

C 89/8

LA CONSTITUCIÓN DE TODAS LAS ORGANIZACIONES DE ASESORÍA A LA ECONOMÍA MUNDIAL Y A LA HUMANIDAD.

接受本章程的国家为了下述宗旨：
提高它们各自管辖下的人民的营养
水平和生活标准；
改进一切粮农产品的生产和分配的
效率；
改善农村人口的状况；

ET DE CONTRIBUER AINSI A L'ECONOMIE MONDIALE, CONSTITUENT PAR LES PRESENTES L'ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE, PAR L'INTERMEDIAIRE DE LAQUELLE LES MEMBRES SE TIENDRONT MUTUELLEMENT INFORMES DES MESURES PRISES ET DES PROGRES ACCOMPLIS DANS LES CHAMPS D'ACTIVITE ENONCES CI-DESSUS.

الدستور، وقد عقدت العزم على
بدعم العمل الفردي والجماعي

المعيشة للشعوب التابعة لكل منها،
نتجات الغذائية والزراعية وتوزيعها،

A L'OCCASION DU VINGTIEME ANNIVERSAIRE, LE PREAMBULE DE L'ACTE CONSTITUTIF A ETE OFFICIELLEMENT MODIFIE POUR AFFIRMER QUE L'OBJECTIF ULTIME DE TOUTES LES DIVERSES ACTIVITES DE L'ORGANISATION EST D'AFFRANCHIR L'HOMME DE LA FAIM. LE TEXTE DIT DESORMAIS:

review of the REGULAR PROGRAMME 1988-89

ومن ثم تساهم في خلق اقتصاد عالمي
تنشئ بهذا «منظمة الأغذية
اليها فيما بعد بلغة «النظمة» والتي
بعضهم بعضا بما يتخذ من تدابير و
مبادئ العمل المبينة فإسقى.

修改后的句子现为：
“从而促进世界经济的发展并保证
人类免于饥饿。”

PREAMBLE TO THE CONSTITUTION OF FAO

THE NATIONS ACCEPTING THIS CONSTITUTION BEING DETERMINED TO PROMOTE THE COMMON WELFARE BY FURTHERING SEPARATE AND COLLECTIVE ACTION ON THEIR PART FOR THE PURPOSES OF:
RAISING LEVELS OF NUTRITION AND STANDARDS OF LIVING OF THE PEOPLES UNDER THEIR RESPECTIVE JURISDICTIONS,
SECURING IMPROVEMENTS IN THE EFFICIENCY OF THE PRODUCTION AND DISTRIBUTION OF FOOD AND AGRICULTURAL PRODUCTS,
BETTERING THE CONDITION OF RURAL POPULATIONS,
AND THUS CONTRIBUTING TOWARD AN EXPANDING WORLD ECONOMY,

CON OCASION DEL 20° ANIVERSARIO, FUE SOLEMNEMENTE MODIFICADO EL PREÁMBULO DE LA CONSTITUCIÓN PARA RECONOCER QUE EL OBJETIVO FINAL DE TODAS LAS ACTIVIDADES DE



FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

联合国粮食及农业组织的章

PRÉAMBULE
CONSTITUTIF DE LA FAO

接受本章程的国家为了下
提高它们各自管辖下的人
水平和生活标准；
产品的生

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DIRECTOR-GENERAL'S FOREWORD

This is the sixth Review of the Regular Programme. As in the case of the previous Reviews, it assesses the performance of FAO's Programmes with respect to their objectives, the efficiency of implementation and the effectiveness in achieving their results.

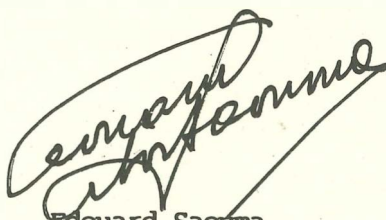
This Review is presented at a time when the Organization continues to face problems of financial liquidity and a comprehensive Review of FAO's roles, objectives, strategies and priorities is underway. These factors reinforce my own conviction, as I have often emphasized, of the need for constant vigilance in ensuring the relevance and cost-effectiveness of FAO's programme and operations. The evaluation processes, including the Review of the Regular Programme, together with the planning, programming and monitoring mechanisms, comprise the major tools for the judicious management of the Organization's programmes and resources.

In Part Three of the Review, syntheses of two special topics of wide interest to member countries have been presented: Review of FAO's Policy and Planning Support to Member Countries and FAO Support to Member Countries in Conservation and Amelioration of the Natural Environment. These syntheses provide comprehensive information on the scope and achievements of FAO's activities in these two vital fields and raise issues of special interest in the current debate on programme priorities.

Efforts have been, and will continue to be, made to improve and strengthen the Organization's capacity for evaluation and monitoring. In particular, I invite recognition of the fact that the Review of the Regular Programme has been progressively improved as a result of effective inter-action between the Governing Bodies and the Secretariat over the last ten years.

Obviously, there is scope for further improvements. For example, one may always question whether the lessons emerging from the Reviews have always been learned sufficiently for the improvement of future programmes. The feedback into future programmes and operations is the central rationale for evaluation as a management tool, and this is an area where every further effort will be well placed, in order to ensure effective use of the Review as well as other evaluations.

It is in this spirit that I submit this Review. I trust that the Conference will find the Review useful in making its own assessment of the relevance and cost-effectiveness of FAO's Programmes, and I look forward to its further constructive observation and guidance.



Edouard Saouma
Director-General

SUMMARY

Part One

1. The performance reviews of the Major Programmes are brief and highlight their achievements during 1987-89. Over three-quarters of the biennial Regular Programme funds have been channelled to the substantive Major Programmes, comprising the three technical Major Programmes on Agriculture, Fisheries and Forestry (47.4%), Development Support Programmes (15.7%) and the Technical Cooperation Programme (12.8%). A major share of the Regular Programme under the technical programmes is also devoted to providing direct support to field activities through advisory services and technical support to member countries, as well as through technical and operational backstopping of field projects. This provides for built-in mutual feedback between the Regular and Field Programmes and reinforces the Organization's ability to serve its Member Nations cost-effectively. The Review highlights, in each chapter, the effects of the financial crisis on programme implementation. Chapter Four presents quantitative information on selected aspects of programme implementation under the three technical Major Programmes.

Agriculture: Major Programme 2.1

2. Major Programme 2.1 is the largest and absorbs nearly 78% of the Regular Programme resources devoted to the technical and economic activities. It provides multi-disciplinary support for the development of food and agriculture. For the 1988-89 biennium, the Conference stressed the priorities of food production, food security and African development. Other important areas included the conservation of resources, environment, work with small-scale producers, disadvantaged groups including women, the Organization's function as a world information centre for agriculture and the Global Information and Early Warning System (GIEWS) (1.1).

3. During the course of the biennium, work has been seriously constrained by the financial crisis affecting the Organization (1.4). The most immediate and serious effect has been observed in training, where the number of trainees in 1988-89 was 36 percent below the figure for 1986-87 (1.169). Examples are provided of the very serious effects of the financial constraints on such programme areas as research development and quantifying economic losses due to soil erosion (1.170-1.172) and the slow down in implementation of such major activities as the Undertaking on Plant Genetic Resources (1.173).

4. Output continued to be substantial however and in Natural Resources, the development of a central FAO Geographic Information System (GIS) has continued. Guidelines were issued for land use planning (1.5). Pilot units for Rhizobium inoculant production reached a capacity adequate for 150,000 ha of grain legumes per year (1.6). The Fertilizer Programme has expanded its project coverage and its orientation has broadened, with some projects concentrating on more detailed trials and others on the establishment of national fertilizer planning units (1.13). The number of simple irrigation training manuals for middle-level technicians expanded to six (1.18). Work commenced on a world map of land degradation (1.21).

5. Much of the Crops Programme is very field-oriented and network approaches were stressed. The Prevention of Food Losses (PFL) programme had 35 operational projects and an evaluation made recommendations for its improvement (1.29-1.30). By March 1989, 87 countries adhered to the International Undertaking on Plant Genetic Resources and 24 countries were prepared to place germplasm collections at the disposal of the network. Crop programmes touched on such aspects as field trials (1.34), lesser known edible oils (1.36) and peri-urban horticulture (1.37). In plant protection, attention was given to implementation of the International Plant Protection Convention (1.42) and the Code of Conduct on the Distribution and Use of Pesticides (1.43). The integrated pest management approach has continued to receive emphasis (1.44). The Emergency Centre for Locust Operations supported the coordinated campaign which helped to bring the outbreak to an end (1.48). An evaluation was completed of FAO/Italy agricultural mechanization projects, following which improvements have been implemented (1.50).

6. An in-depth review of Sub-programme 2.1.2.6 (Food and Agricultural Industries) is contained in Chapter Seven (see also Part Two of this Summary).

7. For Livestock, an important new area of activity has been biotechnology (1.55). Encouraging results have been obtained from trial work on improved methods of trypanosomiasis control (1.58). Fodder tree introduction has received emphasis (1.59-1.60) as well as fodder and pasture seed production (1.62) and the use of crop residues (1.63). Work has begun in tackling another emergency disease outbreak: the American screwworm (1.67). Control programmes have continued for a wide range of animal diseases (1.65-1.70). Work is now under way on conservation of animal genetic resources (1.72). The FAO/DANIDA Dairy Development and Training Programme was evaluated and conclusions drawn for a future phase (1.75).

