demand and agricultural production}}$$

The question of whether the rules valid in the monetary sector also apply to the self-sufficiency sector or, if not, where they diverge, must be examined.

a) The overall planning of general economic development, of employment in and outside agriculture, the national product, both monetary and non-monetary, investments and taxes, and monetary and non-monetary purchasing power available for consumption in the present and future, must be considered and their real content examined.

b) The inverse method to point 5 should also be used, and the consumption corresponding to the growth of purchasing power determined.

On the basis of the trend hitherto and of the known or presumed elasticity of incomes, quantities of various foodstuffs for self-suppliers and for purchasers of food are ascertained separately as presumed demand and consumption. Here again, family budgets are extremely useful. If necessary, reference can be made to the elasticities of incomes in countries with similar consumption and income structures. It must be remembered that the income elasticity decreases as saturation progresses (first for cheap foodstuffs, then when well-being and consumption increase, for conversion products also).

c) The change in demand for various foodstuffs can be deduced from the following formula:

$$\text{Income elasticity of demand} = \frac{\text{Proportionate change in demand}}{\text{Proportionate change in incomes}}$$

whence:

$$\text{Proportionate change in demand} = \text{Income elasticity of demand} \times \text{Proportionate change in income}$$

The result is to be confronted with the requirement desirable from a nutritional physiology point of view calculated at point 4.

6. COARSE GRAIN REQUIREMENTS

The growing utilization of conversion products leads to higher consumption of livestock feed which has to be covered, partly by coarse grains, partly by fodder produced, and partly by waste and from natural meadow and pasture. A global calculation can be made by converting the calorie content of the foodstuffs into the primary calories needed for their production (on the basis 1:7) and deducing the fodder requirements in grain units. This is a faulty and inexact method, but until such time as greater knowledge of animal feeding conditions in the developing countries allows of a more precise approach, it is preferable to abandoning any attempt to calculate requirements at all.

The same applies to the fixing of the proportion of grain (in the standard enquiries: from 33 to 50%) in the overall supplementary fodder input. Here it must be remembered that growing fodder input on a constant area also makes it probable that the proportion of grain will rise.

7. GLOBAL CEREALS REQUIREMENT AND DEFICIT

Allowing for seed and waste, the quantities needed for direct consumption and for livestock feeding give the aggregate number of grain units in the most diverse forms and of cereals in the strict sense.

8. PRODUCTION

The total requirement is confronted with present production and production expected in the light of experience hitherto. Agricultural production plans and the possibility of implementing them should be checked. Thus, we finally obtain the order of magnitude of the total deficit in grain units and in cereals.

9. GRAIN UNITS AS A COMMON DENOMINATOR

According to the situation, account must be taken of the various farm products in the forecasts of production and requirements. It is generally recommended that the different products and the foodstuffs be converted into grain units or a similar common denominator. This also applies to the fodder needed for animal products.

10. ADAPTATION OF PRODUCTION TO THE FORESEEABLE REQUIREMENT

Within the limits set by purchasing power and production forecasts it is necessary to check whether and how far the development of food supply which appears feasible corresponds to physiological demands or can be brought closer to them. This may call for changes in production programmes.

11. FOOD REQUIREMENT AND UTILIZATION OF SURPLUSES

The utilization of surpluses continues to be restricted to the non-agricultural part of the population served by transport, and by efficient distributing organizations working at economical costs. Thus surplus utilization is often even more restricted than indicated above. If, on the other hand, the requirements of the self-supplying agricultural farming population increase faster than production as a result of population growth, a decline in the share marketed and an increase in consumption on the farm are to be expected. The volume of surpluses which may possibly be utilized for those who are not self-suppliers increases in consequence.

12. ASSESMENT OF THE METHODS AND POSSIBILITIES OF IMPROVEMENT

a) The calculations so far made concerning future requirements and the utilization of surpluses are based on data which are often very imprecise. The margin of error is wide. It is only by constantly improving the quality and average of the statistical data and other documentary material in co-operation with the authorities of the various developing countries, and by elaborating the methods sketched here, that it will be possible to establish more reliable forecasts.

b) Inquiries in 8 to 10 developing countries repeated and elaborated at short intervals make possible a broad estimate of the probable trend in the developing countries as a whole.

c) The countries chosen represent 70 to 80% of the total possible surplus utilization. There is no point in studying a large number of countries.

d) Roughly exact orders of magnitude can be given only for a period of three to four years. Beyond this, only a general trend can be indicated.

B. *SUPPLEMENTARY FOOD FOR THE VULNERABLE CATEGORIES OF THE POPULATION*

Statistics and sample enquiries give an idea of the number of persons, particularly children and expectant mothers who, in a general way or because of inadequate purchasing power, need extra food. These persons, when they are in need, are the potential consumers of supplementary foodstuffs, particularly animal protein. Here, powdered skim milk is the most important food, both for the receiving and for the donating country. However, the surplus quantity which can be used depends less on the number of potential consumers in this sector of the population than on the volume of the free gift which the donoring countries are prepared to make and on the number of vulnerable persons who can be checked by the appropriate institutions. The consumption of this extra food promises the desired results only if it can be arranged directly in hospitals, schools and other centres which organize and control distribution.

