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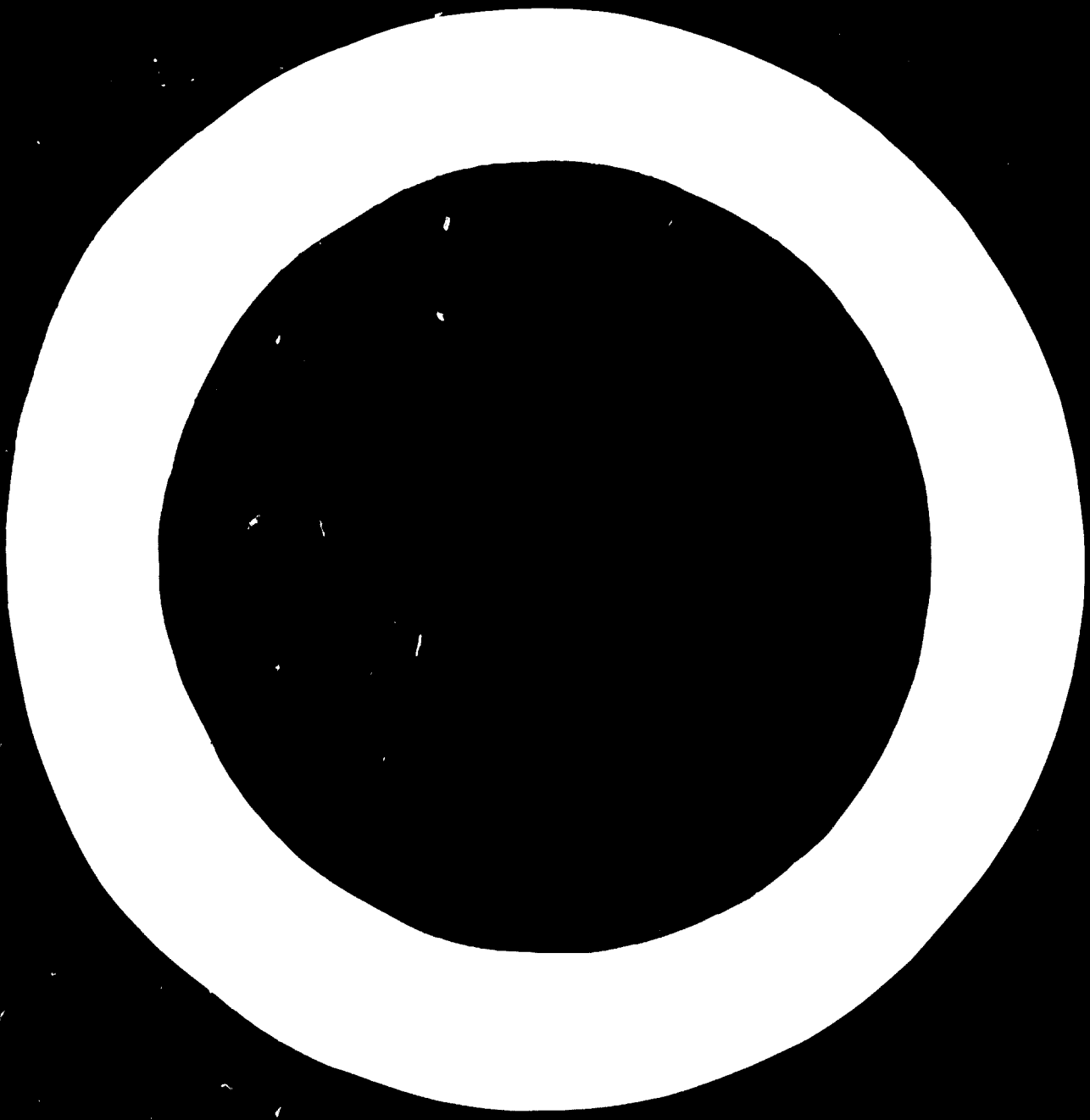
ACTIVITIES OF THE UNITED NATIONS SYSTEM OF ORGANIZATIONS IN THE FIELD OF INDUSTRIAL DEVELOPMENT

FAO's Activities in the Field of Industrial Development - 1966 Annual Report

Note by the Executive Director

The attached report of the Food and Agriculture Organisation on its activities in the field of industrial development is transmitted to members of the Industrial Development Board at the request of FAO. This report is brought to the Board's attention as a supplement to the information contained in the Second Consolidated Report of the Industrial Development Activities of the United Nations System of Organisations.

* In view of the limited number of copies, this document is being distributed only to members of the Industrial Development Board.



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

FAO's ACTIVITIES IN THE FIELD OF INDUSTRIAL DEVELOPMENT

Annual Report for 1966

for the

First Session

of the

United Nations Industrial Development Board

as a contribution to the

Annual Consolidated Report on Activities of the United Nations System in the Field of Industrial Development, being prepared pursuant to ECOSOC Resolution 1081-D (XXXIX) of 30 July 1965

Compiled in the Office of the Assistant Director-General, Technical Department, with collaboration from the Members of the FAO Inter-Divisional Working Party on Industrial Development Activities

Rome

November, 1966

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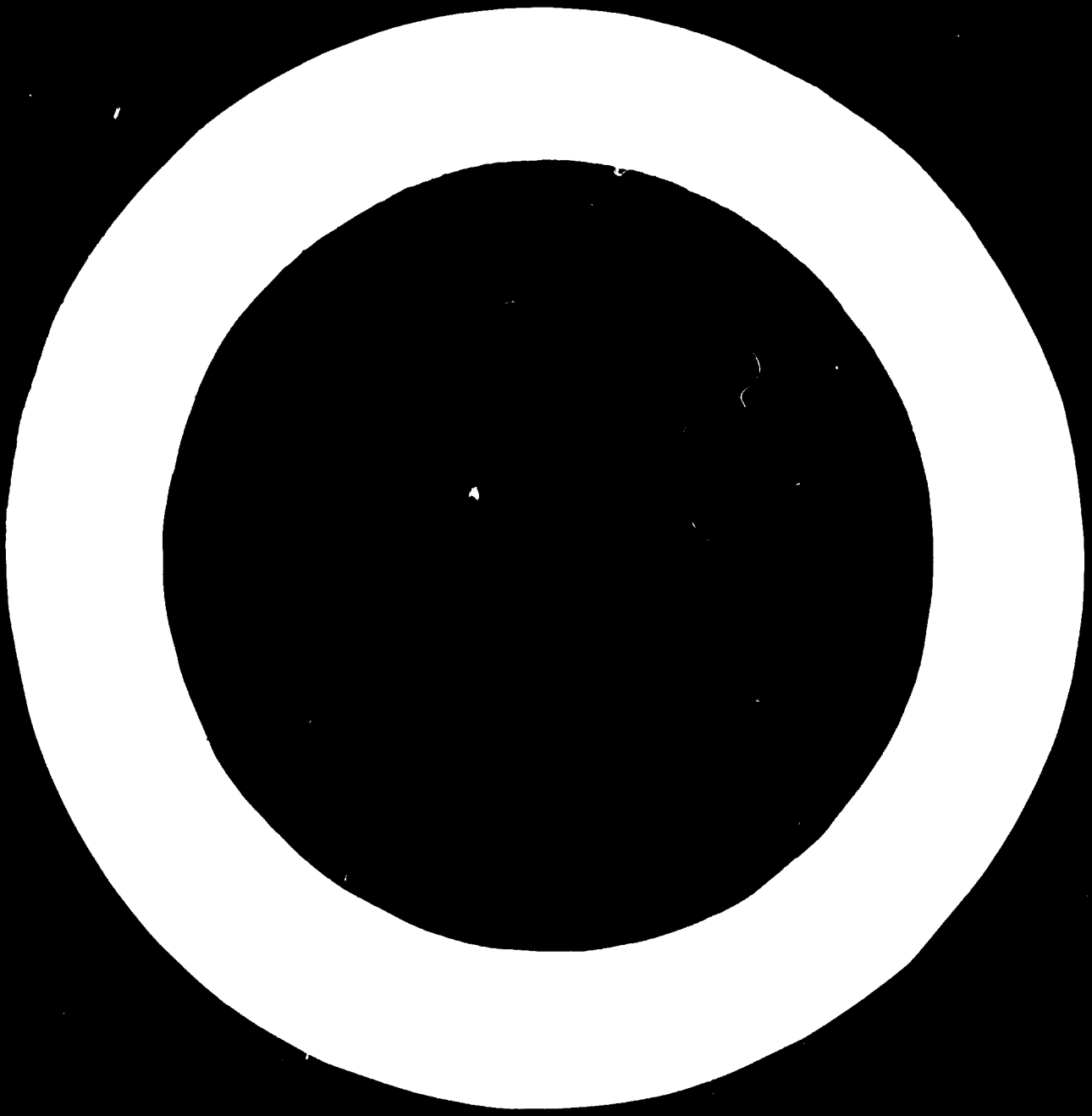

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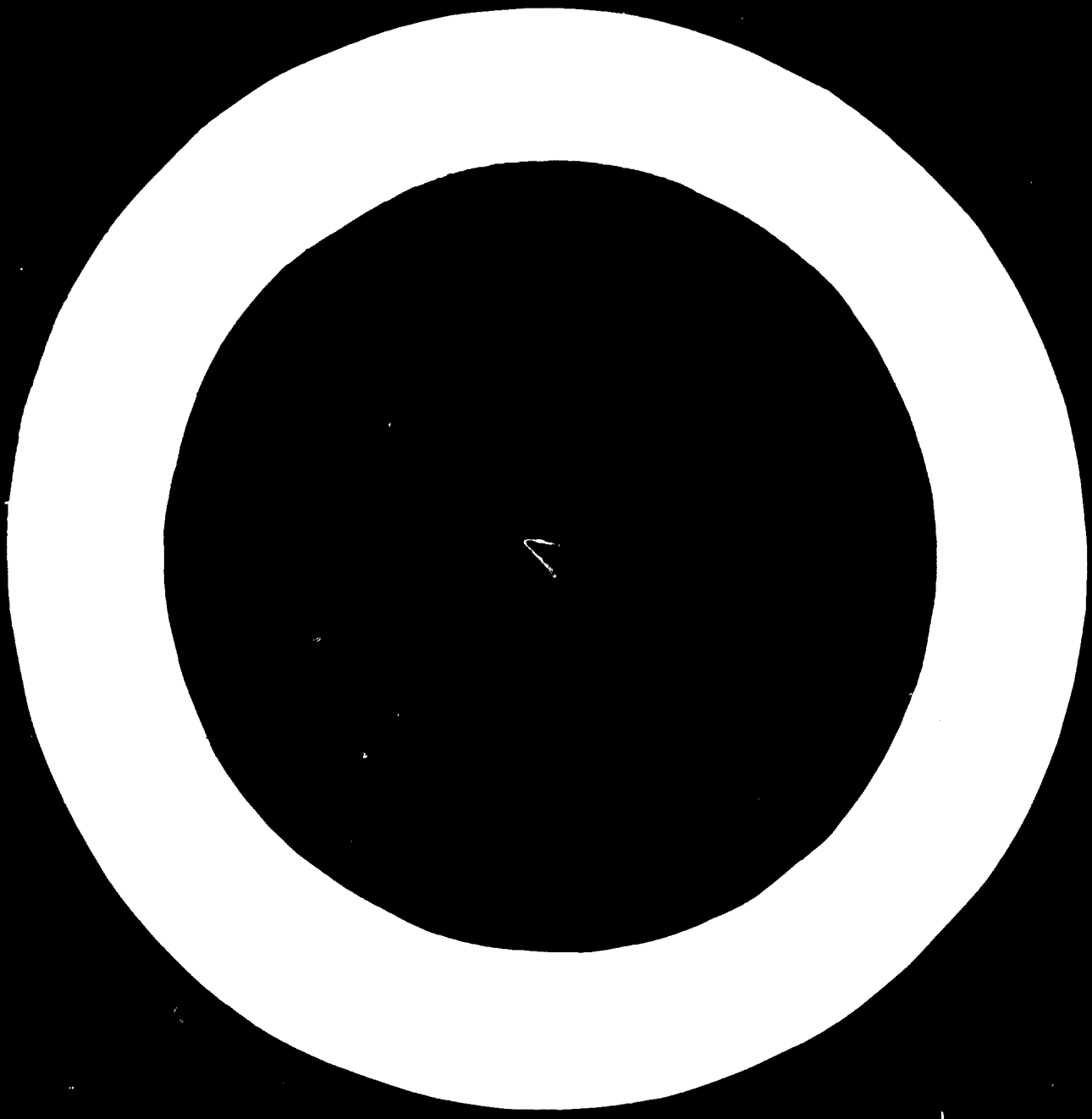
FOREWORD

This FAO Annual Report for 1966 describing FAO's Activities in the Field of Industrial Development has been prepared pursuant to ECOSOC Resolution 1081-D(XXXIX) of 30 July 1965, calling for "a single analytical annual report summarising the work in the field of industrial development of the United Nations, including the Regional Economic Commissions and the work of the other agencies of the United Nations System", requesting "the Secretary-General to undertake consultations with other agencies of the United Nations System with the objective of developing a framework for such a coordinated report".

A Preliminary Sample of the Consolidated Report of the Industrial Development Activities of the United Nations System of Organizations, for 1965, was presented to the Committee for Industrial Development at its Sixth Session in New York, 1966 (Document E/C.5/125/Add.1 of 20 April 1966).

Consultations regarding a suitable final framework of the single analytical report are not yet fully conclusive, but it is clear that such a report should consist essentially of factual information on programs and projects which were operated during the year covered by the report, rather than take the form of a study on the many problems to be given consideration in dealing with industrial development activities.

This FAO report follows previous FAO annual reports supplied to the UN Committee for Industrial Development, ECOSOC and General Assembly Sessions, and to others concerned with the work of this Organization in this particular field. The report covers FAO projects and activities that are operational in 1966, though reference is sometimes made to earlier periods, such as for instance in the case of Appendix II, containing a list of selected FAO publications issued over a period of years on industrial development activities related to or based on the handling and processing of certain renewable natural resources derived from agriculture, forestry and fisheries.



I. INTRODUCTION

1. This Annual Report for 1966 on FAO's Activities in the Field of Industrial Development describes in broad outline the projects and activities dealing with the handling, processing, and wider industrial treatment of raw materials derived from agriculture, (including animal husbandry), forestry and fisheries.

FAO's Governing Body

2. The activities reviewed in this Annual Report are integrated with FAO's overall program of work, and covered by the FAO Constitution. Thus, industrialization based on the raw materials derived from agriculture, forestry, and fisheries, has been discussed and reviewed at regular intervals by FAO's Governing Body.

3. Appendix I of this Report contains the full text of Resolution 28/63 on Industrialization, as adopted at the Twelfth Session of the FAO Conference held in Rome in 1963.

4. This FAO Conference Resolution 28/63 emphasizes that processing industries based on products derived from agriculture, forestry and fisheries cannot be adequately dealt with independently of the various aspects of production of the raw materials, and the economic and social considerations affecting the people involved, i.e. farmers, forest workers and fishermen. This Resolution, therefore, "considers that the proper management and development of renewable natural resources requires that there should be no divorce between responsibility for these resources and responsibility for the industries based upon them", and "reaffirms FAO's responsibility for advising and assisting Member Nations on the sound development of industries, either based on renewable natural resources or designed to meet food and nutritional needs".

5. At the Thirteenth Session of the FAO Conference held in 1965, the desire was expressed for a more active FAO program with regard to industries providing essential requisites, such as seeds, fertilizers, pesticides and other agricultural chemicals; vaccines and other animal medicaments; tools, equipment and machinery for the production, protection, handling and processing of agricultural, forestry and fisheries products, including fishing gear, boats, vessels, development of fishing harbours, refrigeration and storage plants, etc.

6. In this present FAO Report, an account has been given of this particular area and reference is made to Chapter VII, (part E, Sectoral Activities), and to Chapter VIII, Supporting Activities. The corresponding Appendix VIII lists a selection of current FAO operated field projects.

FAO Organizational Arrangements

7. FAO's areas of activity are to assist in the promotion and development of a wide range of processing industries that use as raw materials a variety of products from agriculture, forestry and fisheries. The promotion and development of such a wide range of processing industries, based on a great variety of raw materials which all have their own specific characteristics, involving distinct technological processes, requires an integrated planning, as shown throughout this Annual Report particularly when reviewing field operational projects. (See Appendices III - VIII for specific examples).

8. To be fully effective, the funds derived from a variety of resources - Regular Program, UNDP-SF and -TA, Funds-in-Trust, FFHC funds, etc. - are allocated in the light of the overall program requirements and subject to priorities set by the recipient Governments and by the FAO Conference and Council. The guidelines issued by the Governing Body of the UN Development Program are also taken into account.

9. The work is carried out by the appropriate parts of the Organization and spread throughout Departments, Divisions, Branches, and to various subject matter specialists, comprising the Technical Department, the Department of Fisheries, and the Department of Economic and Social Affairs, as well as other programs and units as listed in the next paragraph.

10. The integrated program also takes into account the work on the Indicative World Plan (see Chapter III), involving cooperation throughout the Organization, in order to relate the growth of agriculture, forestry and fisheries, with that of industry in the context of production, processing, consumption and trade. Multi-divisonal cooperation is provided as required for a large part of the planning and execution of UNDP-SF and -TA and other field projects, and/or programs undertaken by the FAO/IBRD Program and FAO/Industry Cooperative Program (see Chapter V and VI of the Report).

FAO Operational Activities

11. Over the past years FAO work as a whole has been concentrated increasingly on field action programs and projects. Thus, during 1966 out of about 80 million dollars more than 55 million were devoted to action projects and implementation of field operations.

12. Except for a number of FAO/UNDP-SF projects (see Chapter V) detailed figures are at present not available with regard to the proportion of these resources which are used for specific industrial development activities. Thus it was not possible in this Annual Report to provide detailed figures. A reasonable estimate, however, is that about one-third to one-quarter of all FAO operated UNDP-SF projects deal with one or another area or sector of industrial development as described in this Report, involving an expenditure of around 10 million dollars during 1966.

FAO's Specific Areas

13. A general description of FAO's specific areas in the field of industrial development is described in Chapter II of this Annual Report, the FAO role and responsibility being summarised in the paragraphs 26-30.

14. Chapters III and IV give further details on projects and programs dealing with planning, economic analysis, trade and other economic aspects of processed agricultural commodities, economics of processing enterprises, development of cooperatives and credit systems, research, education, training, management and marketing, etc. Appendix III lists a selection of current operational field projects for which FAO assistance has been requested by Governments.

15. Appendix III gives a list of 11 FAO/UNDP-SF and 34 FAO/UNDP-TA operational field projects, 1 project financed by FFHC resources and 2 by Funds-in-Trust arrangements.

16. In Chapter VII-A and Appendix IV, the FAO report deals with projects and programs in the sector of Food and Food Products Industries, including those based on both animal and plant products. Appendix IV refers to 14

FAO/UNDP-SF operational projects, 33 UNDP-TA projects, 10 UNICEF supported, 9 projects financed from FFHC resources and 2 projects operated under Funds-in-Trust arrangements.

17. Chapter VII-B and Appendix V deal with the sector of Industries Processing Agricultural Products other than Food. Appendix V refers to 7 FAO/UNDP-SF and 12 FAO/UNDP-TA projects, 3 FFHC supported projects and 1 project under a Funds-in-Trust arrangement.

18. The FAO report deals in Chapter VII-C with the sector of Forestry and Forest Industries including Pulp and Paper, and the corresponding Appendix VI lists a selection of 15 UNDP-SF and 21 FAO/UNDP-TA projects.

19. The sector of Fisheries Industries is described in Chapter VII-D, whilst Appendix VII includes a selection of operational projects, being 18 FAO/UNDP-SF, 15 FAO/UNDP-TA and 1 project under Funds-in-Trust.

20. Chapter VII-E refers to Industries for the Supply of Essential Requisites to develop Agriculture, Animal Husbandry, Forestry and Fisheries and the selection of operational projects described in Appendix VIII refers to 17 FAO/UNDP-SF, 51 FAO/UNDP-TA, 6 FFHC projects, and 4 projects operating under a Funds-in-Trust arrangement.

UN/FAO World Food Program

21. The FAO Annual Report for 1986 also deals in Chapter IX with a selected number of World Food Program assistance to development projects in the field of industry.

II. UN SYSTEM AND INDUSTRIAL DEVELOPMENT

Identification of FAO's Role and Responsibility

22. The processing of raw materials derived from agriculture, which, in addition to crops, includes animal husbandry, forestry and fisheries, referred to in paragraph 8 as "renewable natural resources", has been part of FAO's Program of Work and Budget since FAO's inception. Prior to the establishment of EPTA, such activities were already being undertaken through FAO field missions under other sources of funds. 1/

23. The work is of great variety and is dealt with by the appropriate parts of the Organization and subject matter specialists, and is integrated in the overall program of work, because industrial development planning cannot be dealt with independently of the various aspects of production or catch, the handling of the raw materials, and the social considerations affecting the people. Thus, farmers, fishermen and forest workers are directly concerned with such activities, all of which take place predominantly under rural environmental conditions, as processing plants never can operate effectively unless full participation of the primary producers in the entire chain of operation is guaranteed, from production, or catch, through handling to the processing plant

24. Forestry, where crops in some instances take only a few years but in others many years to mature, offers a striking example of the need to avoid divorce between planning for the raw material, and planning for the ultimate product, e.g. pulp and paper. 2/ The same applies to the planning and development of fisheries and food processing industries which are based on perishable raw materials.

25. To achieve such an integrated industrial development not only technology but social factors as well must be taken into account, involving a range of institutional, organizational, and educational measures. A striking example in this respect is the rapid development of dairy industries now taking place in so many countries, which type of industry commences with the organization of individual producers through milk collection schemes, almost invariably inducing a variety of dairy products processing industries. (See Chapter VII-A and Appendix IV).

1/ See FAO Agricultural Development Paper No. 24, February 1953, referring to cotton ginning in China; food processing in China, Czechoslovakia, Greece and Italy; various small-scale industries in China; refrigeration engineering in Czechoslovakia and a fellowship on refrigeration and cold storage to a national of Yugoslavia.

2/ In the case of the Usutu Forest Operations in Swaziland involving the planting of 100,000 acres under pines, the first seedlings were planted in 1949 and a mill processing 100,000 tons a year of pulp based on these plantations came into operation in 1961.

FAO's Specific Areas

26. FAO's role and responsibility in the field of industrial development is to assist its Member Governments in such matters as:

(a) the formulation of policies and review of plans in order to accelerate industrial development based on renewable natural resources;

(b) analysing economic, social and institutional, organizational and administrative aspects required to implement such plans, and examination of the problems affecting implementation. This includes feasibility studies, raw material assessment, compilation of data regarding relevant economic characteristics of the processing industries such as value added, import content of inputs, optimum size, possibilities for regional economic cooperation, etc.;

(c) development of programs and projects aimed at the education and training of personnel at different levels, and in a variety of disciplines, to accelerate the rate at which qualified skills become available to implement industrial development projects;

(d) development of specific demonstration and research projects, leading to operation of pilot processing plants that make use of the most appropriate modern techniques and technologies as determined by the raw material concerned, taking into due account new products and marketing development, consumer preference, social habits, and other factors that require consideration in order to arrive at profitable operation;

(e) fostering products processing investment projects through preparation of investment plans, feasibility studies and raw material assessment, etc.

27. Sector-wise FAO assists in the development of the following categories of industries:

(a) Food and Food Products Processing Industries, including those based on both animal and plant products.

(b) Industries Processing Agricultural Products other than Food (e.g. cotton, wool, tobacco, natural fibres, hides, skins and leather, agricultural residues such as cereal straw, bagasse, agricultural by-products and waste, etc.).

(c) Forestry and Forest Industries, including Pulp and Paper.

(d) Fisheries Industries.

(e) Industries for the Supply of Essential Requisites to develop Agriculture, Forestry and Fisheries.

28. It is obvious that industrial development requires action in many more fields than those which have been briefly listed in the previous paragraphs 26 and 27. This is particularly true for a number of "supply industries" as listed in paragraph 11 (e), especially with reference to the manufacturing elements.

29. Accelerated agricultural and forestry production requires provision for, and a regular supply of improved seeds, fertilizers, insecticides and pesticides, vaccines and other animal medicaments, a wide range of tools for agricultural and forestry production, tractors and auxiliary equipment and machinery. The same is true for fisheries, where gear, boats, vessels as well as appropriately designed fishing harbours and ice plants are needed. Furthermore, equipment and machinery for handling, processing, storage, packaging and distribution of a great variety of products has to be manufactured for the processing industries. It is in a number of these fields that cooperation with others in the UN will undoubtedly lead to greater and complementary services to the Governments.

30. Action is also required in other fields to which FAO gives support and cooperates with others within the UN System of Organization. Industrial development, especially for the rural areas, requires adequate supplies of water and energy, improvement and development of farm access roads, suitable transportation facilities including refrigerated transport for perishable food, establishment of improved farm service and market structures, organization of cooperatives and credit systems, and development of managerial competence, development of rural housing, etc. (See also in this connection Chapter VIII "Supporting Activities").

III. ECONOMIC ANALYSIS OF INDUSTRIES BASED ON RENEWABLE NATURAL RESOURCES

31. FAO's analytical work includes both the macro-economic aspects of agriculture-based industries (i.e. their relation to agriculture and to other industries in the framework of a country's economy as a whole) and the micro-economic study of particular kinds of industry, including their potential markets.

(i) Agriculture and Industrialization

32. At the most general level, agriculture and industry must be seen in their organic inter-connections in the process of development as a whole. Industry, for one thing, will be held back by rising wages or by the shortage of imported capital goods, if domestic food supplies (and normal imports) are insufficient and lead to pressure on prices, or to increased imports of food. Agriculture is also called upon to supply labour and finance for industry, and conversely it obtains a stimulus to increase productivity from the reduction in manpower and the increased urban markets which result from this process. Lastly, industry has a large potential market for its foods and food products in the agricultural population of developing countries and can stimulate production in the countryside by providing suitable consumer goods in the necessary quantities and at reasonable prices as an incentive to farmers, and also by supplying material inputs to agriculture, such as fertilizers, seeds, and pesticides (see Chapter VII-E).

33. The extent to which any particular commodity can be processed is bound to have a considerable effect on its production and trade. The potential outlet for a commodity, whether processed or semi-processed, will, therefore, condition production considerably. The present upward trend in the demand for processed commodities (as compared with the stagnant market for most raw materials) justifies, together with the general drive towards industrialization, the growing interest in this sector. Processing industries can also act as stimulae to agriculture through the increased demand for raw materials which they generate.

34. In FAO Conference Paper C.63/11, in Paper No. I, and other papers submitted to the Symposium on Industrial Development in Africa, and in similar documents presented to other regional meetings of this kind, FAO has analysed the main economic problems of industries based on renewable natural resources, such as the question of location, flexibility of technology, and related issues of scale and trade outlets, both domestic and foreign, and possible regional groupings.

State of Food and Agriculture - 1966

35. Chapter III of the State of Food and Agriculture, 1966, gives a comprehensive survey of agriculture and industrialization, covering such questions as the interdependence of agriculture and industry; characteristics of industries using agricultural raw materials and their contribution to economic development; review of individual industries using agricultural raw materials and industries serving agriculture. This Chapter attempts among other things, to provide developing governments with a detailed analysis of the considerations to be borne in mind when expanding existing processing industries, or getting up new ones.

Planning: A selection of current action projects

36. FAO also engages in planning for industrialization in specific areas or regions of a predominantly agricultural nature. Thus, it is taking part in the joint ECA/FAO study of the scope for closer integration of the Maghreb countries - Morocco, Algeria, and Tunisia - by analysing the bases for the establishment of processing or similar industries in terms of the probable overall market for the products and sources of supply.

37. Analytical work (both macro- and micro-analytical) on agriculture-based industries forms an integral part of several Special Fund projects carried out by FAO, since development plans in a mainly rural area should cover all aspects of the economy and their inter-relation. In the Sebou project in Morocco, an overall study is being made of the region's potential for development, not only in respect of agriculture but also of industries based on renewable natural resources, and indeed of other industries as well, in order to obtain a complete picture of the region's potential. The processing industries which have been, or are to be, the subject of detailed study include, sugar, olive oil, pulp and paper, and textiles. The others are engineering and chemicals.

38. Similarly, the Oaxaca project in Mexico and the Western Peloponnesus project in Greece include the predominant agricultural sector, but also processing and other industries, in their overall planning framework, and have carried out or plan to effect micro-economic analyses of the more promising processing industries (including available supplies of raw materials, skills and outlets for the manufactured product), as well as of those non-agriculture-based industries which can be implanted or developed in the region.

Indicative World Plan

39. A similar integration of agricultural and industrial developments, initially on a country and regional, and subsequently on a world basis, will be effected by the Indicative World Plan, which sets out to indicate the levels of production and consumption of and trade in agricultural commodities that should be attained by developing countries in 1985, with intermediate projections for 1975, if their economic and social objectives are to be realised. These projections postulate certain rates of overall development for the economies of the developing countries and bring out the interactions between agricultural and general development including industries. More specifically, they will relate the growth of the various branches of agriculture with that of industry in the context of production, processing, consumption and trade and in the light of the capital resources available and employment opportunities generated, and take full account of the reciprocal influences of processing industries and agriculture.

The expansion and improvement of industries based on renewable natural resources will thus be viewed in the dynamic perspective of overall economic development in the coming twenty years.

(ii) Trade and Other Economic Aspects of Processed Agricultural Commodities

FAO's analytical activities

40. The established programs for all major commodity groups cover the compilation and analysis of information on production, processing, consumption, trade, prices and national policies. This work is increasingly required to include consideration of the commodity in processed form and of economic problems of processing industries in developing countries. The

commodity-by-commodity approach is being supplemented by studies on general economic problems of agricultural processing industries and their impact on trade and development.

Scope of work on processed agricultural commodities

41. The scope of work on processed agricultural commodities in the economic field may be defined as follows:

(i) Compilation, analysis, interpretation and publication of data on production, raw material content, consumption, international trade, stocks and prices with respect to processed agricultural commodities.

(ii) Analysis of factors affecting demand (domestic and external) and supply of processed agricultural commodities with special reference to:

a. prices and incomes;
b. tariffs and other obstacles to trade;
c. trends in the volume, prices, value and direction of international trade;
d. projections of supply and demand, international trade, stocks and prices;
e. competition from industries based on synthetic raw materials;
f. international commodity agreements and arrangements.

(iii) Studies of economic problems associated with the promotion of production and exports of processed agricultural commodities in developing countries with special reference to the impact on their trade balance. This includes analyses of:

a. the relevant economic charactaristics of the processing industries, such as value added, import content of inputs, optimum size;

b. the feasibility of establishing processing facilities for selected commodities in particular countries;

c. the possibilities for regional economic co-operation among developing countries in the establishment of processing industries in collaboration with the UN Regional Economic Commissions and other regional bodies.

(iv) Participation in field programs where the above studies and analyses are required. (See following section in this Chapter).

Major Commodity Groups

42. The following paragraphs illustrate the types of activities currently under way or being initiated.

Grains

43. Studies have been carried out at the request of the FAO Study Group on Grains on the benefits and problems associated with the establishment of grain processing industries (flour mills and compound feed plants) in the

developing countries, including the problems of utilization of grain by-products. In the case of rice, analysis is predominantly concerned with processed rice (i.e. milled or husked) since nearly all rice enters international trade or is consumed in this form (see also Appendix II, Section I). Studies have also been carried out on milling by-products, notably on rice bran and rice bran oil. A systematic study of the economics of rice milling, with special reference to developing countries, is nearing completion.

Livestock products

44. Work in the field of processed dairy products has been proceeding for many years, in particular as part of the joint FAO/UNICEF milk conservation program. Such work includes participation in surveys of the production potential of countries aiming at the establishment of economically efficient dairy schemes, determination of the type of dairy products to be manufactured by milk plants in the light of cost and price factors, supply, marketing outlets, and advice on marketing and foreign trade aspects (see Chapter VII-A). In the case of meat and poultry, increasing attention is to be given to the development of trade in processed meats and egg products, and a preliminary investigation of the feasibility of improving import substitution and processing in West Africa is at present being carried out.