8. In Research and Technology Development, much of the work is interdisciplinary (1.81). In research development, training continued to receive emphasis (1.83). The joint FAO/IAEA division worked on soil fertility (1.87), plant breeding (1.88), animal vaccines and diagnostic agents (1.89), sterile insect technique (1.90) and pesticide residues (1.91). The International Information System for the Agricultural Sciences and Technology (AGRIS) is included in Programme 2.1.4 since 1988 (1.93) and both AGRIS and CARIS continued to expand the extent of computer access (1.93-1.95). The joint FAO-Dutch Programme in Remote Sensing was evaluated and improvements to maximize the system's usefulness to users are now being implemented (1.97). Activities in energy were carried out in many cases through networks (1.100-1.102).

9. Rural Development: Follow-up to WCARRD was an important area of inter-disciplinary activity (1.105-1.106). A Global Consultation on Agricultural Extension is scheduled to take place in October 1989 (1.109). Development of human resources continued to receive emphasis (1.112). Improved management was an area of focus in cooperatives (1.113) and experience from people's participation projects is now being introduced into larger development programmes (1.114). The Plan of Action for Integration of Women in Development was agreed by the FAO Council in 1988 (1.115). In Agricultural Marketing, studies and papers were released on issues in agricultural marketing liberalization, privatization and subsidy (1.117-1.119).

10. In Nutrition, some 80 country profiles have been prepared (1.125). Under-exploited traditional food crops received attention (1.126). In the context of the GATT Uruguay Round, discussions have taken place on the use of Codex standards as a point of reference in non-tariff barriers to international trade (1.128). Training activities have given attention to the hazards of mycotoxins (1.132) and the incorporation of nutrition issues into rural development plans and programmes (1.134).

11. Under Food and Agricultural Information and Analysis, the ambitious concept of a World Agricultural Information Centre has now been launched (1.138). The Global Information and Early Warning System (GIEWS) continued to receive priority and technological advances in remote sensing, etc., were applied (1.141-1.142). Preparations have proceeded for the 1990 World Census of Agriculture (1.143). Achievements under Sub-programme 2.1.7.2 (Food and Agricultural Information and Analysis) are reviewed in depth in Chapter Eight (see also Part Two of this Summary).

12. In Food and Agricultural Policy, work was initiated on analytical tools for the integration of environmental considerations into the planning process (1.147). The sustainability of ECDC/TCDC arrangements were considered (1.149). Major studies were published for Latin America and the Caribbean (1.148) and Europe (1.150). A particular study was made of the problems of structural adjustment (1.152). Aid flows also received attention (1.153). Informal price and marketing arrangements have continued for certain commodities (1.154). The future orientation of the Food Security Assistance Scheme was reviewed by the Committee on World Food Security (CFS) (1.156). Work in agricultural planning assistance included a number of studies which are discussed in the text (1.160-1.163).

13. Among the Issues facing the Major Programme are those imposed by resource shortfalls (1.174-1.176), inter-disciplinary activities (1.177), Field and Regular Programme inter-actions and technical backstopping (1.178- 1.179) and the strengths and problems of TCDC networks (1.180-1.181).

Fisheries: Major Programme 2.2

14. Activities within the Major Programme have continued to centre on the follow-up and implementation of the five Programmes of Action endorsed by the 1984 World Conference on Fisheries Management and Development (2.2).

15. Financial constraints have severely affected technical backstopping activities under Programme 2.2.1 - Fisheries Information (2.5). Work during the biennium was focussed mainly on the updating of data and the dissemination of fisheries statistics (2.8). A database for fisheries was established in the Gulfs and manuals on stock assessment were prepared (2.11).

16. Despite serious reductions in resources, work under Programme 2.2.2 - Fisheries Exploitation and Utilization continued to provide support on resource assessment to member countries (2.15). Emphasis was given to the dissemination of computerized packages for stock analysis (2.16). Close cooperation has been maintained with the network of Aquaculture centres in Asia (2.20). Workshops on shrimp management were organized in support of field projects (2.22).

17. High priority was given to environmental aspects related to marine pollution (2.24) and development of aquaculture in the LDCs of Asia and the Pacific (2.26). A comprehensive study on recent developments of shrimp culture in the Asian region was also prepared (2.27).

18. A total of 23 countries has been reviewed to assess the status of their aquaculture. This work is expected to continue for other countries during the next biennium (2.30). A study on the use of high resolution satellite data for Agricultural and Marine Application in the Maldives was also finalized and published (2.31). Work on the impact of species transfers has also received particular attention and an updated register on the introduction of inland aquatic species was published (2.33).

19. The development of small-scale fisheries has been pursued through a variety of investment missions fielded in support of national programmes (2.40). Cooperation with IOC, IMO and ICOD has led to the elaboration of guidelines for the management, operation and use of research vessels (2.44). Research activities have focussed on the design of small fishing vessels and the review of new materials for their construction (2.45).

20. Under the Sub-programme on Fish Utilization and Marketing, emphasis has been placed on the promotion of international trade (2.46). Two commercial conferences (Shrimp '88 and Squid '89) have been held in support of the sector. The INFOFISH network which started under the auspices of FAO has become an independent inter-governmental organization (2.48).

21. Work under Sub-programme 2.2.3.1 - Fisheries Policy and Planning has been reviewed in-depth in Chapter Nine (see also Part Two of this Summary).

22. Secretariat and administrative support was maintained to the network of FAO regional fishery bodies (2.51). However, 24 sessions and meetings to be held in 1987 were reprogrammed for the 1988-89 biennium (2.52). Several meetings of the regional fishery bodies were held in 1988 and 1989 i.e. CEEAF Sub-Committee on Management of Resources, Fishery Committee for the Eastern Central Atlantic, European Inland Fisheries Advisory Commission, CEEAF Sub-Committee on Fishery Development, IPFC Committee for the Development and Management of Fisheries in the South China Sea, IPFC Working Party on Aquaculture and the IOFC Committee for the Development and Management of Fisheries in the Bay of Bengal (2.53-2.59).

Forestry: Major Programme 2.3

23. The Tropical Forestry Action Plan, aimed at coordinating efforts both inside and outside FAO, for the planning, organization and implementation of activities to develop and conserve the world's tropical forest resources, continued to be the primary focus of the Forestry Department's activities (3.4). The Department was heavily engaged in preparation of national, sub-regional and regional plans. Particular attention was given to improving planning methodologies, to the coverage of linkages between forestry and other sectors and to strengthening of WCARRD issues in the TFAP (3.5).

24. Under Forest Resources and Environment (Programme 2.3.1), the emphasis was on assisting countries in the inventory and monitoring of their forest resources. The Forestry Inventory Data Processing System (FIDAPS) was fully documented and distributed to developing countries and data on forest resources were processed in the Forest Resources Information

System (FORIS), which now includes 129 countries (3.6). Preparations were made for conducting the 1990 Global Forest Resources Assessment (3.6, 3.7). Two TCDC networks on seed collection, conservation, evaluation and exchange of genetic materials in the dry and humid tropics were operational. Work continued on *ex situ* and *in situ* conservation, the latter with assistance from UNEP (3.10). Several activities were conducted on forest fire management (3.11). A number of networks were further developed, including those for National Parks and Wildlife Management for Latin America and the Caribbean (3.13), Arid Zone Forestry in the Sahel (3.13), Agroforestry in Latin America and the Caribbean (3.15) and Upper Watershed Management in the Caribbean (3.15).

25. In Forest Industries and Trade (Programme 2.3.2), support was continued to planning for sound development of forest industries, improving utilization by reduction of waste and strengthening national capabilities in training in charcoal manufacture and forest harvesting (3.16-3.18). Work on tropical timber concentrated, with the International Tropical Timber Organization, on the development of the monthly bulletin "Tropical Forest Products in World Timber Trade" (3.19).

26. Activities under Forest Investment and Institutions (Programme 2.3.3) focussed on institutional development, international information and perspectives for the future of forestry sector planning and involvement of rural people as managers and direct beneficiaries of sustainable forestry (3.23). In addition to a number of new publications (3.24), regular editions of the Yearbook of Forest Products, Pulp and Paper Capacities and Forest Product Prices were issued. These publications are the source of forestry sector data for the UN and other international organizations (3.25). These data are now in computer readable form (3.26). Work on community forestry emphasized the development of better appraisal and participatory monitoring and evaluation tools. Studies were carried out to develop better understanding of tenure, local institutions and indigenous resource management as a basis for designing forestry activities which benefit the poor (3.33). The International Conference on Forestry and Food Security produced an information base on the links between forestry and food security. It was found that forestry's main contribution to food security is in the form of income generated through gathering, processing and sale of a wide gamut of wood and non-wood products of trees and forests (3.34). Work under Sub-programme 2.3.3.1 (Training and Institutions) is reviewed in depth in Chapter Ten (see also Part Two of this Summary).