C. *DISASTER AID AND SPECIAL REQUIREMENTS CONSEQUENT UPON LAND REFORM*

In the various enquiries, separate consideration should be given to exceptional factors influencing cereals requirements, such as natural disasters and production deficits attributable to land reform. Under these heads it is possible to furnish only a certain global quantity of surpluses to be used according to requirements.

D. *ASPECTS OF SURPLUS UTILIZATION NOT TAKEN INTO CONSIDERATION*

The above-mentioned elements of a system of forecasting possibilities for a quantitative utilization of surpluses deal with only a part of the total problem. We have not asked whether efforts to increase agricultural production can be intensified and given more fruitful form and the pace of development speeded up. Similarly, we have not examined the question of what this would involve on the plane of industrial production, the functioning of institutions and infrastructure. Finally, no mention is made here of such questions as the volume of extra capital accumulation needed for development, the productive use of counterpart funds and the far-reaching interdependence of general development measures.

TABLE 1

Development of population and incomes

		1959/60		1976		Increase in %	
		%	in millions	%	in millions	annually [2]	total
Population	total	100	425 [1]	100	600	2,5	41
	agricultural	70	298	65	390	1,9	31
	non-agricultural	30	127	35	210	3,9	65
	self-sufficient	70	298	65	390	1,9	31
	buying food	30	127	35	210	3,9	65
National income per inhabitant	self-sufficient	—	—	—	—	1,4 [3] (ø : 2,0) [5]	23
	buying food	—	—	—	—	3,4 [3]	56
Private consumption per inhabitant	self-sufficient	—	—	—	—	1,8 [4] (ø : 2,0) [5]	30
	buying food	—	—	—	—	2,6 [4]	43

[1] Average of 1959 and 1960. — [2] Linear growth rates during this period. — [3] Assuming 2 % in all and with a breakdown corresponding to the distribution of incomes per head in 1956/57 : agric. = 202 Rs, non-agric. = 500 Rs, overall Ø = 291 Rs. — [4] Change in ratios, since the per capita income of the non-agricultural population, which is arithmetically higher, may only be partly reflected in increased demand. — [5] Ø = average.

TABLE 2

Development of demand for direct consumption

	Self-supply sector (S) / Food-buying sector (B)	Cereals for food				Meat, fish, eggs				Milk, milk products			
		1959/60	1976	Increase in % up to 1976	Increase in % annual	1959/60	1976	Increase in % up to 1976	Increase in % annual	1959/60	1976	Increase in % up to 1976	Increase in % annual
Income elasticity of demand	S	0,75 (1)	0,5 (2)	—	—	0,9 (1)	0,8 (2)	—	—	1,37 (1)	1,1 (2)	—	—
	B	0,52 (1)	0,4 (2)	—	—	1,03 (1)	0,9 (2)	—	—	1,35 (1)	1,1 (2)	—	—
Consumption corresponding to the presumed increase in purchasing power	S	172 kg (3)	198 kg	15	0,9	3 kg (3)	3,7 kg	24	1,5	53 kg (4)	70 kg	33	2,0
	B	175 kg (3)	205 kg	17	1,0	3 kg (3)	3,9 kg	39	2,4	53 kg (4)	78 kg	47	2,8
		(in million tons)				*(in million tons)*				*(in million tons)*			
Overall consumption	S	51,3	77,2	50	3,0	0,89	1,44	62	3,8	15,8	27,3	73	4,4
	B	22,2	43,1	94	5,7	0,38	0,82	116	7,0	6,7	16,4	145	8,8
Total		73,5	120,3	64	3,9	1,27	2,26	70	4,2	22,5	43,7	94	5,7

(1) 1958. — (2) Breakdown of consumption per head of the agricultural and non-agricultural population in conformity with the proportion of spending on the various foodstuffs by the population groups, see Coale and Hoover, op. cit., p. 125. Average consumption in all: 173 kg. — (3) Average consumption: 3 kg. — (4) Average consumption in all: 53 kg. — (5) Fixed arbitrarily, taking account of income elasticity for 1958 and of the proportion of spending on the various categories of food products by the population groups.

TABLE 2a

Trend of demand for other foodstuffs

Foodstuff group		Income elasticity of demand		Consumption per inhabitant		Demand in million tons		
		S	B	S	B	S	B	Total
Vegetables	1960	0,90	0,75	15 kg (1)	18 kg (1)	4,47	2,29	6,76
	1976	0,90	0,75	19 kg	24 kg	7,41	5,04	12,45
	Increase until 1976 (in %)	—	—	27	32	66	120	85
	Annual increase (in %)	—	—	1,6	1,9	4	7,3	5,1
Starchy tubers	1960	0,70	0,70	12 kg (2)	12 kg (2)	3,58	1,52	5,10
	1976	0,60	0,50	14 kg	15 kg	5,46	3,15	8,61
	Increase until 1976 (in %)	—	—	18	22	152	208	169
	Annual increase (in %)	—	—	1,1	1,3	9,3	12,6	10,2
Sugar	1960	0,77	0,64	13 kg (3)	15 kg (3)	3,87	1,91	5,78
	1976	0,70	0,55	16 kg	19 kg	6,24	3,99	10,23
	Increase until 1976 (in %)	—	—	21	24	61	109	77
	Annual increase (in %)	—	—	1,3	1,5	3,7	6,6	4,7
Fats	1960	0,90	0,85	3,7 kg (4)	4,6 kg (4)	1,10	0,58	1,68
	1976	0,85	0,70	4,7 kg	6 kg	1,83	1,28	3,11
	Increase until 1976 (in %)	—	—	26	30	66	121	85
	Annual increase (in %)	—	—	1,6	1,8	4,0	7,3	5,1