Processing of oilseeds, oils and fats

45. Studies on processing and methods of increasing the trade in processed products are an essential part of the commodity work on oilseeds, oils and fats - the raw materials for a wide range of manufactured foods and industrial products.

Oilseeds are a major source of export earnings for many developing countries. At present, most of their exports are in the unprocessed form. FAO has recently completed an extensive study (CCP:OF 66/12) on the scope for expanding the oilseed processing industries in these countries to meet both domestic and export demand. The study showed that there were no over-riding reasons why, under suitable conditions, seed crushing industries in developing exporting countries should not be able to compete effectively and the study suggested ways in which such developments could be encouraged. The FAO Study Group on Oilseeds, Oils and Fats considered the report at its first session, accepted the conclusions and asked FAO to examine ways and means of fostering the development of these industries, on the lines suggested in the secretariat's study. This is now in hand.

Sugar and beverages

46. Current work on commodities in this group covers the processed as well as the primary commodity since it is impossible to analyse demand for the raw product without reference to prices of and trade in the various processed products. Technical and policy developments are followed with respect to refined sugar, coffee products (roasted coffee and instant coffee), cocoa products (cocoa butter, powder, paste, chocolate), processed tea and processed spices.

Fruits

47. Developments in dried fruit are regularly followed since a very large proportion of the output of fresh grapes, figs, prunes, apricots, and other tree fruits is marketed and consumed in processed form. Other kinds of processed fruit particularly citrus, are assuming increasing importance in commodity trade and more work is consequently being undertaken on such

products. For instance a study has been started on possible export outlets for frozen and processed horticultural products in the Mediterranean area.

Other agricultural raw materials

48. Non-food agricultural raw materials require much processing, and because of the dependence of demand for these raw materials on the demand for the end products and on the demand for competing materials, attention is given in the regular work program to processed products (manufactures). Data are regularly assembled on consumption of natural and man-made materials by end uses and by the branches of industry in which the raw materials are consumed since such data are essential for the effective study of demand for natural materials. More attention will be given in future to the economics of processing and manufacturing industries established in or capable of being readily established in developing countries. Fuller attention will be given to trade in manufactures with particular reference to the trade of the developing countries.

The raw materials now covered in the FAO program of work include cotton, wool, hard fibres, jute and allied fibres, rubber, and bagasse. It is hoped in the near future to add hides, skins and leather in view of the importance of this item to many developing countries.

Raw materials derived from forestry and fisheries

49. Similar activities and studies are made with regard to forest products including pulp and paper, and fish products.

FAO Publications

50. The attached Appendix II, especially Section I, shows a list of selected FAO publications mainly dealing with economic and social aspects of industries that use renewable natural resources as their main source of raw material.

(iii) Economics of Processing Enterprises

51. Advice has been given to governments on the establishment of new processing industries, which includes cost/benefit analysis, advice on contractual arrangements of supply of raw material to processors and on aspects of management including operational efficiency, storage and marketing of processed products. Trial shipments of processed products were effected to test markets. Training programs on marketing of processed and unprocessed agricultural products were organized in several countries and regions. Particular emphasis was given to operational efficiency.

52. The processing of agricultural produce, though in many cases still on a largely traditional basis in developing countries, is more and more coming to rely on modern industrial methods. Processing may take the form of preparation for consumption (e.g. milling), preservation (sometimes linked with processing for consumption), or of obtaining a standardised product as a step in initiating industrialization.

Preparation for consumption

53. The preparation of agricultural commodities for consumption, e.g. flour and rice milling, is now almost entirely done by mechanical means, in both developed and developing countries. FAO is heavily engaged in field action projects including the economic aspects of such processes.

Selected field projects

54. The siting and choice of scale of rice mills forms an essential part of the FAO Special Fund project in Mali for the improvement and expansion of rice cultivation. An FAO marketing adviser at the Ghana Food Research and Development Unit is presently examining questions of the supply to plants of particular agricultural products that may be economically processed within the country, and the problems of distribution and sale of the finished product. A number of new national food research institutes are planned, for which FAO assistance has already been sought in assessing the economic potential for processing of locally grown agricultural products. In Taiwan, FAO assistance to the new Food Processing Institute will cover such fields as canning and the dehydration of sweet potatoes. In Malaysia FAO will be helping to set up a Food Technology Research and Development Centre whose aim will be to deal with the processing and marketing problems of more than 2,000 small food industries that have in recent years been set up. These include rice and oil mills, canning factories, sago factories and copra kilns. On a larger scale the palm and coconut oil plants and canned pineapple and fish factories will be helped as they expand.

Preservation, handling and marketing

55. Large quantities of food are annually wasted through inefficient methods of handling and marketing - particularly in the hot and humid climates of many developing countries. Preservation by modern methods, such as canning or freezing, not only helps to arrest normal deterioration but increases trade outlets.

Selected field projects: marketing

56. FAO has carried out a great deal of work in this field. An FAO marketing expert assisted in the establishment of a tomato canning plant in the Derj oasis in Libya, and the necessary arrangements for supplying it and placing the canned product on the Tripoli market. This project thus includes all stages of marketing, and it is hoped that the plant may ultimately serve as a model for others in the desert areas and thus do much to revive agriculture in the oases and arrest emigration to the towns.

57. The establishment of a Commission on Agricultural Marketing for the Near East has been recommended which would, among other things, coordinate national programs in the field of refrigeration and promote development in the marketing of refrigerated produce.

Marketing; packaging and transport

58. Processing extends to packing. In the United States of America and Western Europe, this packaging accounts for an increasing part of marketing costs, as much perhaps as an aid to selling as for reasons of protection. But it is becoming evident also in the developing countries that where products are processed - for example in a coffee curing works, in tea processing plants, etc., - it is usually convenient and economical for the bagging and weighing to be done by mechanical means.

A number of FAO operations are directed towards improving the transport of agricultural and fishery commodities, including schemes for refrigerated transport.

Standardisation

59. A frequently necessary pre-condition of processing is the proper differentiation of qualities and varieties on a regular basis. Here, too, FAO has been active. For example, in Jordan the Marketing Centre is operating two pilot plants, using modern machinery, for grading and packing fruit. This demonstration is linked with efforts to widen the market for perishable Jordanian products. FAO experts have also assisted in the setting up and operation in the United Arab Republic and Libya of orange grading machinery, which has done much to promote sales in overseas markets and to stimulate production activity. The FAO Special Fund Hides, Skins and Leather Development and Training Project in Sudan is developing new methods for standardization of hides and skins and leather, with a view to developing overseas markets.

60. The standardization of agricultural produce typically leads to the adoption of industrial systems of processing; and this development frequently offers opportunities for economies of scale and to similar advances in other parts of the marketing chain. The resultant improvements in organization of supply and distribution accelerate the trend towards an industrialized pattern of marketing. (See in this connection Chapter VII-A, the section Future Trends).

(iv) Industrial Requisites for Agriculture

61. FAO also includes in its analytical work the use of material inputs in agriculture. It concentrates on trends in the production and consumption of, and trade in, these inputs (e.g. fertilizers, pesticides, improved seeds) as a whole, since the increase in these of most of the inputs is part of the inter-related process of the gradual process of the modernisation of agriculture. Since agro-allied industries also form an integral part of the industrial sector utilizing renewable natural resources as raw materials, it is only possible to analyse the economic aspects of the agro-allied industrial sector by taking into account overall development. See also Chapter VII, Section E.

62. However, the wider and more effective use of such inputs is mainly dependent on whether it will pay. FAO gives particular attention for example to cost analysis of the use and to the supply problems of fertilizer and other inputs as a spearhead of development in agriculture.

IV. DEVELOPMENT OF HUMAN RESOURCES
TRAINING - EDUCATION - DEMONSTRATION AND RESEARCH

Introduction

63. Field action projects carried out under FAO/UNDP, FFHC, Funds-in-Trust, etc., deal invariably with the specific disciplines referred to above, which are of the utmost importance in order to enable Governments to accelerate industrial development.

64. For a variety of resources FAO deals increasingly with the elements of demonstration and research in pilot processing plant operations, specific examples being mentioned in this and Chapter VII which deals with sectoral industrial activities.

65. FAO also assists Governments in the organization of regional sub-regional and national institutes, including programs of training and research, some being at university level.

Summary Programs to Develop Human Resources

66. FAO programs aimed at the development of human resources all involve education and training at various levels. These programs and projects can be conveniently classified as follows:

(a) appraisal of educational requirements;

(b) establishment of permanent institutes;

(c) organization of training centres, seminars and similar projects of a non-permanent nature;

(d) specific research projects including pilot processing plant operations;

(e) fellowships programs, and

(f) issue of specific publications.

Appraisal of Educational Requirements

67. An example is the project conducted by a panel of experts from African countries to investigate the educational and training requirements in the field of agricultural engineering, especially with reference to farm power, machinery and workshops, to be included in the African Education and Training Program.

Establishment of Permanent Institutes

68. FAO assistance to Governments involves planning and execution. In general, a preliminary survey is conducted after which a full detailed program of work is prepared. Implementation through any of the field programs is achieved by establishing a permanent institute and a variety of courses, preparation of the required curricula, provision of lectures and the training of local staff, setting up of laboratories, and demonstration facilities, workshops, etc.

69. An activity of this type is carried out in the FAO/SF project dealing with the establishment of the Faculty of Agricultural Engineering at the Agricultural University of La Molina, Peru. This project involves the planning and organization of a regular academic year, and the setting up of a number of departments, dealing with such disciplines as: farm power and machinery, farm structures, agricultural products processing, etc. A research program is also included.

70. The establishment of the North African College for Agricultural Engineering in Tunisia is another example of a permanent institute. North African countries are faced with a shortage of technicians such as agricultural machines operators, small workshop managers, maintenance and repair men. The purpose of the project was to establish and initially operate a College of Agricultural Engineering for education and training of the needed technicians and instructors at slightly below university level. It is an FAO/FFHC project, to which church groups in Germany, Gt. Britain and the U.S.A., have contributed $520,000 through the World Council of Churches, whilst the Government contributed $1.5 million. The college is planned to accommodate 50 students, 25 places being reserved for etudents from neighbouring French speaking countries, Algeria and Morocco.

Organization of Training Centres, Seminars, Conferences and Similar Projects of a Non-Permanent Nature

71. The FAO International Food Technology Training Centre is established at the Central Food Technology Research Institute in Mysore, India. The Centre started in November 1964 with funds provided by the Canada Hunger Foundation (CHF), with full support of the Government of India. The purpose is to train personnel from food industries and government departments in Asia and the Far East. The FAO Regional Food Technology Seminar held in Mysore, recognised the need for such a Centre and recommended its establishment, which was fully supported by the FAO Regional Conference held in Saigon, 1962. Under the present agreement and contribution from CHF of about $400,000 the Centre will continue to function until October 1967. Negotiations are in progress to extend the operation up to 1969. The Centre is conducting a Post Graduate Course in food technology and short courses in specialised fields such as fruits and vegetables, quality control and protein-rich food.

72. An FAO expert surveyed the production, transport, marketing, local surpluses and spoilage of fruits and vegetables in Cambodia, and drew up a phased program for small scale food industries development in various parts of the country. The Government has already allocated the sum of $30,000 for commencing two training centres for preservation and processing.

73. FAO is operating many centres to assist in the development of dairy industries. Milk processing plants require workers at all levels who have been properly trained in dairy industry management, milk processing and manufacture of a wide range of milk products. FAO arranges facilities for education and training in developing countries, either by assisting in the establishment of special colleges and training centres, operation of pilot processing plants, or for training abroad. (See also Chapter VII A).

74. There are numerous training centres in operation dealing with agricultural engineering and agricultural products processing. One such is in Ceylon on farm mechanization and workshop practices for the benefit of 30 participants from 8 countries of the Far East region. There are

similar others held in the United Arab Republic, Chile and Tunisia.

75. The South American Farm Mechanization Centre provides training for technicians from South American countries as instructors on machinery operation and maintenance, who will organise and instruct on similar courses in their own countries, or who may become supervisors in farm mechanization or other agricultural development projects. FAO has set up the plan of operation for this project and provides general supervision.

The project is operated jointly by the National Vocational Training Institute (SENA) of Colombia, which provided all buildings and farm facilities, and the donor, a large machinery manufacturing industry, who contribute approximately US $300,000 in cost of instructors and equipment.

76. The Libyan Government established a Farm Mechanization Training Centre to train operators and maintenance personnel for the Government hire services and for private farmers. The Centre also carries out controlled field trials of types of equipment and machinery in order to test its suitability for Libyan farming conditions. The United Kingdom FFHC Committee supported the initial phase of the project contributing $64,000 with the Government financing buildings, training aids and equipment. Since the completion of the initial stage the Government of Libya under a Funds-in-Trust arrangement continues to finance the cost of the international instructors.

77. A Regional Seminar on Food Technology for the African Region was conducted by FAO, and was held in Ghana in late 1965. The purpose of this seminar was to review the extent to which traditional as well as modern methods for food processing are used, to discuss the general problems in food processing including food losses, and to propose programs in training and education in food science and technology. (Similar seminars were held earlier for the Far East and for the Latin American Region).

Cairo Pulp and Paper Conference 1/

78. The Conference on Pulp and Paper Development in Africa and the Near East was held in Cairo from 8 - 18 March 1965. Organised jointly by FAO, the United Nations and the Economic Commission for Africa (ECA), it was attended by 162 government delegates and experts from 42 countries.

79. Third of a series of regional conferences which have highlighted FAO's continuing activities in the field of pulp and paper, the direct importance of this meeting is linked to the fundamental role that paper must play in the economic and social development of countries of Africa and the Near East.

1/ See Proceedings of the Conference on Pulp and Paper Development in Africa and the Near East, April 1965. The final report of the Conference was published in 1966, and is available under the title "Pulp and Paper Development in Africa and the Near East".

80. In this area FAO estimates that paper consumption will rise from about one million tons in 1960 to about four million tons in 1980. Many countries of the region already import large portions or even all of their paper requirements. Rising paper imports would require heavey expenditures of foreign currency. Accordingly, one of the early conclusions of the conference was that as much as possible for the future demand for paper should be met by production within the region. The area's fibrous raw material resources are capable of sustaining a considerable expansion in pulp production, and if further developed could also help meet the rapidly rising wider world demand. In recent years, many governments in Africa and the Near East have explored the economic availability of potential raw material sources. Some countries have gone a step further by systematically establishing wood plantations to support specific mill projects. Interesting developments have also taken place in the utilization of non-wood fibrous raw materials, particularly bagasse, and a special ad hoc working group was established by the conference to look into the economic and technical aspects of producing newsprint from bagasse 1/

World Forestry Congress

81. The central theme of the Sixth World Forestry Congress 2/ which was held in Madrid from 6 to 18 June was "The role of forestry in the changing world economy". Over 2,000 members and some 700 associate members were registered from 93 countries. A specific objective of the Congress was to define a modern philosophy for forest policy, abreast of present world trends in the consumption of wood and wood products and in line with the legitimate expectations of the developing countries.

Reflecting the findings of the ten Technical Commissions and four Plenary Sessions of the Congress, at which more than 600 papers were presented and discussed, most of the resolutions were concerned with increasing the productivity of existing forests, particularly in the tropics, and of establishing new productive forest areas, in order to meet rising world demands for wood and wood products.

Three Study Tours were arranged in France, Morocco and Portugal and four in Spain before the Congress. These were repeated with variations after the Congress. At a Festival of Forestry Films, which was conducted during the Congress, the highest award went to the U.S.A. film "The Paper Forest". (See also Chapter VII C).

Seminar and Study Tour on Forest Industries in the U.S.S.R.

82. FAO organized a Group Fellowship Seminar and Study Tour on Forest Industries in the U.S.S.R. in which 28 participants (from 17 countries from 4 continents), were engaged. The participants were responsible for the planning and development of forest industries in their respective

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1/ See Report of the Working Party on Bagasse Newsprint (pp. 39/42 ECA/ BTAO/ FAO CONF/PROCEEDINGS)

2/ The First World Forestry Congress was held in Italy (Rome, 1926); the Second in Hungary (Budapest, 1936); the Third in Finland (Helsinki, 1949); the Fourth in India (Dehra Dun, 1954) and the Fifth in U.S.A., (Seattle, 1960).

countries. Mechanical wood conversion, in particular sawmilling, plywood and other board material, joinery and furniture manufacture, were the principal features of the program, which included lectures on the technology and management methods applied in the U.S.S.R., as well as visits to a number of forest industry combines.

International Seminars and Courses

83. FAO was invited during 1966 to participate in Seminars on Industrial Development for African Countries organised by the German Foundation for Developing Countries (Deutsche Stiftung für Entwicklungsländer) in Berlin-Tegel.

84. FAO also contributed to the Fourth International Summer Course on Industrialization, held in The Hague, Netherlands, 1966, and organised by the Netherlands Universities Foundation for International Co-operation.

International Symposia on Industrial Development

85. FAO contributed papers on the subjects (I) - (VII) listed below in paragraph 71 to the Symposium on Industrial Development in Africa, organised by the United Nations Economic Commission for Africa, (Cairo, U.A.R. 27 January - 10 February 1966); the Conference on Industrial Development in the Arab Countries, organised by the Government of Kuwait (Kuwait 1 - 10 March 1966) and the Latin American Symposium on Industrial Development 1/, organised by the United Nations Economic Commission for Latin America (Santiago, Chile, 14 - 25 March 1966).

86. A set of papers of a similar nature are now being prepared for the International Symposium on Industrial Development, scheduled to take place sometime in 1967.

87. A paper on the topic listed below under "I" has also been prepared for the Eighteenth Session of the Committee on Industry and Natural Resources, Economic Commission for Asia and the Far East, held in Bangkok, Thailand, from 4 - 14 February 1966.

88. The list of FAO Contributions referred to in the paragraphs above is as follows:

Paper No. I : The Economic Significance and Contribution of Industries Based on Renewable Natural Resources, and the Policies and Institutions Required for their Development.

Paper No. II : Some Essential Requisites for Industrial Development of Renewable Natural Resources.

1/ An Interim Review Consultation on Pulp and Paper Development in Latin America, jointly sponsored by ECLA and FAO, has taken place in Santiago in conjunction with this Symposium.

Paper No. III : Food and Food Products Industries.

Paper No. IV : Industries Processing Agricultural Products other than Food.

Paper No. V : Development of Forest Industries.

Paper No. VI : Fisheries Industries.

Paper No. VII : FAO's Relations with Industry through the Freedom from Hunger Campaign.

(See footnote on previous page)

Specific Research Projects

89. A number of FAO projects are based on research, which in most instances means that the projects deal with applied research, but sometimes also include further basic research studies.

90. Such is for instance the case in the project of the Government of the United Arab Republic requesting FAO assistance in the fields of cotton research, such as fibre quality investigations, in order to assist breeders in their efforts to develop extra long staple cotton varieties. This project also includes the establishment of a new cotton spinning test mill, a laboratory for grade standardisation and a new laboratory for research in cotton ginning. The Giza Cotton Research Station therefore will, through this research program, be able to advise the textile industry.

91. Other examples are the establishment of a National Forestry Research Project in Pakistan, and a National Forestry School and Forest Research Organization in Brazil. In these projects the research elements are in the fields of wood utilisation and primary wood conversion and the organization of future research programs.

92. In the field of fisheries the Peruvian Sea Institute carries out research in fishmeal processing, through factory trials, in co-operation with industry, as well as extensive studies to assess the magnitude of the stocks of anchoveta upon which the industry is based and to determine the level of catch that could be attained.

93. An FAO/UNDP-TA expert assisted the Government of the Philippines in the development of a method of treatment of fresh coconut to control infestation during drying and storage. Copra obtained by such treatment is valued at a premium in the country and abroad. The process is being tried in the field, and additional earnings through this development will be significant. The method is now extending to different areas; the Government provided facilities for this specific research project

Issue of Specific Publications

94. Reference is made to Appendix II showing a list of selected FAO publications on industrial development activities related to and based on the utilization of renewable natural resources. A great number of these publications have found use in training and educational programs and projects. Another specific publication is mentioned in the following paragraph.

A Guide for Food Packaging for Developing Countries

95. One way of reducing food losses is by proper packaging. Because of the importance of this as well as other aspects of food packaging, the

preparation of a Guide for Food Packaging for Developing Countries was initiated by FAO in 1965. The preparation and editing of the paper are in the hands of a consultant and the individual chapters are written by specialists within their respective fields and with experience in developing countries. The main aim of the Guide is to provide a basis which will permit food technologists, marketing economists, economic and legal advisers, industrialists in the field of food processing and distribution and others to take decisions concerning the suitability of various types of food packaging. It will, therefore, deal with the purpose of food packaging as well as the characteristics and limitations of the major packaging materials.

V. SURVEYS OF RESOURCES

Introduction

96. Over the past years FAO has concentrated increasingly on field action programs and projects. Thus during 1966 out of about 80 million dollars more than 55 million dollars were devoted to action projects and implementation of field operations. No detailed figures are at present available as to the proportions of these resources, which are used for specific industrial development activities, except for a number of SF financed projects on which an account is given below in paragraphs 100 and following. Thus it was not possible in this Annual Report to provide detailed figures. A reasonable estimate, however, is that about one-third to one-quarter of all FAO operated UNDP-SF projects deal with one or another area, or sector, of industrial development described in this Report, involving an expenditure of around 10 million dollars during 1966.

FAO/IBRD Cooperative Program

97. The FAO/IBRD Cooperative Program reflects the determination on the part of the President of the World Bank and the Director-General of FAO to give higher priority to the promotion of improvements in agriculture. The cooperation between these two agencies is therefore to lead to greater investments in agriculture. The 13th Session of the FAO Conference strongly supported the Program in the light of the progress already achieved in over 18 months of operations. From its establishment in April 1964 to the middle of 1966, the FAO/IBRD Cooperative Program has initiated or participated in 143 missions, which have been sent to all parts of the world. Loans and credits to a total of 166 million dollars have already been approved following project work to which the Program has contributed.

98. The FAO/IBRD Cooperative Program in particular seeks to achieve the following objectives:

(a) to provide an opportunity for the two Organizations to fulfil more effectively their respective essential functions within the UN System - FAO being the agency having specific responsibility for the technical, economic and institutional aspects, and the IBRD/IDA being the organization primarily responsible for financing;

(b) make an effective contribution to the UN Development Decade by speeding up, and enlarging the volume of, Bank investment;

(c) enable FAO studies, carried out especially under its extensive field programs to be taken to the stage of actual implementation, since the process of development involves not only techniques, expert knowledge and management, which FAO can provide, but also the availability of necessary financial resources which the Bank has.

99. The Program activities cover a wide range, and considerable scope is foreseen for projects in the field of industries based on renewable natural resources. For example, the Program has tried to diversify its operations, preparing projects related to livestock production, which will inevitably broaden the base for future development of industries processing livestock products, and engaging more and more in identifying and preparing projects in forestry, forest industries and fisheries development. The FAO/IBRD

Cooperative Program expects furthermore to give additional guidance to the elaboration of these projects in a manner which will lead to their being conducive to rapid investment.

UNDP - Special Fund Projects

100. A breakdown as to the proportion of the resources available to FAO which are used for specific industrial development activities is available for a certain number of SF financed pre-investment projects.

101. The Managing Director of the Special Fund submitted to the Fifth Session of the UN Committee for Industrial Development (May 1965) a document E/C.5/94 of 13 April 1965. This document lists industrial projects by field of activity, i.e. using the labels manpower training, research and surveys, and in the annex projects by country and executing agency.

Of the 208 listed projects FAO is operating agency for 51, or about 25 percent of the total. Based on the total projects' costs the FAO share is around 20 percent. Since then the number of FAO operated projects has increased.

Out of total project cost figures (in US dollar equivalents) amounting to $504,703,700, FAO is handling around 20 percent, involving US dollar equivalents of $99,378,700 spread over the several years duration of the projects.

102. Although FAO in its Progress Report to the Fifth Session (UN ECOSOC Document E/C.5/71 Add.1, 16 April 1965) of the Committee for Industrial Development reporting over 1965 had labelled the SF projects dealing with industrial development activities, according to another system of classification, a comparision with the SF document referred to above shows that the round figure of $100,000,000 is of the right order of magnitude. The Managing Director of the SF when introducing this paper mentioned particularly that the labelling of the projects also included a number of projects that were to be considered as on the periphery, i.e. only related to industrial development. The amount of projects, therefore, listed by FAO was actually less, but was compensated by another group dealing with agricultural requisite projects, which sector or area is of great importance as it will undoubtedly stimulate industrial development in the fields of tools, equipment and machinery. In the near future, these requisites for increased productivity, especially in the food sector, will need to be manufactured locally rather than be imported. (See in this respect also Chapter VII, Section E).

103. When comparing the figure of $100,000,000 with the total amount of FAO-operated SF projects, although detailed figures are at present not available, a conservative estimate is that about one-third to one-quarter of all FAO-operated SF projects deal with one or another area or sector of industrial development as listed in paragraph 27 of this report. The number of projects, as shown in Appendix II and following, has since then greatly increased.

Investments as the Result of SF Projects

104. Although it is still too early to report on investments resulting from SF pre-investment surveys, an example may be given of an investment made whilst the project is still in operation. In the Food Processing Project in the Syrian Arab Republic, three pilot mills for virgin olive oil processing were introduced in selected areas. Within three years private interest established some 30 commercial plants calling for a total investment of around $1,000,000 in value.

Investments as the Result of EPTA and Trust Fund Projects

105. That funds as quoted above can also lead to investments may be shown by the following examples:

Burma: Rice Processing

FAO has given assistance to the Government of Burma in order to modernise its rice milling industry. The FAO expert in addition to other activities such as training of mill operators and managers, field personnel for supply, procurement, and storage of raw material, also advised on the selection of site, type and capacity of mills and drew up the necessary specifications as required by the condition of the raw materials.

Under this program over 25 modern medium size rice mills and a few large ones were established, involving a government expenditure of over seven million dollars, including auxiliary equipment such as artificial driers and storage facilities.

Included in this project was the erection of a large bag loading plant in Rangoon harbour with a capacity of over 60 bags per minute.

Libya: Pilot Tannery to Replace Leather Imports

FAO has for several years (under EPTA) assisted the Government of Libya in its efforts to improve the quality of raw goat skins, which were exported whilst several types of leather were imported for shoe manufacture, and for use by a number of other leather industries. As a first result of this assistance the export of raw skins increased in volume as well as in money value. At a later stage, as a result of a Trust Fund arrangement between the Libyan Government and FAO, a tannery utilising goat skins but also camel hides has been established. In this way an import saving of almost 90 percent could be achieved. A further expansion of the leather industry is now envisaged in Libya.

Cooperation with Development Banks

106. Special reference is made to Chapter VII, Sectoral Activities, C. Forestry and Forest Industries, including Pulp and Paper.

VI. FAO COOPERATION WITH INDUSTRY THROUGH FFHC

Introduction

107. In this report reference has already been made to field action projects that were developed through support of a donor under the Freedom from Hunger Campaign.

108. The Campaign today claims the moral allegiance of all those who are working towards a new world order of economic freedom and social justice, and its chief aim is too well known to be discussed at this point in further detail.

109. Previously the majority of FAO's work was undertaken in cooperation with governments, but with the launching of the Campaign its appeal has spread to much wider areas, and now also includes sponsoring of industrial development projects in cooperation with industry.

110. The important role of the agro-business and processing industry was already recognised at the International Food Industry Congress in 1962, and at the World Food Congress in 1963.

111. Since then closer cooperation between FAO and the food and food products industry, as well as with the agro-business sector, within the framework of the Freedom from Hunger Campaign, has become a matter of still greater urgency. The possibility of inducing these industries and business sectors in the industrialized countries to step up their participation in the processing of renewable natural resources in the developing nations, and thus raise productivity, constitutes an important and so far insufficiently utilised reserve to achieve the targets of FAO.

112. In certain specific fields, such as forest industries, pulp and paper manufacture, dairy industry development, fish processing and fertilizer application, and others, continuous cooperation with FAO has already been established and has produced encouraging results. Usually this cooperation has been achieved through advisory committees or special industry panels established under FAO's Regular Program, and more recently and increasingly within the framework of the Campaign. FAO's work is therefore benefiting from significant industrial support for specific projects, such as the fighting of animal diseases, manufacture of vaccines, organization of research work and field demonstrations, and especially the establishment of pilot product processing units for various commodities. Such pilot units are of the utmost importance and serve the purpose of training technicians on the spot and of demonstrating suitable techniques or technological processes. They contribute to the necessary integration with agriculture in its broadest sense and, when expanding in number or size, gradually absorb a substantial part of the population now only engaged in agriculture.

FAO/Industry Cooperative Program

113. Following the approval of FAO Member Governments and NGOs during the Thirteenth Session of the FAO Conference (November/December 1965) and subsequent to the meeting of the then FAO/Industry Relations Steering Committee held at Headquarters on 20 January 1966, the FAO/Industry Cooperative Program was set up within the framework of the FFHC. The Program will aim at closer working relations between FAO, Industry and Governments so as to implement development projects in order to help to expand industries in the FAO sector in developing countries at an accelerated

pace and to assist in gradually removing the obstacles to the fulfilment of this objective.

114. It is this Program's responsibility to maintain day-to-day contacts with various interested sectors of the Organization by means of an internal Working Group on FAO/Industry Relations. The cooperation with Industry has been established through the General Committee of the FAO/Industry Cooperative Program. The General Committee, either through its Chairman or on the recommendation of its Executive Committee, advises the Director-General on the activities of the Program. Its work is based at FAO Headquarters in Rome, with direct contact with the members of the Cooperative Program.

115. The Director-General, on the advice of the Executive Committee, invites senior executives of such industrial firms as are prepared to participate actively in the development of FAO related industries in developing countries; these industries include:

> processing industries requiring raw materials derived from agriculture, including animal husbandry, forestry and fisheries; and industries supplying essential requisites for the development of agriculture, such as seeds, chemicals, fertilizers, equipment, machinery and packaging materials. (See also in this connection Chapter VII, E).

The General and Executive Committees stressed their desire not to form a closed membership group, but to secure the participation of all those industrialists who could contribute to the objectives of the Cooperative Program. This approach constitutes an indispensable condition for the fruitful association of Industry with FAO.

116. It is understood that, while industrial initiatives are bound to be based on the interest and support of private business, it will be left to the government of each developing nation to decide whether, and in what form, it wishes to take advantage of these possibilities, and what guarantee it is prepared to offer for the security of foreign investment and for the efficient working and maintenance of new industrial plants.

117. FAO's cooperation with Industry is directed along two major lines:

(a) to mobilize the managerial ability, scientific experience, technical competence and capital resources of Industry; to initiate investment operations such as the implementation of FAO's pre-investment studies jointly with Industry and Governments, and to facilitate country reviews and missions where appropriate;

(b) to exchange technical and economic information on development activities and on commodity studies on investment needs and prospects, and on planning for raw material supplies; to cooperate in research, training and demonstration programs, in particular with the food industry; to improve the climate for cooperation with foreign enterprise, inter alia by establishing better facilities for informing the public in developed and developing countries.

VII. SECTORAL ACTIVITIES

Introduction

118. FAO, at the request of its Member Governments, conducts a vast number of field action projects in sectors of industrial development, making use of the different programs and various sources of funds: Regular Program, UNDP (SF, TA), Funds-in-Trust, and funds obtained through the Freedom from Hunger Campaign. The number of projects carried out under all sources of funds, including the Campaign, is greatly increasing and elsewhere reference has already been made to a few selected field action projects.

119. In this Chapter a review will be made of the principal areas of industries for whose development FAO's assistance has been requested. Further details of selected projects are also given in the Appendix III and following.