27. Forestry programmes were considerably constrained by the FAO financial crisis (3.39-3.41) and face the prospect of significant further demands (3.43). The Tropical Forestry Action Plan will continue to provide the focus of effort in the next biennium (3.42).

Information Base Related to Three Technical Major Programmes

28. Chapter Four presents quantitative information on selected aspects of programme implementation (training, meetings, publications, direct support to member countries and technical backstopping of field projects) in a combined form for the three Major Programmes. Effects of the financial constraints experienced during the last two biennia, and especially in 1988, are discernible in the overall declining trends in these indicators (4.2).

29. Over 600 training activities (courses, workshops and study tours) have been undertaken during 1988-89, involving nearly 12 500 trainees. This indicates an overall decline of about 20% in the total number of activities and a decrease by one-third in trainees over the previous biennium, especially under the Major Programme - Agriculture (4.7, 4.8). The Regional Offices have continued to play an active role, accounting for about one-third of the total activities and the number of trainees in 1986-87 (4.10).

30. Some 580 meetings (including seminars and expert consultations), have been held during the biennium with over 16 200 national participants. These figures represent a decline from 1986-87 of 3% in the number of meetings and 27% in the number of national participants, especially under the Major Programme Fisheries (4.13).

31. It is estimated that 1 516 publications have been issued during 1988-89, marking a decline of 4% from the previous biennium. The reduction is particularly marked for the Regional Offices (17%), but the full effect of the financial constraints will be felt later when the work started in 1988 would normally be published (4.14).

32. The technical staff at Headquarters and Regional Offices have devoted about 20% of their work months to direct support to member countries in the current biennium. The total work months of some 3 840 (about equally shared by FAO staff and consultants) represent a decline of 12% from the peak level achieved in 1984-86 (4.16). The only exception to this overall trend has been the Major Programme Fisheries, which showed an increase of over 50% (4.16).

33. The total work months spent for technical backstopping of field projects are estimated at over 3 300 during 1988-89, a decline of about 15% from the previous biennium, with a notable decrease in the Major Programme Fisheries. Over one-third of professional staff time under the three Major Programmes is devoted to technical backstopping (4.17).

34. The importance of data bases has been growing, and an increasing number of small data bases have been established at both Headquarters and the Regional Offices. The larger ones include AGRIS, AGROSTAT, the Aquatic Sciences and Fisheries Information System, and ARTEMIS on remote sensing (4.19).

Technical Cooperation and Development Support:
Major Programmes TCP and 3.1 to 3.4

35. Submissions for TCP assistance declined from 589 requests in 1986 to 324 in 1988. The number of approvals also declined, reaching 257 projects in 1988 for a total cost of US\$ 27.9 million (5.6). The decline in the number of requests reflects the closure of the ARPA Programme in May 1988 (5.7).

36. TCP allocations for Investment Support reached 10.5% of approvals in 1988, a trend which may have significant implications for future programming (5.8). TCDC, a new category created in 1986, has continued to grow reaching 4.8% of resources in 1988 (5.9.).

37. The regional distribution has remained the same, with Africa receiving the largest share in assistance, 42.5% of resources followed by Asia and the Pacific, Latin America and the Caribbean, the Near East and North Africa and Europe (5.11).

38. Overall Field Programme delivery during 1987-88 reached US\$ 654.3 million. UNDP financing covered 905 on-going projects for a total delivery of US\$ 283.2 million during 1987-88. The introduction of improved Field Programme procedures has facilitated quick response to incoming requests (5.18). Project expenditures under Trust Fund allocations reached US\$ 307.5 million during 1987-88. Italy has continued to be the largest single donor accounting for 19% of the Trust Funds. The Netherlands accounted for 13% of allocations followed by the World Bank and Saudi Arabia with 8% each (5.19). Unilateral Trust Funds have declined from US\$ 107 million in 1985-86 to US\$ 34 million in 1987-88. The decline is due to current lending policies and their effects on technical assistance projects (5.21). The focus of overall Field Programmes has remained on Africa which represented 48% of total expenditures (5.22).

39. ^{*}Eighty-five investment projects prepared by the Investment Centre were approved for a total cost of US\$ 3 003 million (5.32). The major share of projects (61%) were in the Sub-Saharan Region (5.34). Demand for the Investment Centre's service reflects the present stress on structural adjustment and decreased borrowing. The number of Sector and Sub-sector Studies is expected to continue to increase in order to provide a framework for lending strategies for member governments (5.45).

40. Demand for assistance under the Freedom-from-Hunger Campaign has increased, reaching US\$ 5.2 million in 1986-88 with UNDP allocations providing for the largest share (5.48). The long-standing experience of FFHC/AD with NGOs is increasingly sought both from developing regions and donor partners (5.51).

41. A total of 105 countries are covered by FAO Representations (5.53). During the biennium, efforts have been made to strengthen the staffing of the Representations through selection of new candidates with experience and post-graduate education in rural development, while maintaining staffing levels at a strict minimum (5.54). Involvement of FAO Representations in support of National Project Directors has also increased (5.56).

Information and Documentation (Major Programme 5.1)

42. During the biennium, the main focus of the Public Information Programme remained on world food security and the locust threat to Africa and the Near East as well as on FAO's regular assessments of the world food situation (6.3). Regional Conferences were given wide coverage. Cooperation with RAI led to the production of a special 90-minute programme entitled "Africa Africa" (6.6-6.7).

43. Production of information materials has undergone a rapid change during the period under review with the full integration of visual media activities with editorial and writing activities. The change is typified by the installation, in early 1988, of a computer system to produce graphic displays, design booklets and prepare newsletters (6.10-6.13). The production of *Ceres* was suspended during 1988. The suspension will cover all the 1989 issues and the early part of 1990, when it is planned to be relaunched (6.15).

44. Acquisitions of outside material and periodical subscriptions by the David Lubin Memorial Library had to be substantially reduced during 1987-88 due to austerity measures. The FAO bibliographic data base was expanded by some 5,800 documents, reaching now nearly 109,000 titles (6.16-6.18). Twenty-seven libraries are now members of AGLINET (Worldwide Network of Agricultural Libraries) coordinated by the FAO Library (6.19).

45. Overall production of publications and main documents was lower during 1988 than in previous years; however, sales revenue increased through an intensification of promotion activities (6.20-6.21). Efforts were made to increase efficiency through the introduction of a new computerized system for word processing, desk top publishing and graphics, as well as the reduction of overtime and use of temporary staff (6.23-6.25).

46. Document processing requests and wordage of documentation for meetings considerably decreased in 1988, in line with the Organization's policy to reduce the length of documentation and focus on the more technical material required for regular meetings and publications (6.26-6.27).

Administration (Major Programme 5.2)

47. Due to the financial constraints, the support provided by the Administrative Services Division to its field programme has been constrained (6.30). A number of economy measures were introduced, especially with respect to programmes for maintenance work and communications (6.34-6.36). The Financial Bill worth Lit. 25 billion for improvements of Headquarters accommodation has been approved by the Host Government and work is planned to start as of mid-1989 (6.35).

48. During the biennium, support to FINSYS development has continued to receive the highest priority and it is expected that FINSYS Phase II will be fully implemented by January 1990, providing the Organization with a greatly improved ability to process financial data and to exercise efficient and effective control over its financial resources (6.38-6.40). The financial crisis with the resulting cash flow problems and several key staff vacancies have put severe strains on Treasury operations (6.41-6.43).

49. Usage of computing resources at the Computer Services Centre continued to increase at a rapid pace and in early 1987, a second mainframe computer was installed (6.45) and various improvements were made in office automation facilities (6.46-6.48). Phase I of FINSYS-PERSYS has been now fully implemented with effect from the April 1989 payroll cycle (6.49).

50. Although the number of vacant Professional posts permitted to be filled decreased during the biennium, efforts continued to be made to accelerate recruitment procedures and to increase the number of applications from under- or non-represented countries in the Organization (6.51). To optimize available human resources, an Ad Hoc Committee on Redeployment was set up and permitted the redeployment of a significant number of staff (6.52). While staff training resources have been substantially reduced, training has continued in key areas (6.54).

Part Two

51. The chapters (Seven to Ten) under this section cover in-depth reviews of four selected technical Sub-programmes. These include Food and Agricultural Industries (Sub-programme 2.1.2.6), Situation and Outlook (Sub-programme 2.1.7.2), Fisheries Policies and Planning (Sub-programme 2.2.3.1) and Forestry Training and Institutions (Sub-programme 2.3.3.1).

Food and Agricultural Industries - Sub-programme 2.1.2.6

52. The sub-programme has concentrated its activities on upgrading traditional food processing technologies, promoting indigenous flours and composites, apiculture, hides and skins improvement and animal by-product utilization, processing of natural fibres, sericulture and the application of new and emerging technologies in food and non-food processing (7.8).

53. In the upgrading of traditional food technologies, good results have been achieved in improving milling technologies of indigenous grains, especially rice milling and the processing of fruits and vegetables (7.16-7.19).

54. Work on indigenous flours and composites has confirmed the technical feasibility of the operation but several evaluations have confirmed that success depends on the presence of a sound economic policy framework. Recent work on wheatless bread has proved most promising (7.25-7.28).