(1) Total average consumption 16 kg.
(2) Total average consumption 12 kg.
(3) Total average consumption 14 kg.
(4) Total average consumption 4 kg.

TABLE 3

Consumption of coarse grains for conversion products

	Unit	Total consumption of coarse grains shown in the statistics (3)	1959/60						1976					
			Self-supply sector (1)			Food-buying sector (1)			Self-supply sector			Food-buying sector		
			Meat, eggs	Milk, milk products	Total	Meat, eggs	Milk, milk products	Total	Meat, eggs	Milk, milk products	Total	Meat, eggs	Milk, milk products	Total
Calories per kg of food	cal		1 510 (4)	830 (5)	—	1 510 (4)	830 (5)	—	1 510 (4)	830 (5)	—	1 510 (4)	830 (5)	—
Consumption	'000 t		675 (2)	15 800	—	275 (2)	6 700	—	1 080 (2)	27 300	—	615 (2)	16 400	—
Secondary calories	'000 million cal		1 010	13 114	14 124	415	5 561	5 976	1 631	22 659	24 290	929	13 612	14 541
Primary calories (secondary × 7)	'000 million cal				98 868			41 832			170 030			101 787
Fodder requirements in grain units (7)	million tons				28,3			12,9			48,6			29,1
Coarse grain requirements (6)	million tons	0,6			14,2			6,0			24,3			14,6

(1) Failing more exact data, the same consumption of foodstuffs for the self-supply as for the food-buying sector has been assumed for 1959/60. — (2) Total consumption of meat, fish, eggs, after deducting 1/4 for fish. — (3) *Source*: FAO Year Book, Production 1960. It is not possible to determine statistically the real consumption of coarse grains in India. The quantity shown here = 0.6 million tons = corresponds neither to the animal population nor to the output of conversion products. The figure indicated cannot, therefore, be used in calculating the presumed consumption. — (4) Presumed consumption made up in equal parts of poultrymeat and eggs. — (5) The consumption of meat and milk products has been converted into milk consumption, and the calorie content corresponds to a milk with 5.6 % of fat (Food Balances). — (6) Assuming that half the grain unit requirement is in the form of coarse grains. — (7) 1 kg grain units (G.U.) = 3 500 calories.

TABLE 4

Overall cereals requirements 1959/60 and 1976

in million tons

	1959/60			1976		
	S	B	Total	S	B	Total
1. According to the coarse grain requirements shown statistically:						
Food cereals for direct consumption	51,3	22,2	73,5	77,2	43,1	120,3
Coarse grains according to the requirements shown statistically	0,3	0,3	0,6	0,8 (2)	0,4 (2)	1,2 (2)
Total	51,6	22,5	74,1	78,0	43,5	121,5
Seed, wastage (1)	7,2	3,2	10,4	11,0	6,2	17,2
Overall requirements	58,8	25,7	84,5	89,0	49,7	138,7
2. On the basis of the coarse grain requirements physiologically necessary for conversion:						
Food cereals for direct consumption	51,3	22,2	73,5	77,2	43,1	120,3
Coarse grains, requirements calculated theoretically (3)	14,2	6,0	20,2	24,3	14,6	38,9
Total	65,5	28,2	93,7	101,5	57,7	159,2
Seed, wastage (1)	9,5	3,8	13,3	14,5	8,5	23,0
Overall requirements	75,0	32,0	107,0	116,0	66,2	182,2

(1) Assumed to be 12.5% of production. Assuming that total requirements are covered by home production. If imports play a part. the seed requirements corresponding to the quantities imported must be subtracted. – (2) The extra cereals requirements have been doubled in conformity with the doubled coarse grains requirements. – (3) For the calculation of coarse grain requirements. see Table 3.

Explanations concerning Table 4:

Two methods are possible to determine overall cereals requirements. The coarse grain requirements shown in the statistics can be taken as a basis and increased for the year 1976 by the percentage of extra consumption of livestock conversion products expressed in secondary calories (method 1). It is then assumed that in 1976 the statistical coverage of coarse grain requirements will be as imprecise as now. But as the figures indicated have no relation to the quantities, as is the case for India, it follows that in absolute terms the requirements are too low.

We therefore need a comparison with total requirements established in the light of the volumes of coarse grain physiologically indispensable (method 2). These methods have already been described in detail (see report on India, page 141). The actual requirements should be between these two orders of magnitude, probably nearer to those estimated theoretically.