120. In line with Chapter II, paragraph 27, the project activities will be reviewed under the following main area headings:

A. Food and Food Products Industries, including those based on both Plant and Animal Products.

B. Industries Processing Agricultural Products other than Food (e.g. cotton, wool, tobacco, natural fibres, hides, skins and leather, agricultural residues such as cereal straws, bagasse, agricultural by-products and waste, etc.).

C. Forestry and Forest Industries, including Pulp and Paper.

D. Fisheries Industries.

E. Industries for the Supply of Essential Requisites to develop Agriculture, Animal Husbandry, Forestry and Fisheries.

A. Food and Food Products Industries, including those based on both Plant and Animal Products

Food Science and Technology

121. Within the broad fields of food science and technology, FAO is the operating agency for a number of field projects dealing with food technology institutes or units, both through UNDP-SF supported programs as well as from other resources, as specified in more detail in the Appendix IV.

122. The purpose of these institutes is to strengthen existing facilities, either in universities, or in other sectors in the Governments' administration with a view to providing scientific, technical and technological background for the development of the food and food products industry in the respective countries. Often these programs, in addition to research and quality control, include activities such as market and food product development, legislation and control measures, whilst education and training of personnel for food and food products industries is a most important part of the work.

123. For further details of these 14 FAO/UNDP-SF projects reference is made to Appendix IV. The projects are operational in cooperation with the Governments of Brazil, Chile, China (Taiwan), Ghana, Greece, Jordan, Malaysia, Philippines, Poland, Senegal, Sudan, Syrian Arab Republic, and Turkey.

Dairy Industry Development

124. Early in 1966 two consultants to UNICEF and FAO reported on their independent appraisal of UNICEF assisted FAO milk conservation programs and dairy industry development projects in 35 countries, involving 216 milk processing plants and 10 training centres.

125. These two consultants formulated their conclusions as follows:

> "Although the projects are directed to providing milk for children and expectant mothers in nutritionally deficient areas, they have served in many cases as a catalytic force which has resulted in the eetablishment of a sound and expanding dairy industry".

126. It was also pointed out by them that there is a growing need to provide the impetus for better coordination of numerous programs and projects being carried out by the international agencies, bilateral agencies and private enterprises throughout the world.

127. FAO has been responsible for the planning and development of many of such projects a selection of current operations being listed in Appendix IV.

128. In assisting Governments the planning and development of dairy industries usually follows a pattern as shown in some further detail below, consisting of 5 main stages.

Stage 1: Surveys

129. In this stage an investigation is made whether the area suggested is suitable for development of a dairy industry, and the survey includes such activities as assessment of current and future milk potential, live-stock population and milk production per animal, crop and pasturage potential in relation to seasonal and weather conditions, water supply, conditions of roads, etc. In addition an estimate is made regarding the present and future consumption trends for milk and milk products. In case a milk processing plant is envisaged, problems such as collection and transport of milk, choice of technology for milk and milk products processing and product development and marketing are also given due consideration.

Stage 2: Planning of Milk Plant

130. FAO projects for planning of milk processing plants involve the selection of site, taking into account such elements as geographical density of milk production, road networks, location and establishment of collecting points and centres, when necessary receiving stations to be properly equipped, availability of water supply, provision of power, electricity, steam, disposal of effluents, etc. Finally, at this stage the planning includes the design of buildings, selection and layout of equipment.

Stage 3: Construction and Installation of Processing Equipment

131. In most instances, construction of buildings for the plant and its annexes can usually be carried out locally, sometimes provision for supervision being made. Frequently, however, FAO provides a dairy engineer or technologist to supervise installation of the processing equipment.

Stage 4: Operation of Milk Processing Plant

132. Usually trained management and technical staff being not immediately available, initial FAO assistance is required, consequently this stage of such projects provides largely for educational and training programs.

Stage 5: Guidance for Milk Plant Management

133. Once in Stage 4 of the project the point has been reached that local operation can be carried out successfully, however, government and local management often welcome still further advice and inspection after withdrawal of the expert who guided the initial plant operation; this is to ensure continued efficiency and technological improvement. FAO provides such experts on short term assignments from its Regional field staff whenever feasible, or under special arrangements.

Field Projects in Dairy Industry Development

134. Appendix IV reviews a selected list of current FAO field projects in dairy industry development. FAO/UNICEF assistance to milk conservation projects is now being provided to the following countries 1/ Africa: Ethiopia, Kenya (3), Mali, Niger, Nigeria, Senegal, Tanzania, and Uganda; Asia and Far East: Ceylon and India (12); Europe: Bulgaria, Greece, Poland (2) and Spain *; Latin America: Brazil, Guiana, Chile, Colombia, Ecuador, El Salvador, Guatemala, Honduras and Mexico; Near East: Iran, Iraq, Pakistan (2) and Syrian Arab Republic*. Dairy industry development projects are also increasingly supported from other resources such as UNDP, Danish Special Contributions, as well as through Funds-in-Trust arrangements. Together with governments FAO is operating such projects in Argentina, Burundi, Central African Republic, Cyprus and Haiti. Many more projects will soon become operational.

135. An FAO Regional Dairy Training Course for Spanish speaking countries in Latin America is operating in cooperation with the Government of Chile, and is financed by Danish Funds-in-Trust. Another FAO Dairy Training Course, including dairy technology, for which UNICEF supplies dairy equipment, is operating in cooperation with the Government of Kenya. An FAO Regional Dairy Training Course (for the Near East Region) financed by UNDP-TA and Funds-in-Trust (Denmark) operates in the Lebanon.

Finally, in cooperation with the governments FAO is operating a Regional Dairy Training Course for English speaking countries in Africa in Entebbe, Uganda, with UNDP-TA and Funds-in-Trust (Denmark) support. The FAO Dairy Industry Development Program therefore is developing well in African countries; interest has been shown in expanding existing dairy projects or establishing new ones in the Sudan, Somalia, Tchad and Rwanda.

Code of Principles Concerning Milk and Milk Products

136. In view of the rapid development of dairy industries throughout the world, the need for international agreement on the terminology applicable to milk and milk products is obvious. Although proper definitions of milk and milk products are essential for international trade, they also have to be incorporated in the legislation of countries, in order to protect both producers and consumers.

1/ In countries where more than one individual project has been assisted the respective number of projects is given in brackets.

* Indicates that assistance has been provided to several milk schemes under one basic plan.

FAO is actively engaged in this work, and organizes every year a meeting of the Committee of Government Experts concerned with the Code in Rome. This Committee continued its work, in 1966, of preparing standards for individual cheese varieties, additives in milk and milk products, processed cheese and the determination of compositional quality.

Slaughterhouse, Abattoir and Beef Industry Development

137. Appendix IV shows a selected list of current FAO field projects in slaughterhouse and abattoir construction as well as in beef industry development, financed from a variety of resources.

138. The Government of Greece for instance, under a Funds-in-Trust arrangement has requested FAO advice on the layout of plans for the construction of three industrial abattoirs and fifteen smaller slaughterhouses with appropriate cold storage facilities.

139. Also under UNDP-TA, FAO is assisting the Government of the Lebanon in the establishment of an Animal Quarantine and Abattoir Construction in Tripoli, Libya. Similar projects are awaiting completion or are under consideration in the Sudan (Khartoum), Iran (Teheran), India (Calcutta and Madras), and Singapore.

140. Beef industry development is included in an FAO/UNDP-SF project on diversification of coffee crop to livestock in the Retalhulea area, in cooperation with the Government of Guatemala.

Rendering Plants and Development of the Poultry Industry

141. Appendix IV also shows some FAO projects in which rendering and feed mixing plants are being established. These plants are converting slaughterhouse by-products, such as blood, condemned meat and bones, into useful by-products which, together with other agricultural waste, will form a mixed feed for an increasing poultry industry.

142. FFHC donations from Switzerland enable the installation of rendering and other equipment in a project in cooperation with the Government of Chad. In Dahomey a similar project is receiving UNICEF and FFHC support (from France). Other projects of this type are under consideration.

Protein-rich Food Industry Development

143. In collaboration with UNICEF and FFHC support, a number of projects deal with the promotion and development of industries for the processing of protein-rich food and food products, based on a variety of raw materials.

144. In cooperation with the Governments of Algeria, Ethiopia, India and Kenya, FAO projects in the field of protein-rich food industry development are now in process.

145. Experiments to use bread as a carrier for such protein-rich food products, as well as breadmaking experiments using suitable mixtures of non-cereal flours and other protein-rich raw materials, have furthermore been given considerable attention. The study is still at the laboratory stage but it is planned to undertake pilot plant work and consumer acceptance trials during 1967. The project conducted in cooperation with the Institute for Cereals, Flour and Bread, TNO, Wageningen, Netherlands, is being undertaken specifically to benefit those countries in the tropical and sub-tropical regions who are heavily dependent on imported wheat and who are having to use valuable foreign exchange for the purchase of food rather than more essential equipment and manufactured goods.

Other Projects

146. Other projects include the establishment of a pilot oil extraction plant in San Ignacio, East Bolivia, made possible under the FFH Campaign through a contribution from Upper Austria. Reference is also made to Appendix IV, the establishment of a small jaggery (sugar) processing plant in Pemba, Tanzania, an FAO/FFHC/UNDP-TA project.

147. FAO projects on grain storage, handling and processing involving FFHC contributions of nearly 2 million dollars are under preparation for several areas in India (Madras, Punjab, Uttar Pradesh).

148. FAO projects utilizing UNDP-TA resources are dealing with food industry surveys (Ceylon, Greece), rice milling and parboiling (Ceylon, British Honduras), the development of palm oil industry (Ecuador), the establishment of a small jaggery sugar processing plant in Pemba (Tanzania), crop by-products utilization (Trinidad and Tobago), and refrigeration of vegetables (Yugoslavia).

149. Other FAO projects operating under Funds-in-Trust are dealing with silo and flour mill establishments, and food control organization (Saudi Arabia), on programs for food processing installations (Greece) and on the development of food industries (Libya).

150. FAO is also assisting the Government of Pakistan in the field of date processing and by-products utilization, and in Turbat, the centre of a date growing area of the Mekran, West Pakistan, a pilot plant for date processing and packaging has been established.

It became obvious during the preliminary operation that 50 percent of the total date production was suitable for processing and packaging, and in order to assist date growers a cooperative has been established to purchase the required equipment and machinery on an interest-bearing loan. This loan imposed a heavy burden on the Cooperative Society of Date Growers, and an interest-free loan of around $21,000 has been obtained from the Oxford Committee for Famine Relief through the FFHC. Equipment and machinery purchased with this loan increased the production of the plant in the past season by 30 percent and has the potential to double the previous production capacity. A date syrup by-product pilot plant now is also installed and operated.

Food Catering India

151. Institutes of catering technology are being sponsored by the Ministry of Food and Agriculture, Department of Food in India, Bombay, New Delhi, Calcutta and Madras

Training in food management and catering technology, mass feeding principles, including industrial and hospital feeding, hotel management, food canning and preservation, bakery and other related subjects on which FAO is giving assistance is the main purpose of this project. The trainees are already in great demand for posts in industries, hotels, restaurants, etc., and other countries in the region have expressed interest in receiving FAO assistance.

Future Trends

152. It is obvious from the great variety of field projects that Governments desire to accelerate the development of food and food products industries, especially as in many countries urbanization has become a grave problem,

considerably adding to losses and waste of food occurring all along the line between primary producer and ultimate consumer.

153. Since many food crops pass through a number of operational stages, such as harvesting, field handling and transportation, curing, storage, preservation, processing, marketing and distribution (often after being in storage again for some period of time), it is obvious that at each of these stages losses and partial waste tend to occur. It is essential that improvements are initiated at every point in this chain of operation, to permit control of losses and elimination of waste as much as possible.

154. Unfortunately in many countries storage facilities are inadequate or lacking, whilst food and food products industries in the primary production areas are almost inexistent. These industries are essential in order to make the chain operate effectively, thus reducing losses, and in addition wherever possible to utilise waste and by-products adequately, leading to the establishment of profitable complementary industries (for instance animal feed) resulting in reduced costs for processed human food and food products.

155. Governments, as can be seen from the number of requests made for FAO advice and assistance, are aware of the necessity when planning these industries that due consideration must be given to considerably improved storage, and to implement processing facilities more rapidly, but also to take into account transportation, refrigeration, cold storage, marketing and distribution facilities.

156. The measures required in all these fields, and the necessity that for maximum effect they should be implemented simultaneously whenever possible, indicate clearly the need for ultimate development of a vertically integrated system having elements of, and comparable to, in several respects, the supermarket system which is becoming increasing popular in the industrialised countries.

157. The development of such a chain requires a considerable volume of investment, particularly in the processing industries, storage, marketing, and distribution facilities, but also in the institutional and organizational structure serving agriculture, and fisheries. The potential returns to this investment, however, can be substantial as at present losses and waste are much too high, and occasionally could be rapidly achieved.

158. The establishment of food and food products industries in addition, is bringing about discoveries of new food products derived from various sources, such as cheap protein-rich products. Campaigns to promote acceptability of these new products will be needed to inform the potential consumer about the nutritional and low-price advantages of such products.

FAO Publications

59. Reference is made to Appendix II Sections II and V.

B. Industries Processing Agricultural Products Other Than Food

Introduction

160. In addition to the development of food and food products industries Governments also requested FAO assistance in the planning and development of industries based on agricultural products other than food.

161. A list of selected current FAO field projects dealing with a variety of raw materials is attached in Appendix V. Significant industrial raw materials listed are: wool, cotton, coir and other fibres, rubber, tobacco, tea, coffee and hides and skins.

162. It is essential that raw materials as referred to in the previous paragraph (which raw materials are often available in great quantity) be of high quality. Otherwise investment will not yield a commercial profit whether as in the case of the textile and leather industry when used locally to save foreign currency, or when exported as processed goods. This is especially so in view of the competitive efforts of those countries which are already industrialised.

Some Selected Field Projects

Cotton Fibres

163. The Government of the United Arab Republic is greatly expanding the existing Giza Cotton Research Station through the establishment of a new laboratory for cotton fibre quality research, and the addition of a new unit to the existing cotton spinning test mill. This latter will permit spinning to the high counts, appropriate to extra long staple cottons. Research on fibre properties of Egyptian cottons and fibre tests are carried out with the purpose of assisting breeding and selection work. Another line of research includes spinning studies made on the breeder's material and quality surveys of the commercial varieties.

A new laboratory included in this FAO operated UNDP-SF project deals with grade standardization of Egyptian cottons, whilst another new laboratory for research on roller-ginning is used to advise the existing textile industries on further investments.

Wool Fibres

164. The Government of India established under FAO/UNDP-SF arrangements a Central Sheep and Wool Research Institute in Rajasthan for which FAO is the operating agency. This project also is to furnish technical information and data for the benefit of small and medium-scale textile industries with a view to better and appropriate utilisation of wools, in order to stimulate new investment. To achieve this, training of key personnel, instructors, supervisors, managers and research workers is carried out in various disciplines, such as wool shearing techniques, grading and quality testing of wools, and in a number of wool processing techniques, such as scouring, for which demonstrational pilot units are available.

165. Studies are also undertaken in wool technology, particularly as a means to establish breeding aims when selecting for wool quality. Investigations will be pursued in the economics of production, processing and appropriate utilization of wools. Established is a Central Research Institute, two sub-stations and over a hundred large scale and small scale field centres, the latter mainly to demonstrate improved shearing, grading and wool marketing.

Leather

166. Since FAO's incention numerous requests from Governments to advise on the establishment of leather industry have been dealt with, and under EPTA and/or Funds-in-Trust arrangements over 30 Governments have received assistance in quality assessment and raw material improvement through FAO expert services.

167. As a first step in such a project an FAO supported improvement program based on the introduction of modern techniques of flaying and curing of hides and skins was carried out. Once sufficient raw material of good quality became available steps were undertaken to develop leather tanning, either based on locally available vegetable raw material or by utilising chemicals. In many instances, a simultaneous development of by-product utilization has been envisaged, especially in countries where "fallen animals" are available in quantity. As can be seen from Appendix V, FAO/UNDP-TA projects dealing with the latter aspect of the work are carried out in India and Nepal, whilst a part of an SF project in Iran also deals with by-products utilization from recognised slaughtering.

168. It is, therefore, not surprising that Governments requested further UNDP-SF support in the sector of leather industry. FAO is at present the executing agency for a Hides, Skins and Leather Development and Training Project in the Sudan; a Hides and Skins Demonstration and Training Project in the Northern Region of Nigeria; a project on Hides, Skins and Leather Development in Iran, whilst other UNDP-SF projects in co-operation with Governments are forthcoming.

Projects of this type are also carried out under UNDP-TA, or Funds-in-Trust arrangements in cooperation with the Governments of Ethiopia, Libya (pilot tannery), Nepal and Turkey.

169. The FAO/SF project in Iran involves the establishment of a Hides, Skins, Leather and Animal By-products Utilization Institute, and a main centre and 3 sub-stations. The program of work of the Institute includes applied research, training and demonstration, planning and legislation with a view to reducing losses of raw materials, promoting exports by meeting required quality standards, modernizing marketing and development of local tanneries and leather industries, as well as the animal by-products industry.

170. A pilot tannery and a pilot animal by-products rendering plant is available for in-plant training and demonstration. In addition, special educational courses are given for intermediate and high level personnel.

171. The FAO/SF projects in the Sudan and the Northern Region of Nigeria are organized along similar lines, but adjusted to locally available raw material, as well as with reference to demand, i.e. to establish industries for the processing of sole leather, chrome and re-tanned upper leather, glazed kid, etc.

172. These projects also include experimental research for the development of supply industries, the processing of tanning agents derived from natural indigenous raw materials such as tannin extracts, sulfonated oils, bates, binders, neatsfoot oil, etc.

Furthermore, these projects assist in the development of by-products utilization, hair, wool, offal, in order to establish industries processing felts, insulating material, glue, gelatin, bone and meat meal, etc.

The project in the Sudan also includes a leather utilisation training centre.

Rubber

173. FAO is also operating agency for a UNDP-SF project on rubber research and development in South Thailand. The program includes research, training and demonstration, processing and marketing, with the aim to improve the general level of technical efficiency among small-holders.

Other Projects

174. Other projects in this sector deal with coconut fibre (coir) processing for matting, upholstery, and other industries. A previous FAO/FFHC project provided for the establishment of a commercial type of enterprise in Dominica, which project will continue and expand under a UNDP-TA program.

175. Another project on the development of the coir fibre industry is carried out in Surinam and Tanzania.

176. Projects for the development of small-scale agricultural products processing industries are in operation, with the Governments of Bolivia, Haiti, and Nigeria.

177. FAO is also assisting the Office of the Agricultural Products in Kivu Province (Congo, Kinshasa).

178. Another FAO project deals with the subject tobacco blending and processing and is carried out in cooperation with the Government of Burma.

FAO Publications

179. Reference is made to Appendix II, Section III.

C. Forestry and Forest Industries Including Pulp and Paper

Introduction

180. Governments increasingly recognise that trends in forestry and forest industries, including pulp and paper development, offer opportunities for an expansion of domestic industries, and a diversification of exports. It is obvious that such developments can only be achieved through fully integrated planning, taking into account such aspects as the organization and supply of raw materials, and production development and management, as is carried out in current field action projects discussed below.

181. The value of primary products from world forestry is now, in U.S. dollars, around 40 thousand million a year and close to 18 thousand million from the pulp and paper industries alone. The labour force of the primary forest industries - excluding labour in forest operations and transport which is probably greater than that in the plants and mills themselves - is estimated at about 6 million.

It is against this background that the paragraphs below describe the more important features of the FAO activity and work in forestry and forest industries development, under the Regular and Field Programs, over the past year.

World Forestry Congress: Cairo Pulp and Paper Conference

182. Reference is made to Chapter IV, paragraphs 81 and 78, 79 and 80 respectively.

World Timber Trends Study

183. Since 1950 FAO, in collaboration with the U.N. Regional Economic Commissions, has been engaged in a series of regional timber trends studies 1/ which compile information gathered on a country to country basis into sub-regional and regional analyses of the trends and production, consumption and trade of wood-based products, projections of future requirements and requirements and resource appraisals, as well as an examination of the adequacy of forestry and forest industry policy and plans to provide for the changing situation. These regional studies have culminated in a special world review "Wood: World Trends and Prospects" 2/ which was submitted, as the major contribution of FAO, to the Sixth World Forestry Congress held in Madrid in June, 1966.

184. According to this study, by 1975, the world will need nearly 50 percent more wood and wood products than it required in 1961. The study reports the growing dependence of two major wood consuming regions; northwestern Europe and Japan, upon imports of forest products. It also stresses that most of the additional wood needed by 1975 will come from the world's temperate forests, particularly those of North America, where the investment capital and knowledge needed to increase output is more readily available.

Pulp and Paper

185. The FAO Advisory Committee on Pulp and Paper, which has reviewed and advised the Director-General on follow-up action in relation to such studies as "World Demand for Paper to 1975", "Pulp and Paper Prospects in Western Europe", and other publications, held its Seventh Session in Rome in October 1965. An annual survey, prepared by the Secretariat, of world pulp, paper and paperboard capacities reported that the world's total capacity to produce paper and paperboard is now expected to reach close to 128 million tons in 1968 - four million tons higher than was foreseen a year ago. It was estimated to be 83 million tons in 1960. Total pulp capacity is expected to be more than 108 million tons in 1968 (66 million tons in 1960). Another report reviewed by the Committee dealt with "Obstacles impeding the flow of private investment to the pulp and paper industry in developing countries".

186. In collaboration with ECLA, an "Interim Review Consultation on Pulp and Paper Development in Latin America" was held in Santiago in March 1965. The purpose of the meeting was to consider the present situation of the industry with respect to markets, investments, expansion programs, etc., as well as the possibility of convening a second Meeting of Experts in 1967 or 1968, with a view to evaluating the progress made since the first Meeting of Latin American Experts of the Pulp and Paper Industry, held in Buenos Aires in 1954

1/ European Timber Trends and Prospects, 1953 (with ECE)
Timber Trends and Prospects in the Asia Pacific Region, 1961 (with ECAFE)
Timber Trends and Prospects in Latin America, 1963 (with ECLA)
European Timber Trends and Prospects: A New Appraisal 1950-1975 (with ECE, 1964
Timber Trends and Prospects in Africa, 1966 (with ECA).

2/ Unasylva Vol. 20 (1-2) Nos. 80-81, FAO, 1966.

187. The final report of the Regional Pulp and Paper Conference which took place in Cairo in 1965 was published under the title "Pulp and Paper Developments in Africa and the Near East", (see also Chapter IV, paragraphs 78, 79, and 80).

Wood Based Panel Industries

188. The first session of the "FAO Committee on Wood Based Panel Products" was convened in Rome in December 1966. Major items dealt with were the present situation and future trends in consumption, production and trade, and an enquiry into use patterns and development possibilities in the application of plywood, fibreboard and particleboard in furniture, and for housing and construction. The Committee also had before it the final report 1/ of the International Plywood Consultation which was published during the year.

Cooperation with the U.N. and other Specialized Agencies

189. A report on forest industries development was submitted to the ECA Symposium on Industrial Development in Africa (Cairo, Jan/Feb. 1966) 2/ and a similar paper was prepared and submitted to the Conference on Industrial Development in the Arab Countries (Kuwait, March 1966) 3/. FAO also prepared:

1) at the request of UNESCO, a report on "Meeting the Demand for Newsprint and Other Printing and Writing Paper in Asia and the Far East", for the UNESCO Meeting of Experts on Book Production and Distribution in Asia, which took place in Tokyo;

2) and collaborated with the Economic Commission for Africa in the preparation of a study covering the development of forest industries in West Africa, 4/.

Together with the Manufactures Division of UNCTAD, a Joint Working Party on Timber and Forest Products was established, with the aim and objective of expanding and further processing forest products exports. This new group held its first meeting in Geneva from 31 October to 7 November 1966.

Cooperation with Development Banks

FAO/IBRD Cooperative Program

190. In January 1966 the FAO/IBRD Cooperative Program extended its activities by the inclusion of a full time forestry and forest industries expert. Up to the end of August 1966, the Program had carried out a number of missions directly concerned with the identification of projects which might be of interest for IBRD/IDA or IFC. These included pulpwood plantation and natural forest exploitation projects in Morocco, a survey of pulpwood plantation requirements in India, main forest access roads in Congo (Brazzaville), industrial wood plantations in Zambia and a general economic review of forest industrial possibilities in the Central American region. Reports on these various projects are currently under consideration by, or about to be submitted to, the Bank. The Program is about to send a Forestry

1/ "Plywood and Other Wood Based Panels" FAO Rome 1966. The 82 background papers submitted to the Consultation have also been reissued in sets comprising five volumes.
2/ Development of Forest Industries in Africa, TE: ECA/SID/65/V
3/ Forestry and Forest Products Industries in the Arab Countries, CIDAC
4/ Forest Industries Development in West Africa E/CN.14/INR/108, April 1966.

Identification Mission to Ecuador, and a small mission to Gabon which will primarily be concerned with assessing the contribution which forest exploitation can make to the amortization of a proposed railroad. The Program hopes considerably to expand its activities in the forest industries field in the coming year.

FAO/IDB Cooperative Program

191. Assisted by the Joint ECLA/FAO Regional Advisory Group on Forest Industries in Latin America, FAO carried out a survey of the pulp and paper situation in Brazil for the Interamerican Development Bank.

Indicative World Plan

192. In accordance with the program of activities under the Indicative World Plan, material has been prepared and submitted covering; the Near East, Western Latin America, while work on the East African region has been completed. Preliminary reports were completed for South-East Asia, North Africa and Central America.

Assessment of production possibilities for the IWP is a major step which when combined with the consumption analysis already presented in the series of regional timber trends studies, will permit a more rational approach to the problems of supplying the world with increasing quantities of forest products demanded by larger populations and rising levels of living.

Seminar and Study Tour on Forest Industries in the U.S.S.R.

193. Reference is made to Chapter IV, paragraph 82.

Man-made Forests

194. Man-made forests already make a very large contribution to all forms of forest production throughout the world. Their importance and their individual significance will be emphasised by the "World Symposium on Man-Made Forests" in the course of preparation and to take place in Canberra, Australia, early next year.

Summary of Field Operations

195. Appendix VI briefly describes the FAO activities as carried out in a selected number of UNDP-SF and TA projects, dealing with pulp and paper development, wood based panels, saw milling and wood working, wood technology and utilization, forest industries development, logging and transportation. More FAO/UNDP-SF projects in co-operation with the Governments of Chile, Iran, Mexico, Paraguay, and Turkey are also coming into operation during 1955.

Publications

196. Reference is made to Appendix II, Section IV, and VI.

D. Fisheries Industries

Introduction

197. Many governments are recognizing the potential importance of better utilization of fishery resources in their economic and industrial development programs; thus increasing attention is being given to the development of their fisheries and to establishing fish processing and fish products industries.

198. The attached Appendix VII shows a selection of current field projects for which FAO is providing assistance upon government request. The list includes 19 UNDP/SF projects, FAO being operating agency, of which 4 are on a regional or multi-country basis.

199. Invariably such projects aim at industrial development, and without exception, all of these projects include one or more of the elements described in the following sections.

Evaluation of Resource Potential

200. An example of this type of FAO/UNDP-SF project is the Peruvian Sea Institute developed with the Government of Peru. Major objectives are to accurately assess the large anchoveta stocks off the coast of Peru and to determine the maximum level of catch the resource will support on a sustained basis. Within a period of ten years, the catch of fish has increased from approximately 200,000 metric tons to over 9,000,000 metric tons, making Peru the largest producer of fish in quantity in the world.

201. Other FAO/SF projects giving major attention to evaluation of the resources are those for Federation of South Arabia (Gulf of Aden), Ghana, Nigeria, and Pakistan. The projects for Congo (Brazzaville), Ivory Coast Senegal and Sierra Leone are specifically to assess the sardinella stocks off the central west coast of Africa. Other projects not listed here, but included in Appendix VII also give attention to evaluation of resource potential.

Manpower Training Education

202. Although all projects contain elements of education and training, some are devoted almost entirely to these aspects. Examples are: the Deep-Sea Fishing Training Centre in Pusan, developed with the Government of Korea. Trainees are selected from graduates of fishery colleges, fishery high schools and other vocational schools, as well as among fishermen. They receive intensive practical training, mostly aboard training vessels, but partly ashore, emphasis being given on fishing techniques, particularly tuna fishing, and various types of trawlfishing, navigation and maintenance of marine engines. This Korea project provides 12-month shore and sea training at the rate of 150 trainees per year.

203. A similar FAO/SF project is carried out in co-operation with the Government of India, and involves the establishment of a Fisheries Training Institute in Bombay. The India project provides a two-year course covering marine biology, fishing gear technology, fishery economics and marketing, and fish utilization technology. About 25 students are accepted each year.

General Fisheries Development

204. A number of projects are of rather broad scope, giving attention not only to resource evaluation and manpower education and training, but also to

the technological and economic aspects of production and utilization including processing and marketing.

Processing and Industrial Development

205. An FAO/SF project developed with the Government of Argentina through an extensive exploratory and experimental fishing program supported by biological and hydrographic studies, endeavours to promote increased supplies for existing industrial canning and fishmeal plants. Studies of a technological nature are undertaken in the National Institute of Industrial Technology.

206. The FAO/SF project in Chile is particularly oriented towards overcoming specific problems within the industry, and extensive research has been carried out already with respect to the improvement of existing reduction industries (fish meal), output, employment and efficiency in the North of Chile. Private industries also have requested to assist on particular research activities, such as on shrimp and langostino freezing, salted and dried hake and fishmeal, crab and mussel canning, and on fish canning plant design and establishment.

207. The FAO/SF project in Ecuador specifically deals, amongst other activities, with product development, the manufacture of fish meal, salt fish processing industries, and quality control, the latter with particular reference to frozen shrimp for export.

208. The Marine Resources Research Institute, in the FAO/SF project in Peru, referred to earlier, also carries out research in co-operation with industry, through factory trials in fish meal processing to minimize production losses. Other activities of this FAO/SF project concern suitable package and storage methods to overcome the danger of spontaneous heating of fish meal during storage and transport. On the economic side, cost and earnings studies were carried out for the Peruvian fish meal industry.

209. The Deep Sea Fishing Development Project in the Philippines, a UNDP/SF project operated by FAO in cooperation with the Government, introduced purse seine fishing methods, which resulted in a rapid expansion of purse seine fishing fleet and a marked increase in production. The project also includes major activities with respect to fish preservation and processing based on modern industrial methods, including canning, freezing and frozen storage, as well as improvement of traditional techniques, such as salting, smoking, drying, pickling, fermentation, etc.

Fishing Harbours, Boat Building Facilities, Ice Plants, etc.

210. FAO's activities with respect to fisheries also give attention to requisites and requisite industries. Almost all projects listed in Appendix VII provide services for introduction of improved fishing gear, whilst another group of projects are introducing modern fishing vessels. Governments increasingly become aware that in view of this development, special provision has to be made for fishing harbours and other facilities, such as ice plants for servicing the vessels and handling the larger catch. Thus a fishing harbour FAO/SF project is being developed with the Government of India, designed to provide both technical and economic information for siting and constructing a series of fishing harbours.

211. The FAO/UNDP-SF projects in the Philippines and Argentine referred to earlier, include advisory services for the development and financing of projects such as fishing harbours, canning industries, ice-making facilities, cold store and freezing plants, fishing vessel construction, etc. Also,

through the FAO/IBRD Cooperative Program (see Chapter VII, paragraph 175), potential projects in the area of fishing harbour construction, fleet expansion and other aspects of industrialization of fisheries, are being studied to determine their viability. (See also in this respect Section E, Industries for the Supply of Essential Requisites to Develop Agriculture, Animal Husbandry, Forestry and Fisheries).