55. Many developing countries have benefited from assistance in apiculture through demonstration, extension and applied research and the strengthening of national apiculture centres (7.29-7.30). Ten countries have been assisted in promoting their hides and skins industry and increasing revenues from this source (7.32-7.33).

56. In several countries, the sub-programme has successfully improved the processing of natural fibres (7.35-7.36) and the development of sericulture, which mostly benefited rural women (7.38-7.40).

57. The sub-programme is giving increasing attention to energy production and conservation, biotechnology in food and non-food processing and residue utilization (7.42, 7.44 and 7.46-7.48). In several countries, it has assisted agro-industrial planning, programming and investment project preparation (7.51).

58. The sub-programme has contributed to rural development through expanding the volume of marketable products and income-earning activities, import substitution of processed agricultural commodities, improving the value of farm produce, improved resource utilization and the development of new technologies (7.53-7.54, 7.56-7.59 and 7.61).

59. In future, FAO's assistance in agro-industry should place more emphasis on arrangements for vertical integration, greater involvement of the private sector and farmers and encouraging investment by transnational corporations in developing countries (7.65).

60. In order to better serve the member countries, greater coordination is needed between the sub-programme and the activities of other 22 sub-programmes with an agro-industry component, as well as establishing closer cooperation with other UN agencies, especially UNIDO (7.69-7.70).

Situation and Outlook: Sub-programme 2.1.7.2

61. The Sub-programme has an important role among FAO's information activities, especially by monitoring and reporting on the current status of food and agriculture in general and on the trends in commodity markets and trade at the global, regional and national levels (8.6-8.7). It is linked closely to all the major FAO activities related to information and analysis, as well as policy and planning, and maintains collaboration with the major international and bilateral organizations active in these fields, especially IMF, the World Bank, OECD, GATT, UNCTAD and USDA (8.12-8.13). The major outputs comprise (i) the annual State of Food and Agriculture (SOFA), including the SOFA publications, (ii) the annual Commodity Review and Outlook publication, and (iii) a wide range of statistical and analytical information on over 80 key agricultural commodities (8.9).

62. Emphasis has been placed on improving the quality and coverage of the information to enhance its utility, both within and outside FAO, as well as to strengthen the analytical content of the SOFA and the Commodity Review and Outlook and to ensure timely publication of these documents (8.8). Particular attention has been given to strengthening analyses in both publications on the implications of macro-economic developments, policy-oriented issues and on the short-term outlook (8.18 and 8.32).

63. The SOFA reporting, especially the main SOFA publication issued since 1947, has remained a difficult task, given the wide scope of work involved, and efforts have centred on improving the analytical content, the coverage and timeliness of the SOFA publication (8.16-8.17). Some encouraging progress has been made. The analytical content is being upgraded by highlighting important effects of macro-economic factors and policies on the food and agricultural production and rural development performances, both at the global and regional levels (8.18). Coverage has been improved through strengthening the regional analysis and the analytical focus on policy-oriented issues (8.20). A more balanced structure of the SOFA has been established, comprising the world review, regional review and special topics, the latter covering in-depth reviews of topics of significance to world food and agriculture (8.21-8.23). Arrangements have been worked out during 1988 to improve the editorial and publication aspects of the SOFA (8.24).

64. The Commodity Review and Outlook, a well established publication since 1960, has been further consolidated by enhancing its analytical content, aimed at providing better insight into the dynamics of international commodity markets and examining issues related to enhancing the participation of developing countries in these markets. The coverage of macro-economic and policy aspects has become more extensive and in-depth, and assessments on market outlook have been strengthened (8.32). The special topics covered analytical reviews of commodity trade aspects of direct interest to many developing countries (8.34-8.35).

65. Monitoring of commodity and trade situations has covered over 80 agricultural commodities to provide a factual basis for commodity policy and trade work (under Sub-programme 2.1.8.3) as well as for food information and security work under Sub-programmes 2.1.7.3 and 2.1.8.4 (8.37). Enhanced computerized application systems have led to more efficient compilation and use of the data and better integration among these databases with other databases in FAO (8.38). Progress has also been made in extending the coverage to additional commodities, especially

traditional non-cereal crops, such as pulses, roots and tubers, and tropical horticultural crops (8.39-40). Much of the information is routinely disseminated, particularly through special commodity surveys and studies (8.42).

66. Both the SOFA and the Commodity Review and Outlook are unique in terms of their comprehensive coverage, both substantively and geographically, and are among the most widely disseminated FAO publications (8.44-8.47). Improvements made in both publications will further enhance their relevance and utility, and the expansion of the commodity information systems will also add to the unique value of FAO's commodity intelligence work. The current emphasis on macro-policy aspects will increase the importance of the Sub-programme, but will require continued efforts in improving the quality of information (8.51). Close cooperation between ESPS, GII and GIP will continue to be essential in ensuring timely publication of the SOFA document (8.52).

Fisheries Policy and Planning (Sub-programme 2.2.3.1)

67. Under the Exclusive Economic Zones (EEZs), the management of the fisheries resources has become extremely complex (9.1-9.2) and the World Conference on Fisheries Management and Development provided the thrust for the activities of the Sub-programme (9.4-9.5). The Sub-programme has sought to strengthen national planning, encourage a coordinated approach to fisheries project assistance and provide technical support to countries in the planning and management of fisheries (9.6). An indication of Regular Programme resources devoted to the Sub-programme and a statistical summary of activities are provided (9.8-9.12).

68. The Sub-programme has devoted considerable attention to the follow-up of the 1984 World Fisheries Conference. Consultation has been fostered between countries on the world fisheries situation and outlook, marking of fishing vessels, investment criteria and improved coordination between development agencies (9.14-9.17). Support to regional fisheries bodies has been extensive and their role in ECDC/TCDC was discussed at COFI (9.18-9.19). Analytical studies have addressed a range of issues and efforts have been made to broaden and improve fisheries data and information (9.21-9.24).

69. Training in fisheries planning, management and investment reached over 200 participants in the current biennium. Courses have improved their focus, approach and the quality of the training materials and exercises and discussion have assumed a growing role in such courses (9.25-9.29). Fisheries development guidelines have also been developed (9.30-9.32).

70. Broad-based policy advice has formed an important part of the Sub-programme's work, particularly with support from the Norway/FAO-EEZ Programme (9.33-9.34). Technical support to the Field Programme has been largely directed to the backstopping of sub-regional projects which bring together a coordinated package of inputs. A few medium-term projects concerned specifically with fisheries planning and management have now started operations. In total, some 40 percent of staff time is devoted to technical backstopping (9.39-9.42).

71. The Sub-programme has influenced the attitudes of countries and regional fisheries bodies to the importance of fisheries management and of socio-economics in fisheries as well as decisions to employ standard markings on fishing vessels (9.44-9.45).

72. The chapter notes the necessity of regulating fishing effort and formulating policies over an adequate time horizon (9.52-9.53). Attention is drawn to questions requiring special study, including balanced off-take from the fisheries resource, aquaculture and joint venture and licensing agreements (9.54). It is observed that statistics require strengthening to take better account of the economic, marketing and social aspects of fisheries and that economic analysis needs to accompany technical prescriptions (9.55-9.56). The importance of educating national planners in the special problems of fisheries and providing fisheries specialists with an introductory knowledge of economic planning is stressed (9.57). The growing importance of national and sub-regional planning for fisheries has contributed to a changing role for regional fisheries bodies and strong links have been built between this Sub-programme and others (9.58-9.59). Joint planning and use of the task force mechanism could be used to further strengthen work in training, publications and policy development (9.60-9.61).

Forestry Training and Institutions (Sub-programme 2.3.3.1)

73. This Sub-programme contributes to the strengthening of national capacity for developing trained manpower and improving the institutional mechanisms in the forestry sector for policies, administration, research and extension. The thrust of the Sub-programme has been to support Member Nations in re-orienting and adjusting their institutional and manpower basis, in line with the priority needs under participatory community forestry development and TFAP (10.7). The Regular Programme activities have centred on the preparation of guidelines, case-studies and reference materials, with a substantial field project component, especially in forestry training, extension, institutions and policies (10.8, 10.12).

74. In forestry education, the emphasis has been on updating training requirement assessment surveys and the related institutional capacities, with several completed for Asia and the Pacific, Latin America and the Caribbean and Near East regions (10.14-10.16). Several methodological approaches have been produced, including guidelines on training curricula for technical personnel, an approach for estimating manpower requirements for mechanical forest industries and on ergonomics (10.18-10.19). In the field of forestry institutions, the emphasis has shifted from surveys and assessments on public forestry administration to examination of problems relating to rural forestry institutions, with several initial studies prepared on selected successful institutions and on social forestry financing (10.20-10.21).

75. To support re-orientation in the staff training and organization of forestry extension, three major guidelines have been produced (10.23). In line with the new emphasis, a guideline is under preparation on the promotion of forestry considerations in public education (10.25). In the field of forestry research, the world compendium of main forestry research institutions has been updated, together with the world list of forestry and forest research institutions (10.27).

76. Assistance has been provided to a number of countries in reviewing their national forestry policies and legislations, especially in connection with TFAP (10.30-10.31, 10.35). A detailed guideline on forestry policy formulation has been prepared to help reorient the forestry policies in line with the new development priorities, and a comprehensive study of forestry policies among the European countries has been completed (10.32 and 10.33).