TABLE 5

Trend of food cereals production and of the deficit

in million tons

Cereals production with an annual percentage increase of					Cereals deficit with an annual percentage increase in production of:			
Year	2	3,5	5		Year	2	3,5	5
1959/60	76,5	76,5	76,5	On the basis of coarse grain requirements according to statistics (Table 4 1)	1959/60	8,6	8,6	8,6
					1976	78,2	61,2	42,2
1976	104	121	140	On the basis of coarse grain requirements physiologically necessary for the production of conversion products (Table 4 2)	1959/60	30,5	30,5	30,5
					1976	34,7	17,7	(+ 1,3)

Remarks on the calculation of the food cereals deficit and possible percentage of surplus utilization:

As it was not possible to establish a forecast on the trend of production, various growth rates were assumed for agricultural production. This calculation can be made by the methods shown in Tables 4/1 and 4/2.

As explained in the general section, the percentage of possible surplus utilization in the cereals deficit depends on the percentage of the population buying its food which is in convenient reach of transport; for India, this would be between 10 and 20 %.

TABLE 6

Nutritional content of the daily ration

Product	Self-supply sector (S) Food-buying sector (B)	Consumption 1976		Calorie content		Protein content		
		Annual kg	Daily g	per kg (1)	Total	per kg	Total	of which animal protein
Food cereals	S	198	542	3 500	1 897	100	54,2	
	B	205	561	3 500	1 964	100	56,1	
Meat, eggs, fish	S	3,7	10,1	990	10	107	1,1	1,1
	B	3,9	10,6	990	11	107	1,1	1,1
Milk, milk products	S	70	191	830	159	37	7,1	7,1
(converted into milk)	B	78	213	830	177	37	7,8	7,8
Vegetables	S	19	52	220	11	13	0,7	
	B	24	65	220	14	13	0,8	
Starchy tubers	S	14	38	910	35	14	0,5	
	B	15	41	910	37	14	0,6	
Sugar	S	16	41	3 500	144	10 (2)	0,4	
	B	19	52	3 500	182	10 (2)	0,5	
Fats	S	4,7	12,8	9 100	116	—	—	
	B	6	16,4	9 100	149	—	—	
Total	S				2 379		64,0	8,2
	B				2 534		66,9	8,9

(1) Allowing for conditions special to India and the quantitative composition of consumption. — (2) Gur.

ANNEX No. 13

HOW THE UTILIZATION OF FARM SURPLUSES IS ORGANIZED IN THE UNITED STATES

by
Professor H. Wilbrandt
Institut für Ausländische Landwirtschaft
der Technischen Universität
Berlin

CONTENTS

HOW THE UTILIZATION OF FARM SURPLUSES IS ORGANIZED IN THE UNITED STATES [1] [2]

I. *DEVELOPMENTS UP TO 1954*

Before and after the first World War, the internal market for farm products in the United States was determined by export prices. Betweem 1940 and 1950, production in excess of home needs found many uses. Lend-lease exports of farm products valued at 6 500 million dollars were succeeded by UNRRA exports, which in their turn gave way to exports as part of the British Loan. From 1947, exports in the framework of the Marshall Plan and the Aid and Assistance Programme for Greece, Turkey and Korea began. All this represented contributions to the war effort or to post-war reconstruction. One of the basic principles of the present utilization of surpluses — the creation thanks to receipts from supplies of foodstuffs of counterpart funds for use in promoting economic development in the receiving countries — has been copied from the Marshall Plan. As the distress and difficulties of the post-war period were rapidly overcome, the impulses given to production during the war and post-war period continued to be felt. Production was stimulated as much by the new techniques as by the level of internal prices which, thanks to state intervention on the markets, were kept well above world prices.

In the fifties the growth of surpluses exceeded sales. In 1956 the Commodity Credit Corporation (CCC) had accumulated surpluses of farm products worth nearly 9 000 million dollars. It was during this same period that a beginning was made with more intensive action both to prevent production from rising too clearly above actual needs — but this is not within the province of our study — and to organize systematic utilization of the surpluses in the United States and abroad.

The nature of these exports changed between 1950 and 1955. The initial objective of supplying aid and assistance to the suffering nations increasingly took second place to the need to dispose of surpluses which otherwise would not have been usable. The new Section 32 of the 1935 Agricultural Adjustment Act and Sections 407 and 416 of the 1949 Agricultural Act opened fresh possibilities for subsidized export. The Mutual Security Act of 1953 authorized sales for payment in the currency of the receiving country, and the constitution of counterpart funds for various development objectives is again playing an essential part. The account below is confined to the important Public Law 480, the incidence of which is much greater than that of all the earlier arrangements. A Bill to set up a special Food for Peace Organization having been thrown out in 1959, the title Food for Peace Programme was chosen to designate action under Public Law 480.

II. *PUBLIC LAW NO. 480*

Where it applies to agricultural products [3] Public Law 480, promulgated in 1954, pursues a large number of objectives. The objectives, implementing details and cost of the surplus utilization operations covered by PL 480 can be summed up as follows:

Objectives of surplus utilization

1. To promote the stability of agriculture in the United States;

2. To utilize surpluses in the best United States interests on the plane

a) of the economy

b) of external policy;

under a) To stimulate external trade,

To stimulate economic development in the United States and abroad.

under b) To reinforce collective security,

---

[1] In preparing this study, the author was aided by M. W. Kock, M. E.G. Jentzsch and M. H. Meliezck.