Regional and Multi-National Projects

212. Four FAO/UNDP-SF projects, developed with cooperative participation of a number of Governments operated on a regional or multi-country basis are listed below.

a. East Africa: Lake Victoria Freshwater Fisheries Research Project. Participants are the Governments of the Republic of Kenya, Tanzania and Uganda.

b. Central Africa: Inland Fishery Project. Participants are the Governments of Cameroon, Republic of Central Africa, Congo and Gabon.

c. Caribbean Fishery Development Project
Participants are the Governments of the following States and Territories:

Barbados, Guyana, Dominican Republic, France (in respect of French Guyana, Guadeloupe, Martinique, and their dependencies), Haiti, Jamaica, Leeward Islands (Antigua, Montserrat, St. Christopher/Kitts, Nevis and Anguilla), Netherlands Antilles, Surinam, Trinidad and Tobago, United States of America (Puerto Rico), Windward Islands (Grenada, St. Lucia, and St. Vincent).

d. Central American Survey Development Project of Fishery Resources on the Isthmus

Participants are the Governments of Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama.

213. Activities included in these projects are:

1. Resources surveys, strengthening of fishery administration and management planning of fishing operations;

2. Introduction of improved and suitable gear, craft and fishing methods and techniques.

3. Introduction of improved methods of handling, preservation, processing and transportation of fish and fish products; and

4. Analysing costs of fish processing and distribution, conduct of marketing surveys, development of marketing statistics and sponsoring products development.

FAO/UNDP-TA Projects

214. The Appendix VII also includes a number of FAO/UNDP-TA projects dealing with activities such as fish and fish products processing and technology, including frozen fish, industrial management and other subjects.

FAO Publications

215. Reference is made to Appendix II, Section V.

E. Industries for the Supply of Essential Requisites to Develop Agriculture, Animal Husbandry, Forestry and Fisheries

Introduction

216. The requisites essential to the development of agriculture, including crop production, animal husbandry, forestry and fisheries, are many and varied, and are manufactured by a number of industries. Planners and research workers in developing countries increasingly recognise that local manufacture of some of these are part and parcel of the total industrial development process.

In addition, Governments realise the importance to develop and organise appropriately the agro-allied industrial sector, to ensure a regular supply of the needed requisites, thus promoting economic development to the fullest extent possible.

217. In a great number of FAO field action projects extensive use is made of a variety of requisites, and Governments continue to request in increasing measure active FAO development assistance. (See also paragraph 5).

218. Appendix VIII contains a list of selected current field projects, showing not only a relatively great number of projects, but also a great variety in subject matter. Before giving further details on selected field projects a review will now be made of the wide range of activities, most of which involve appropriate utilization of requisites, but also include certain determined elements of storage, processing and manufacturing. For all requisites this will be the final goal in a continuous process of industrialization development.

Range and Scope of Activities

219. The following comprehensive list of selected FAO field activities is appropriate in reviewing their range and scope.

Seeds

220. In addition to the selection and the production of seeds in multiplication farms and seed inspection laboratories, a number of processing operations such as cleaning, drying, packaging and storage, followed by inspection and recognised certification, are carried out

Pesticides and Fertilizers

221. Programs and projects cover activities such as promotion and application including local manufacturing development in advising on the establishment of such industries.

Animal Fodder and Feeding Stuffs

222. Projects include appropriate utilisation of the various by-products of agricultural products processing industries such as oilseed cakes, rice and pineapple bran, molasses, animal by-products from rendering plants and slaughterhouses, etc., the development of concentrated feed stuffs, and promotion and development of the fodder processing, and feed mixing industry, including the use of minerals, vitamins, suitable waste, and by-products. (See also paragraph 5).

Vaccines and Other Animal Medicaments

223. Projects deal with the establishment of local manufacturing in suitable laboratories, institutes and industries. Such projects include careful control over safety, potency and viability through biological control. (See also paragraph 5).

Agricultural Tools

224. Projects and programs deal with the introduction and promotion of improved hand-operated and animal drawn implements inducing local manufacturing. FAO projects are carried out under arid, dryland conditions, as well as in temperate and humid tropical zones. (See also Appendix II, Section VI).

Agricultural Equipment and Machinery

225. Programs and projects deal with the establishment and development of local workshops for servicing and maintenance, and whenever possible local assemblage or manufacturing. These activities involve a great variety of requisites including harvesting equipment and machinery, water lifting devices, pumps for irrigated agriculture, etc. (See also Appendix II, Section VI).

Processing and Packaging Equipment and Machinery

226. Projects and programs include selection and introduction of most appropriate equipment and machinery required especially for the development of small-scale and medium size products processing industries involving a great variety of raw materials and industries.

Storage, Farm Service Buildings, and Market Structures

227. Projects and programs aim at the introduction of suitable structures, using whenever possible locally available building and construction material and services.

Forest Industries, Pulp and Paper

228. With reference to the development of forest industries, FAO's field programs deal with the development of mechanical logging of forests, timber extraction and transportation, and of equipment and machinery for industrial processing in a variety of industries, including pulp and paper. (See also Appendix II, Section IV).

Fisheries

229. In the fisheries sector a number of field projects aim at the development and local manufacture of fishing gear design and construction of fishing boats and vessels, naval architecture, planning and development of fishing harbours, and a wide range of equipment and machinery for industrial processing, including cold storage, marketing and distribution. (See also Appendix II, Section V).

Conclusive Remarks

230. The activities in the fields referred to above are obviously manifold. With reference to processing and packaging equipment and machinery for example, FAO is regularly adivising (upon request from Member Governments)

on suitable types, costs involved, advantages and disadvantages of specific processing plant lay-outs, etc. In this respect reference is made to Appendix II, Section VI where a number of FAO publications dealing with these aspects are listed.

Contacts with Manufacturers

231. It is appropriate to acknowledge that FAO is in regular contact with the equipment and machinery manufacturers all over the world, and consequently receives regularly the required detailed and specialised information, and thus also remains informed about latest developments in techniques and technologies.

232. Reference in this respect is also made to Chapter VI where a review is given with regard to the development of the FAO/Industry Cooperative Program.

Review of Some Selected Field Projects

233. Throughout this report the main emphasis is given to current FAO field operations, programs and projects in which renewable natural resources are utilized for the development of industries. These raw materials are in most instances readily available in FAO member countries, or, with some exceptions, can be developed in a reasonably short period of time.

234. For a number of industries referred to in this Section raw materials are not always available in developing countries. Consequently, the development of some of these industries needs proper planning of raw material supply.

235. The significance of the selected field projects, as described below in some greater detail is that Governments are more and more undertaking such projects, which as part of their entire industrial development planning, offers tremendous possibilities for greater social and economic progress for the majority of the predominantly rural population. Improved seeds, and the development of a pesticides industry, as listed below, are, for example, such promising developments.

Seeds

236. The Government of the United Arab Republic established a Vegetable Improvement and Seed Production Research Centre, in Dokki. This is a SF project for which FAO is the executing agency, and it aims at the development and research of seed selection, production, processing and certification. Work is carried out on crops such as tomatoes, watermelons, cabbages, beans and artichokes. The project also includes the development of improved storage conditions and constructions for seeds and tubers, as well as research in post harvest handling.

237. At the request of the Governments similar programs are also carried out in FAO/EPTA projects: India (for temperate vegetables), Pakistan (for sugar beet) and Uruguay (for herbage crops).

Pesticides

238. Also under a FAO/SF arrangement, the Government of the United Arab Republic established a Central Agricultural Pesticides Laboratory in Cairo. This project aims at the development of local resources for the manufacture and formulation of pesticides and related compounds in order to serve the

national industry with technical advice. The project includes testing of effectiveness in the laboratory as well as in the field, application and marketing control, including registration and certification of commercial products. Analytical chemical control on pesticide residues is furthermore part of the research program.

Animal Fodder and Feedstuff

239. The Governments of Argentina, British Honduras, Cuba, Guatemala, Haiti, India, Iran, Iraq, Liberia, Libya, Mexico, Morocco, Peru, Philippines, Syrian Arab Republic, Taiwan, Tanzania, Tunisia, United Arab Republic, Upper Volta, and Uruguay, have undertaken work in this field through an FAO arranged project, under a variety of resouces. Activities are carried out in many fields, including agricultural engineering, seed production and storage, hay and silage making, quality assessment of fodder conservation and concentrates, and supplementary feeding including protein material and minerals.

240. FAO projects in the field of fodder development, i.e. establishment of feed mixing plants are carried out at Governments requests in India.

Vaccines

241. The production of vaccines is handled in several FAO projects through a variety of resources, at the request of the Governments of Afghanistan, Bechuanaland, Burma, Cambodia, Ceylon, Congo (Kinshasa), Ethiopia, Mexico, Nepal, Pakistan, Rwanda, Somali, Sudan, Syrian Arab Republic, Thailand, Turkey, and Uganda.

Agricultural Tools, Farm and Agricultural Machinery

242. A great amount of projects are carried out in these fields under the FAO/EPTA program, and also through FFHC supported projects. At the request of Governments there are projects now operating in Brazil, Burma, Ceylon, Chile, Jordan and Libya (with particular emphasis on dryland conditions), Madagascar, Malawi, Pakistan, Saudi Arabia, Syrian Arab Republic, Tunisia and the United Arab Republic.

243. In Congo (Kinshasa) an Agricultural Mechanization Training Centre is operation under an FAO/Funds-in-Trust arrangement.

Storage, Farm Service and Market Structures

244. The Government of Peru, in the FAO/SF project Faculty of Agricultural Engineering, Agricultural University at La Molina, has included the subjects listed above as part of the regular academic program leading to the degree of agricultural engineer.

245. Activities of this nature are also included in a Government request for an FAO/UNDP-TA project in Dahomey, dealing with grains and groundnuts storage, construction of silos and establishment of groundnut shelling plants, whilst the Government of Greece lodged a Funds-in-Trust in order to be assisted in fruit and vegetable storage.

246. FAO Grain Storage development projects are also undertaken at Government request in Argentine and Colombia. The FAO/UNDP-SF project Institute for Training and Research in Agricultural Marketing (ILMA) in Bogota deals for instance with enlargement of a grain storage network, and development of designs and plans of grain elevators and warehouses. Construction of store and warehouses mainly for maize and sorghum forms an important part of the FAO/UNDP-SF project on Grain Marketing, Storage and Price Stabilization as requested by the Government of Somalia.

Development of Refrigerated Transport

247. The development of refrigeration, cold storage, and transportation of agricultural and fisheries products under refrigerated conditions is included in a number of projects listed in the Appendix IV and VII. Meat transportation in refrigerated trucks is an important element in the FAO/UNDP-SF project in Niger, Development of Animal Production and Water Resources. The Government of Yugoslavia is assisted by an FAO/UNDP-TA expert dealing with refrigeration of vegetables.

Logging of Forests, Timber Extraction and Transportation

248. In a number of FAO/UNDP-SF projects, as listed in the Appendix VI, logging, timber extraction and transportation development form part of the operations.

Sawmilling

249. Sawmilling and promotion of utilization of sawn wood is dealt with in the FAO/UNDP-TA project of the Governments of Bolivia and Brazil, the latter for the Amazon area. Similar projects include the establishment of new saw mills, and modernization of existing ones. Projects are in operation (from a variety of resources) in Burma, Central African Republic, Ceylon, Guinea, Iran, Malaysia (Sarawak), Tanzania and Zambia.

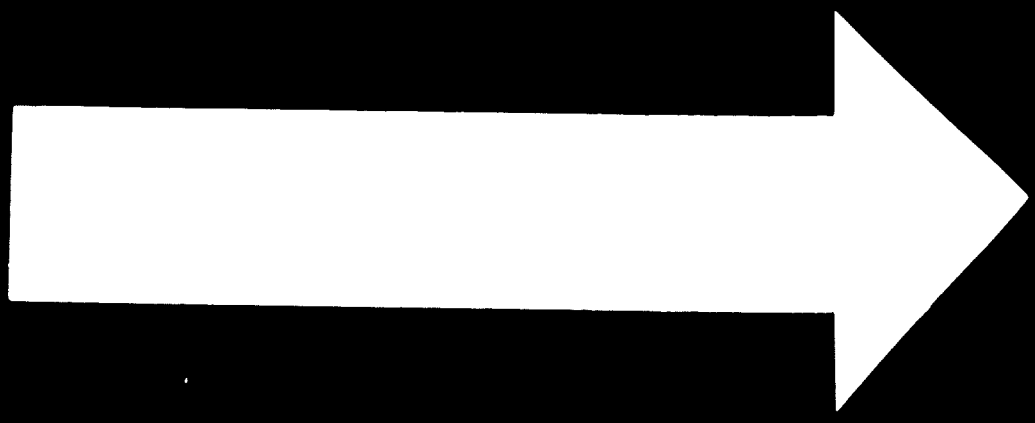
Fishing Gear, Marine Engineering, Boat Building, etc.

250. Fishing gear technology is an integrated activity in a great number of FAO/UNDP-SF projects, of which a selection has been given in the Appendix VII and FAO fishing gear development, training and demonstration programs are carried out in Brazil, Ceylon, Cuba, Federation of South Arabia (Gulf of Aden), Ghana, India (including power fishing development), Honduras, Jamaica, Kenya, Nigeria, Pakistan and the Philippines. This activity is also included in the FAO Regional Projects for East Africa (Republic of Kenya, Tanzania and Uganda), Central Africa (Cameroon, Republic of Central Africa, Congo, Gabon) and the Caribbean Fishery Development Project, involving a great number of states and territories.

251. FAO experts also assist in marine engineering, upkeep, operation, maintenance and repair of engines, vessel design, boat building and mechanization of fishing boats. Such projects are in operation with assistance of Governments in Argentine, Ceylon, Chile, Dahomey, Korea, Libya, Nigeria and Senegal.

252. Naval architects and experts for fishing harbour development and construction and operation of cold stores, ice plants, water and fuel facilities are included in FAO projects in Brazil, Chile, Ecuador, India, Israel, Nigeria and the Philippines.

253. An important Seminar and Study Tour on fishermens training was held in the USSR during 1965, and a Training Centre on Fishing Boat Design was



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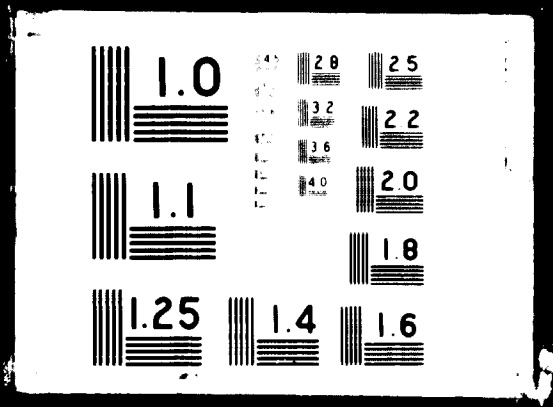


held in Sweden. The former drew up criteria for fishermen's training in developing countries, and the latter was intended to promote skills in the design of small fishing craft.

VIII. SUPPORTING ACTIVITIES

Introduction

254. As has been shown in the previous chapter, FAO is making strong efforts to promote industrial development in the related fields of agriculture, animal husbandry, forestry and fisheries.

255. Consequently, FAO organizational and staffing arrangements for industrial development are integrated to include programs, projects and other activities related to infrastructure, and similar supporting activities.

256. Accelerated industrial development requires action in many more fields than those which have been dealt with in the previous part of this paper, and FAO is assisting Member Governments in the execution of projects that embrace the creation of certain basic infrastructural facilities: power, water, road and rail communications, and port facilities.

257. FAO also includes in its overall program for industrial development a number of supporting activities such as the development of industrial feeding programs, the development of building materials, the development of housing and other structures and facilities, rural electrification and development of solar energy and windpower for farm use, the development of food and food products standards, etc.

258. Some of the more significant areas of interest and action, to which little reference has been made so far in this report, are reviewed below with respect to program formulation, promotion and execution.

Home Economics

259. This FAO activity directly concerns family life, both urban and rural. Families must obtain housing facilities sufficiently adequate to promote and maintain desirable patterns of living.

260. Consequently, it concerns housing and space requirements in connection with the conservation, preparation and consumption of nutritionally balanced diets and general family living needs. In this field, FAO's assistance to Governments includes numerous action projects carried out by home economics and dietary survey programs.

261. Such FAO activities include the objectives of developing or improving competence in the planning of living space adaptable to the needs of families at costs within the limits of family budgetary housing allocations, and developing or improving tenant educational programs in the effective utilisation, care and maintenance of space provided.

262. FAO activity also includes projects and programs directed towards catering technology development, practices and facilities, mass feeding principles, including industrial and hospital feeding, hotel management, etc., and reference is made to a project described in paragraph 136 of this paper.

Manpower Training and Utilization

263. In developing countries with increasing pressure of population on available land resources, establishment of small-scale rural industries and the related rural public works open up opportunities for shifting surplus or unused manpower from agriculture to non-agricultural occupations.

Improvements in infrastructures of rural institutions and organizations as well as community development constitute the basic conditions for popular participations in any integrated and balanced programs for agricultural development and rural industrialization.

264. FAO is continuing to advise and assist developing countries to orient their agricultural education and training and rural extension services toward mobilizing and utilizing the unused manpower and physical resources for integrated and balanced development of agriculture and rural industries with the framework of comprehensive national and regional development plans and programs.

Forest Products

265. FAO activity here includes the various steps and measures for analysing and projecting needs (qualitative and quantitative) for wood and wood products to be used in housing and other construction. FAO's activity covers such aspects as a continuous supply in the form of lumber or manufactured wood-based products, (plywood, fibreboard, particleboard, etc.). and promoting their application in housing and other constructions, both conventional and prefabricated. This, inter alia, includes different treatments such as preservation, seasoning and the specialised treatment of timber and wood-based panels, and the conversion of bamboo, bagasse, straw and other agricultural products and residues into suitable building materials as referred to above, and the assembly of building components and units, especially for the mass production of low cost houses and other structures. Different FAO projects and schemes currently in active operation have incorporated such elements aimed at improved housing in the developing countries.

Agricultural Engineering

266. FAO's activity is directed towards assistance in the construction of improved farm structures and farm service buildings, farm storage and handling facilities, barns, etc., with particular reference to the use of low cost locally available building material. It also covers the development of rural power including electrification and power use on the farm, rural water supply and rural sanitary engineering. These elements are either associated with or are integrated parts of projects and programs for housing of rural people, but many features have much wider implications and often extent also into larger centres of urban population.

Institutional and Service Buildings and Facilities

267. FAO is assisting Governments in the design, construction, maintenance and use of a broad assortment of buildings, not used for residential purposes. These arise in volume and complexity in UNDP-SF projects, FFHC and other Trust Fund projects and, to some extent, under UNDP-TA as well. The scope especially includes accommodation to meet educational, manpower training and research needs, and other buildings and facilities for settlement, cooperative activities and rural welfare. This activity in many respects involves features and factors that are identical with those in residential housing.

268. FAO's activity also covers installations and service structures, both rural and urban, for storage, preservation, processing, distribution and marketing of products derived from agriculture, animal husbandry, forestry and fisheries.

269. It includes also the self-help aspect of housing and construction to be considered and encouraged through cooperatives and other mutual aid arrangements. This includes cooperative credit for building purposes, and the supply of building materials or components, through rural cooperative outlets, such as construction and other auxiliary workshops, and the production of lime, mortars, stabilised earthblocks, cement, tiles, tubes, bricks, etc., by industries organized into cooperatives. The appropriate design of housing and other farm constructions connected with land settlement schemes, and having special implications for cultural and social changes, also falls within this area.

Energy

270. The production and transport of electrical energy is a basic requirement for the development of agro-allied industries in agricultural areas.

Present FAO activities are concentrated on electrical energy applications for agricultural industries and farm use. Work is also being carried out in the field of education. Special Fund projects and Freedom from Hunger Campaign projects on agricultural engineering education in progress have rural electrification components, such as the Special Fund project "Faculty of Agricultural Engineering, Agricultural University, La Molina, Peru", and the Freedom from Hunger Campaign project "The Establishment of the North African College of Agricultural Engineering, Tunisia". New Special Fund projects on agricultural engineering under preparation will cover the technical aspects of electric power, distribution and utilization.

Steps are being taken to prepare the ground for rural electrification schemes of a wide nature which might be undertaken in the near future. An Informal Working Bulletin in the Agricultural Engineering series (No. 22) "The Potentials for Rural Electrification in Asia and the Far East" was prepared for this purpose.

Solar Energy

271. With regard to the development of solar energy for use in developing countries, FAO has established permanent working contacts with a specialised institute, i.e. the Brace Research Institute, McGill University, Montreal, Canada.

272. FAO has also published an Informal Working Bulletin (No. 16) on this subject entitled "Possibilities for the Utilization of Solar Energy in Under-developed Rural Areas". The paper reviews experience gained in solar energy research during recent years, and investigates the practical and economic possibilities of its application for rural areas of the world which do not have ready access to conventional sources of power.

273. As far as field work is concerned, the Government of the Syrian Arab Republic, with FAO/UNDP-SF assistance, has carried out a project on solar energy applications, mainly for fruit drying, within the framework of an SF project on food processing.

Wind Power

274. FAO recently published an Informal Working Bulletin (No. 1?) entitled "Windmills for Water Lifting and the Generation of Electricity on the Farm". This bulletin provides information, mainly of a practical nature, on the utilization of wind power for farm purposes and for village communities. FAO's work in this field is expanding.

Codex Alimentarius

275. Earlier in this Report reference has been made to Standardization as a frequently necessary pre-condition for the development of processing industries especially in the food and food products industry sector, in order to facilitate international exchange of processed products. (See previous paragraphs 59, 122 and 136 as examples).

Joint FAO/WHO Program

276. The Codex Alimentarius Commission, the principal organ of the Joint FAO/WHO Food Standards Program, established in October 1962, held its Fourth annual session at FAO Headquarters from 7-14 November 1966.

Program of Work; Standards

277. Draft standards for sugars, cocoa products and chocolate, fruit juices, frozen foods, fish products, fats and oils, milk products, processed fruits and vegetables have been sent to governments for approval or observations. The greatest progress to date has been made with international standards for milk and milk products. A Code of Principles dealing with the use of proper designations, definitions and ethical practices in the international trade of milk and milk products has been formally accepted by 71 countries. Sixty-five countries have accepted a Standard for Milk Powder; 45 countries have accepted Standards for Butter, Butterfat and Evaporated Milk; 46 countries have accepted a Standard for Condensed Milk and 31 countries have accepted a General Standard for Cheese. Standardized Methods of Analysis and Sampling for Milk and Milk Products have also been accepted by 45 countries. Other milk products for which standards are being elaborated are processed cheese products, milk ices and international individual cheese standards.

IX. WORLD FOOD PROGRAM AID IN KIND TO DEVELOPMENT PROJECTS IN THE FIELD OF INDUSTRY

Introduction

278. The UN/FAO World Food Program was established first on an experimental basis for a period of three years by FAO Conference Resolution 1/61 adopted on 22 November 1961 and UN General Assembly Resolution 1714 (XVI) adopted on 19 December 1961. Operations started in 1963. By FAO Conference Resolution 4/65 of 6 December 1965 and UN General Assembly Resolution 2095 (XX) of 20 December 1965, the World Food Program was extended on a continuing basis for as long as multilateral food aid is found feasible and desirable.

279. The main objective of the Program is to use food as an aid to economic and social development, particularly when related to pre-school and school feeding, increasing agriculture productivity, labour-intensive projects and rural welfare.

280. Projects should be technically sound and economically feasible and they should relate to the development plans or policies of the requesting country or be in general conformity with the country's overall development prospects. Moreover, the provision of food aid should have no harmful effect on local agricultural production and on the normal volume and value of domestic and foreign trade.

281. Requests for WFP assistance are prepared by the interested Government, with the assistance, if necessary of WFP and/or UN agencies staff.1/ They are channelled through the UNDP Resident Representatives who also act as WFP representatives.

282. Targets for pledges were established at $100 million for the period 1963-1965 and at $275 million for the period 1966-1968. As of 31 July 1966, total cumulative resources available to WFP from inception to the end of 1968 amounted to some $250 million. Provision being made for administrative expenditures and for emergency operations, some $184 million were available for development projects. At the same date, 164 projects had been approved, representing a total cost of $139 million. However, a part of those commitments related to shipments to be made in 1969 or later and are therefore charged against future pledges. This means that some $67 million were available at the end of July 1966 for assisting further development projects up to the end of 1968.

283, As of 31 July 1966, out of the 164 approved projects, five are clearly of an industrial nature (at a total cost of $2.5 million). Three of them relate to the production of couscous, of pulp and paper and of nitrogen for fertilizer; they are therefore of direct interest to FAO.

284. Ten projects, amounting to a total cost of $16.4 million, have to some extent a bearing on the development of the agro-allied industries. One of them relates to the collection and chilling of milk, and all the others are related to increasing production of milk, meat or eggs through the provision of mixed rations, a part of which is supplied by WFP.

285, The following notes summarise the main data on the various projects referred to above.

1/ Pro-forma requests are available and should be adhered to.

GHANA - Development of poultry and pig industry.

286. In order to reduce the protein deficiency in the diet of a large part of the population and to satisfy the increasing demand for animal products in the big towns, the Government of Ghana embarked in 1952 upon a program of building up a commercial poultry and pig industry. In the initial years the development of this program was mainly based on imported feed and chickens. The country is now able to produce locally the compounded rations needed and it will be possible to limit importation to only the pre-mixes (vitamins, minerals and antibiotics) which will be combined with locally produced peanut cake, fishmeal and rice bran. Attempts have been made to increase the production of maize, which constitutes the major ingredient of the ration, by the introduction of a high yielding variety of hybrid maize; however, production has not yet caught up with the full requirements of the industry and increased human consumption.

287. This situation was aggravated by the inadequate rainfall and an attack of maize rust during the last two years. The progress made since 1952 in poultry and pig production is therefore in jeopardy, due to the lack of an adequate supply of maize. In these circumstances, WFP has accepted to supply 4,000 tons of maize, to match an equal quantity of local concentrated feed and imported supplements with which to produce compound rations to keep the industry going until the situation becomes easier. Adequate milling and mixing capacity (3,000 tons per month) and sufficient storage and transport facilities are available.

288. The proceeds of the sales of maize to the producing agency will be used by the Ministry of Agriculture for the further promotion of the poultry and pig industry in Ghana. The project was approved in August 1966. Its total cost to WFP amounts to $335,600.

INDIA - Supply of maize for poultry development projects
(assistance in the development of animal feed mix industry)

289. The 1964 continuous summer drought followed by excessive rains damaged seriously the local production of maize in certain states of India, causing a sharp rise in the price of this commodity. Consequently, the price of poultry feed has also risen to a very high level. The acute shortage of maize and the sudden rise in the price level has resulted in a drastic reduction of poultry production in the country and in the closure of poultry farms. In order to alleviate this situation, the Government of India requested WFP for an immediate supply of 20,000 tons of maize, which was to be mixed with local ingredients in the ratio of 20:80 and sold to the farmers of the affected areas at a reasonable price. The sales proceeds are to be used for the further expansion of the poultry industry including:

(a) the provision of the necessary grinding and mixing equipment in addition to that already in existence;

(b) purchase of other local ingredients;

(c) subsequent purchase of locally produced coarse grains.

290. The Government is increasing the production of hybrid maize in the country and has recently completed a survey of the possibilities of using agricultural and industrial by-products for poultry feeding. The use of balanced feed for poultry is expected to spread gradually to all Indian states where poultry farming is gaining in popularity.

291. The project was approved in April 1965; its total cost to WFP amounts

to $1,588,000.

INDIA - Improvement of milk supply through balanced feeding of cattle and milk toning (assistance in development of dairy and animal feed industry).

292. Another project aiming at increasing milk production, but on a wider scale, is also assisted by WFP. Simultaneously with increased milk yields, livestock improvement in India also needs to provide for draught animals, since there is no prospect of early mechanization of agriculture and transport in the country.

293. To meet these needs the Government has launched an intensive cattle development program under which all the measures and investments considered necessary will be concentrated in selected favourable areas. The measures include the establishment of central semen collection stations, artificial insemination centres, organization of veterinary and dairy extension services, and feed and fodder development, including the establishment of feed mixing mills where necessary, for the manufacture and distribution of balanced feed. Each intensive cattle development scheme is linked with a dairy plant, so that the dairies are worked to their installed capacity and the milk produced finds a ready and remunerative market.

294. A major impediment to the raising of the productivity of cattle is an inadequate supply of feed. It is estimated that the available fodder supplies are hardly sufficient to meet 70 percent of the needs and that the available concentrates do not even meet 30 percent of the requirements. The scope for further extending the area under fodder crops is limited by the small size of farm holdings and the competing demand for land for the production of food grains and cash crops. In addition to the problem of increasing fodder supplies, development of the cattle industry is hampered by the difficulty of organizing milk production on a commercial scale, and by certain other factors which at the present time appear to be insuperable. The immediate solution envisaged is to make more balanced cattle feed compound available. WFP has accepted to supply maize and sorghum to be mixed with locally available feed ingredients for the manufacture of a balanced feed for sale to the cattle owners in the following eleven Intensive Cattle Development (ICD) blocks, on a no-profit no-loss basis: Bombay, Calcutta, Delhi, Ahmedabad, Hyderabad, Kanput, Bangalore, Madras, Bhopal, Barada and Madurai. Each block, it has been estimated, contains 100,000 female bovine cattle, half of which will be in milk at a time, but only 40 percent of these will be producing at a level which will pay concentrated feeding. It is estimated that to begin with not more than half the farmers will avail themselves of the facility to buy the balanced feed. The daily mixed feed ration will be 3 kg. per animal. Of this the maize and sorghum to be supplied by WFP will constitute 1/3 of the feed ration, (66 percent maize and 33 percent sorghum).

295. The project was approved in April 1966; its total cost to WFP will amount to $10.3 million.

INDIA - Increase of milk production in Anand, Gujarat (assistance in dairy industry and feed mixing development)

296. The need to increase the consumption of animal protein foods by urban communities is receiving close attention in India. Milk is one of the widely acceptable as well as nutritionally desirable forms of these foods and a number of government demonstration farms as well as non-governmental cooperative societies have been established in order to promote the dairy industry. The Kaira District Cooperative Milk Producers' Union at Anand, Gujarat State, is one of the best known of these cooperatives. The Union

has been effectively expanding its activities and its milk production has been raised from 500 lbs (230 kg) per day in 1948 to a daily average of 275,410 lbs (125 metric tons) in 1962. The Union is now building extensions to its dairy plant which will permit a daily output of about 1 million lbs (445 metric tons). In furtherance of this undertaking, the Union has formulated a large seven-year development plan for increasing the productivity of the dairy industry in the area. WFP assistance is provided in support of this plan for a period of approximately two years.

297. The project aims at increasing production of milk per animal and reducing the cost per unit of output by providing balanced feed mixture for the cattle. In order to help prepare this mixture a feed-mixing mill has been provided by the Oxford Committee for Famine Relief (OXFAM) under the auspices of the Freedom from Hunger Campaign. WFP is providing feed grains which are ground and mixed with local supplies. The balanced ration thus prepared is sold at a reasonable price to the members of the Union. It is expected that WFP assistance will have considerable demonstration value as the practice of the use of mixed feed is expected to be followed in many other areas.

INDIA - Improvement of feed for dairy cows, Andhra Pradesh (assistance in development of animal feed industry)

298. The State Government of Andhra Pradesh is implementing plans to increase milk production by making a balanced feed ration available to farmers. For this purpose two key village blocks in the Krishna District have been selected as a pilot area, and a feed-mixing plant and other necessary equipment have been installed at Buddavaram on a plot of land donated by the villagers. WFP is providing 2,650 tons of maize and sorghum which are compounded with such local feedstuffs as oilcakes, bran and pulses, and sold through local cooperatives to the stock owners to feed some 6,000 cows selected for their milk production, at the rate of 2 kg per head per day. The state Government is establishing milk collection and chilling centres in this area in order to develop a market for the utilization of the increased milk produced.