77. The Sub-programme has collected a vast amount of information on forestry manpower development and institutions at the regional and national levels, which has provided a valuable basis for FAO forestry activities (10.37). The guidelines and studies have been widely disseminated, with many of the guidelines applied through the field projects, and a momentum is being generated for increased TCDC in forestry training, especially in Asia and the Pacific region (10.39). A number of countries have also been assisted in strengthening their education and training systems for forestry manpower development at various levels, as well as in improving their institutional mechanisms, policies and legislation (10.40-10.44). While the importance of most activities under the Sub-programme is enhanced under the TFAP approach, there are some issues requiring attention, including the internal organizational location of FORE, the relation between the Sub-programme and other Sub-programmes dealing also with forestry policies, institutions and extension work, and the need to narrow the scope of the Sub-programme, especially its priority activities (10.45-10.46).

Part Three

78. This part reviews two thematic subjects which cut across all the technical activities of the Organization: Review of FAO's Policy and Planning Support to Member Countries and FAO Support to Member Countries in Conservation and Amelioration of the Natural Environment and Introduction of Environmental Considerations into FAO Projects and Programmes. Both topics represent important priority areas of the Organization's work, and the chapters (Eleven and Twelve) provide a synthesis review of key achievements during the past several biennia and identify issues relevant for the future.

Review of FAO's Policy and Planning Support to Member Countries

79. FAO's credentials in the policy field derive mainly from the Organization's work at global and regional level. In the country context, decisions on policy are the exclusive prerogative of the governments concerned (11.3). Nevertheless, there has been a growing recognition - especially since the food crisis of the mid-seventies - that FAO can contribute usefully to analysis which precedes national policy decisions and their subsequent follow-up. The 1987 FAO Conference expressed support for "FAO's key role in providing policy advice to Member Nations within its sphere of competence and to the desirability of strengthening such a role" (11.4). FAO's major activities in policy analysis and planning support are grouped in three main categories: (i) global policy studies and strategies; (ii) regional policy studies and strategies; and (iii) policy advice and planning assistance at country level (11.6-11.7).

80. FAO's role in policy analysis and planning involves four major aspects which are closely linked (11.9-11.10): (i) establishing the codes of conduct, norms and decision-making criteria which provide normative framework for use by Member Nations, such as the Guidelines for International Agricultural Adjustment (IAA), guiding principles and decision-making criteria for food security and nutrition, rural development, and the conservation and rational exploitation of natural resources (11.12-11.14); (ii) developing planning approaches and techniques such as area development and decentralized planning (11.16-11.17); (iii) organizing and servicing inter-governmental fora where policy issues are discussed; and (iv)

providing direct assistance to member countries in reviewing sector and sub-sector policies, including commodity policies, redesigning development policies and translating them into plans and programmes, e.g. in relation to structural/sectoral adjustment programmes, and strengthening this capacity for policy analysis and planning work (11.9).

81. There is an element of policy and planning in virtually every technical field covered by FAO. Consequently, policy and planning and activities are carried out on a decentralized basis. Inter-departmental or inter-divisional working groups are established to handle complex areas cutting across several units (11.19-11.20). There is also a varying but often significant policy component in the Organization's Special Action Programmes and other major programmes (11.21). Many of FAO's Special Action Programmes require coordination of national policies at regional level (11.23). Also, much of FAO's work in the policy field involves close cooperation with a number of agencies in the United Nations system and outside (11.14-11.25). Regional Offices and Joint Divisions contribute to ECDC in food and agriculture through regional and sub-regional cooperation schemes and assist a number of FAO's regional committees or commissions in policy formulation (11.26-11.27).

82. An estimated US\$ 82 million of Regular Programme resources have been allocated to policy and planning activities over the 1984-89 period, or approximately 13 percent of Regular Programme resources devoted to technical programmes. Some 41 Sub-programmes were engaged in policy and planning assistance to varying degrees (11.28). Over the period 1984-88, there were 1,085 policy and planning advisory missions; 309 meetings and consultations; 200 training sessions, with an average attendance of 20-30 national participants; and 611 publications related to policy and planning (11.31-11.34). Over the same period, the policy and planning support provided through the field programme came close to US\$ 270 million in budget allocations to 405 projects, of which 31 percent were development projects with a planning component (11.35). Support was heavily concentrated on Africa, which received 54 percent of the total allocation in the period under review. The importance of TCP for the Organization's role as policy adviser is important (11.36).

83. Some of the major results of FAO's policy and planning support to member countries include, at global level, several comprehensive policy studies, e.g. the IAA Guidelines and periodic monitoring reports (11.39); Agriculture Toward 2000 (11.40-11.41); the Agricultural Price Policy Study (11.42-11.43); the WCARRD Declaration of Principles and Programme of Action (11.44-11.47). In the area of food security, the important contributions have been the 1974 International Undertaking on World Food Security (11.48), the 1979 Plan of Action (11.49) and the 1983 broader concept of food security (11.50). Other important global studies have included the Tropical Forestry Action Plan (11.52-11.55); the strategy adopted by the 1984 FAO World Conference on Fisheries Management and Development (11.56-11.58); commodity trade policies and strategies, supported by continuous monitoring of some 80 agricultural commodities (11.59-11.61) and agricultural mechanization strategies (11.62). At regional level, recent policy studies have covered Africa, Latin America and the Caribbean and Europe, and at sub-regional level, the Southern Africa Development Coordinating Conference (SADCC). Over 200 documents have been produced at regional level, addressing mainly food security and rural development issues, including the role of women, producer incentives and price policies (11.63-11.67).

84. FAO's policy advisory and planning activities at country level are wide-ranging and policy/planning projects in the field are often closely linked to Regular Programme activities (11.71). FAO's assistance for sector planning has been stepped up in recent years, in response to the growing complexity and urgency of development problems (11.72). As of 1 May 1989, three sub-regional groups and 25 member countries were assisted through sector-wide policy advisory missions (11.73), and some 30 country price policy studies had been or were being completed (11.74). Examples of agricultural policy review exercises include Tanzania (11.76-11.81), Indonesia (11.82-11.84), Senegal (11.85), Malta (11.86-11.87) and Morocco (11.88-11.89). Country level sub-sector studies and plans cut across macro-economic and more technical areas, involving many programmes and sub-programmes. In support of macro-economic and social development policies and programmes, assistance has been provided mainly in five areas: food security (FSAS), nutrition policy, agrarian reform and rural development (WCARRD follow-up), ECDC and Commodity Policy at the Country Level (CPCL) (11.90-11.92). In sub-sector planning, major areas of assistance have included land use planning, agricultural research planning (11.94-11.97), soil conservation strategies, seed development policy and planning (11.98-11.99), fertilizer policies (11.100), credit and marketing, plant protection, dairy development (11.101- 11.104), community forestry development and TFAP (11.104-11.105) and natural resource base legislation.

85. Training activities have shifted from building national expertise in agricultural project analysis to strengthen agricultural planning capacity with emphasis on training the trainers (11.106). Training materials in policy analysis have been developed. The FAO Computerized System of Agricultural and Population Planning Assistance (CAPPA) is being increasingly applied at the country level and the system is installed in 9 countries (11.107-11.109).

86. Conclusions and issues are presented in paragraphs 11.111-11.134. These include: (a) a broad frame of reference has been provided to regional and national planners through comprehensive global studies and strategies, thereby promoting a greater degree of policy harmonization; (b) to meet local conditions, modifications have to be brought to plans and programmes based on global policies and strategies; (c) as the policy and planning process is evolutionary, it requires constant revision and updating to remain receptive to changing needs and new problems; (d) to remain responsive to the needs of beneficiaries, the planning process should have a comprehensive data base, adopt a decentralized/multi-level approach and allow for a realistic assessment of available resources; (e) the institutional framework for policy and planning needs to be further harmonized to ensure strong linkages among planning units in different institutions and ensure a multi-disciplinary approach; (f) support at global, regional and national levels needs to be coordinated and this requires careful planning to facilitate timely and adequate support (11.123).

87. The implications of the above for FAO are clear. Global and regional studies and strategies do contribute to policy harmonization between countries and a better understanding of the development process in agriculture and need to be pursued (11.124). However, difficulties arise when global policies and strategies are applied at national level; few countries have succeeded in formulating a coherent set of development objectives and related programmes for coordinating external assistance. As a result, requests to FAO for assistance have often been generated on a mono-disciplinary basis when a multi-disciplinary approach was required

(11.125-11.128). For greater effectiveness, FAO's planning assistance should be multi-disciplinary and well placed within a sector framework. More sector reviews are needed (11.129). The effectiveness of FAO's assistance in a stabilization programme, a structural adjustment loan (SAL) or a sector structural adjustment loan (SECAL) would also be enhanced if the Organization was brought into the process from its inception, with the consensus of the government and the funding agency (11.131). One way of strengthening FAO's capacity to deliver policy and planning advice to member countries is through the creation of country task forces to ensure a multi-disciplinary approach and coordinate policy and planning activities at country level (11.132).