[2] According to "Farm Surpluses" by Murray R. Benedict and Elizabeth K. Bauer and "Message to the President of the United States" concerning the Food for Peace Programme. U.S. Government Printing Office 1961. Doc. No. 223, 87th Congress, 1st Session.

[3] "To promote the economic stability of American agriculture and the national welfare, to make maximum efficient use of surplus agricultural commodities in furtherance of the foreign policy of the United States, and to stimulate and facilitate the expansion of foreign trade in agricultural commodities produced in the United States by providing a means whereby surplus agricultural commodities in excess of the usual marketings of such commodities may be sold through private trade channels, and foreign currencies accepted in payment therefore. It is further the policy to use foreign currencies which accrue to the United States under this Act to expand international trade, to encourage economic development, to purchase strategic materials, to pay United States obligations abroad, to promote collective strength, and to foster in other ways the foreign policy of the United States".

To promote measures of strategic interest,

Settlement of US debts abroad and other external policy objectives of the United States.

Measures for the utilization of surpluses

1. Sales against payment in cash in national currency or foreign currency;
2. Loans
3. Barter
4. Gifts

The operations mentioned under points 2 to 4 are partly carried out through counterpart funds.

Cost of surplus utilization

1. The CCC expenses are considered as costs. This means all expenditure incurred in the production, storage and administration of the surpluses in the widest sense;

2. Transport costs are calculated separately: ocean freight and internal freight in the receiving country;

3. The costs are not in direct relation with the world price of the products concerned.

The main promotion objectives aimed at by using surplus products are set out in detail in the various sections of Titles I to IV. Public Law 480, whose four Titles are studied below, has assumed considerable importance for the American agricultural market and also for the world market. Table 1 shows the total volume of transactions with abroad in the framework of PL 480.

TABLE 1

Breakdown of transactions with abroad under PL 480 (1 July 1954 to 30 June 1961)

in million $

Title	Amounts authorized for utilization	Agreements concluded
I	11 250 (1)	9 480 (2)
II	1 400	937
III of which gifts	(3)	1 593
III and barter	(3)	1 411
IV	in preparation	
Total		13 421

Source: Message from the President of the United States transmitting the 14th semi-annual report on activities of the food-for-peace programme carried on under Public Law No. 480. House Document No. 223. 87th Congress. 1st Session. Washington 1961.
(1) Until 31 December 1961.
(2) CCC expenditure, Export market value: 6 534 million dollars. of which 4 562 million dollars exported.
(3) Unlimited as regards time and volume.

The share in overall exports of agricultural products accounted for by those made under PL 480 was 22% in 1954/55 and 1955/56, and it recently rose to 25-28%. The PL 480 share in total exports varies according to products. In 1961 the situation was as follows:

for wheat	65%
maize	22%
rice	67%
cotton	20%
cottonseed and soya oil	51%

Title I authorises the conclusion with friendly countries of arrangements for payment in local currency instead of US dollars. The foreign exchange thus acquired by the US Government between 1 July 1954 and 30 June 1961 was put to the following uses:

Section 104(a)

For the development of new markets for American farm products on a mutually advantageous basis.

Many schemes carried out in co-operation with agricultural and trade groupings to finance exhibitions, market centres, propaganda campaigns, research, quality improvements, etc. Total expenditure: 58 million dollars, of which 41 million were provided from funds under the Law, the rest being put up by the parties concerned.

Section 104(b)

Purchases of strategic and other material

This possibility has so far not been utilized.

Section 104(c)

Joint defence

Out of an amount of 394 million dollars for common defence provided for under agreements, 303 million dollars have been transferred to the competent authorities.

Section 104(d)

Purchases of products for other friendly countries

Expenditure so far: 54 million dollars, expenditure planned: 56 million dollars.

Section 104(e)

Loans and non-repayable grants for economic developments

Up to the present, about 1 100 million dollars have been earmarked for non-repayable grants. A further 399 million dollars (25% maximum of foreign currency receipts of each agreement included in implementation of Titel I) have been set aside by the Export-Import Bank for American firms in agreement with the receiving country. These loans cannot be used either to further production for export to the United States which competes with American products, or to encourage the manufacture of products which can compete with American farm products or with products resulting from the processing of these.

Section 104(f)

Payment for American commitments

As far as can be ascertained, 961 million dollars have been allotted to various objectives, among them the construction of housing for military personnel, but the funds have only been used in part.

Section 104(g)

Loans to foreign governments

A total of 2900 million dollars has been made available so far for loans to 33 governments (1 100 millions already paid out). This is by far the most important utilization and covers about 44% of total receipts expected from sales. The loans are used for expenditure on development projects within the countries: wages, salaries and locally produced equipment. They can also be used for projects for which spending abroad is financed by international or American credit establishments. The conditions agreed on as regards interest and exchange risks were revised in 1959 to the advantage of the beneficiary countries.

Of the 1 100 million dollars so far spent, 514 million dollars (45%) went to industry and mining, water supply and electric power and to small industries.