299. The project was approved in October 1964 and has a duration of 18 months. Its total cost to WFP is $222,900.

INDIA - Supply of food for increased production of pork and pork products, West Bengal (assistance in development of animal feed industry)

300. The project aims at increasing the production of pork and pork products through the supply of balanced feed and the introduction of improved breeds and better methods of rearing. It is also designed to demonstrate to the stock owners the economic advantages of using balanced rations. The project covers areas of intensive pig breeding within a radius of 80 kilometres from the Regional Pig Breeding Station, Haringhatta, where there is a feed mixing plant.

301. WFP is supplying maize and sorghum, which are ground and mixed with locally available feed stuffs, such as oilcake, bran, fishmeal, and meat meal in order to constitute a balanced feed ration. The mixture is sold to pig breeders in the area to feed approximately 7,000 pigs at the rate of 1.6 kilograms per head per day for a period of about 22 months. The sales proceeds are to be used for expansion of the project.

302. The project was approved in October 1964. Its total cost to WFP is $427,900.

INDIA - Intensive egg and poultry production and marketing, Bahraich, Uttar Pradesh (assistance in development of poultry feed industry).

304. The project aims at accelerating the production of eggs and poultry meat in a selected area in Uttar Pradesh with a view to raising the nutritional standard of the local population in respect of animal protein, in which their diet is at present deficient.

304. An important means of improving poultry production is to provide the birds with feed of adequate nutritional quality. To this end, the government poultry farm at Bahraich (Uttar Pradesh) is producing balanced poultry feed, using the maize supplied by WFP as an ingredient in the process. The feed produced in this manner is sold to poultry farmers in the area. The sale proceeds are intended to be used to expand the area and improve the work of the project.

305. It is expected that the demonstrated advantages of using balanced feed will eventually stimulate the domestic demand for such feed and consequently for maize, so that the production of that seed grain currently little used in the preparation of poultry feed, is likely to increase.

306. The project was approved in July 1963; its total cost to WFP amounts to $240,000.

NEPAL - Milk collecting and chilling centre (assistance in dairy industry development)

307. Milk supply in the Kathmandu Valley is seriously handicapped by lack of proper chilling centres in milk collection areas. At present supplies are obtained from a large number of small and scattered villages, most of which are away from motorable roads. To equip small collection units with refrigeration facilities has been considered too expensive. In addition, there are considerable seasonal fluctuations in the milk supply, which is at its lowest during the dry months of the year. In order to improve the situation, a pilot project for the introduction of toned milk in the market is being carried out with WFP assistance through the supply of 100 tons of skim-milk powder. Toned milk is prepared by mixing the skim-milk powder with the local supplies of buffalo milk, whereby a standard butterfat content of 3.5% for toned milk is obtained. For this purpose a new centre for chilling and storage of 3,000 litres of milk at a time is being build at Bhadgaon. The experiment, if successful, will be extended to other milk collection areas and it is expected that milk consumption by the urban population will increase.

308. The project was approved in August 1963. The total cost to WFP amounts to $46,000.

PHILIPPINES - Livestock and poultry feeding (assistance in development of animal feed industry)

309. The purpose of the project is to provide food grains for the livestock and poultry being maintained by the Bureau of Animal Industry at its 9 stock farms and 54 beeding stations and centres (small stock farms for servicing local herds naturally and artificially, which also produce a limited quantity of breeding stock). The addition of WFP feed is improving the animals' feed rations and is particularly useful in ensuring that the reproduction of breeding herds and flocks is maintained at an optimum rate. The mortality rate has also been reduced.

310. The dairy and beef industry in the Philippines is not yet well established,

although the efforts of the Bureau of Animal Industry in this direction are being intensified. The latter's program for importing superior cattle, whose offspring could be distributed to farmers had developed only gradually because of limited budgetary resources, although its efforts to improve the dairy cattle have been successful.

311. Good results have been achieved by the Bureau in its plans for encouraging the poultry industry, mainly because of the rapid rate of reproduction and the lower cost per unit. In addition, since the commencement of the project the Bureau has increased the area under improved pasture and corn with a view to reaching near self-sufficiency.

312. WFP is providing 4,000 metric tons of yellow maize to feed buffaloes, cattle, pigs and chickens, raised under the supervision of the Bureau. The feed grain provided by WFP are ground and mixed with local feed, such as fish meal, oilseed meal, rice bran and copra meal, and the balanced mixture is fed to the livestock and poultry.

313. The project was approved in July 1964. Its total cost to WFP is $343,000.

SENEGAL - Assistance in the development of food industries

314. This pilot project is intended to promote the production of couscous on an industrial scale and to help the Government accelerate the process of developing large scale food industries. WFP is supplying sorghum to make possible the production of couscous by an experimental unit over a period of two years. The results of the project will, it is expected, lead to the establishment of permanent industrial production of couscous in Senegal. UNICEF is assisting the Government with the provision of cash and equipment to improve the harvesting and storage of groundnuts, which will be used to fortify the couscous.

315. Under this project it is propsed to produce a total of 3,730 tons of couscous. The project was approved in May 1964; the total cost to WFP will amount to 344,900 dollars.

TUNISIA - Promotion of poultry production and sheep husbandry
(assistance in development of animal feed industry)

316. The purpose of this project is to assist the Government of Tunisia towards the achievement of its ten-year plan (1962-1971), one aim of which is to increase animal production by 60%, and more specifically, to increase poultry production by 140% and sheep husbandry by 40%.

317. WFP is assisting the Government in achieving these aims by supplying in two instalments 21,500 tons of maize, which are being used as follows:

12,500 tons are provided for the production of high-quality poultry feed obtained by mixing maize with other compounds, the latter ingredients being purchased partly on credit advanced by the Government to the executing agency. The mixing is carried on in the only state owned feed mixing plant in the country, which entered into operation in 1964.

The executing agency distributes free of charge to poultry farmers pure bred stocks of White Leghorns and Rhode Island Reds, bred and reared at the Government poultry station at Sidi Thabet, and its four sub-centres, conveniently located throughout the country. The poultry feed is sold to the

farmers at a subsidized price, the subsidy decreasing annually until the end of the third year, when it will cease. These prices, as established in the project request, are approximately 15% the first year, 11% the second year, and 7% the third year, below the market price.

The Government is in charge of raising the standard of the breeding stocks, controlling poultry diseases, and familiarising farmers with better techniques of poultry feeding and management.

318. The project was approved in July 1964. Its total cost to WFP is $1,561,900.

TURKEY - Assistance for the expansion of a pulp and paper factory.

319. The purpose of the project is to assist in increasing the pulp and paper output of the Turkish State Paper Enterprise factory at Izmit through modernization and expansion by providing a supplementary ration for workers engaged on heavy manual labour under difficult working conditions. This factory employs about 3,250 unskilled workers of whom 1,400 are low-wage workers engaged on the heavy construction work connected with the modernization and expansion of the plant. Supplementary food is being provided for these workers and their families. These 1,400 workers could not previously afford an adequate diet and were not provided with a balanced meal at the works canteen. The funds, previously spent by the management, to cover basic dietary essentials for the daily meal such as bread and meat, are being used to meet the cost of vegetables and other protective foods to be served in the canteen. The improved diet which the workers receive is helping to increase their productivity.

320. The project was approved in July 1964; its total cost to WFP will amount to 430,000 dollars.

TURKEY - Assistance for the expansion of the nitrogen industry

321. The purpose of the project is to expand the nitrogen fertilizer plant at Kütahya. It is planned to increase production from 22,000 tons of nitrogen per year (corresponding to 110,000 tons per year of 20% N fertilizer) to 88,000 tons of nitrogen per year (corresponding to 440,000 tons per year of 20% N fertilizer). WFP is supplying food to provide a basic diet for the 1,200 unskilled workers who are engaged in the expansion program, and for their families. These workers are employed on land levelling, pipe laying and installation of machines and equipment. Food aid is given as a supplement to the cash wage and is intended to improve labour productivity by ensuring that the workers receive an adequate diet.

322. The project was approved in July 1964. Its total cost to WFP amounts to 554,000 dollars.

APPENDIX I

Text of
RESOLUTION 28/63 ON INDUSTRIALIZATION
adopted at the Twelfth Session of the FAO Conference
held in Rome from 16 November to 5 December 1963.

THE CONFERENCE

Recognizes the world-wide importance of industries based on the products of agriculture, fisheries and forestry, and their role in the economic development process, being capable of making a special contribution to economic growth in developing countries as well as often possessing high import-saving and export-earning potential:

Considers that

1. FAO's broad responsibilities in the field of food, agriculture, fisheries and forestry cannot be adequately discharged without increasing attention to ensuring remunerative outlets for the products of the farm, the forest and the sea, and also to the fulfilment of the nutritional needs of the people;

2. the proper management and development of renewable natural resources requires that there should be no divorce between responsibility for these resources and responsibility for the industries based upon them.

Reaffirms FAO's responsibility for advising and assisting Member Nations on the sound development of industries, either based on renewable natural resources, or designed to meet food and nutritional needs, and accordingly welcomes the degree of understanding in this regard already reached with the United Nations Commissioner for Industrial Development and the arrangements made for collaboration with the United Nations Industrial Development Centre, and hopes that this will be widened;

Recognizes that trends in the world forest and forest products economy may especially provide opportunities for many developing countries to expand their domestic industries and diversify their exports, thereby stimulating their economic development and helping to solve their pressing trade problems;

Requests the Director-General, in formulating his program of work and budget for 1966/67, to give particular attention to strengthening those aspects of the Organization's activities which can assist the developing countries to achieve a rapid and sound expansion of industries either based on renewable natural resources, or designed to meet food and nutritional needs.

APPENDIX II

LIST OF SELECTED FAO PUBLICATIONS ON INDUSTRIAL DEVELOPMENT ACTIVITIES RELATED TO AND BASED ON AGRICULTURAL, FORESTRY AND FISHERIES RESOURCES

SECTION I
General Matters: Policies, Planning, Commodities and Trade Development, Marketing, Rural Welfare, Credit, Co-operatives, Training, Extension, Research, Legislation, Statistics.

SECTION II
Food and Food Products Industries Including Those Based on Animal Products (see also Sections I and VI)

SECTION III
Industries Processing Agricultural Products other than Food (see also Sections I and VI)

SECTION IV
Forestry and Forest Industries Including Pulp and Paper (see also Sections I and VI)

SECTION V
Fisheries Industries (see also Sections I and VI)

SECTION VI
Industries for the Supply of Essential Requisites to Develop Agriculture, Animal Husbandry, Forestry and Fisheries.

SECTION VII
Industrial Activities Developed in Co-operation with Industry and Through the Freedom from Hunger Campaign (see also Sections I and VI)

SECTION I - GENERAL MATTERS: POLICIES, PLANNING, COMMODITIES AND TRADE DEVELOPMENT, MARKETING, RURAL WELFARE, CREDIT, CO-OPERATIVES, TRAINING, EXTENSION, RESEARCH, LEGISLATION, STATISTICS

State of Food and Agriculture (issued annually since 1947)

Commodity Policy Studies

(Several issues on a variety of commodities)

No. 12 (1960) National Dairy Policies in Advanced Countries
No. 16 (1964) International Commodity Arrangements and Policies
No. 17 (1964) Agricultural Commodity Trade and Development; Prospects, Problems and Policies: A Reference Paper.

Commodity Bulletins

On a number of commodities: Wheat; Livestock and Meat; Dairy Products; Poultry and Eggs; Vegetables and Fruits; Rice; Sugar; World Fibres Review; Fats and Oils; Feedstuffs; Fertilisers; Citrus and Dried

Fruits; Tobacco

No. 35 (1962) The Economics of Filled Milk; A Case Study
No. 36 (1962) The World Rice Economy (2 vols.)
No. 38 (1964) Synthetics and Their Effects on Agricultural Trade
No. 40 (1965) The World Meat Economy
No. 41 (1966) A Review of Cheese Production, Consumption and Trade in Some Developed Countries.

Commodity Reports

Several issues on: Cocoa; Fats and Oils; Fertilisers; Fibres (Wool, Hard Fibres, Jute, Carpet Wool, Silk); Grain; Rice; Sugar; Tea; etc.

Commodity Reference Series

No. 2 (1963) Bibliography on the Analysis and Projections of Demand and Production, 1963.
No. 3 (1965) The World Rice Economy in Figures, 1909 - 1963

FAO Commodity Review (special supplement)

Trade in Agricultural Commodities in the United Nations Development Decade. Vol. 1, Part III: Trade in Processed Agricultural Commodities

SOFA 1966, Chapter IV, pp.166-172. Rice in the World Food Economy. Processing and Storage.

FAO Rice Report 1965, pp.26-32. Some Economic Features of Rice Milling Industries in Developing Countries.

FAO Study Group on Rice

Economic Aspects of Rice Processing Industries - CCP/Rice/65/4
Economic Aspects of Rice Processing Industries - CCP/Rice/65/4, Suppl.No.1.
Economic Aspects of Rice Processing: Utilization and Trade in Rice Bran - - CCP/Rice/64/3
Characteristics of Rice By-Products: Germany - CCP/Rice/61/7
A Summary of the Utilization of Rice and its By-Products in Industrial and Animal Feeding Usage and in the United States - CCP/CRI/59/8
Rice and By-Products used for Industrial and Animal Feed Purposes in Japan - CCP/CRI/59/12

FAO Study Group on Grains

Economic Survey of Modern Flour Mills in Developing Countries, and some Policy Implications - CCP/GR 66/7
The Effects on Trade in Wheat and Wheat Flour of Establishing Flour Mills in Less Developed Countries - CCP/Grains-Rice/8

FAO Study Group on Oilseeds, Oils and Fats

Economic Aspects of the Location of Oilseed Crushing Industries - CCP: OF66/12
The Location of Oilseed Crushing Industries: Case Studies in Nigeria, the Philippines, Fiji, Senegal, Japan, New Guinea, Sudan - CCP: OF 66/12/1 to 7

FAO Study Group on Jute, Kenaf and Allied Fibres

Jute Manufactures in Developing Countries - CCP/Jute/64/3
Problems Connected with the Establishment of Jute Textile Mills - CCP/Jute/64/4
Data on the Investment Required for an Integrated Spinning and Weaving Mill in Western Europe - CCP/Jute/64/10

FAO Committee on Commodity Problems

The Economic Impact of Dairy Development in Developing Countries - CCP 66/11/2
The Economic Impact of Dairy Development in Developing Countries: Case Studies in Kenya, Ethiopia, United Arab Republic, Iraq, Turkey, Iran, India, Ceylon, Poland - CCP 65/Working Papers Nos. 1 to 9.

World Food Program Studies

Several issues on: Planning, Operational and Administrative Problems
(1964) Food Aid: A Selective Annotated Bibliography on Food Utilization for Economic Development

World Food Problems

No. 3 (1960) Fish: The Great Potential Food Supply
No. 5 (1964) Protein: At the Heart of the World Food Problem

FAO Marketing Guides

No. 1 (1958) Marketing Problems and Improvement Programs
No. 2 (1957) Marketing Fruits and Vegetables
No. 3 (1960) Marketing Livestock and Meat
No. 4 (1961) Marketing Eggs and Poultry
No. 5 (in preparation) Agricultural Marketing Boards: Their Establishment and Operation

Other Reports

(1961) Livestock and Meat Marketing in Africa
(1963) Hides and Skins Marketing in Africa and the Near East
(1964) Marketing of Staple Food Crops in Africa
FAO Bibliography of Food and Agricultural Marketing

Freedom from Hunger Campaign Basic Studies

(1962) Marketing: Its Role in Increasing Productivity
(1963) Possibilities of Increasing World Food Production
(1964) Third World Food Survey

FAO Agricultural Studies

No. 7 (1949) Better Utilisation of Milk
No. 23 (1953) Milk Pasteurisation: Planning, Plant Operation and Control
No. 27 (1949) Essentials of Rural Welfare
No. 29 (1950) Training Rural Leaders
No. 46 (1959) Agricultural Credit in Economically Under-developed Countries
No. 50 (1960) Improvement of Olive Production
No. 52 (1960) Joint FAO/WHO Expert Committee on Milk Hygiene: Second Report
No. 58 (1962) Second Report of the Joint FAO/WHO Expert Committee on Meat Hygiene
No. 63 (1964) World Cocoa Survey

FAO Agricultural Development Papers

No. 1 (1949) Fertiliser Manufacturing Projects: Their Planning and Financing
No. 15 (1951) Use of the Revolving Capital Plan by Co-operative Associations
No. 16 (1952) Agricultural Credit for Small Farmers
No. 24 (1953) FAO Advisory Assistance to Member Countries under the UNRRA Transfer Fund
No. 29 (1955) Organization of Agricultural Research in Europe
No. 34 (1953-1961) Co-operative Thrift, Credit and Marketing in Economically Underdeveloped Countries
No. 36 (1963) Report of the Meeting on Fertiliser Production, Distribution and Utilisation in Latin America
No. 39 (1953) Report of the Third Meeting of the Working Party on Fertilisers
No. 47 (1955) Manual of Supervised Agricultural Credit in Latin America
No. 48 (1955) Report of the Fourth Meeting of the Working Party on Fertilisers
No. 50 (1955) Legislation of Fertilisers in Latin America
No. 59 (1956) The Principles of Milk Legislation and Control
No. 69 (1960) Manual de Practicas Cooperativas para el Agro de America Latina
No. 73 (1962) Guide to Methods and Procedures of Rural Credit Surveys
No. 74 (1962) Training and Extension in the Co-operative Movement
No. 77 (1964) New Approach to Agricultural Credit
No. 79 (1964) Rural Sociology in Action

Informal Working Bulletins in the FAO Agricultural Engineering Series

No. 12 Planning and Organization of Projects for the Improvement Work on Hand and Animal Operated Farm Implements
No. 22 The Potentialities for Rural Electrification in Asia and the Far East

FAO Fisheries Studies

No. 2 (1953) Commodity Standards for Fisheries Products

No. 9 (1960) Financial Assistance Schemes for the Acquisition or Improvement of Fishing Craft
No. 10 (1961) Costs and Earnings Investigations of Primary Fishing Enterprises
No. 11 (1964) Financial Assistance Policies and Administration for Fishery Industries

FAO Forestry and Forest Products Studies

No. 1 (1950) Planning a National Forest Inventory
No. 2 (1950) Forest Policy, Law and Administration
No. 4 (1953) Grazing and Forest Economy
No. 5 (1953) Elements of Forest Fire Control
No. 7 (1953) Forestry Abstracts Coverage List
No. 8 (1953) National Forest Policies in Europe
No. 9 (1953) Research in Forestry and Forest Products
No. 10 (1953) Directory of Forestry Schools
No. 11 (1955) Eucalypts for Planting
No. 12 (1958) Poplars in Forestry and Land Use
No. 13 (1958) Tropical Silviculture (3 volumes)
No. 14 (1960) Pinus Radiata
No. 15 (1962) Forest Influences
No. 16 (1962) Genetics of Forest Tree Improvement

Periodicals and Yearbooks

The State of Food and Agriculture (issued annually since 1947)
The FAO Commodities Review (issued annually since 1961)
Production and Trade Yearbooks (1947 and following years)
FAO Plant Protection Bulletins
Animal Health Yearbook
Monthly Bulletin of Agricultural Economics and Statistics
Cocoa Statistics plus Monthly Supplement
World Fisheries Abstracts
Unasylva
Timber Statistics for Europe
Timber Bulletin for Europe
Yearbook for Forest Products Statistics
Yearbook of Fishery Statistics (several volumes: Production; Internatio
International Trade; Fishing Craft; Fishery Commodities)
Current Bibliography for Aquatic Sciences and Fisheries
Food And Agriculture Legislation
Current Food Additives Legislation
Coconut Situation, bi-annual

FAO Nutritional Studies

No. 2 (1949) Synthetic Fats
No. 12 (1954) Rice Enrichment in the Philippines
No. 17 (1959) Milk and Milk Products in Human Nutrition

FAO Food Additive Control Series

Nos. 1 - 7 Food Additive Control in Selected Countries

FAO Legislative Series

No. 4 (1963) Animal Feedstuffs: Regulations Governing their Manufacture and Sale in European Countries
No. 4 Informal Working Bulletin in the Agricultural Engineering Series: Legislation Affecting Farm Building Design

Miscellaneous

(1950) A Survey of Oils and Fats in Guatemala
(1950) Progress and Economic Problems in Farm Mechanization
(1955) Methods of Collecting Current Agricultural Statistics
(1957) International Directory of Agricultural Engineering Institutions
(1959 and subsequent years) National Grain Policies (with various supplements)
(1960) An Enquiry into the Problems of Agricultural Price Stabilization and Support Policies
(1960) Technical Conversion Factors for Agricultural Commodities
(1960) Multilingual Vocabulary and Notation for Fishery Dynamics
(1962) Agricultural Commodities: Projections for 1970
(1963) Report of the World Food Congress
Reports of the Committee on Commodity Problems and its Commodity Study Groups
(1964) Fertilizers: An Annual Review of World Production, Consumption and Trade, 1963
(1964) Report of the Joint Symposium on Industrial Feeding and Canteen Management in Europe

SECTION II - FOOD AND FOOD PRODUCTS INDUSTRIES INCLUDING THOSE BASED ON ANIMAL PRODUCTS (see also Sections I and VI)

FAO Agricultural Studies

No. 7 (1949) Better Utilization of Milk
No. 12 (1950) Some Aspects of Food Refriperation and Freezing
No. 23 (1953) Milk Pasteurization: Planning, Plant operation and Control
No. 34 (1957) Meat Hygiene
No. 38 (1958) Advances in Cheese Technology
No. 59 (1963) Milk Plant Layout
No. 60 (1963) Processing of Raw Cocoa for the Market
No. 65 (1965) Milk Sterilization

FAO Agricultural Development Papers

No. 27 (1953) Equipment for the Processing of Rice
No. 54 (1956) Processing of Cassava and Cassava Products in Rural Industries
No. 58 (1956) Olive Oil Processing in Rural Mills
No. 59 (1956) The Principles of Milk Legislation and Control
No. 63 (1958) Copra Processing in Rural Industries
No. 70 (1960) Meat Handling in Underdeveloped Countries: Slaughter and Preservation
No. 72 (1962) Dates: Handling, Processing and Packing

Equipment for Rice Production (in preparation)

Miscellaneous

(1957) Illustrated Glossary of Rice Processing Machines
(1965) The Technology of Fish Utilization

Freedom from Hunger Campaign Basic Studies

No. 1 (1961) Weather and Food (World Meteorological Organization)
No. 2 (1962) Development through Food: A Strategy for Surplus Utilization
No. 4 (1962) Marketing: Its Role in Increasing Productivity
No. 7 (1962) Population and Food Supply (United Nations)
No. 9 (1962) Increasing Food Production through Education, Research and Extension
No. 10 (1963) Possibilities of Increasing World Food Production
No. 11 (1963) Third World Food Survey
(1963) Report of the World Food Congress

Informal Working Bulletins

No. 21 Portable Equipment for Sampling and Temperature Measurement of Bulk Grain
No. 23 Rice Drying: Principles and Techniques
No. 24 Some Essential Considerations on the Storage of Food Grains (Cereals, Legumes and Oilseeds) in Tropical Africa

FAO Marketing Guides

No. 2 (1957) Marketing Fruit and Vegetables
No. 3 (1960) Marketing Livestock and Meat
No. 4 (1961) Marketing Eggs and Poultry

SECTION III - INDUSTRIES PROCESSING AGRICULTURAL PRODUCTS OTHER THAN FOOD (see also Sections I and VI)

FAO Agricultural Studies

No. 60 (1963) Processing of Raw Cocoa for the Market

FAO Agricultural Development Papers

No. 12 (1951) Equipment for the Processing of Tea
No. 25 (1953) Equipment for the Ginning of Cotton
No. 26 (1953) Equipment for the Processing of Long Vegetable Fibres
No. 49 (1955) Flaying and Curing of Hides and Skins as a Rural Industry
No. 68 (1960) Rural Tanning Techniques
No. 75 (1963) Processing and Utilization of Animal By-products

Informal Working Bulletins

No. 20 The Processing of Coffee

SECTION IV - FORESTRY AND FOREST INDUSTRIES INCLUDING PULP AND PAPER (see also Sections I and VI)

FAO Forestry and Forest Products Studies

No. 3 (1952) Tropical Woods and Agricultural Residues as Sources of Pulp: A Symposium
No. 6 (1953) Raw Materials for More Paper: Pulping Processes and Procedures Recommended for Testing
No. 9 (1953) Research in Forestry and Forest Products
No. 11 (1955) Eucalyptus for Planting
No. 12 (1958) Poplars in Forestry and Land Use

No. 14 (1966) Forest Statistics

FAO Forestry Development Papers

No. 7 (1955) Report of the Third Conference on Wood Technology

Forest Industries Economics and Statistics

(1954) World Pulp and Paper Resources and Prospects (FAO/UNESCO/ECE/ECLA)
(1954) Possibilities for the Development of the Pulp and Paper Industry in Latin America (FAO/ECLA)
(1955) Pulp and Paper Prospects in Latin America (FAO/ECLA)
(1958) World Forest Products Statistics 1946-1955; A Ten-year Summary
(1958) Fibreboard and Particle Board (2nd printing 1959); 3rd printing 1963)
(1960) World Demands for Paper to 1975 (2nd printing 1961)
(1961) Timber Trends and Prospects in the Asia-Pacific Region (FAO/ECAFE)
(1962) Pulp and Paper Prospects in Asia and the Far East: 2 volumes (FAO/ECAFE)
(1963) Pulp and Paper Prospects in Western Europe. Published by BLV Verlagsgesellschaft, Munich 1963, by arrangement with FAO
(1963) Pulp and Paper in Latin America: Present Situation and Future Trends of Demand, Production and Trade (FAO/ECLA/BTAO)
(1963) Latin American Timber Trends and Prospects (FAO/ECLA)
(1964) European Timber Trends and Prospects: A New Approach 1950-1975
(1966) Wood: World Trends and Prospects (Unasylva Vol. 20, 1-2 1966)
(1966) World Forest Inventory 1963. (This volume is the fourth in a series of quinquennial enquiries on the forest resources of the world)
(1966) Yearbook of Forest Products Statistics
(1966) World Forest Products Statistics 1954-1963 (A Ten Year Summary)
(1966) Pulp and Paper Development in Africa and the Near East (FAO/ECA)
(1966) Plywood and Other Wood-based Panels
(1966) Timber Trends and Prospects in Africa (FAO/ECA)

Miscellaneous

(1958) Asia-Pacific Regional Grading Rules for Teak Squares
(1959) Asia-Pacific Regional Rules for Teak Logs
(1959) Asia-Pacific Regional Grading Rules for Hardwood Logs other than Teak
(1959) Asia-Pacific Regional Grading Rules for Sawn Hardwood Timber (not Teak)
(1960) Standard Nomenclature of the Exportable Timbers of the Asia-Pacific Region
(1962) Forest Seed Directory 1961

Periodicals

Unasylva
Timber Statistics for Europe
Timber Bulletin for Europe
Yearbook of Forest Products Statistics

SECTION V - FISHERIES INDUSTRIES (see also Sections I and VI)

FAO Fisheries Studies

No. 1 (1949) Salted Cod and Related Species
No. 2 (1953) Commodity Standards for Fisheries Products

Periodicals

World Fisheries Abstracts
(1952) Supplement: Fisheries Technology Literature
FAO Fisheries Bulletin
Yearbook of Fishery Statistics

Miscellaneous

(1960) Trilingual Dictionary of Fisheries Technological Terms: Curing
General Fisheries Council for the Mediterranean. Proceedings and Technical Papers

SECTION VI - INDUSTRIES FOR THE SUPPLY OF ESSENTIAL REQUISITES TO DEVELOP AGRICULTURE, ANIMAL HUSBANDRY, FORESTRY AND FISHERIES

The State of Food and Agriculture (issued annually since 1947)

FAO Agricultural Studies

No. 2 (1948) Preservation of Grains in Storage
No. 6 (1949) Storing and Drying Grains, in Canada, in the United States, in the United Kingdom
No. 8 (1949) Rinderpest Vaccines
No. 9 (1949) Efficient Use of Fertilisers
No. 12 (1950) Some Aspects of Food Refrigeration and Freezing
No. 43 (1958) The Efficient Use of Fertilisers
No. 55 (1961) Agricultural and Horticultural Seeds
No. 56 (1961) Manual of Fumigation for Insect Control

FAO Agricultural Development Papers

No. 5 (1950) Essential Considerations in Mechanisation of Farming
No. 7 (1950) Results of Co-operative Hybrid Maize Tests in Europe, 1949: A Progress Report
No. 10 (1951) Equipment for Cleaning and Grading Grains and Seeds
No. 11 (1951) Report of the First Meeting of the Working Party on Fertilisers
No. 12 (1951) Equipment for the Processing of Tea
No. 25 (1953) Equipment for the Ginning of Cotton
No. 26 (1953) Equipment for the Processing of Long Vegetable Fibres
No. 27 (1953) Equipment for the Processing of Rice
No. 31 (1952) Co-operative Hybrid Maize Tests in European and Mediterranean Countries,(1950)
No. 32 (1953) Small Farm Implements
No. 35 (1953) Co-operative Hybrid Maize Tests in European and Mediterranean Countries, (1951)
No. 37 (1953) Report of the Second Meeting of the Working Party on Fertilisers
No. 39 (1953) Report of the Third Meeting of the Working Party on Fertilisers
No. 42 (1955) Co-operative Hybrid Maize Tests in European and Mediterranean Countries (1952)
No. 44 (1964) Considerations and Procedures for the Successful Introduction of Farm Mechanisation
No. 48 (1954) Report of the Fourth Meeting of the Working Party on Fertilisers
No. 51 (1955) Problems of Animal Feeding in Europe
No. 60 (1956) Water-Lifting Devices for Irrigation
No. 62 (1958) Hybrid Maize Breeding and Seed Production

No. [illegible] Sprinkling
No. [illegible] Agricultural Machinery Workshops: Design, Equipment and Management
No. [illegible] (1960) Farm Implements for Arid and Tropical Regions
No. 78 (1964) Methods and Machines for Tile and other Tube Drainage

Equipment for Rice Production (in preparation)

Informal Working Bulletins in the FAO Agricultural Engineering Series

No. 11 Methods and Machinery for Harvesting, Threshing, Cleaning and Grading of Forage Seeds
No. 15 Methods and Equipment for Rice Testing
No. 16 Possibilities for the Utilisation of Solar Energy in Under-developed Rural Areas
No. 17 Windmills for Water Lifting and the Generation of Electricity on the Farm
No. 21 Portable Equipment for Sampling and Temperature Measurement of Bulk Grain
No. 23 Rice Drying: Principles and Techniques
No. 24 Some Essential Considerations on the Storage of Food Grains (Cereals, Legumes and Oilseeds) in Tropical Africa
No. 26 Aircraft in the Mechanisation of Agricultural Production

FAO Forestry Development Papers

No. 1 (1954) Tractors for Logging
No. 3 (1954) Forest Plantations Protection against Diseases and Insect Pests
No. 4 (1955) Handling Forest Tree Seed
No. 5 (1955) Tree Seed Notes: I Arid Areas; II Humid Tropics
No. 8 (1956) Tree Planting Practices in Tropical Africa
No. 10 (1956) Tree Planting Practices in Temperate Asia: Japan
No. 11 (1957) Tree Planting Practices in Tropical Asia
No. 13 (1958) Choice of Tree Species for Planting
No. 14 (1959) Tree Planting Practices in Temperate Asia: Burma, India, Pakistan
No. 15 (1960) Practicas de Plantacion Forestal en America Latina
No. 16 (1963) Tree Planting Practices for Arid Areas

Forestry Equipment

(1955) Directory of Wheel and Tract-type Tractors Produced throughout the World
(1957) Log Saw Catalogue
(1958) Catalogue of Mechanical Saws for Felling and Bucking
(1959) Catalogue of Portable Wood Chippers
(1960) Catalogue of Tree-Planting Machines
(1960) Catalogue of Debarking Machines
(1962) Directory of Wheel and Crawler Tractors Produced Throughout the World
Forestry Equipment Notes (recent issues; Hydraulic Baling Presses; Vacuum Pressure Plant; Mobile Chipper).