FAO Support to Member Countries in Conservation and Amelioration of the Natural Environment and Introduction of Environmental Considerations into FAO Projects and Programmes

88. Depletion of natural resources due to environmental degradation has had a profound effect on the productive capacities of countries (especially developing countries) in agriculture, fisheries and forestry (12.1-12.3). FAO has been involved in activities aimed at preserving and enhancing the environment ever since its inception and conservation of natural resources is given in FAO's Constitution as one of the Organization's main functions (12.4). Major international activities in the environmental sphere (1972 Environment Conference, 1987 Brundtland Report) have taken place and have affected FAO's environmental activities (12.5 and 12.7). While many activities of FAO could be classified as "environmental" in the broad sense of the term, the Chapter focusses on those activities involving inter-action with the natural environment (12.9).

89. Major agreements promoted by FAO since 1982 include the World Soil Charter, International Undertaking on Plant Genetic Resources, Strategy for Fisheries Management and Development, the International Code of Conduct on the Distribution and Use of Pesticides and the Tropical Forestry Action Plan (12.11). Within FAO, there is an Inter-Departmental Working Group on Environment and Energy which coordinates activities (12.12); various sub-groups have been formed to deal with more restricted topics (12.13). FAO has initiated new procedures for Environmental Impact Assessment of projects (12.14-12.15). FAO actively cooperates with UNEP and in other international fora, e.g. Ecosystems Conservation Group, Unesco/MAB Programme (12.16-12.20).

90. A statistical analysis of FAO's environmental activities shows that for the Regular Programme, 3% of the total budget for AG, FI and FO are for primarily environmental activities. Of this, 57% was for technical backstopping and direct support, 25% for training and meetings, 14% for publications and 4% for cooperative research networks (12.22). For the Field Programme, 6% of FAO's total project portfolio is primarily environmental. By source of funds, 10% of the UNDP portfolio was primarily for environmental projects, 3% of Trust Funds and 3% of TCP (12.23).

91. FAO has many programmes of particular environmental significance. Those covered in the Chapter are: soil conservation and reclamation; land evaluation and land use planning; grazing land eco-systems; water resources development; integrated pest management; trypanosomiasis control; plant nutrition; genetic resources; remote sensing; fisheries and forestry. Efforts are made to indicate the manner in which the reported activities are environmentally significant and how the results of activities are being used (12.25-12.144).

92. While FAO has always been involved in environmental activities, over the last 20 years the Organization has been influenced by the "environmental movement". Many activities initiated since that time have become important components of the Regular Programme (12.147). While FAO's cooperation with other agencies in the environmental field has been generally satisfactory, there remain certain areas (e.g. biological diversity) where rationalization and harmonization of activities are needed (12.148).

93. While many of FAO's field activities on the environment have been in "traditional" areas (e.g. soil conservation, use of irrigation water), newer areas of work have been initiated under the Regular Programme. Progress has been slow in translating these to field activities, partly because the development of solutions has been slow, but also due to limited interest shown by donors and recipients in projects relating primarily to conservation (12.150).

94. Areas are identified where FAO can probably make its most effective contribution. These include: causes of environmental degradation in rural areas; pace and level of environmental losses; alternative technologies and proven management tools for rational utilization of natural resources; preventive measures for further land use and resource stress; identification of priority areas and sectors for intervention; pollution control from agro-chemicals and agro-industries; and ameliorating the high level of fishery resource exploitation with a view to sustainable utilization (12.155).

95. The need for closely knit inter-departmental activities is identified (12.157). The trend is for the IDWG to work through sub-groups. The IDWG is intended to be upgraded to Division Director level. It will be responsible for defining FAO's overall policy on environment, overcoming overlaps between FAO divisions and between FAO and other agencies, and seeking support from Regional Offices with respect to environmental problems common to different geographic zones (12.158). The Chairman of the IDWG will brief the Assistant Directors-General of the Agriculture, Economic and Social Policy, Fishery and Forestry Departments every six months on progress achieved, problems encountered and questions of resource allocation for environmental activities (12.159). It is felt that such an arrangement will build on existing strengths and give clearer focus, higher profile and better inter-departmental coordination to FAO's environmental activities (12.160).

INTRODUCTION

The Review of the Regular Programme has served, since its inception in 1979, as the main mechanism for reporting to the Governing Bodies on the implementation achievements and results of FAO's Regular Programme. Through this Review and the Review of Field Programmes, the Governing Bodies have been kept informed about the work of the Organization and the results achieved.

The Review of the Regular Programme forms an important part of FAO's overall evaluation system, the evolution of which has been assessed favourably by the United Nations Joint Inspection Unit. The FAO's evaluation process includes, apart from the two biennial Reviews, auto-evaluation conducted annually by all programme managers of the Regular Programme, special programme evaluations commissioned by the Director-General and those conducted by the JIU, and evaluations of technical cooperation projects under the Field Programmes, including thematic evaluations, conducted by independent missions.

This edition of the Review follows the same format and structure as of the previous two editions, in view of the general satisfaction expressed by the Conference. Part One, the Performance Report, covers the overall implementation achievements during the current biennium under the Major Programmes. Part Two contains in-depth reviews of four selected technical Sub-programmes covering the last three biennia. Part Three presents synthesis assessments of work under two subjects which cut across all the technical programmes: Review of FAO's Policy and Planning Support to Member Countries and FAO Support to Member Countries in Conservation and Amelioration of the Natural Environment and Introduction of Environmental Considerations into FAO Projects and Programmes.

Part One draws on the findings of the auto-evaluation process as well as on the programme implementation reports considered by the Committees on Agriculture, Fisheries and Forestry. In this Review, a new chapter has been introduced to present together all the performance data base related to the activities of the three technical Major Programmes. It is hoped that this provided a more concise presentation of performance reports focused on the substance, as well as a broad indication of the effects of the resource constraints on programme delivery.

The in-depth reviews in Part Two cover Sub-programmes on "Food and Agricultural Industries" (2.1.2.6), "Situation and Outlook (2.1.7.2), "Fisheries Policy and Planning" (2.2.3.1) and "Forestry Training and Institutions" (2.3.3.1). These reviews identify the nature and scope of key outputs and their effects, and assess the extent of their contributions to the respective objectives, as well as their implications for follow-up action within FAO and by member countries.

Part Three covers two subjects in which considerable interest has been expressed recently by the Governing Bodies. The Review of FAO's Policy and Planning Support to Member Countries is one of the major functions of the Organization. The chapter provides a synthesis review of the nature and scope of FAO activities, key outputs and their contributions to member countries and the international development community. The problems and issues of FAO Support to Member Countries in Conservation and

Amelioration of the Natural Environment and Introduction of Environmental Considerations into FAO Projects and Programmes have been receiving increasing attention within and outside FAO. The chapter examines FAO's activities, under both the Regular and Field Programmes, in support of conservation, protection and betterment of the natural environment and assesses their contribution to this important cause.

It is hoped that these two chapters will make substantive contributions to deliberations on FAO's future work in these two areas. In particular, the chapter on Review of FAO's Policy and Planning Support to Member Countries, together with the in-depth reviews on "Fisheries Policy and Planning" and "Situation and Outlook", might serve as a useful information base for the on-going review of FAO's roles and priorities in relation to these activities. In addition, earlier editions of the Review covered related Sub-programmes, and those with particular relevance include: Programme on Food and Agricultural Policy (Chapter 7 in the 1980-81 edition), Sub-programmes on Food and Nutrition Assessment and Commodity Policy at Country Level (both in Chapter 7 in the 1982-83 edition), Nutrition Policy at Country Level (Chapter 7 in the 1986-87 edition) and Community Forestry Development (Chapter 9 in the 1986-87 edition); and Special Topics on FAO's Research Activities and FAO's Activities in Support of ECDC and TCDC (Chapters 10 and 11 in the 1984-85 edition) and FAO's Extension Activities (Chapter 10 in the 1986-87 edition).

As in the past, special care has been taken to provide a more comprehensive and sharper picture of the results of the Regular Programme activities, in line with wishes frequently expressed by the Governing Bodies. It is not pretended that the Review is an in-depth evaluation exercise of all activities reported, such as practised in evaluating field projects. However, efforts continue to be made in highlighting the tangible results and emerging lessons and issues of FAO's Regular Programme, especially in Parts Two and Three. In this connection, with the sixth edition of the Review, in-depth reviews have covered 25 Sub-programmes, or 41% of the total technical Sub-programmes, together with eleven special topics.

The Review, especially Part One, covers the period of a severe financial contraction which resulted in substantial adjustments in FAO's work programme. Adverse effects of this have been widespread and are evident throughout the Review. The combined effects of the budgetary cuts have been critical, not only in the short-run by impeding the implementation of priority work at hand, but also in the longer-run by eroding the momentum of priority technical work and the staff resource base. In particular, during 1988, 115 professional posts were frozen (54 under the three technical Major Programmes); and non-staff costs for operations have been reduced on average 7.1%, including reductions by 8.7% for meetings, 7.6% for publications, 8.4% for travel, and 10.9% for contractual work and consultancies. However, it is in terms of the long-term effects that the Organization's overall technical capacity has suffered a serious setback and will require intensive efforts and time to recover and to regain the lost ground.