219 million dollars (19%) was allotted to agricultural schemes, including irrigation, opening up of new land, reafforestation and fisheries.

108 million dollars (9%) was spent on communications and transport.

239 million dollars (21%) went to investments of the State and local authorities, loans, etc.

The smaller sums (doubtless the balance) were used to promote hygiene, public health, education, and community development projects.

Section 104(h)

International cultural exchanges

More than 38 million dollars have been spent on cultural exchange programmes; about 10 000 agreements have been concluded under this head.

TABLE 2

Value and volume of CCC deliveries under Title I between 1 July 1954 and 30 June 1961

Product	Quantities (1) in '000 t	Export value (in million dollars)	Estimation of CCC cost price (in million dollars)	Percentage of CCC cost price covered by the export price
Wheat and wheat flour	53 865	3 257	5 473	59
Rice	3 062	388	639	61
Coarse grains (2)	7 387	364	474	77
Fats and oils	1 988	610	618	99
Dry beans	22	4	4	100
Fruit and vegetables	86	17	17	100
Milk products	131	47	78	60
Meat and meat-based products	59	43	43	100
Tobacco	139	222	222	100
Cotton (3)	1 329	858	1 188	72
Seeds	1	1	1	100
Total	68 068 (4)	5 812 (4)	8 757	66
Maritime freight financed by CCC		723	723	100
Value of the products (including freight)		6 534 (4)	9 480	69

Source : Message from the President of the United States, transmitting the 14th semi-annual report on activities of the food-for-peace programme carried on under Public Law No. 480, p. 4, House Doc. No. 223, 87th Congress, 1st Session, Washington 1961.
(1) The original data were expressed in American units of measure.
(2) In particular, maize and barley.
(3) Including small quantities of cotton lint.
(4) An error in the addition, explained by the use of round figures.

Section 104(i)

Translations, publications, lending of books and reviews

Commitments so far entered into for the translation of technical works amount to 6 million dollars.

Section 104(j)

Schools, librairies and community centres under American responsibility or in co-operation with American authorities

Allocations so far: about 14 million dollars.

Section 104(k)

Promotion of scientific information, activity and co-operation

These measures of encouragement help numerous schemes for research into agriculture, public health, food and education, as well as cultural activities and the translation of scientific works. As far as can be seen, approximately 20 million dollars have been provided so far for this purpose.

Section 104(l)

United States government building

A 4.5 million dollar programme

Section 104(m) to Section 104(r)

Agricultural and horticultural exhibitions, acquisition and loans of foreign publications, promotion of American educational establishments

Workshops

Audio-visual material

Expenditure: about 3 million dollars.

Table 2 shows transactions under programmes falling within the province of Title I, the export market prices agreed to with the receiving country, cost prices to CCC and the fraction of the latter covered by the export prices.

Table 3 lists the main beneficiary countries, in respect of which the export value of supplies effected or planned between 1 July 1954 and 30 June 1961 is over 100 million dollars.

Supplies to the 13 main beneficiary countries accounted for 85% of the total.

TABLE 3

Export value of CCC supplies to the main beneficiary countries under Title I of PL 480 planned or effected between 1 July 1954 and 30 June 1961

Country	Export value of CCC deliveries in $ million		Percentage of deliveries effected in relation to deliveries planned
	Planned	Effected	
India	1 195	1 049	88
Spain	472	423	90
Yugoslavia	389	376	97
Pakistan	381	357	94
Poland	338	340	101
Brazil	253	191	75
Turkey	231	229	99
Egypt	199	180	90
South Korea	195	166	85
Israel	175	153	87
Indonesia	156	152	97
Italy	140	140	100
Japan	135	135	100
13 countries	4 259	3 891	91
Total Title I	5 812	4 563	79

Source: **Message from the President of the United States .... p. 92.**

Utilization of surplus products in the struggle against famine and for the supply of other emergency help to friendly countries or persons with a friendly attitude irrespective of the friendly or unfriendly behaviour of the Governments concerned. Recently applicable also to grants in kind to encourage economic development and complete the aid granted under Title I and to cover transport costs for surplus products, particularly in countries without access to the sea. Annual expenditure up to 300 million dollars approved. Total authorizations granted since the beginning amount to 1 400 million dollars; 937 million have already been released. About half of this sum has been used for help to disaster victims, for children's feeding, school meals and refugee aid. In a number of cases famine provoked by drought or floods has been combatted. Help granted to public institutions has amounted to 150 million dollars.

Products worth 147 million dollars will serve to stimulate economic development. This category includes labour-intensive schemes giving productive work to unemployed: roadbuilding, reafforestation, anti-erosion campaigns, irrigation and drainage, land settlement, etc. As much as 50% of the wages is paid in surplus cereals. Materials and equipment of national origin for these schemes are procured from counterpart funds. Projects of this kind have been successfully carried out in Tunisia, Morocco, Erithrea, Ethiopia, Iran, Korea, and elsewhere.

in $ million

Bread grains	471
Coarse grains	100
Fats and oils	32
Beans	4
Milk and milk products	73
Rice	49
Cotton	19
Freight charges in respect of the above products	60
Freight charges in respect of Title III	130
	937

Transaction coming under Title II may be broken down as above for the period 1 July 1954 to 30 June 1961.