FAO Fisheries Studies

No. 7 (1957) Electrical Fishing
No. 9 (1960) Financial Assistance Scheme for the Acquisition or Improvement of Fishing craft.

Miscellaneous

(1952) World List of Plant Breeders
(1950 - 1959) World Catalogue of Genetic Stocks (Wheat, Rice, Barley)
(1959) International Directory of Agricultural Engineering Institutions (second edition 1962)
(1955 - 1959) Fishing Boat Tank Tests Part I and II
(1960) Fishing Boats of the World
(1964) Modern Fishing Gear of the World
(1950 - 1961) World Fisheries Abstracts
Yearbook of Fishery Statistics (several volumes: Production and Fishing Craft)
General Fisheries Council for the Mediterranean, Proceedings and Technical Papers (1952 - 1966)
(1965) Fishing Vessel Data
(1965) Research Vessel Data
(1965) FAO Catalogue of Fishing Gear Designs

SECTION VII - INDUSTRIAL ACTIVITIES DEVELOPED IN CO-OPERATION WITH INDUSTRY AND THROUGH THE FREEDOM FROM HUNGER CAMPAIGN (see also Sections I and VI)

Freedom from Hunger Campaign Basic Studies

No. 8 (1962) Aspects of Economic Development: The Background to Freedom from Hunger (United Nations)
No. 12 (1963) Malnutrition and Disease: A Major Problem of the Human Race (World Health Organization)
No. 13 (1963) National Development Efforts (United Nations)
No. 14 (1963) Hunger and Social Policy (International Labour Organization)
No. 15 (1963) Education and Agricultural Development (UNESCO)

APPENDIX III

POLICIES AND PLANNING, ECONOMIC, SOCIAL AND INSTITUTIONAL ASPECTS AND PROBLEMS OF INDUSTRIAL DEVELOPMENT BASED ON RENEWABLE NATURAL RESOURCES

(list of selected current field projects for which FAO is providing assistance upon Government request)

ALGERIA

FAO/UNDP-TA

- Fisheries Co-operatives (Marketing, Co-operative and Credit, Training and Demonstration Education Research)

BURUNDI

FAO/UNDP-SF

- Rural Polytechnic School, Karusi

CHILE

FAO/UNDP-TA

- Livestock Management and Marketing

Meat marketing in Chile was hampered mainly by antiquated slaughterhouses and means of transportation. Because of limited capital resources and expertise the Government is co-operating with private enterprise to promote the countrywide construction or modernization of slaughterhouses, freezing plants and cold stores. The Government organization (CORFO) is assisted financially by the World Bank and technically by an FAO livestock and meat marketing expert whose chief duties are to advise on the siting, scale, layout, and economic viability of facilities for cattle, sheep, pigs and poultry. This project (which forms part of the National Livestock Development Plan) began in February 1964 and has just been completed. Total investment (spread over 10 years) will be US $4,350,000.

COLOMBIA

FAO/UNDP-SF

- Institute for Training and Research in Agricultural Marketing (ILMA) Bogota.

The Institute completed in March this year a feasibility study for the enlargement of the grain storage network operated by the Colombian National Supply Institute (INA). Based on engineering designs and plans of grain elevators and warehouses drawn up by INA, the ILMA/FAO research team's survey concluded that the capital cost of slightly more than US $11 million would be covered within twelve years by savings due to bulk handling alone; the potential reduction of storage losses was estimated to save an additional $1.2 million annually.

CONGO

FAO/UNDP-TA

- Agricultural Research and Education

DAHOMEY

FAO/UNDP-TA

- Assistance to Produce Marketing Board (OCAD)

Among the functions of OCAD (which, since August 1963 and continuing to end 1968, is being closely assisted by an FAO marketing expert) are provision and operation of processing and storage facilities, chiefly for maize and groundnuts. Investigations are currently being conducted for construction of silos to hold 3,000 tons of maize; two groundnut shelling plants ($33,000) and a warehouse ($32,000) - to be financed by the Fonds Europeen de Developpement and handling the total crop of North Dahomey - are to be constructed shortly; a pilot cashew decorticator is under consideration.

ETHIOPIA

FAO/UNDP-TA

- Technical Director Coffee Board

GREECE

FAO/Funds-in-Trust

- Fruit and Vegetable Packing and Processing

The FAO marketing expert (October 1965-October 1966) is surveying the marketing channels, packing stations, cold storage depots, transport and handling facilities from the main producing areas (chiefly peaches, apples, citrus, grapes, apricots, onions, tomatoes). While many plans exist for expansion of processing facilities they are frequently uncoordinated and pay insufficient regard to problems of raw material supply and the ultimate market. FAO is stressing the importance of rational planning, the suitability of varieties for processing, ensuring a regular through-put of standard qualities, an economic scale of operation, and the orientation of production towards particular market opportunities. The results of this mission, combined with other FAO specialist reports (such as post-harvest physiology) will have an important bearing on the future progress of the Greek fruit and vegetable industry, particularly in export markets.

- Livestock and Meat Marketing

FAO/Funds-in-Trust

An FAO Livestock Marketing Economist is collaboration with a slaughterhouse engineer is presently (from November 1965 for one year) advising on the location, scale and operation of abattoirs. Greece has an extensive net work (about 165) of small slaughterhouses; only 4 produce more than 2,000 tons of meat annually; their equipment is mostly old and technically inefficient. Recommendations will be made for rationalising slaughterhouse improvement and new construction, which would be financed chiefly by local authorities but under guidance from the central government. (See also Appendix IV).

IRAN

FAO/UNDP-TA

- Supply Food Planner

JORDAN — FAO/UNDP-SF

- Centre for Research, Demonstration and Training in Agricultural Marketing, Amman

  A central activity of this project is the pilot demonstration of a citrus and two tomato packing plants. Commencing in October 1964 and scheduled to last 4 years the Centre has a staff of seven FAO experts with local counterparts; it is training Jordanians in all aspects of grading, among other duties, packing and transporting fruit and vegetables, including pre-cooling and refrigeration. Packing line equipment is currently being installed and will commence operation on behalf of local co-operative societies shortly. Total cost of this project is US $994,000, but successful operation of the pilot plants would lead to further construction on similar lines. Output is expected to be directed mainly towards export markets.

KENYA — FAO/UNDP-TA

- Dairy and Veterinary Education and Research

- Agricultural Marketing Research Economist — FAO/UNDP-TA

LEBANON — FAO/UNDP-TA

- Agricultural Marketing Research

- Forestry Education, Training and Research — FAO/UNDP-SF

LIBERIA — FAO/UNDP-SF

- College of Forestry, Monrovia

- Agricultural Training and Research — FAO/UNDP-SF

LIBYA — FAO/UNDP-TA

- Co-operatives and Credit, Education and Research

MAURITIUS — FAO/UNDP-TA

- Adviser to the Agricultural Marketing Board and Co-operative Marketing

MEXICO — FAO/UNDP-TA

- Industrial Fish Management

NIGER — FAO/UNDP-SF

- Development of Animal Production and Water Resources

  An FAO team of two are currently investigation the economics of alternatively tracking/transporting live animals to the Nigerian markets, or slaughtering in South Niger and transporting the meat in refrigerated trucks.

PERU

FAO/UNDP-TA

- Preparation, Evaluation, Planning of Agricultural Development Projects

SOMALIA

FAO/UNDP-SF

- Grain Marketing, Storage and Price Stabilization

With a view to encouraging the local production of grains (chiefly maize and sorghum) the Government, with FAO assistance is setting up a marketing organization which in the first instance, for a period of 5 years, will purchase, clean, store and resell produce on a demonstration basis. When fully operational (estimated to be September this year) the project will employ eight specialists plus local counterparts. Total cost of stores (13,000 tons) equipment and staff will exceed US $2 million. Additional finance will be sought from the Federal German Republic and the EEC development fund. Working capital will in part be obtained through supplies of grains from the World Food Program, which will use this project to investigate the problems and effectiveness of price-stabilization through the manipulation of buffer stocks. The project will ultimately be expanded to provide a grain marketing service to the whole country.

SYRIAN ARAB REPUBLIC

FAO/UNDP-SF

- Agricultural Research Station, Damascus

TUNISIA

FAO/FFHC

- North African College for Agricultural Engineering

This FAO operated FFHC project was initiated in July 1969, and during 1965 the training session accommodated 38 students in well converted buildings. The FAO recruited staff with 5 instructors, including the project manager, 2 Peace Corps volunteers and one Associate Expert soon will be completed with a 6th instructor (soil and moisture conservation). The building conversion now under way will provide internal accommodation for 55 students for the 1966/67 session. Church groups in Germany, England and the U.S.A. have contributed $520,000 through the Council of Churches, whilst the Government contributes $1.5 million. The college has 50 percent of its place reserved for students from neighbouring French speaking countries, Algeria and Morocco.

UNITED ARAB REPUBLIC

FAO/UNDP-SF

- Development of a Regional Agricultural Research Station at Sakha

ASIA AND FAR EAST REGION

- Regional Fisheries Statistician	FAO/UNDP-TA
- Agricultural Research and Development	FAO/UNDP-TA
- Joint FAO/ILO Forest Workers Training Centre	FAO/UNDP-TA
- Regional Dairy Training Centre	FAO/UNDP-TA

LATIN AMERICAN REGION

- Training Centre, Seminar on Marine Resources Appraisal (with ECLA and UNESCO)	FAO/UNDP-TA
- Training Centre, Seminar on Management Problems of Agricultural Cooperatives (with ILO, OAS and OCA)	FAO/UNDP-TA
- Joint FAO/ILO Forest Workers Training Centre	FAO/UNDP-TA
- Latin American Regional Dairy Training Centre	FAO/UNDP-TA
- Inter-American Institute of Agricultural Science	FAO/UNDP-SF

NEAR EAST REGION

- Near East Forest Rangers School	FAO/UNDP-TA
- Seminar on Industrial Feeding (with ILO and WHO)	FAO/UNDP-TA
- Dairy Development Training Centre	FAO/UNDP-TA
- Dairy Course at Dalum Agricultural School	FAO/UNDP-TA
- Dairy Training and Demonstration Course for Near East and Mediterranean Countries (including participants in the Dairy Course at the Dalum Agricultural School)	FAO/UNDP-TA

INTER-REGIONAL

- Training Centre on Fishermen's Training	FAO/UNDP-TA
- Seminar/Study Tour for Scientists from Developing Countries on Inland Fisheries Research and Management and Fish Culture	FAO/UNDP-TA
- Study Tour on Grain Storage	FAO/UNDP-TA
- Training Centre on Production, Certification and Multiplication of Seed	FAO/UNDP-TA
- Training Centre in Slaughterhouse Development	FAO/UNDP-TA
- Course on Forest Seed and Tree Improvement	FAO/UNDP-TA
- Training Centre in Denmark on Marketing of Mediterranean Vegetables, Fruits and Flowers	FAO/UNDP-TA

APPENDIX IV

FOOD AND FOOD PRODUCTS INDUSTRIES INCLUDING THOSE BASED ON BOTH ANIMAL AND PLANT PRODUCTS

(list of selected current field projects for which FAO is providing assistance upon Government request)

ALGERIA

FAO/RP/UNICEF

- Protein-rich Food Industry Development

FAO, in co-operation with UNICEF assisted in the development of a protein-rich weaning food. It is expected that the production line, financed by UNICEF, now under construction, will be operating by the end of this year in one of the Algerian plants processing pasta. Commerical production, promotion for use and marketing activities will continue to receive FAO assistance.

ARGENTINA

FAO/UNDP-SF

- Milk Plant Project Development in an Agricultural Diversification Project

FAO made available a short-term consultant to advise on a small milk plant project to process milk now becoming available in the Viedma area, as a result of recommendations made in the SF project on agricultural diversification.

BURUNDI

FAO/UNDP-TA

- Dairy Industry Development

FAO made available a dairy technologist to assist in the organization of a small milk plant for processing of liquid milk and manufacture of butter and cheese.

BOLIVIA

FAO/FFHC

- Vegetable Oil Extraction Plant, San Ignacio, East Bolivia

In the large region of Chiquitos many oil plants are thriving, but remain unused in spite of their great value for the production of vegetable oils for human consumption. At present the fats for cooking are provided from animal sources. The purpose of this FAO sponsored project is to provide expert's knowledge and the equipment to install a small pilot oil extraction plant in San Ignacio, and to train local technicians in its best use and maintenance. The FFHC contribution from Upper Austria amounts to $10,000.

BRAZIL

FAO/UNDP-SF

- Tropical Centre of Food Research and Technology Campinas, Sao Paulo

The purpose of this project (initiated December 1964 and to be completed in 1969) is to contribute to the development of the Tropical Centre of Food Research and Technology through the establishment of its Vegetable Products Sections. The Centre is to become a permanent national institution for the promotion and development of food storage and processing and will provide research and testing services as well as training in food technology for public and private industrial enterprises throughout Brazil.

Seven FAO specialists in food technology and processing of industrial food, edible vegetable oil, in chemical analysis, juices and concentrates of fruits and vegetables and microbiology of foods, for a total of 180 man-months have been assigned to the project. In addition 180 man-months of fellowships are available for this project.

The equipment to be provided for this project amounts to $308,000. The SF allocation is $772,200 and the Government counterpart contribution amounts to $2,170,349.

BRITISH HONDURAS

FAO/UNDP-TA

- Rice Processing Development

The objectives for the FAO expert are to survey the main rice producing areas of the country in the Belize and Toledo Districts, and to investigate the efficiency of the present rice milling facilities in the Belize District and suggest possible improvements. Finally to advise the Government on a suitable location and type of equipment necessary for the possible establishment of milling facilities in the Toledo District.

CENTRAL AFRICAN REPUBLIC

FAO/UNDP-TA

- Dairy Industry Development

FAO is advising on milk plant management and dairy technology with particular emphasis on butter and cheese making.

CEYLON

FAO/UNDP-TA

- Survey Food Industries

A FAO consultant will be conducting the survey during the last part of 1966.

- Rice Milling

FAO/UNDP-TA

The FAO expert's main objective is to determine the most appropriate milling and parboiling methods, in order to obtain high processing yields, both with regard to quality and quantity of products and by-products.

The FAO expert will demonstrate the advantages deriving from modern processing plants, versus out-dated mills and huller-type mills, conducting comparative trials, thus to provide general advice to the Government on improvement and development programs related to rice storage, processing and marketing.

CHAD

FAO/FFHC

- Installation of a Poultry Breeding Centre in Ft. Archambault and of a Rendering Plant for Slaughterhouse Offals in Ft. Lamy

This project is included in the Government Five-Year Plan. FAO experts will install equipment for the rendering of slaughterhouse by-products in order to process blood, meat and bone meal, and mixed feed for the poultry industry. Furthermore, a Centre is being established with a capacity for 1,300 breeding hens, and 6,000 egg incubation equipment. This Centre also will accommodate 10-15 trainees, for a training and demonstration program which includes poultry husbandry, reproduction of improved poultry breeds and training of local technicians in the operation of the by-products processing plant. The project has been initiated in 1965 and intends to be completed in 1969. Financing is by FFHC donations from Switzerland (US$195,000) whilst the Government contributes $198,000.

CHILE

FAO/UNDP-SF

- Institute of Food Science and Technology, Santiago

The purpose of this project (initiated 30 April 1965 and expected to be completed by 30 April 1968), is to strengthen existing facilities in the University of Chile in the field of food technology in order to serve the country's food processing industries through research, training, quality control, and technical advice.

The Institute has been established in the Faculty of Agriculture in the University of Chile. The pilot plants and control laboratories are located in the farm "La Rinconada", Maipú, (Department of Technology and Chemistry), situated at 30 km. from Santiago. This is the central headquarters of the Institute. Applied research concerning food chemistry and biochemistry is carried out in the laboratories situated in Santiago (Department of Bromatology, Nutrition and Toxicology of the University). The activities of both sectors will complement each other; in the central headquarters studies are undertaken directly related to the production and industrialization of food products; in the laboratories in Santiago scientific and technical studies are carried out into the relevant processes and production. The research work of the Institute is directed towards the solution of technical problems related to the processing of food products in the various parts of the country, with emphasis on quality improvement and reduction of costs. Investigations are also undertaken to develop the use of cheap and little used food resources (particularly those rich in protein) in order to help solve national nutritional problems. An information service through meetings, publications and demonstrations is also developed.

In addition to conducting academic courses comprising various subjects of food technology, the Institute is training managers and technical and supervisory personnel employed in the food industry by means of short courses, field work and demonstrations.

The international experts FAO has provided for this project include 3 food technologists, 1 food microbiologist, specialists in quality and acceptability analysis of manufactured foods, thermal sterilization and formulation of new products, manufacturing of meat products, organisation of food technology courses and short-term consultants in marketing, for a total of 156 man-months. In addition, 84 man-months of fellowships are provided for this project and about $121,000 of equipment and supplies.
SF allocation is $474,400 and the Government counterpart contribution amounts to $748,607.

CHILE

FAO/UNDP-TA

- FAO Regional Dairy Training Course for Spanish Speaking Countries in Latin America

- Dairy Industry Development

FAO/UNDP-TA

FAO is assisting in dairy technology and advises on management problems with special emphasis on cheese making and milk powder manufacture. The expert also advises on existing FAO/UNICEF-assisted milk plants in Chillán and Valdivia.

CHINA (TAIWAN)

FAO/UNDP-SF

- Food Processing Institute, Taipei

The purpose of the project (initiated in 1966, to be completed in 1970) is to expand the activities of the laboratory that has been set up for advisory service to a full scale Food Processing Institute with a view to improving the efficiency and output of the country's food processing industries and to co-ordinate the efforts and activities of other pertinent agricultural industrial and commercial agencies towards this end.

In particular the project will:
(a) carry out applied research to help the industry develop new products, to introduce new processing methods and to improve the quality of present processed foods;
(b) carry out advisory services to the Government and food industry regarding the needs for government measures and the training of personnel in pertinent government and industry agencies;
(c) organize demonstrations and training seminars to improve the efficiency of management at all levels;
(d) carry out feasibility studies to advise on product development and new processing procedures;
(e) carry out economic evaluations of potential markets, with special emphasis on exports.

During the first phase the following four departments will be developed:
(a) Secretariat office
(b) Food Science and Technology
(c) Food microbiology
(d) Food chemistry department

In the second phase an additional three Departments will be established:
(a) Food Engineering Department
(b) Extension and Service Department
(c) Economic Evaluation Department

The project provides for a total of 156 man-months of internationally recruited FAO experts including a food technologist, a processing engineer, a quality control and nutrition and an economics and extension expert,

and 84 man-months of fellowships, as well as $385,000 for equipment. The SF allocation to this project is $829,200, whilst the Government counterpart contribution amounts to $1,082,100.

- Dairy Industry in Livestock Development Project — FAO/UNDP-SF

This FAO/SF project on livestock development provides assistance on dairy technology and milk plant mangement; priority has been given to liquid milk processing.

CYPRUS — FAO/UNDP-TA

- New Milk Plant

The FAO expert is advising on the most suitable organization of existing milk plants in Nicosia, and submitted to the Government a project for a new plant to process sterilised milk in order to overcome present problems of milk distribution.

DAHOMEY — FAO/UNICEF/FFHC

- Establishment of Two Poultry Breeding Centres in Cotonou and Kpinou

This project, initiated in 1965, and to be completed in 1967, has been included in the Governments' General Improvement Plan. The purpose of the project is to increase the capacity of the poultry station in Cotonou, installation of a rearing station in Kpinou, and to develop and process mixed feed. Provision is made for the establishment of poultry houses for 600 breeders, installation of incubators for 5,000 eggs, establishment of a feed mixing plants and rearing houses for the production of 2,500 laying pullets per month. Furthermore the project provides training at various levels, including modern management methods. UNICEF is providing $55,000, FFHC from France $29,500, and the Government $36,400.

ECUADOR — FAO/UNDP-TA

- Development of Palm Oil Industry

An FAO expert, in co-operation with the local research organization INIAP, is carrying out investigations leading to improvement in the processing of high quality palm oil, in order to make the country self-supporting in the field of fats and oils.

ETHIOPIA — FAO/RP

- Protein-rich Food Industry Development

The survey, conducted earlier by FAO in Ethiopia on protein-rich food industry development will be followed up early in 1967.

ETHIOPIA

FAO/UNICEF/
UNDP-TA

- Dairy Plant

This FAO project on dairy plant management emphasises the installation of further processing facilities UNICEF to assist in the supply of dairy equipment.

GHANA

FAO/UNDP-SF

- Food Research and Development Unit, Accra

The purpose of the project (initiated 30 September 1965 and to be completed by 30 September 1970), is to assist the Food Research Institute in carrying out a co-ordinated programe of applied research in the storage, processing, preservation and marketing of foods with the aim of contributing towards the development of the food industries of the country. The Institute is playing an advisory role in assisting the Government in planning and implementing its policy of developing national food industries and increasing agricultural productivity.

The program of work includes surveys of the food industries at all levels of organization to determine which food industries it would be most desirable to develop based on local agricultural and fisheries products and essential imports; and applied research through laboratory and pilot-scale investigations on the processing, preservation, storage, marketing and utilization of the main foods of the country, such as rootcrops, cereals, oilseeds, cacao, fish and seafoods meat, fruit and vegetables. Particular attention is given to the retention of nutritive value in stored and processed foods, to the production of new (high protein) foods, to the development of appropriate standards of safety and quality and to the requirement, where necessary, of modifying food processing methods used elsewhere in view of the differences in properties and composition of foods produced under tropical conditions.

In addition, the internationally recruited FAO experts include: a food technologist and specialists in fish processing, meat processing, storage of plant products, food dehydration, food analysis, food planning and consumption, food marketing, food laws and standards, grain processing, oilseeds and by-products processing, food engineering and fruit and vegetables processing, for a total of 336 man-months.

The FAO marketing expert arrived in November 1965 for a period of two years. His work has this year included an investigation of salt and vegetable oil supplies for canning factories, a comparative cost analysis for a fish cannery, and a (continuing) survey of private and state owned agricultural processing industries.

A total of 120 man-months of fellowships is provided for this project, as well as about $100,000 for equipment and supplies. SF allocated $888,100 and the Government counterpart contribution amounts to $2,668,720.

GREECE

FAO/Funds-in-Trust

- Slaughterhouse Construction

The Government of Greece requested FAO in 1965 to make a comprehensive survey of the existing slaughter facilities in the country, and suggestions for reorganisation. Suggestions of locations and design of new abattoirs and reconstruction of existing ones where feasible.

The purpose of the project is to facilitate the domestic meat supply, taking into account the vast distances between the main producing areas and the larger cities.

In connection with the survey plans, specifications and estimates are made by FAO for 3 industrial abattoirs and 15 smaller slaughterhouses in such details that tenders can be called. The various projects are to be implemented by contractors and FAO supervision is not envisaged at this stage.

The survey was initiated in 1965 and the final report is to be presented to the Government early in 1967. Construction of the first industrial abattoirs and reconstruction of others is expected to start immediately but implementation of all recommendations will take at least five years.

The survey is financed by funds in trust and considerable amounts are earmarked within the national budget for the implementation.

- Food Technology

FAO/Funds-in-Trust

An FAO expert is advising on the country's programs for food processing installations.

GUATEMALA

FAO/UNDP-TA

- Dairy Industry (Milk Plant)

The expert is advising and assisting on management of the FAO/UNICEF-assisted milk plant in Asunción/Mita, with special emphasis on milk powder and processing of liquid milk (Tetra-pak).

- Dairy and Beef Industry Development in Agricultural Diversification Project — FAO/UNDP-SF

An FAO dairy consultant participated in the SF project on diversification of coffee crop to livestock in the

Petalhulea area, and a draft project for a milk processing plant to be established in this area has been prepared.

A team of FAO experts, in co-operation with the Ministry of Agriculture and local farmers, is setting up bankable projects for beef industry development and other matters.

This SF project commenced in 1964 and is expected to finish in 1968. SF allocations: $524,600, Government counterpart contribution: $354,000.

GUYANA

FAO/OPEX/UNICEF

- Milk Plant

FAO is assisting in milk plant management, with emphasis on the organization of milk collection, quality control and the organization of distribution in consuming areas. UNICEF provided part of the dairy equipment.

HAITI

FAO/UNDP-TA

- Dairy Industry

As part of a SF project on livestock development a FAO Dairy Technologist was made available to organise the collection of milk from small producers and to plan for the development of a dairy industry.

This project continued under UNDP-TA, and is now emphasising the development of cheese making (Gruvere type) and yoghurt manufacture.

INDIA

FAO/UNICEF/
FFHC/WFP

- Production of Protein-rich Food through Poultry

This project is included in the Government's 4th Five-Year Plan, and the purpose is to improve the human diet and to raise the income level of the rural population through increased egg and poultry meat production on a commercial scale. To achieve this, provision is made for the establishment of a main poultry demonstration and hatching centre at Rahuarh (U.P.) and similar centres and sub-centres in the other States at 35 regional farms and over 150 State block units. The project also includes the development of local industrial manufacture of poultry equipment, such as incubators, feed grinders and mixers and other auxiliary equipment. FAO's assistance includes training of local technicians, and also deals with the organization of credit to farmers. The total project cost is $11,160,000 consisting of $2,000,000 supplied by UNICEF, $130,000 as a contribution from FFHC Australia, a WFP contribution (Provision of feed) of $1,830,000 whilst the Government is contributing $7,200,000.

INDIA

FAO/RP/FFHC

- Projects on Grain Storage, Handling and Processing

These three projects were prepared by a Far East Regional FAO expert upon completion of a survey, and steps have been taken in order to become operational by the end of 1966, and to have the projects financed by the Association for Food Production of Religious Organizations.

The first project involves the setting up of nine community drying and storage centres, two parboiling plants and four rice mills in Thajavur, Madras. The estimated FFHC contribution covering personnel services, equipment and supplies amounts to $1,554,000.

The second project is designed to set up grain storage facilities in Khanna, Ludhiana District, Punjab. The total FFHC contribution covering personnel services, equipment and supplies amounts to US $302,000.

The third project involves the setting up of village storage and cleaning facilities for grain and pulses in Hathras, Aligarh District, Uttar Pradesh. The total FFHC contribution will amount to US $146,700.

- FAO International Training Centre Food Science and Technology, Mysore — FAO/FFHC

This Centre, financed by the Canadian Hunger Foundation and operated by FAO with the co-operation and assistance of the Indian Government, is now in full function.

INDIA

- Dairy Industry Development — FAO/UNICEF/UNDP-TA

One FAO expert is assisting in dairy engineering, products research, dairy technology and training in dairy plants in New Delhi, Bombay and Karnal.

Another FAO expert is advising on matters of dairy engineering with particular emphasis on lay-out and maintenance of milk plants — FAO/UNDP-TA

An FAO expert is also advising on refrigeration problems as connected with dairy industry development — FAO/UNDP-TA

An FAO expert is advising on the manufacture of evaporated and condensed milk, especially from buffalo milk. — FAO/UNDP-TA

IRAN

- Dairy Industry Development — FAO/UNICEF/UNDP-TA

An FAO dairy engineer is advising on operation and maintenance of a dairy plant in Shiraz; the program includes technical training at various levels.

Another FAO dairy technologist is assisting in cheese processing, in Teheran, with emphasis on the utilization of cow, sheep and goat milk. — FAO/UNDP-TA

KENYA — FAO/UNDP-TA

- Protein-rich Food Industry Development Survey — FAO/UNDP-TA

The possibility for the development of protein-rich food industries is under investigation by an FAO expert. The survey includes also Uganda and Tanzania.

- Dairy Industry Development — FAO/UNICEF/UNDP-TA

FAO is operating a diploma dairy training course including dairy technology, for which UNICEF supplies dairy equipment.

An FAO technologist is assisting in the proper organization of rural dairy development schemes with special emphasis on practical demonstrations, quality control and dairy technology. — FAO/UNDP-TA

Another FAO expert is assisting in milk plant management with emphasis on the organization of milk collection and organization of producers. — FAO/UNDP-TA

LEBANON

FAO/UNDP-TA

- Animal Quarantine and Abattoir Construction, Tripoli

The project provides for quarantine facilities for imported livestock and establishment of a modern mechanised slaughterhouse within the quarantine area, in which all imported animals are to be slaughtered.

The main purpose is to facilitate the supply of a deficit region (Near East) by importing livestock for slaughter from a surplus region (East Africa) and to minimise the risk of introducing exotic diseases by such transaction.

The quarantine station can accommodate 600 head of cattle and the capacity of the slaughterhouse is 60 cattle per day. Initial planning was made by an FAO expert and advice has been given throughout both implementation and necessary legislation. FAO management is envisaged in the initial stages of operation.

The project is the first of its kind to be found in the world, but if successful it is expected to be followed by others elsewhere.

The project was initiated in 1961 and then shelved for political reasons, but it is now being completed and expected to be operational towards the end of this year.

Technical assistance is financed by UNDP-TA. Only government funds are involved in the construction. The exact amount is not known but it is expected to be in the region of $500,000.

- Dairy Industry, Regional (Near East) Dairy Training Courses

FAO/UNDP-TA/ Funds-in-Trust (Denmark)

FAO is operating this regional dairy training course.

LIBYA

FAO/UNDP-TA' Funds-in-Trust

- Abattoir Construction and Establishment, Tripoli

An FAO expert advised and assisted on the construction and establishment of an abattoir in Tripoli.

- Food Processing Industries

FAO/Funds-in-Trust

The FAO expert is advising and assisting the Government in the development of industries for the processing of a wide range of agricultural raw materials through such measures as:

Operation of the date syrup plant and further development work on date syrup and other date products, i.e. in fancy packs and as a component in livestock feed mixtures; technical supervision of the running and maintenance of the citrus processing plants; further introd ction of new citrus products;

the technical establishment of two five-ton per hour livestock feed mixing plants;
the further development of the tomato processing factory located in Deri;
development of plans for the establishment of a fruit juice factory;
continued training of counterparts and other personnel assigned;
advice on the proper staffing of the Governments enterprises.

The FAO expert is also organising regular quality control tests during processing and packing operations, with special reference to the introduction of hygienic control measures.

MALI

FAO/UNDP-TA

- Dairy Industry Development

An FAO expert is assisting the organization of milk collection and transportation from rural areas to consuming centres, with a view to develop further the dairy industry.

MALAYSIA

FAO/UNDP-SF

- Food Technology Research and Development Centre, Serdang

The purpose of the project (initiated in 1966, and expected to be completed in 1971) is to assist in establishing and initially operating a Food Technology and Development Centre, in order to carry out applied research on problems relating to the handling, storage, processing, and marketing of locally produced foods, and to provide advice and training in these fields to personnel from the Government and from industry at all levels.

In particular the project will give attention to improve the already established industry, so that it could be increasingly commercialised and expanded into larger, more productive and economical units. It will also explore investment opportunities for the development of new food industries for both local and export markets. The main activities of the project will be carried out at the Centre located at Serdang, which includes the following divisions:

(a) Food Analysis and Food Standards
(b) Food Microbiology
(c) Food Biochemistry and Nutrition
(d) Food Technology
(e) Marketing

In addition, four pilot stations will be established which will serve as demonstration units, and will also be utilised for training purposes:

(a) Fruit and Vegetable Processing Station,

(b) Rice Processing Station
(c) Fish Processing Station
(d) Animal Feed and Poultry Development Station

A total of 11 internationally recruited FAO experts, including 2 food technologists and specialists in food microbiology, food biochemistry, food analysis and control, rice processing, fish processing, poultry feed, food marketing, rice standards and grading and food packaging, for a total of 336 man-months are provided for this project, as well as 141 man-months of fellowships and $280,000 for equipment.

The SF allocation provides for $1,171,700, whilst the Government counterpart contribution amounts to $1,170,000.

MOROCCO — FAO/UNDP-SF

- Dairy Industry Development

During the operation of a SF project, the need for reorganization of existing milk plants became apparent. Thus, FAO made available a short term consultant to advise on most suitable dairy legislation whilst FAO staff also is assisting on the possible co-ordination of all dairy activities within the country.