PART ONE

The performance report in Part One contains six chapters:

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|---------------|---|---|
| Chapter One | : | Agriculture (Major Programme 2.1) |
| Chapter Two | : | Fisheries (Major Programme 2.2) |
| Chapter Three | : | Forestry (Major Programme 2.3) |
| Chapter Four | : | Information Base Related to the Performance of
Technical and Economic Programmes |
| Chapter Five | : | Technical Cooperation and Development Support |
| Chapter Six | : | Supporting Services |

The reports on individual programmes are of necessity selective, to highlight the main achievements. The traditional means of implementation - i.e. training, meetings, publications, direct support to member countries, and technical support to field projects, are reported on in tabular form in Chapter Four and now cover data over four biennia. The data include the contribution made by the Regional Offices.

In order to provide a common framework for analysis, the following format was used for the performance report (with modifications in Chapters Five and Six due to the slightly different nature of the programmes covered):

- Objectives and Strategy covers medium-term and immediate objectives and the strategy and priority considerations governing programme implementation;
- Resources and Management describes the development of Regular Programme resources and the management structure for implementation. The related extra-budgetary resources attracted are also noted;
- Progress and Achievements gives an account of activities and results during 1987-88 and those planned for 1989;
- Outlook and Issues discusses key issues arising from the preceding analysis.

CHAPTER ONE

AGRICULTURE

Major Programme 2.1

Objectives and Strategy

- 1.1 Major Programme 2.1 is the largest in the programme structure of FAO and provides multi-disciplinary support for the development of food and agriculture. Its share in the regular budget for 1988-89 was 36.9% (about the same as in the three previous biennia) and formed 78% of Regular Programme resources devoted to the technical and economic activities of the Organization. Twelve Special Action Programmes are coordinated and backstopped by this Major Programme as well as the Emergency Centre for Locust Operations. Its eight technical Programmes and 42 technical Sub-programmes cover a wide spectrum of technical and socio-economic activities and are aimed at the growth of sustainable agriculture with special emphasis on balanced nutrition and security of food supplies, improved living standards, equitable access to resources, better income distribution, conservation of the environment and increased national income through more balanced trade. For the 1988-89 biennium, the Conference stressed the emphasis on food production, food security and African development. The conservation of resources and the amelioration of environment received further emphasis, as did improved efficiency and effectiveness in the management of services to agriculture and work with small-scale producers and disadvantaged groups, including women. Particular stress was given to the Organization's function as a world information centre for agriculture and the Global Information and Early Warning System (GIEWS). Support to the Organization's policy advisory role was enhanced with a substantial increase in resources for global and regional policy studies, training in policy analysis and direct assistance to requesting member countries on sectoral policies. The Organization's role in training, information and the enhancement of economic and technical cooperation between developing countries was emphasized. Stress was also placed on the essential inter-action between the Major Programme and its field components.
- 1.2 The management of Major Programme 2.1 is shared by the Agriculture and Economic and Social Policy Departments with the full involvement of the Regional Offices and some participation from the Department of General Affairs and Information. Several programmes receive contributions from units in two or three Departments. The Development Department coordinates the planning and funding of field projects, including liaison with donors. The ADGs of the Agriculture and Economic and Social Policy Departments jointly supervise the work of the Agricultural Operations Division which implements nearly all the field projects supported by the Major Programme. The Major Programme is also engaged in joint activities with Major Programmes 2.2 (Fisheries) and 2.3 (Forestry).
- 1.3 In the execution of activities, there has been a sustained trend to further strengthen the linkages between the work of the Regular Programme and field projects, to increase the efficiency and effectiveness of the Special Action Programmes and to consolidate the

inter-action between them, to make greater use of national and regional institutions and TCDC networks through selected contractual arrangements and to develop increased cooperation with UN and non-UN organizations. Horizontal linkages have been further developed through inter-divisional and inter-departmental working parties and task forces. These have facilitated the planning and implementation of specific initiatives which cut across Programmes and Sub-programmes.

- 1.4 During the course of the biennium, systematic work towards the objectives of the Major Programme has been seriously constrained by the financial crisis affecting the Organization and this is discussed in the context of each Programme, and more generally under "Outlook and Issues".

Natural Resources - Programme 2.1.1

Inter-disciplinary Activities

- 1.5 The Inter-departmental Working Group on Land Use Planning has continued the development of a central FAO Geographic Information System (GIS). The work accomplished has included an assessment of FAO's information needs from GIS as well as expanding and restructuring the existing digitized map of resource attributes. The new material integrated into the database included additional data on vegetation, soils and irrigation potential. The outputs included information to be used in assessing the development potentials of aquaculture and irrigation and soil constraints. An analysis of environmental factors in the Mediterranean Basin was completed. Guidelines for land use planning, developed inter-departmentally, were published in 1989 for testing in developing countries. Land evaluation guidelines, using FAO's established methodology, had been previously completed for irrigated and rainfed agriculture and forestry. Similar guidelines for extensive grazing have now been distributed to projects for testing.
- 1.6 So far, limited investigation has taken place on models for integrated plant nutrition under tropical conditions. Over the last three years, two contracts have been awarded to institutions in India and Indonesia for investigating irrigated rice/wheat and upland cropping systems. In 1988, an integrated plant nutrition systems network was initiated in Africa and Asia within the framework of field projects funded from the extra-budgetary funds of the FAO Fertilizer Programme. Biological nitrogen fixation activities have continued to be supported in twelve countries* where grain legumes comprise an important part of cropping systems. Pilot units for *Rhizobium* inoculant production were established and backstopped and the total production capacity, established with FAO's assistance, reached 77 tons/year or a potential for the treatment of 150,000 ha of grain legumes. This work was closely related to that on fodders and pastures which also involved the Forestry Department (see 2.1.3 Livestock).
- 1.7 The RAPA-supported organic recycling network increased to cover 427 institutions and resource persons in 27 countries. The network continued to produce an annual bulletin and training activities in

* Bangladesh, Bhutan, Burundi, Colombia, Madagascar, Nepal, Nicaragua, Rwanda, Tanzania, Tunisia, Turkey, Zaire

biogas and organic recycling were conducted in China with UNDP and ESCAP support. Studies on organic and bio-fertilizer use were completed for 12 countries* and the results were discussed at an expert consultation in 1988 which established a sub-network on bio- and organic fertilizers. RAFR completed a report on organic recycling and biogas in selected African countries and a network** on biogas was initiated. Financial support was provided to Burkina Faso for work on the cost-effective use of local materials in the construction of biogas digesters. In Europe, a cooperative research network on waste utilization issued guidelines for the economical use of slurry.

Sub-programme Implementation

- 1.8 Assessment and Planning: The FAO methodology on the assessment of land potentials has now been adopted by many countries and by the EEC. The UNDP-financed agro-ecological zones study for Bangladesh was published with Regular Programme assistance and a training course in its use was held in 1989. RAPA assisted China to prepare a study of the potential population carrying capacities of its agro-ecological zones. A revised legend of the FAO/Unesco Soil Map of the World has been prepared and was issued in 1989. A draft edition was used to produce an updated 1:1 million scale soil map of the Nile Basin countries. A RAPA study of trends in land under cultivation and agricultural population growth showed that few countries have much remaining land suitable for cultivation and that several have unsuitable land already under the plough. Two RLAC-sponsored networks on lowlands subject to flooding and the natural resources of the semi-arid Chaco Region were used to organize seven sub-regional training activities on land development and planning.
- 1.9 Farming Systems Development (FSD): A brochure describing the farming systems development (FSD) approach has been completed for wider distribution. FAO Headquarters and RLAC continued to monitor FSD planning of 84 Latin American*** farms typical of 13 different agro-ecological zones. It is intended that these farm plans be put to use in extension work and that 50 additional farms be included. RLAC also prepared a study of experience to date with FSD in the Region, which was discussed at a Technical Meeting in Brazil during 1988. Farm data handbooks were prepared in nine countries.**** Development of farming systems training materials for Anglophone and Francophone Africa has now been completed and a pilot course to finalize them was held in Tanzania. RAPA completed three village studies in Thailand which identified production constraints and designed farm plans for selected farmers on the basis of existing farming practices and research results.