The CCC cost prices correspond to the global costs.

The main beneficiary countries (more than 30 million dollars' worth of products between 1 July 1954 and 30 June 1961) were the following:

in $ million

Tunisia	101	(chiefly economic development and help to disaster victims)
Italy	87	(chiefly food for children and help to disaster victims)
Morocco	74	(chiefly economic development and help to disaster victims)
Pakistan	69	(disaster victims)
Yugoslavia	47	(disaster victims)
Afghanistan	44	(economic development and disaster victims)
Japan	37	(food for children)
Jordan	35	(disaster victims)

474 million dollars, or about 60% of the value of the products delivered (without freight costs) have been allotted to these 8 countries. Nearly half of this amount has gone to help them in disasters; 17% has been allotted to economic development; 10% to children's food, and the remainder to other objectives.

Under this Title, welfare institutions and UNICEF receive food surpluses for their aid work both in the United States and abroad. From 1 July 1954 to 30 June 1961, food products of a total value of about 1 600 million dollars were thus supplied for aid to foreign countries. In make-up these products differ greatly from those delivered by virtue of Titles I and II. Dairy products account for nearly two-thirds of the value, with powdered skim milk in the first place. Then come cheese, butter and butterfat. The remainder consists chiefly of flour and cereals products.

As regards deliveries under Title III (gifts), the value of the gift is considered to correspond to the costs. The composition of these deliveries is shown in Table 4.

TABLE 4

Volume and value of gifts to foreign countries under Public Law 480 between 1 July 1954 and 30 June 1961

Product	Volume in '000 tons (1)	Value in $ million
Wheat	230	29
Flour	1 998	309
Rice	334	90
Maize	123	13
Maize flour	707	96
Dry beans	53	11
Cottonseed oil	21	11
Powdered skim milk	1 340	541
Cheese	262	251
Butter	80	121
Butterfat	56	107
Butcher's fat	26	13
Total	5 231 (2)	1 593 (2)

Source: Message from the President of the United States ..., p. 44.
(1) Original quantities expressed in lb.
(2) The error in the addition is explained by the use of round figures.

The chief countries which have benefited from these gifts under Title III, that is to say those which received more than 30 million dollars' value between 1 July 1954 and 30 June 1961, were the following:

in $ million

Italy	198	Egypt	82
Yugoslavia	141	South Vietnam	61
India	140	Formosa	53
Spain	140	Chile	42
South Korea	114	Philippines	33
Greece	97	Pakistan	32
Germany (FR)	96		

These 13 countries received 77% of the total sum of 1 593 million dollars.

A special character attaches to the barter operations authorized by Title III concerning American farm surpluses exchanged for products of the receiving country – easily stockable and less perishable — which the United States does not produce in sufficient quantities, or against consumer goods needed for American economic aid either in the receiving country or in other countries. The volume of these transactions, which cannot be dealt with 108 countries, they amounted to about 1 400 million dollars between 1 July 1954 and 30 June 1961.

In 1959, Law 86-341 added Title IV to Public Law 480. This authorizes long-term deliveries — up to ten years — and dollar credit sales of American farm products, with deferred payment up to 20 years. The main objective of this extension is to utilize surplus products and counterpart funds to finance development projects in friendly countries and to exploit or maintain exports of such products against deferred payment in dollars.

STUDIES

published so far in the Agricultural Series (1)

VI/707 – No. 1
Les grandes régions agricoles dans la C.E.E.
(Etude réalisée en commun par la C.E.E. et l'O.E.C.E.)
(The main agricultural areas in the EEC [Joint study by EEC and OEEC])
1960. 60 pp. + 5 maps (out of print).

8005* – No. 2
Tendances de la production et de la consommation en denrées alimentaires dans la C.E.E. (1956-1965)
(Trends in food production and consumption in EEC [1956-65])
1960. 120 pp. (report) + 145 pp. (annexes) (f, d, i, n). £1.1.3; $3; Bfrs. 150

8080* – No. 3
G. Schmitt: Méthodes et possibilités d'établissement des projections à long terme pour la production agricole
(Methods of drawing up long-term projections for agricultural production)
1961. 80 pp. (f, d). 17s.; $2.40; Bfrs. 120

8020* – No. 4
Prof. Dr. Priebe – Prof. Dr. Möller: La politique économique régionale, condition du succès de la politique agricole
(Regional economic policy – a prerequisite for a successful agricultural policy)
1961. 20 pp. (f, d, i, n). 4s.3d.; $0.60; Bfrs. 30

8022* – No. 5
L'augmentation de la production de viande bovine dans les pays de la C.E.E.
(Raising production of beef and veal in the EEC countries)
1961. 216 pp. (f, d), £1.15.6; $5; Bfrs. 250

8025* – No. 6
Etude de droit comparé sur les rapports entre bailleur et preneur à ferme dans les pays de la C.E.E.
(Study of comparative law on relations between the lessor and lessee of farmland in the EEC countries)
1961. 48 pp. (f, d, i, n). 8s.6d.; $1.20; Bfrs. 60