- Fish Protein Concentrate and Protein-rich Foods — FAO/RP

FAO is assisting on product development based on fish protein concentrate and sunflower seed protein concentrate produced in the country.

NIGER — FAO/UNDP-TA

- Food Industries

An FAO expert is now erecting a millet milling model unit at Zinder. The expert is also surveying the possibilities of creating other food industries in the country.

NIGERIA, Northern Region — FAO/UNDP-TA

- Dairy Industry Development

An FAO dairy technologist is assisting in the development and organization of milk processing.

PAKISTAN — FAO/UNDP-TA

- Dairy Industry, Plant Management (Karachi)

FAO is advising and assisting the Karachi Milk Plant on management with special emphasis on proper organization of milk collection, and reconstitution of milk power supplied both from the USA and (to be expected) from WFP.

PAKISTAN

FAO/UNDP-TA/ FFHC

- Development of the Date and Date Products Processing Industry

Two FAO experts are assisting in the operation of a date packing house and date products plant in the Mekran area.

PHILIPPINES

FAO/UNDP-TA

- Food Technology and Food Industries Development

The FAO expert has just concluded this assignment. One of the main achievements was the development of methods for improved drying of coconut and recovery of edible coconut protein concentrates.

- Applied Research Institute for Products of Animal Origin (Dairy Industry Development) FAO/UNDP-SF

This SF project includes dairy industry development and FAO provided a dairy technologist to deal with both the theoretical and practical aspects of this part of the project.

POLAND

FAO/UNDP-SF

- Research and Extension Services for Food Production, Processing and Utilization, Warsaw

The purpose of the project (initiated 15 April 1963, to be completed 15 April 1967) is to promote a coordinated Plan of research and development with education and extension services for food production, processing and utilization with full attention to quality appraisal, including nutritive value of foods.

The Co-operating Units of the Polish Government are:

(i) The Food Industries Specialised Institutes and Laboratories and associated Agricultural (and Fisheries) Centres with Meat, Fish, Dairy products, Fats, Fruits, Vegetables, Cereals and other products, in Warsaw and elsewhere;

(ii) The Agricultural University of Warsaw - Faculty of Food Technology;

(iii) The Warsaw Food Training Centre - Vocational Secondary Schools and the associated Teacher Training College - in association with the Training Centre for Food Extension Work;

(iv) The Food and Nutrition Institute in Warsaw

- Dairy Industry Development

As far as the dairy field of this SF project is concerned, FAO made available three short-term consultants; (1) to advise on the preparation of pure cultures and starters for industrial purposes; (2) to advise on the most suitable characteristics of glass bottles which are extensively used by the local dairy industry, and (3) to advise on the control of dairy equipment prior to installment in milk plants. A follow-up is expected to make final decisions with regard to the facilities required to make the above mentioned control of dairy equipment operational.

In view of the excellent supply of scientific workers of high calibre in Poland, the duration of internationally recruited FAO experts assigned to the project did not generally exceed 5 months, so that a large number of specialists and consultants could be recruited for specific purposes. In addition, the success of this project has been assisted by a very liberal allowance of fellowships amounting to approximately 25 man-years.

The Special Fund contribution for equipment amounted to $637,000. The SF allocation amounts to $1,057,100 whilst Government counterpart contribution is $3,631,000.

REGIONAL PROJECTS

AFRICA

FAO/WHO Training Centre for Meat Inspectors.

CHILE

- FAO Regional Dairy Training Courses for Spanish Speaking Countries in Latin America — FAO/UNDP-TA Funds-in-Trust (Denmark)

FAR EAST BANGKOK — FAO/UNDP-TA

- Regional Improvement Project on Coconut Industry

An FAO expert is guiding countries in the region on aspects of coconut cultivation and processing through dissemination of information, organization of training centres and technical meetings and by conducting experiments on the spot.

INDIA

- FAO International Training Centre for Food Science and Technology, Mysore — FAO/FFHC (Canada)

- Seminar on Dairy Industry Management

KENYA

- FAO is operating a diploma dairy training course including dairy technology, for which UNICEF supplies dairy equipment. — FAO/UNICEF/ UNDP-TA

LEBANON

- FAO Dairy Training Courses, Near East Region. — FAO/UNDP-TA Funds-in-Trust (Denmark)

UGANDA (Entebbe)

FAO/UNDP-TA/Funds-in-Trust (Denmark)

- FAO Regional Dairy Training Courses for English speaking countries in Africa (Entebbe).

SAUDI ARABIA

FAO/Funds-in-Trust

- Food Control Organization

The Government of Saudi Arabia has for this project established the Funds-in-Trust with FAO. The Institute of Nutrition and Food Research TNO in the Netherlands, under a sub-contracting agreement, is undertaking the project under the direct supervision of the Nutrition Division of FAO.

- Silo and Flour Mill Project — FAO/Funds-in-Trust

The Ministry of Commerce and Industry of the Kingdom of Saudi Arabia has planned the design and construction of a number of port and inland silos for wheat as well as flour and food mills.

The FAO expert to be recruited under Trust Fund arrangements should act as project coordinator. His duties will involve:

1) Selection of Consulting Engineers for the project and execution of a contract for consulting engineering services spelling out the scope of work and terms and conditions of the appointment.

2) Preliminary and detailed design of the project and preparation of specifications and tender documents.

3) Operation and management of the facilities.

4) Training of local personnel.

The duration of this project is for a period of 3-5 years.

SENEGAL

FAO/UNDP-SF

- Institute of Food Technology, Dakar

The purpose of the project (initiated in 1966 and to be completed in 1971) is to assist the Institute of Food Technology in Dakar in a co-ordinated program of applied research in processing, preservation, packaging, storage and marketing of foods, in the training of the counterpart personnel of the project, in the training of personnel for employment at various levels in food industries and in providing advice to the Government and Industry.

The project will be devoted to applied research on groundnuts, millet, fish and meat. Fruits and vegetables will also form part of the program of the project. Particular emphasis is given to:

(a) improvement of the methods of processing the locally available foods in order to produce products that are nutritious, adapted to the taste of the consumer and within his economic reach;

(b) studies of the traditional methods of storage and preservation of the major food commodities in order to determine ways and means for improvement;

(c) studies of methods for developing effective promotion and marketing services;

(d) feasibility studies for the creation of viable food industries;

(e) the study of food regulations and food standards on behalf of the Government food control services.

In addition the FAO experts assigned to this project include a food technologist and specialists in food production and marketing economy, fish processing, cereal and meat processing food storage, fruit and vegetable processing, chemical analysis, food microbiology, food promotion and food legislation, for a total of 252 man-months. In addition 72 man-months of fellowships are provided for this project, as well as $290,000 for equipment. SF allocation $ 1,035,000 and Government counterpart contribution $ 851,200.

- Dairy Industry Development — FAO/UNICEF/UNDP-TA

FAO made available an adviser on milk plant management with emphasis on the organization of a milk processing plant to be established with UNICEF assistance in St. Louis.

SUDAN — FAO/UNDP-SF

- Food Processing Research Centre

The project aims at the establishment of services for investigation of food processing problems. It involves the setting up of a main centre in the Khartoum area, including microbiological laboratory, food technology laboratory, freezer room, and various training facilities. The four sub-stations, although forming an integrated part of the project, are established and equipped at Government expense, and they are used for demonstration and training programs and rural grading, packing and marketing of food products. The FAO operated project commenced in 1965 and is to be completed in 1970. SF allocation is $739,600 with Government contributing $678,070.

SYRIAN ARAB REPUBLIC

FAO/UNDP-SF

- Food Processing Project

This project has involved the setting-up of a Central Food Processing Educational and Research Station at Douma, near Damascus, servicing existing food processing industries, and the establishment of four sub-stations in the field to deal with kamaradine, dried figs, raisins and olive oil.

The FAO operated project commenced in 1961 and has been completed in July 1966. SF allocation $ 621,000 and Government contribution $417,960

- Dairy Industry Development

FAO/UNICEF/UNDP-TA

FAO made available an expert to advise on milk plant management for the Damascus and Aleppo plants to which UNICEF already has supplied parts of the dairy equipment. Emphasis is given on milk sterilization.

TANZANIA

FAO/RP/FFHC/UNDP-TA

- Small Jaggary Sugar Processing Plant, Pemba

This project, being prepared by FAO involves the establishment of a demonstration and training unit with small factory for the processing of brown sugar, as a prototype of a rural industry, aimed at the promotion of sugar production for local consumption. Equipment costs were $4,950 and Government contribution $14,400 to this project.

TRINIDAD and TOBAGO

FAO/UNDP-TA

- Crop By-products Utilization, Port of Spain Trinidad

The object of this project is to recommend for specific pilot plant operations, training and demonstration facilities resulting in an effective utilisation of local crop and by-products such as from coconuts, fibres for mattresses, brooms and brushes, coconut shells, bagasse, etc. The FAO expert to achieve this will carry out a brief survey to determine the potential possibilities.

TURKEY

FAO/UNDP-SF

- Research and Training Centres for the Production, Processing and Marketing of Fruit and Vegetables, Yalova

The purpose of the project (initiated in 1966 to be completed in 1971) is to increase the efficiency of the horticulatural and related industries in Turkey through research and training, and thus to improve the supplies, both for export and local markets of fresh and processed fruit and vegetables.

The program of work covers the following activities;

(a) Research in production with the aim of increasing yields and improving the quality of fruit and vegetables, through more efficient cultural practices, including irrigation, fertiliser use and pest and disease control.

(b) Selection of superior varieties and strains of of fruit trees, vines and vegetables as well as the solution of practical problems pertaining to the production and distribution of recommended seeds and rootstocks.

(c) Research on the preservation and processing of fruit and vegetables with the aim of adapting to Turkish conditions the most suitable and economical modern techniques. Emphasis will be placed on quality control and grading with a view to export markets.

(d) Market research and development including packaging and transportation methods. (This includes advice on supplies, grades and standards of fruits and vegetables in relation to processing activities, chiefly canning, dehydration and refrigeration).

(e) The training program of the project will cover both production and processing and marketing. It will be in the form of in-service training and demonstration of modern techniques and will consist mainly of short courses in co-ordination with the universities and horticultural schools in the areas in question. Extension workers, managers and nurseries and food technologists in public and private service will participate in these courses.

A total of 20 FAO experts for a total of 634 man-months are assigned to the project. These experts are specialists in the production of vegetables, glasshouse products, olives, deciduous fruit, citrus; viticulture, fruit and vegetables canning, olive oil processing, quality control, dehydration and dried fruit processing, citrus processing, and cold storage.

324 man-months of fellowships are provided for in the project, and a total of $ 403,000 for equipment and supplies. SF allocation is $1,997,100 and Government counterpart contribution $3,125,089.

- Development of Protein-rich Food Industries FAO/RP/UNICEF

An FAO/UNICEF team has conducted negotiations with the Government of Turkey and a private food industry for the production of Protein-rich foods in the country. The reaction of the Government to the suggestions made is awaited.

UGANDA

FAO/UNDP-TA

- Dairy Industry Development (Kampala, Entebbe)

  FAO provided a dairy technologist to organize milk collection schemes near Kampala with emphasis on organizational and dairy technological aspects.

- FAO Regional Dairy Training Courses for English speaking countries in Africa (Entebbe) — FAO/UNDP-TA/ Funds-in-Trust (Denmark)

YUGOSLAVIA

FAO/UNDP-TA

- Refrigeration of Vegetables

  An FAO expert is advising the Government on the technical aspects of refrigeration of vegetables.

- Development of Protein-rich Food Industry — FAO/RP/UNICEF

  Equipment supplied by UNICEF is now on the spot and will soon be functioning. The development of formulas for Protein-rich food products is under way at the University of Zagreb, Food Technology Department, with the cooperation of FAO.

APPENDIX V

INDUSTRIES PROCESSING AGRICULTURAL PRODUCTS OTHER THAN FOOD

(List of selected current field projects for which FAO is providing assistance upon Government request)

BOLIVIA — FAO/UNDP-TA

- Development of Small-scale Industires

BURMA — FAO/UNDP-TA

- Tobacco Blending and Processing

CONGO (Leopoldville) — FAO/Funds-in-Trust

- Coffee Processing

DOMINICA — FAO/UNDP-TA

- Coir and Copra Processing Industry Development, Roseau

  This project is the follow-up of a previous FAO/FFHC activity carried out during 1965/66, and provides for the establishment of the coir and copra processing industry on a commercial basis. Technical in-project training of nations is included.

ETHIOPIA — FAO/UNDP-TA

- Hides, Skins and Leather Industry Development

HAITI — FAO/UNDP-TA

- Development of Small-scale Agricultural Products Processing Industries

INDIA — FAO/UNDP-SF

- Central Sheep and Wool Research Institute, Rajasthan

  The Institute will provide experimental and training facilities in sheep husbandry, better utilization of land, wool shearing, grading, testing, wool technology, and wool processing.

  The Institute comprises a central sheep and wool research institute, and one main sheep and wool training centre, both in Malapura near Jaipur. Two sub-stations, one in the Himalayan Region at Kulu and the other in Kodai Kanal (Madras State). Ten large and 148 small centres demonstrate shearing, grading, wool marketing and sheep flock management. The Institute is being equipped with a fibre research laboratory, wool processing, utilization and testing equipment, grading and shearing equipment and sheep breeding stocks.

The FAO operated project commenced in 1963, and is to be completed in 1968. The SF allocation amounts to $777,500 with a total Government contribution of $6,064,744.

- Animal carcass processing, bonemeal, meatmeal, to develop poultry industry — FAO/UNDP-TA

IRAN — FAO/UNDP-TA

- Hides, Skins and Leather Development

NEPAL — FAO/UNDP-TA/FFHC

- Animal Carcass Processing, Hides, Skins and Leather Development

NIGERIA (Northern Region) — FAO/UNDP-SF

- Hides and Skins Demonstration and Training Project, Northern Region

The project initiated in 1964, to be completed in 1968, aims at the improvement of raw hides and skins, semi-tanned hides and skins for the export trade, and developing tanning and leather manufacture in Nigeria. The implementation has involved the setting-up of a main centre and two sub-centres. The main centre in Zaria comprises a laboratory, lecture room, library and office accommodation. The two sub-stations in Maiduguri and Sokoto are mainly to give technical assistance on the processing of hides and skins, on village tanning and on marketing problems related to the export trade. The two sub-centres are furnished with selected tanning machinery and laboratory equipment.

The project includes a marketing survey, and the FAO expert dealing with these aspects completed his report in 1966. The report includes a feasibility study for the establishment of a commercial tannery in the Northern Region, with a daily intake of 200 - 300 hides for wet treatment, with finishing in Europe.

The SF allocation amounts to $461,500 and the Government contribution to $452,000.

- Development of Agricultural Products Processing Industries — FAO/UNDP-TA

PERU — FAO/UNDP-SF

- Faculty of Agricultural Engineering, Agricultural University, La Molina

The project was designed to assist the Government in setting up a new faculty of agricultural engineering at the Agricultural University of La Molina. This implies the planning and organization of a regular academic year, and the setting up of the following departments: Irrigation and Drainage, Farm Power and

Machinery; Soil Conservation; Farm Structures; Agricultural Products Preservation and Processing; General Engineering. The project also includes a program of research.

The FAO operated project commenced in 1962 and is to be completed in 1967. SF allocation $737,200 with Government contributing $451,700.

REGIONAL (Africa)

- Agricultural Products Processing and Storage — FAO/UNDP-TA

SUDAN — FAO/UNDP-SF

- Hides, Skins and Leather: Development and Training Project

A training and advisory institute was established to undertake service, research works, demonstration and training for the development of the hides, skins and leather industry. The institute comprises demonstration pilot tannery, leather utilization and training centre, laboratory, lecture room, stores and offices.

The FAO marketing specialist will conclude his findings in 1967, but it is already clear that an immediate progress is made by improvement of the rural tanning industry in the light of market requirements and opportunities.

The FAO operated project initiated in 1961 is to be completed by the end of 1966. SF allocation is $491,700 with a Government contribution of $365,100.

SURINAM — FAO/UNDP-TA

- Development of Coir and Copra Processing Industry

TANZANIA — FAO/FFHC

- Coconut fibre (coir) processing, for matting and rope industry and upholstery

THAILAND — FAO/UNDP-SF

- Rubber Research and Development in South Thailand

This project (initiated in 1965 and to be completed in 1970) has the purpose of raising the productivity of the natural rubber industry, rubber exports (200,000 tons yearly) being with rice the two main foreign currency earners.

The FAO experts cover such aspects as research, training and demonstration, in order to improve the general level of technical efficiency among small-holders, but also in addition to production, include processing and marketing.

The SF contribution amounts to $931,600 and the Government counterpart contribution to $817,370

TURKEY

FAO/UNDP-TA

- Hides, Skins and Leather Industry Development

UNITED ARAB REPUBLIC

FAO/UNDP-SF

- Cotton Research Laboratory

This project was planned to strengthen the Government cotton research station at Giza establishing a new laboratory for cotton fibre quality investigations, adding a new cotton spinning test mill for extra long staple cotton, establishing a new laboratory for grade standardization, and establishing a new laboratory for research in ginning.

The FAO operated project commenced in 1962 and is to be completed by the end of 1966. SF allocation $728,000 with Government contribution $778,000

APPENDIX VI

FORESTRY AND FOREST INDUSTRIES INCLUDING PULP AND PAPER

(List of selected current field projects for which FAO is providing assistance upon Government request)

ARGENTINA

FAO/UNDP-TA

- Technical assistance in wood technology with emphasis on timber grading and standardization is supplied by FAO.

BOLIVIA

FAO/UNDP-TA

- FAO provides expert services for the development of forest industries. The project has been in operation since November 1962, mainly in sawmilling and the promotion of export of sawn wood. Project will be in operation until the middle of 1967.

BRAZIL

FAO/UNDP-SF

- National Forestry Faculty, Curitiba

The project has provided a forestry school at university level, and organised forestry and forest products research aiming at the scientific utilisation of forest resources, and the development of forest industries. Special attention has been given to the demonstration of logging and sawmilling operations in the Amazon area. A training centre is functioning in Santarem and some applied research in forest products is being conducted at this same field station.

The whole project covering training and research for forestry and forest products involves personnel services amounting to 600 man/months in total and equipment provided through FAO.

The project became operational in February 1962 and is scheduled to be completed in August 1967.

The expected total cost is equivalent to US $2,140,100 (UNDP and Government contributions).

BURMA

FAO/UNDP-TA

- This FAO project commenced early in 1965, and is to be concluded in 1966. The project deals with the establishment of new saw mills and modernization of existing ones.

CENTRAL AFRICAN REPUBLIC

FAO/UNDP-SF

- Forestry Training and Demonstration Centre

The project plans the establishment of a training and development centre to encourage and develop internal wood consumption, the development of forest industries and the export of forest products. A small size

sawmill is being installed, as well as equipment for simple woodworking operations, with a small logging centre closely co-operating with the sawmill.

Personnel services, with the exception of consultants and one administrative officer, have been subcontracted to the Centre Technique Forestier Tropical in Paris. Other services are being provided directly through FAO. The project was declared operational on 18 May, 1965, and is scheduled to be completed by May, 1970.

The expected total cost is equivalent to US$860,130 (UNDP and Government contribution).

CEYLON

FAO/UNDP-SF

- Preinvestment Study on Forest Industries Development

This project is to carry out economic, technical feasibility studies of forest industries, train forestry personnel and prepare plans for long term development of forest utilisation. Evaluation will be made of possibilities for establishing selected industries and to provide necessary data for detailed planning of the expansion of logging and existing wood conversion operations, mainly sawmilling, and plywood production.

Long-term development planning also covers fields of forest industries, such as pulp and paper, particle board and fibreboard, etc.

The project is being implemented by personnel services supplied through FAO (188 man-months in total) supply of equipment necessary for demonstration and training, and fellowships.

Three forest products laboratories are carrying out, on a subcontract basis, laboratory tests of selected wood species to support pre-investment studies for board products.

The project became operational in November, 1963 and is scheduled to be completed by the end of April, 1967.

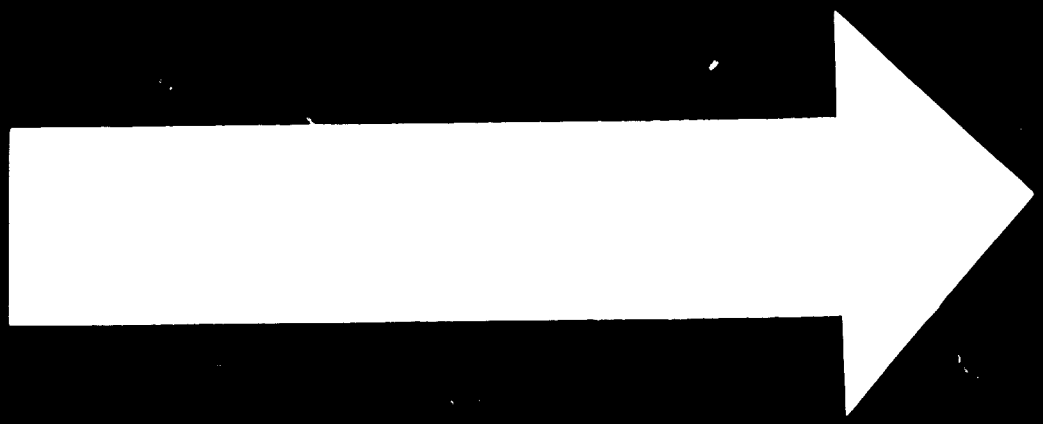
The expected total cost is equivalent to US $788,940 (UNDP and Government contribution).

- Technical assistance in sawmilling is being given by an FAO expert who assists the Ceylon authorities in the operation of Government owned permanent and mobile sawmills and advises on their modernization and expansion. FAO/UNDP-TA

CHILE

FAO/UNDP-TA

- An FAO expert is advising and assisting in the modernization of sawmilling operations.



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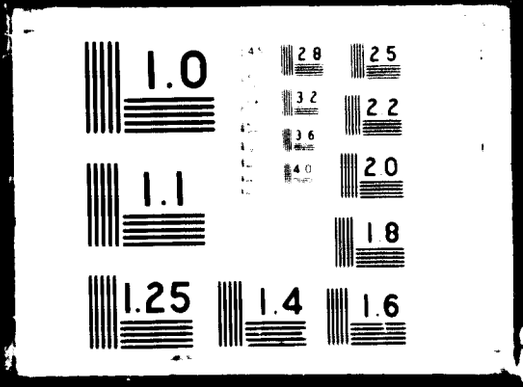

CHINA (Taiwan) FAO/UNDP-SF

- Forest and Forest Industry Development

The project concerns forest products marketing, industrial feasibility studies, improvement of logging and wood conversion methods as well as strengthening research in forest products. The project will involve the preparation and implementation of an overall plan for the rapid and rational development of forestry and forest industries of Taiwan, so that they can better contribute to the economy and well being of the Island.

The project is being implemented by supplying personnel services by FAO of 252 man-months, and technical equipment and facilities for the training of local staff.

Results will influence the development of exports of forest products, which is one of the preconditions for expanding the contribution of local forest resources to the National Economy.

The project was initiated in September 1965, and is scheduled to be completed in September 1968.

The expected total cost is equivalent to US$2,706,900 (UNDP and Government contribution).

ECUADOR FAO/UNDP-SF

- Preinvestment Studies on Forestry Development

The project is to undertake forest inventory and carry out demonstration and training in modern methods of forest exploitation and wood preservation techniques. The project covers an area of approximately 14,000 km2 which will be surveyed to determine locations affording the most favourable prospects for the development of forestry and forest industries.

Timber testing, logging operations as well as improvement of existing wood conversion facilities and planning the establishment of new ones are included in the scheme.

Implementation involves 222 man-months of personnel services of experts as well as some equipment supplied through FAO.

The project became operational in November 1963 and is scheduled to be completed in February 1969.

The expected total cost is equivalent to US$ 1,670,000 (UNDP and Government contribution).

GHANA FAO/UNDP-TA

- FAO provides an expert in wood working industries development scheduled for 1966/67/68

APPENDIX VIII

INDUSTRIES FOR THE SUPPLY OF ESSENTIAL REQUISITES TO DEVELOP AGRICULTURE, ANIMAL HUSBANDRY, FORESTRY, AND FISHERIES

(List of selected current field projects for which FAO is providing assistance upon Government request)

ARGENTINE	
- Fishing Development Project, vessel design	FAO/UNDP-SF
- Research and Demonstration Forage Processing	FAO/UNDP-SF
- Grain Storage	FAO/UNDP-TA
BOLIVIA	
- Small Scale Irrigation	FAO/UNDP-TA
- Sawmilling and Promotion of Export of Sawn wood	FAO/UNDP-TA
BRAZIL	
- Farm Mechanization, Agricultural Engineering (C.I.D.A.)	FAO/UNDP-TA
- Fishing Gear Development (Sudepe)	FAO/UNDP-TA
- Logging, Sawmilling and Wood Utilization in the Amazon area	FAO/UNDP-SF
BURMA	
- Establishment of New Saw mills and Modernization of existing ones	FAO/UNDP-TA
- Agricultural Mechanization	FAO/UNDP-TA
CARIBBEAN TERRITORY (Montserrat, St. Kitts)	
- Fishing Gear Development	FAO/UNDP-TA
CENTRAL AFRICAN REPUBLIC	
- Logging and Sawmilling (Training and Demonstration Centre)	FAO/UNDP-SF
CEYLON	
- Forest Industries, logging and sawmilling	FAO/UNDP-SF
- Mechanical Engineering (sugar and rice industry)	FAO/UNDP-TA
- Fishing Vessel Design, fishing and gear technology	FAO/UNDP-TA
- Boat Building	FAO/UNDP-TA

and the development of new forest industries (including pulp and paper).

The project will involve investigation of the economic availability of raw materials, in three selected zones, investigation into the raw material requirements, into existing plant capacities and marketing possibilities; the project will also determine suitable areas for industrial plantations.

213 man-months of personnel services as well as technical equipment, mainly for air survey operations, are being supplied through FAO; wood testing is being undertaken on a subcontract basis.

A modern forest inventory section is to be established in the Forest Research Institute of Dehra Dun.

The project became operational in April 1965 and is scheduled to be completed in October 1968.

The expected total cost is equivalent to US $2,811,600 (UNDP and Government contribution).

- Establishment of Four Logging Training Centres — FAO/UNDP-SF

The project plans the establishment of four logging training centres to train workers in efficient logging and extraction methods, as well as in simple sawmilling operations.

The Training Centres have been established in four different zones of the country, and the training program is covering operation and maintenance of mechanical logging equipment including cableways and also operation and maintenance of portable sawmills.

174 man-months of personnel services are being provided through FAO as well as equipment for demonstration and training purposes.

The project became operational in August 1965 and is scheduled to be completed in August 1969.

The expected total cost of the project is US $1,102,750 (UNDP and Government contribution).

- Technical Assistance was given by FAO experts in planning the establishment of a Plywood Research Station (6 months in 1966), and on the construction and protection of cooling towers (2 months in 1966). — FAO/UNDP-TA

IRAN — FAO/UNDP-TA

- FAO provides an expert to advise on the development of forest industries with emphasis on saw milling (1966/67).

KENYA — FAO/UNDP-TA

- FAO provides experts assistance in forest industries planning (1966/67/68).

- An FAO expert carries out a survey aimed at the planning of pulp and paper development. — FAO/UNDP-TA

MALAYSIA — FAO/UNDP-TA

- An FAO expert is assisting Government and private industry in the modernization of sawmilling operations. Several old-fashioned saw mills have already been modernised, mainly by substituting old circular saws with band saws. Designing mill lay outs and training saw mill staff forms the main part of the work of this FAO expert.

MEXICO — FAO/UNDP-TA

- An FAO expert assists in the formulation of a rational forest utilization program.

NEPAL — FAO/UNDP-SF

- Survey and Demonstration for Management and Development of the Trisuli Watershed

  Forest industries development planning is a part of this project, the purpose of which is to plan the integrated development of the Trisuli Watershed and to serve as a demonstration scheme for establishing a most suitable approach to the protection and development of mountain areas.

  Personnel services (282 man-months in total) and some technical equipment are being provided through FAO as the Executing Agency; aerophotographic maps will be made on subcontract.

  The project became operational in August 1966, and is scheduled to be completed in July 1970.

  The expected total cost is equivalent to US $1,165,100 (UNDP and Government contribution).

NIGERIA — FAO/UNDP-TA

- An FAO pulp and paper specialist prepared a preliminary feasibility study for pulp and paper development.

PAKISTAN — FAO/UNDP-SF

- National Forestry Research and Training Program

  The project aims at expanding and strengthening the Forest Research Institute and College of Peshawar, which includes a Forest Products Division. The project will involve the establishment of a Wood Utilization Research Unit and expansion of wood utilization research aiming at supplying

the Forest Industry with information required.

The implementation of the whole Project involves 327 man-months of personnel services supplied through FAO as well as other facilities for research and training.

The project was initiated in September 1963 and is scheduled to be completed in September 1968.

The expected total cost of the Project is equivalent to US $4,086,000 (UNDP and Government contribution).

PERU — FAO/UNDP-SF

- Forestry Research and Training

The project is to assist in the establishment of a Forest Faculty, a Rangers School and forestry and forest products research. The Forestry Faculty has been established as part of the Universidad Agraria at La Molina. The Rangers School has been established as a Technical School located in the lower tropical forest zone.

A Forestry and Forest Products Research Institute is being organized by the University, and four forest research field stations (centres) will be located in different parts of the country to cover different conditions. Personnel services (200 man-months in total) are being supplied through FAO.

The project became operational in November 1963 and is scheduled to be completed in November 1968.

The expected total cost of the Project is US $1,289,000 (UNDP and Government contribution).

REGIONAL ADVISORY GROUPS ON FOREST INDUSTRIES DEVELOPMENT

LATIN AMERICA (with ECLA) located in Santiago.

Established in July 1955 provides for a pulp and paper expert, and a mechanical forest industries expert.

AFRICA (with ECA) located in Addis Ababa.

Established in May 1964 provides for a pulp and paper expert.

SINGAPORE — FAO/UNDP-TA

- Two FAO specialists in Forest Products Marketing and Forest Industries Development, prepared a study aimed at determining the feasibility of forest industries development.

SUDAN — FAO/UNDP-SF

- Forestry Research and Education Centre, Khartoum

The project is to assist the Government in establishing a Forestry Research Institute, including a Forest Products Laboratory, and to provide improved facilities for training at the Forest Rangers College.

The Forest Products Laboratory is carrying out an investigation of the properties and uses of both present and potential commercial species of Sudanese timbers. Experiments and applied research in seasoning and woodworking are being made; advice is being given on the modernization of sawmilling.

The implementation of the whole project covering forestry and forest products involves 356 man-months of personnel services, supplied by FAO, as well as equipment and other training facilities for the establishment and operation of the Institute.

The project became operational in December 1961, and should be completed in February 1967.

The expected total cost is equivalent to US $1,271,000 (UNDP and Government contribution).

- Technical Advice on feasibility for wood based board material development, with emphasis on particle board, is being given by an FAO expert who is on a nine month's assignment in the country. — FAO/UNDP-TA

SURINAM — FAO/UNDP-TA

- A wood chemistry charcoal production expert is assisting in the improvement of this industry.

TANZANIA — FAO/UNDP-TA

- An FAO expert is assisting in the improvement of sawmilling and other woodworking operations, and also advising on the preparation of a forest industries development program.

THAILAND — FAO/UNDP-SF

- Paper and Pulp Material Survey

The project aims at determining the technical and economic feasibility of expanding the capacity of existing and establishing new pulp and paper, as well as wood panel, industries based upon domestic raw materials.

The project will involve the preparation of a feasibility study for the above mentioned industries, industrial plantation trials, checking the suitability of local timber species for pulp and paper and other forest products, and the training of local staff in industrial

plantation practice and in operating a wood testing and pulp and paper laboratory.

The project is being implemented by supplied personnel services from FAO in a total of 113 man-months, the establishment of a pulp and paper laboratory and preparation of sub-contract feasibility studies for pulp and paper production. Though the survey of raw material resources and the studies concerning possible location of future mills are limited to selected areas, the findings will be of importance for the country as a whole. The conclusions and recommendations will have a direct impact on national economic development plans, in general, and on immediate investment policy in the field of pulp and paper production, in particular.

The project became operational in January 1964, and is scheduled to be completed in January 1967. The expected total cost is equivalent to US $860,235 (UNDP and Government contribution).

URUGUARY — FAO/UNDP-TA

- A pulp and paper specialist is advising on possibilities for pulp and paper development.

VENEZUELA — FAO/UNDP-SF

- Preinvestment Survey of Forestry Development

The project is to prepare a plan for the development of forestry and forest industries of selected areas in Venezuela based on a forest inventory and other related studies, such as investigations into properties of the more important tree species, timber marketing, etc.

The project is confined to an area of 25,000 km2 in the eastern part of the State of Bolivar, and the south eastern part of the Federal Territory Delta Amacure.

168 man-months of personnel services will be provided through FAO as well as technical equipment required.

The project became operational in December 1963 and is scheduled to be completed in December 1967.

The expected total cost is equivalent to US $1,721,700 (UNDP and Government contribution).

ZAMBIA — FAO/UNDP-TA

- An FAO expert is advising on the best possible use of timber for structural and other purposes.

APPENDIX VII

FISHERIES INDUSTRIES

(List of selected current field projects for which FAO is providing assistance upon Government request)

ARGENTINA — FAO/UNDP-SF

- Fishing Development Project

This FAO/UNDP-SF project commenced in 1966 and has to be completed by 1971. The SF allocation amounts to $1,501,600 whilst the total Government contribution is $1,598,800.

Immediate objectives of this project are:

(1) Extensive prospecting and exploratory fishing to be carried out in conjunction with biological and environmental studies required for the assessment of fishery resources; experimental fishing to test new fishing methods; and the evaluation of the industrial feasibility of introducing new methods of utilizing the resources;

(2) Making available of services to assist Government and industry in taking appropriate measures to overcome institutional and other problems which have been hampering the development of the industry.

The existing canning and fishmeal plants are suffering from a serious shortage of raw material and the introduction of purse seines might offer an immediate solution, whilst exploitation of deep water trawl grounds, the development of a squid or octopus fishery, and the discovery of new shrimp grounds will be studied. Studies of a technological nature will be undertaken in the National Institute of Industrial Technology.

This research includes quality control and the introduction of improved processing technologies.

The FAO team includes Biologists, Masterfishermen, Economist and a number of Consultants, specialised in matters concerning product development, wholesale and retail distribution, vessel design, industrial financing and development, marketing and export promotion.

BRAZIL — FAO/UNDP-SF

- Fishery Development Project

For this FAO/UNDP-SF project (initiated in 1965, to be completed by 1968) SF allocations amounts to $720,300 whilst the Government contributes $321,000.

The project will, amongst other things, provide Government and industry with technical services required for planning of specific industrial development programs and aimed at measures to be taken to encourage the private sector to participate in the construction and operation of cold stores, ice plants, water and fuel facilities, etc.

BURUNDI — FAO/UNDP-TA

- General Fishery Development

CEYLON — FAO/UNDP-TA

- Fishing Vessel Design, Exploratory Fishing and Gear Technology.

CHILE — FAO/UNDP-SF

- Fisheries Development Institute

This FAO/UNDP-SF project was initiated in 1963 and is planned for the duration of 5 years. The SF allocation is $4,734,800 whilst Government counterpart contributions amount to $3,952,250.

The purpose of this FAO/UNDP-SF project is to establish a Fisheries Development Institute in Santiago, which Institute will also direct other work carried on at various locations along the coast.

Amongst other programs, such as raw material assessment, improvement of fishing methods and consequently of vessel and gear design, economics of exploitations and marking statistics etc., a number of investigations will be carried out in the industrial sector.

This covers such aspects as specifying quality grades and establishing quality control through training courses in laboratories and industries, assisting the Government in their efforts to improve existing processing industries, the development of suitable products from the raw material available, including better packing, distribution and improved factory efficiency.

During the operation of this project, work in the training and industrial development section has increasingly been oriented towards overcoming specific problems within the industry. Amongst other things, a paper on "Fish Meal Industry in the North of Chile - capacity, equipment and utilization, 1965" has been completed. This study gives a full picture of the existing reduction industry, its output, employment and efficiency.

Another report that has been prepared is on the organization and requirements for freezing and filletting, in collaboration with the Technology Section of the Institute. A number of studies have further been requested by private industries, and have been taken on by the Institute when their importance in the development of the country's economy and their feasibility are considered sound. These studies deal for instance with such investigations as on: Shrimp and lanpostino freezing; salted and dried hake and fishmeal; crab and mussel canning, plans for expansions of present installations, incorporating freezing of hake; drying and freezing of hake; canning; freezing, drying of fish meal and hake; fish canning plants, etc.

The FAO team includes Research Scientists, Biologists, Experts in Fishing Gear and Methods, in small boat design, Technologists for quality control, processing and freezing.

CUBA — FAO/UNDP-TA

- Experimental and exploratory fishing, gear technology and fishing methods, resource evaluations, shell fish culture and project evaluation.

DAHOMEY — FAO/UNDP-TA

- Fisheries Development

General advice on all matters dealing with fisheries development.

ECUADOR — FAO/UNDP-SF

- National Fisheries Institute

The FAO/UNDP-SF project, to establish a National Fisheries Institute was initiated in 1960 and will be completed by the end of 1966. (Special Fund Allocations: $831,600; Government counterpart contributions: $855,545).

Besides exploratory trawling cruises, fish processing development forms a large part of the project. Commercial companies have been requesting advice on frozen shrimp, quality control, processing of fish meal, fish oil (shark liver oil being exported) canned fish and other matters. A new product, fish sauce (from anchovetas and thread herrings) is now being manufactured, and this new food product is satisfactorily marketed and has been proved to be accepted even in the diets of mountain Indians.

A series of experiments have also been carried out in the production of simple fish products, including salted dried fish, fish granulates consisting of mixed fish and banana flour, protein concentrate consisting of autolysed fish sauce, and pickled shrimps, and tests were carried out on the acceptability of these products.

The FAO team includes amongst others Masterfishermen, Biologists, Technologist for gear and fish processing, Economist and a naval Architect.

FEDERATION OF SOUTH ARABIA (Gulf of Aden) — FAO/UNDP-SF

- Fishery Development in the Gulf of Aden

This FAO/UNDP-SF project has been initiated in 1966 and has a duration of three years. The SF allocation is $948,300 whilst Governments contribute counterpart funds to the extent of $637,900.

The purpose of this FAO/SF project is to assist the Government in the development of marine fisheries, pre-investment surveys of the fishery resources of the Gulf

of Aden and nearby waters and in the training of fishermen and master fishermen.

To achieve this collation and analysis on oceanographic conditions and fisheries resources, appraisal through exploratory fishing, composition, distribution and magnitude with a view to assessing the fish stocks, forms an integrated part of the project, leading to drawing up of development plans.

Exploratory fishing vessel and gear as well as scientific laboratory equipment is provided for in the budget.

GHANA — FAO/UNDP-SF

- Fishery Research Unit

This FAO/UNDP-SF project has been initiated in 1965 and is for the duration of 5 years. SF allocation is consisting of $1,413,600 whilst Government contributions amount to $7,112,500.

The research program to be undertaken has two main objectives: (1) a study on the biology of the sardinella with special regard to expanding the fishing season; (2) a study of the composition of the demersal fish stocks and of the effect of the fishing operations on them. In addition, studies of distribution and fishing techniques for tuna and horse mackerel (Caranx hippos) are undertaken.

The project for which FAO is recruiting an international team of experts, is therefore largely directed towards biological problems of stock assessment, and to the development of suitable and economically profitable gear and new catch techniques, as a pre-investment for further action.

The sardinella and tuna fisheries research programs are of international importance and will represent an essential part of the future co-ordinated researches in the Gulf of Guinea.

- Expansion of Facilities for Fisheries Research on the Volta Lake — FAO/UNDP-SF

This FAO/UNDP-SF was initiated in 1965 and is for a duration of six years. (SF allocation: $1,686,000 Government counterpart contribution $1,797,500).

In view of the national importance of the large man-made lake, which is being created by the construction of the Volta Dam, FAO is assisting three Institutes of the Academy of Sciences, namely the Institute of Aquatic Biology, the Institute of Health and Medical Research, and the Water Resources Institute in carrying out research studies on phytoplankton and zooplankton; aquatic vectors and weeds; taxonomy and biology of fish as well as its parasites; quality of water in the lake as well as its tributaries etc.

A research vessel etc., for this project, being largely resources oriented, as well as part staff and other facilities will be made available whilst FAO recruits a team of international specialists consisting of biologists, fisheries technicians, economists and processing technologists.

INDIA — FAO/UNDP-SF

- Fisheries Training Institute, Bombay

This FAO/UNDP-SF project was initiated in 1962 and is to be completed in 1966. (SF allocation: $607,500; Government counterpart contribution $1,818,669).

The purpose of this FAO/UNDP-SF project is to establish a Central Institute of Fisheries Education in Bombay in order to train Fisheries Officers required at district level for the development of the fisheries industry, and also to train other personnel requiring similar training.

The Institute in Bombay will be equipped with laboratories, fishing training vessels, machinery, gear, etc., whilst an inland fisheries station will be established in Orissa State.

The Institute offers a two year postgraduate diploma course for students who already possess a university degree. The curriculum in addition to elements of such matters as studies in ecology, fish culture, conservation, catching methods, operation of boats and gears, includes on the technological side, harbours, shore establishments, preservation and processing, storage and distribution.

Furthermore, the curriculum includes on the economic side labour and industrial structure, finance, credit, institutional structure, etc. Students will also undertake field work and participate in operations on sea and on land. FAO recruits the international experts, consisting of economists, biologists, gear and processing technologists.

ISRAEL — FAO/UNDP-TA

- Frozen fish processing and marketing

JAMAICA — FAO/UNDP-TA

- Exploratory fishing, improvement in fishing methods and gear

KENYA — FAO/UNDP-TA

- Resource evaluation, tuna long line fishing and general fisheries development.

KOREA — FAO/UNDP-SF

- Deep Sea Fishing Training Centre, Pusan

This FAO/UNDP-SF project was initiated in 1964 and is to be completed by 1969. (SF allocation: $1,013,500

Government counterpart contribution $919,696).

The purpose of this project is to establish and operate a Deep Sea Fishing Training Centre to produce qualified technicians rapidly and efficiently.

The Centre is accommodated at the Ministry of Agriculture and Forestry's Central Fisheries Experimental Station at Pusan, the largest fishing centre of the country. Trainees are selected from graduates of fishery colleges, fishery high schools and other vocational schools, as well as among fishermen. Extensive practical training, mostly aboard training vessels, but partly ashore, are given for a period of 6-12 months, and emphasis is given on fishing techniques, particularly tuna fishing and various types of trawl fishing, and includes instructions in navigation and marine engines. The training vessels are making long distance fishing cruises to the North Pacific, Indian Ocean and China Seas. Appropriate technical training is also provided to selected small boats operators in the use of more efficient gear and methods. Fishing operations conducted under commercial fishing conditions have shown to be profitable.

LIBYA — FAO/Funds-in-Trust

- Consultant on vessel design and procurement

MALAWI — FAO/UNDP-TA

- General fisheries development and fish processing

MALI — FAO/UNDP-TA

- Fish preservation, storage and packaging

MAURITANIA — FAO/UNDP-TA

- Industrial fish processing

NIGERIA — FAO/UNDP-SF

- Fisheries Survey in the Western and Mid-West Regions

This FAO/UNDP-SF project was initiated in 1961, revised in 1963, and is to be terminated by 1967. (SF allocation $540,655; Government counterpart contribution $441,571).

The purpose of this project is to survey the fisheries resources in the Western and Mid-West Region. The project consists of two phases. The first is a survey to supply basic information on the potentialities of fishery resources, and on the various economic and technical factors with relation to the exploitation and utilization of these resources. This phase will also cover the study under present conditions of fishing methods, fish handling, preservation, processing and marketing. The second phase involves demonstration and pilot schemes in order to determine

the most economical methods for development schemes, expanding the fishing industry including processing and marketing.

The international team of FAO experts includes amongst other disciplines specialists for processing and quality control, fishing gear and fishing methods. Fish preservation also takes into account traditional processing methods used by indigenous fishermen, and practical work to improve such methods.

To achieve this, provision is made to set up pilot demonstration plants for salting, drying, and smoke drying of fish and successful experiments were conducted by the FAO processing specialist for the Western Nigeria Fishermens Co-operative Association in Lagos, and also in Aiyetoro (Drum and Altona type of driers). Plans for a fish terminal in Warri have also been prepared by this expert. The terminal is to be situated on the Warri river, and is expected to include a loading jetty and facilities for cold storage, an ice plant, smoke house, store room, and laboratory for quality control.

- Inland fisheries development and boat building — FAO/UNDP-TA

PAKISTAN — FAO/UNDP-SF

- Survey for the development of fisheries in East Pakistan

This FAO operated UNDP/SF project commenced in 1965, and is for the duration of 5 years. (SF allocation $1,757,300, Government counterpart contribution $1,302,500).

The project in particular is assessing the potential for increased fish productions by carrying out exploratory fishing trials and biological studies. Exploratory and experimental fishing operations will take place mainly in the Bay of Bengal off the coast of East Pakistan, and in the estuaries and the lower reaches of the main river systems. Two vessels will use a number of different fishing techniques, including trawling, purse-seining, gill netting, longlining, etc., so that a core of skilled fishermen competent in operating modern fishing craft and gear becomes available.

The FAO recruited international team includes a Gear Technologist, a Fish Products Technologist and a Marketing Expert, to ensure that processing, marketing, and distribution problems can be dealt with adequately.

PERU — FAO/UNDP-SF

- Peruvian Sea Institute (Formerly Marine Resources Research Institute)

This FAO operated SF project commenced in 1960, and finished on 30 June 1966. SF allocation

$959,000. Government counterpart contribution $1,505,300.

PHILIPPINES — FAO/UNDP-SF

- Deep Sea Fishing Development Project

This FAO operated UNDP/SF project has been initiated in 1965 and is for the duration of 5 years. The SF allocation is $1,396,900 and the Goverhment counterpart contribution $2,348,250.

The main objectives of this project are to carry out extensive experimental fishing and to train fishermen in new fishing methods, to improve methods of fish preservation and processing, marketing and distribution, in order to advise on the technical and economic planning of the fisheries industry.

Training will take place on experimental fishing vessels as well as on commercial vessels, as the project is conducted in close cooperation with the industry. Experimental fishing is carried out in the waters around the Philippines Islands, including the Celebes Sea, the Sulu Sea, part of the South Chinese Sea, Pacific water off the Philippines and straits between the Islands. Particular attention will be paid to skipjack and tuna fishing in the Celebes and Sulu seas, utilizing different techniques including tuna long-lining, purse seining, trawling, live bait fishing, gill netting, troll fishing and line fishing.

Particular attention is also given to improve methods of fish handling, preservation and processing, with emphasis on new methods, as well as on the improvement of traditional methods. Activities include smoking, salting, canning, freezing, fermented products development, pickling, etc. The fish processing plants of the Fisheries Commissions are made available for experimental work on fish processing.

In addition to this, advisory services, mainly through consultants are made available in order to develop and finance projects such as new fishing harbours, canning factories, fleet building programs, improved ship building facilities, ice plants, cold stores, and freezing plants. To achieve this the FAO team includes specialists on fish processing technology, but also a naval architect/boat builder, marketing specialists and fisheries economists.

REGIONAL PROJECTS

EAST AFRICA (Republic of Kenya, Tanzania and Uganda)

- Lake Victoria, Freshwater Fisheries Research — FAO/UNDP-SF

This FAO operated UNDP-SF project is to become operational shortly and is for the duration of 5 years. The SF allocation amounts to $823,400 whilst Government counterpart contribution is $580,000.

It is a project aimed at the management and development of freshwater fisheries of Lake Victoria, through experimental fishing, biological investigations, products development, economic surveys and the establishment of a statistical service. The project in particular will strengthen the activities of the East African Freshwater Fisheries Research Organization. It covers also the field of fish products development in cooperation with the Experimental Fish Processing and Demonstration Field Station at Mwanza, Tanzania.

CENTRAL AFRICA (Cameroon, Republic of Central Africa, Congo, Gabon)

- Inland Fishery Project in Africa — FAO/UNDP-SF

The project is to assist the Governments in expanding and developing fish culture through training and research. The total budget is $1,400,000 over 5 years.

CENTRAL AMERICA

- Caribbean Fishery Development Project — FAO/UNDP-SF

This FAO operated UNDP-SF project commenced in 1965 and is for a duration of 4 years. SF allocation $775,600, Government counterpart contribution $772,800.

Participating in this regional FAO/UNDP-SF project are the following states and territories: Barbados, Guyana, Dominican Republic, France (in respect of French Guyana, Guadeloupe, Martinique, and their dependencies); Haiti, Jamaica, Leeward Islands (Antigua, Montserrat, St. Christopher/Kitts, Nevis and Anguilla); Netherlands Antilles, Surinam, Trinidad and Tobago, United States of America (on behalf of Puerto Rico), Windward Islands (Grenada, St. Lucia, St.Vincent)

Main aspects of this Regional FAO/UNDP-SF project are to provide through exploratory fishing, market study, demonstration, and training, a basis for the future growth of the fisheries of the Caribbean Region. The project is divided into two phases, the first one lasting a year being preparatory, in order to become operational in the second phase which is to last approximately three years.

Two exploratory vessels will be devoted to experimental fishing with emphasis on long-lining (pellagic fish) In addition, there will be conducted sink gill-netting (for bottom species, i.e. snapper, grouper; live bait fishing, trawling (surface species) light fishing, seining, etc., as appropriate, geographically or seasonally.

Although shore based courses for fishermen are being held, the greater part of the training will take place on board the exploratory fishing and other vessels available.

(Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama)

- Survey of Fishery Resources on the Isthmus — FAO/UNDP-SF

This FAO operated regional UNDP-SF project is expected to be operational shortly and is for the duration of six years. SF allocation $3,525,700, Government counterpart contribution $2,336,900.

This project was requested by the Economic Cooperation Committee of the Central American Isthmus, and aims to increase production and consumption of marine and brackish water fish and fishery products. To achieve this the project consists of four main parts:

(1) strengthening of fishery administration and planning;

(2) development and management of various fisheries;

(3) a general resources survey, and

(4) improvement of processing and marketing

Training forms a large element in this project, and emphasises the practical aspects of developing the industry and includes fisheries management, fishing methods, preservation and processing, transportation and marketing of fish and fishery products.

Mechanised vessels are used for demonstration, experimental and exploratory fishing, and the boats are equipped for different fishing techniques, including long-lining, gill-netting, purse-seine fishing, trawling, and fishing with lights; trawling for bottom and midwater fish; line fishing for reef fishes.

Adequate marketing and processing methods will be demonstrated; fishery enterprises receive management advice, and emphasis is placed on improved methods of processing, handling, storage and distribution of fish and fishery products. The possibility of replacing imported marine products with locally produced items is given careful attention.

Fish processing activities are carried out in cooperation with the Central American Institute for Research and Industrial Technology (ICAITI), and studies concerning inter-regional trade are carried out in collaboration with the Permenent Secretariat of the General Treaty of Economic Integration of Central America (SIECA).

The FAO team includes biologists, economists, fishing experts, processing technologists and consultants.

COLOMBIA — FAO/UNDP-SF

- Marine Fisheries Development Program

The project will assess the size of commercial fish stocks by conducting exploratory fishing. The international team will be composed of biologists and masterfishermen.

The total budget is $1,864,900 over a 4 year period.

TANZANIA — FAO/UNDP-TA

- General fisheries development, fish processing

THAILAND — FAO/UNDP-TA

- Boat building, inland fisheries development

TOGO — FAO/UNDP-TA

- Organization of fisheries

ZAMBIA — FAO/UNDP-SF

- Lake Kariba Fisheries Research Institute

This FAO operated UNDP-SF project was initiated in 1963, originally for Zambia and Rhodesia, and is for a duration of 4 years. SF allocation is $612,100, Government counterpart contribution $552,000. The purpose of this FAO/UNDP-SF project is to establish a Research Institute for investigation on the hydrobiological, technological and economic aspects of the fisheries potential of Lake Kariba, and the setting up of demonstrations and training programs.

The program also includes stock assessment, testing and introduction of suitable gear, craft and fishing methods, introduction of proper methods of handling, preserving and transporting fish and fish products, analysis of costs of fish processing and distribution and conduct of marketing surveys and development of marketing statistics.

The project will be operated from the Institute located near Lusaka, Zambia.

The FAO international team of experts consists of Biologists, Expert in Fishing Technology, and Fish Processing, Fisheries Economics and specialist consultants.

GUATEMALA — FAO/UNDP-SF

- Preinvestment Study on Forestry Development

The project aims at the preparation of a comprehensive forestry and forest industries development plan for selected areas. It is designed to carry out Forest Inventories in selected areas, on the results of which development plans will be prepared. Local personnel will be trained in modern forest inventory road construction, logging and sawmilling methods and in planning forest industries development.

FAO, as Executing Agency, will supply 210 man-months of expert services and the necessary technical equipment and training facilities.

The project was initiated in August 1963, and is scheduled to be completed in August 1968.

The expected total cost is equivalent to US$ 1,599,700 (UNDP and Government contribution).

GUINEA — FAO/UNDP-SF

- Forestry Training and Demonstration Centre

The project is to help train intermediate staff and workers in the fields of forest and timber utilisation, and to prepare a forest industries development plan. A wood utilization training centre will be established in the wet tropical forest area, and will comprise: logging, sawmilling and woodworking sections. In addition, data will be collected and general survey of the forest resources made for the preparation of a forest industries development plan.

The project is being implemented by subcontracting personnel services (182 man-months) with the exception of the Project Manager and consultants (88 man-months).

Technical equipment required for training and demonstration purposes, as well as funds for fellowship, are being provided by FAO/UNDP-SF.

The project became operational in September 1965 and is scheduled to be completed in September 1971.

The expected total cost is equivalent to US $2,194,459 (UNDP and the Government contribution).

INDIA — FAO/UNDP-SF

- Preinvestment Study of Forest Resources

The purpose of the project is to assist the Government in developing the country's forest resources and associated forest industries; to this end the project is oriented towards planning the expansion of existing

CHILE

- Modernization of sawmilling operations — FAO/UNDP-TA
- Agricultural Engineering — FAO/UNDP-TA

CHINA (Taiwan)

- Improvement of logging and wood conversion methods — FAO/UNDP-SF

COLOMBIA

- Institute for Training and Research in Agricultural Marketing (ILMA), Bogota, enlargement grain storage network, designs and plans of grain elevators and warehouses. — FAO/UNDP-SF

CONGO (Kinshasa)

- Instructor - Agricultural Mechanization Training Centre — FAO/Trust Fund

CUBA

- Fishery gear development, long line fishing (tuna), purse seine fishing. — FAO/UNDP-TA

DAHOMEY

- Grain storage facilities, construction of silos, (maize) groundnut shelling plants (OCAD) — FAO/UNDP-TA
- Mechanization of fishing boats — FAO/FFHC

FRENCH SOMALILAND

- Fishery gear development — FAO/UNDP-TA

GHANA

- Fishery Research Unit, fishing gear development — FAO/UNDP-SF
- Woodworking industries — FAO/UNDP-TA

GREECE

- Fruit and vegetable storage — FAO/Funds-in-Trust

GUINEA

- Logging, sawmilling and woodworking (Training and Demonstration Centre) — FAO/UNDP-SF

INDIA

- Fodder Development, Feed Mixing Plant — FAO/UNDP-TA/FFHC
- Pesticide Analysis and Residue Limits in Foods — FAO/UNDP-TA

- Seed production of Temperate Vegetables	FAO/UNDP-TA
- Power Fishing Development	FAO/UNDP-TA
- Fish Harbour Development and Naval Architecture	FAO/UNDP-TA
- Establishment of Four Logging Training Centres	FAO/UNDP-SF
- Fodder Development	FAO/UNDP-SF
IRAN	
- Pasture and Fodder Crop Investigation Unit, Karaj	FAO/UNDP-SF
- Sawmilling operations	FAO/UNDP-TA
JAMAICA	
- Fishing Gear Development; methods of fishing	FAO/UNDP-TA
JORDAN	
- Farm Machinery Development (dryland farming)	FAO/UNDP-TA
KENYA	
- Agricultural Mechanization	FAO/UNDP-TA
- Fishing Gear Development, Tuna long line fishing	FAO/UNDP-TA
KOREA	
- Deep Sea Fishing Training Centre, Pusan. Fishing gear technology; marine engines maintenance and repair	FAO/UNDP-SF
LIBYA	
- Farm mechanization	FAO/UNDP-TA
- Fishing Boat Development; vessels design and construction	FAO/Funds-in-Trust
- Agricultural Mechanization Centre	FAO/FFHC
MADAGASCAR	
- Agricultural Implements Development	FAO/FFHC
MALAWI	
- Farm Machinery Development (Bunda)	FAO/UNDP-TA
MALAYSIA (Sarawak)	
- Modernization of sawmilling operations	FAO/UNDP-TA
MEXICO	
- Rabies vaccine production	FAO/UNDP-TA

- Fishing Gear Development; fishing operations	FAO/UNDP-TA
NIGER	
- Development of Animal Production and Water Resoures meat transportation in refrigerated trucks.	FAO/UNDP-SF
NIGERIA	
- Boat building	FAO/UNDP-TA
PAKISTAN (East)	
- Farm machinery	FAO/UNDP-TA
PAKISTAN (West)	
- Seed improvement, sugar beet seed	FAO/UNDP-TA
PAKISTAN (Central Ministry)	
- Agricultural machinery	FAO/UNDP-TA
PERU	
- Faculty of Agricultural Engineering, Agricultural University, Faculty of Forestry	FAO/UNDP-SF
PHILIPPINES	
- Deep Sea Fishing Development Project New fishing harbours, improved ship building facilities.	FAO/UNDP-SF
SAUDI ARABIA	
- Farm machinery	FAO/Funds-in-Trust
SENEGAL	
- Motorboat (fishing) building, fishing gear	FAO/UNDP-TA
SOMALIA	
- Grain marketing, storage and price stabilization Store and warehouse construction for maize and sorghum	FAO/UNDP-SF
SYRIAN ARAB REPUBLIC	
- Veterinary vaccines	FAO/UNDP-TA
- Farm mechanization	FAO/FFHC
TANZANIA	
- Forest industries, improvement in saw milling and other woodworking operations	FAO/UNDP-TA

THAILAND

- Naval Architect — FAO/UNDP-TA
- Forest Industries (Pulp and Paper and Wood based Board) — FAO/UNDP-TA

TUNISIA

- Farm Mechanization (Dryland Farming) — FAO/UNDP-TA
- North African College of Agricultural Engineering (Farm Power and Machinery, Farm Mechanics and Workshop Practices) — FAO/FFHC

UGANDA

- Animal Health Laboratory Techniques — FAO/UNDP-TA

UNITED ARAB REPUBLIC

- Sprinkler Irrigation — FAO/UNDP-TA
- Central Agricultural Pesticides Laboratory, Cairo — FAO/UNDP-SF

  This project commenced in 1962 and is to be finished by the end of 1968. Total UNDP allocation and Government counterpart contribution is $1,017,300 The aim of the project is to develop a local pesticides industry, to test efficiency of pesticide formulations and to provide a basis for legislative control with regard to the safe use of pesticides.

- Vegetable Improvement and Seed Production Research Centre, Dokki — FAO/UNDP-SF

URUGUAY

- Seed Industry (herbage crops) — FAO/UNDP-TA

VENEZUELA

- Tropical Fouder Processing — FAO/UNDP-TA

YUGOSLAVIA

- Residual Pesticides in Fruit, Grapes and Potatoes — FAO/UNDP-TA
- Refrigeration of Vegetables — FAO/UNDP-TA

ZAMBIA

- Timber Mechanics — FAO/EPTA

AFRICA REGION

- Fishing Gear and Methods, Training Centre — FAO/UNDP-TA

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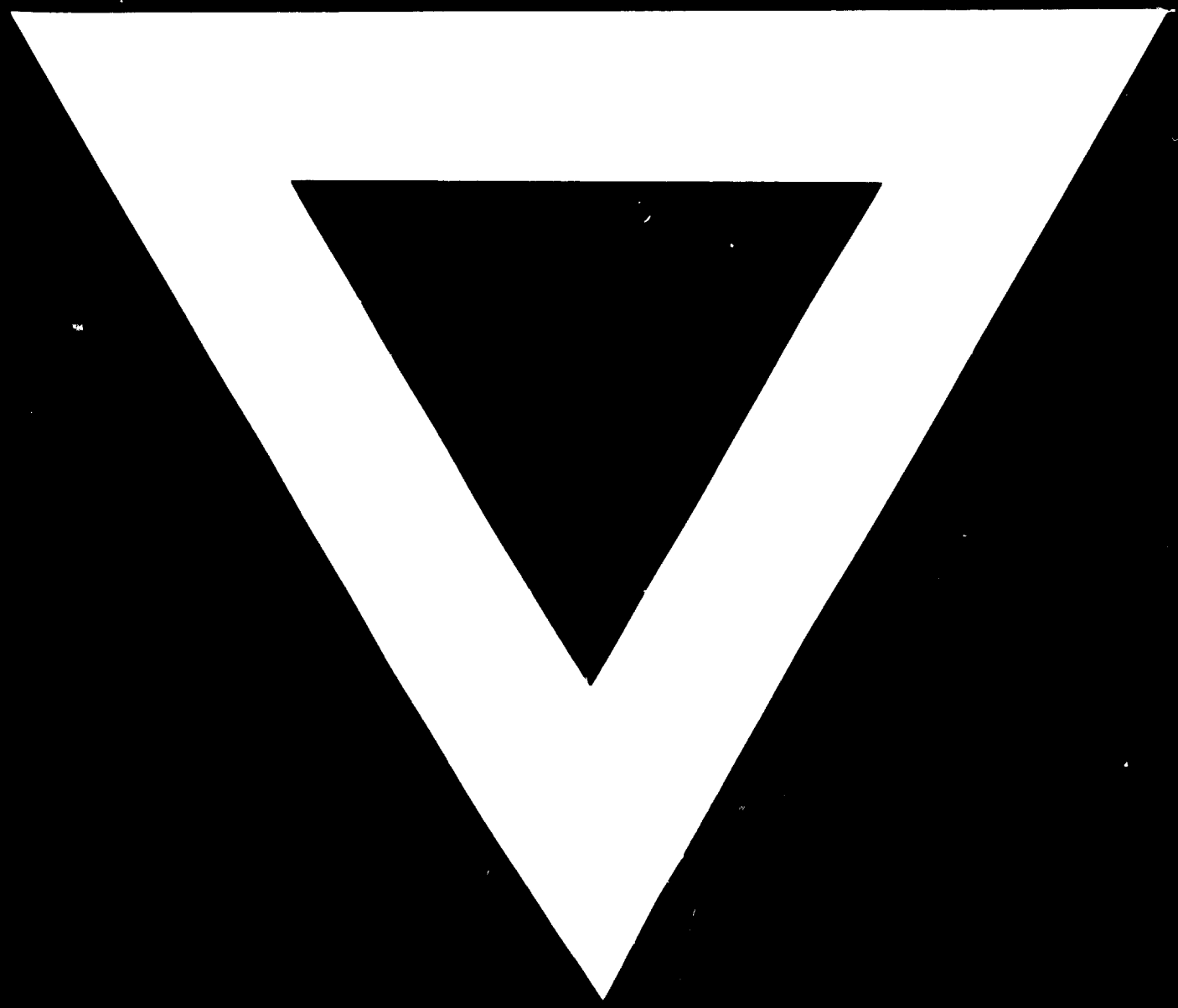

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