8043 – No. 7
M. Soenen/P. F. Pelshenke: Problèmes relatifs à la qualité du blé, de la farine et du pain dans les pays de la C.E.E.
(The quality of wheat, flour and bread in the EEC countries)
1962. 35 pp. (f, d, i, n). 7s.; $1; Bfrs. 50

8054* – No. 8
La consommation des engrais dans les pays de la C.E.E.
(Fertilizer consumption in the EEC)
1962. 82 + 32 pp. + 3 maps. (d; f: out of print). £1.6.0; $3.60; Bfrs. 180

PUBLISHING SERVICES OF THE EUROPEAN COMMUNITIES

(1) The abbreviations after each title indicate the languages in which the documents have been published: f = French; d = German; i = Italian; n = Dutch; e = English.

Studies published so far in the Agricultural Series:

8076* – No. 9
L'organisation de la recherche agronomique dans les pays de la C.E.E.
(Organization of agricultural research in the EEC countries)
1963. 128 pp. (f, d, i, n). £1.15.6; $5; Bfrs. 150

8077* – No. 10
Le marché commun des produits agricoles. Perspectives «1970»
(The common market in farm products – Outlook until 1970)
1963. 198 pp. (f, d, i, n). £1.15.6; $5; Bfrs. 250

8063 – No. 11
Effects of lower farm prices within the framework of a common agricultural policy in EEC on farm incomes in Federal Germany
1962. 85 pp. (f, d, i, n, e). 7s.; $1; Bfrs. 50

8101* – No. 12
La structure du commerce des fruits et légumes dans les pays de la C.E.E. – Standardisation et système de contrôle.
(Structure of fruit and vegetable trade in the EEC. – Standardization and inspection system)
1963. 46 pp. (f, d, i, n) 8s.6d.; $1.20; Bfrs. 60

8099* – No. 13
Modèles d'exploitations agricoles
(Models of farm undertakings)
1964. 76 pp. (f, d) £1.1.3; $3.00; Bfrs. 150

8102* – No. 14
Aid in the form of food by the EEC to the developing countries – Problems and possibilities
1964. 233 pp. (f, d, i, n, e) £1.15.6; $5; Bfrs 250

8117 – No. 15
Organization of World Markets for Agricultural Commodities – A joint action programme for developed and developing countries
1964. 52 pp. (f, d, i, n, e) 8s.6d.; $1.20; Bfrs 60

8124 – No. 16
Problèmes relatifs à la qualité du blé tendre, de la farine et du pain dans les pays de la C.E.E.
(The quality of wheat other than durum, flour and bread in the EEC countries)
1965. 40 pp. (f, d, i, n) 9s.; $1.20; Bfrs 60

8130* – No. 17
Analyse des facteurs qui influent sur l'orientation de l'offre régionale de céréales et de produits transformés dérivés des céréales
(Factors influencing in various regions the choice of cereal crops and the supply of cereal conversion products)
1965. 75 pp. (f, d, i, n) £0.9.0; $1.20; Bfrs 60

8138 – No. 18
Economie de la production, transformation et consommation du blé dur dans la C.E.E.
(Growing, processing and consumption of durum wheat in the EEC)
1965. – (f, d, i, n) in preparation; £0.14.6; $2; Bfrs 100

PUBLISHING SERVICES OF THE EUROPEAN COMMUNITIES

SALES OFFICES

BELGIUM

Moniteur belge – Belgisch Staatsblad
40-42, rue de Louvain – Leuvenseweg 40-42
Bruxelles 1 – Brussel 1

FRANCE

Service de vente en France des publications des Communautés européennes
26, rue Desaix – Paris 15e
Compte courant postal : Paris 23-96

GERMANY (Federal Republic)

Verlag Bundesanzeiger
Postfach – 5 Köln 1
Fernschreiber : Anzeiger Bonn 8882595

LUXEMBOURG, GRAND-DUCHY OF

Office central de vente des publications des Communautés européennes
9, rue Goethe – Luxembourg

NETHERLANDS

Staatsdrukkerij- en uitgeverijbedrijf
Christoffel Plantijnstraat – 's-Gravenhage

ITALY

Libreria dello Stato
Piazza G. Verdi 10 – Roma

Branch Offices :
Roma – Via del Tritone 61/A e 61/B
Roma – Via XX Settembre
(Palazzo Ministero delle Finanze)
Milano – Galleria Vittorio Emanuele 3
Napoli – Via Chiaia 5
Firenze – Via Cavour 46/r

UNITED KINGDOM AND COMMONWEALTH

H.M. Stationery Office
P.O. Box 569
London S.E. 1

UNITED STATES OF AMERICA

European Community Information Service
808 Farragut Building
900-17th Street, N.W.
Washington 6, D.C.

OTHER COUNTRIES

Office central de vente des publications des Communautés européennes
2, place de Metz – Luxembourg

PUBLICATIONS SERVICES OF THE EUROPEAN COMMUNITIES
8102/5/VI/1965/5

£1.15.6	$5.00	FF 24,50	FB 250,-	DM 20,-	Lit. 3 120,-	Fl. 18,-