* Bangladesh, China, India, Indonesia, Laos, Malaysia, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Viet Nam

** Benin, Burkina Faso, Ghana, Mali, Niger, Togo

*** Brazil, Chile, Colombia, Costa Rica, Ecuador, Peru

**** Barbados, China, Ethiopia, Jamaica, Malawi, Nepal, Swaziland, Trinidad, Yemen P.D.

- 1.10 Training in the Farm Analysis Package (FARMAP) and related packages continued both at Headquarters, mainly for field staff (twenty participants from eleven countries), and at the Training Centre for Asia and the Pacific for participants from five countries* in the Region.
- 1.11 Soil Management and Fertilizers: During 1988-89, two updated issues of the periodic publication "Current World Fertilizer Situation and Outlook" were published, originating from the work of the FAO/UNIDO/World Bank Working Group on Fertilizers. The 1988 issue covered the period 1986-87 to 1992-93, including forecasts of world supply and demand. RAPA completed a study of 25-year trends in fertilizer use and more detailed analyses for the last ten years. Fertilizer trade information has been regularly supplied to African countries and RAFR provided technical support to UNEP in setting up a network on soils and fertilizers. Twenty countries participated in the Fertilizer Advisory Development and Information Network for Asia and the Pacific (FADINAP). This is a joint project of FAO, ESCAP and UNIDO based in Bangkok. Fertilizer trade information, country reports and papers and documents were issued on supply, distribution, trade and prices. In addition, FADINAP organized regional seminars on various aspects of fertilizer information, distribution and handling. A guide on fertilizer strategies was prepared as well as computer programmes for modelling fertilizer strategies; the latter had already been tested and installed in Pakistan and was transferred during 1988-89 to Ethiopia and Tanzania.
- 1.12 Provision of fertilizer through the International Fertilizer Supply Scheme has generally been undertaken in combination with technical assistance from the Fertilizer Programme. Funds from the sales of fertilizers under the Scheme were used for development purposes, such as the construction of farm service centres and the training of extension staff in Sudan and Tanzania. However, resources for the Scheme have continued to be a constraint. In 1988, the quantity provided totalled only 3,930 tons of fertilizer products, of which 1,050 tons were donors' pledges made in 1987, the balance originating from reserves of the Scheme. Eleven countries** were assisted during 1988. Also in 1988, a new pledge for fertilizer at a value of US\$ 2.0 million was announced by Italy.
- 1.13 Forty-two projects in 24 countries*** provided technical support under the FAO Fertilizer Programme in 1988-89 (80 percent being funded through trust funds), an increase over the 38 projects assisted in 1987. In 1988-89, Fertilizer Programme project delivery amounts to over US\$ 10 million per year. The following table, indicating diminishing numbers of trainees and training activities, reflects the adaptation of projects to the changing requirements of recipient countries. Earlier projects were more extension-oriented, generating "blanket" recommendations and promoting their application. Recently,

* China, Malaysia, Pakistan, Thailand, Viet Nam

** Antigua, Costa Rica, Grenada, Guinea Bissau, Laos, Liberia, Madagascar, Niger, Sri Lanka, Tanzania, Viet Nam

*** 13 countries in Africa, 9 in Asia and the Pacific and 2 in Latin America and the Caribbean

some projects concentrated attention on more elaborate on-farm trials, to formulate detailed and specific recommendations, while other projects assisted in the establishment of national planning units for the coordination of agricultural inputs.

Fertilizer Training, Field Days, Demonstrations and Trials
with the Assistance of the FAO Fertilizer Programme
(average numbers per year)

<u>Year</u>	<u>Training Courses</u>		<u>Farmers' Field Days</u>		<u>Harvest</u>	<u>Trials</u>
	<u>Number</u>	<u>Participants</u>	<u>Number</u>	<u>Participants</u>	<u>Demonstrations</u>	
1977-81	220	8 300	5 180	66 180	6 740	3 680
1982-86	840	14 200	16 670	337 960	9 400	2 740
1987-89*	1 010	11 780	8 410	172 100	10 220	3 100

* Estimates

- 1.14 Based on earlier experience in Indonesia, the initiative of block demonstrations has been spread to other countries in Asia and Africa.* The approach involves intensive assistance, with advice and inputs, to groups of farmers operating land contiguously in a block. In 1988-89, an average of 200 block demonstrations were organized per year, with 4,000 farmers participating on a 1,550 ha demonstration area, and with a total provision of about 600 tons of fertilizers and related inputs. In Gambia and Tanzania, demonstration blocks were set up for women farmers, also as a pilot activity for a subsequent extension of the approach to other countries assisted by the Fertilizer Programme. In Sri Lanka, private banks provided saving and credit services to the farmers groups involved in block demonstrations.
- 1.15 In 1988-89, a network continued to assess sulphur deficiencies and means for amelioration. Seven Asian** and six African*** countries participated in the network, among which India participated at no cost to the network. One regional workshop each was held in Asia and Africa for the network coordinators to promote continuation of work and information exchange after termination of external support to the network. Based on results obtained under research agreements with universities in India and Indonesia, a network of pilot trials on integrated plant nutrition systems has been initiated within the framework of the FAO Fertilizer Programme. Recommendations are based on cropping systems instead of single crops and trials include mineral

* Bangladesh, Gambia, Madagascar, Nepal, Pakistan, Somalia, Sri Lanka, Tanzania, Zaire

** China, India, Indonesia, Nepal, Pakistan, Sri Lanka, Thailand

*** Burkina Faso, Cameroon, Kenya, Sudan, Tanzania, Zaire

fertilizer, crop residues, other applied organic materials and biological nitrogen fixation. With assistance from Finland, work was in its final phase for contracts in 14 countries* to study the extent of micro-nutrient deficiencies and the results of micro-nutrient application on major crops for different soils. REUR continued support to a network on trace elements. Computer programmes and designs for fertilizer trials and demonstrations have been updated to include the needs of detailed on-farm trials. The data bank of the FAO Fertilizer Programme now contains the results of more than 58,000 trials and demonstrations in 31 countries.

- 1.16 A joint FAO/Government of France technical review of activities on symbiotic nitrogen fixation and inoculant production was carried out in 1988. It was particularly noted that these activities had resulted in the development of appropriate technologies which, in the majority of cases, had reached the small-scale farmers. There was still a need for technical support to inoculant production units. It was recommended that activities be concentrated on regional grouping of countries where grain legumes are an important part of the staple diet and of the cropping systems.
- 1.17 Water Development and Management: A consultation in coordination with a FAO-TCP project was organized in Turkey to bring together high-level managers with experience in large-scale river basin development for agricultural production. These included managers from the Jordan Valley, Canal de Provence, the Nile, the Gharb project and Salt River Arizona. This was to assist the Turkish authorities in their planning for the large Ataturk project. A national seminar was also organized in connection with the Gharb Project in Morocco to transfer Italian experience in the utilization of gabions for river control and pumping station protection.
- 1.18 The series of irrigation training manuals providing simple presentations and examples for middle-level technicians continued to be expanded and the total number of manuals in the series is now six. The Sub-programme has also cooperated with the Economic Development Institute (UK) in the preparation of training guidelines for public sector irrigation agencies. Following the identification by the 1986 Lomé consultation on irrigation development in Africa of six key areas for action, a steering group met twice in 1988 to consider the form in which the technologies could be inventoried and interchanged. An inventory was begun of proven operational techniques and methods in agricultural water development and management with priority to material suitable for training. The 1988 African Regional Conference reaffirmed the importance of irrigation issues.
- 1.19 More detailed manuals on water lifting devices and design and optimization of irrigation distribution networks have also been released during the reporting period. This was complemented by a computerized model and users' manual. In follow-up to the methodologies developed for the determination of crop water requirements, preparation of guidelines was begun on irrigation scheduling. Computer software for the model was developed and a group of international specialists has been reviewing its further promotion.

* Ethiopia, Finland, Iraq, Malawi, Mexico, Nepal, Pakistan, Philippines, Sierra Leone, Sri Lanka, Tanzania, Thailand, Turkey, Zambia

A training course was organized for national staff on all aspects of computer applications in irrigation. A manual on "Planning the Management, Operation and Maintenance of Irrigation and Drainage Systems" had been prepared jointly with ICID and the World Bank. Beginning in 1988, RAPA initiated an Asian network on water lifting devices. Eight TCP projects,* mainly for the transfer of Chinese technology on water turbine pumps, have been completed in the region.

- 1.20 Major constraints to improvements in irrigation were quantitatively identified by RAPA on the basis of information from 16 countries and 99 projects. RAFA has initiated an African network on wetland development and two workshops are leading to a symposium on characterisation and classification of wetlands and the publication of a newsletter. A regional FAO-TCP project in the Near East supported the development of a pilot area in Jordan for use of sewage effluent in irrigation and two training courses and a regional seminar were organised. Guidelines were also issued on this topic.

Conservation and Reclamation

- 1.21 A study of technical, managerial and socio-economic factors leading to success or failure in soil conservation projects has been completed. Technical support to the WFP-assisted Soil Conservation Programme in Ethiopia (US\$ 100 million) was continued, with emphasis on training and retraining of more than 2,000 national staff. From the lessons learned in the early stages of this activity, the WFP/FAO conservation strategies were being reoriented to emphasize the importance of farmers achieving immediate benefit, their participation and the use of plants and improved cultivation techniques. This orientation was being transferred in part to other WFP/FAO projects, notably in the Comoros Islands and Morocco. FAO has provided technical advice for the UNEP study undertaken by ISRIC of the state of soil degradation. Work has commenced through a questionnaire for a world map of existing land degradation and a pilot study has been completed in South America.** The issue of strategies has been taken up on a continental scale in the elaboration of an International Scheme for the Conservation and Rehabilitation of African Lands. To facilitate inter-disciplinary coverage, this scheme was brought under the aegis of the IDWG on Environment and Energy. A draft document was discussed by African soil conservation experts at a workshop with a view to wider discussion and eventual adaptation at country level. Support for a regional conservation network was begun by UNDP for six Asian countries*** of the lowland humid tropics. The network has been designed to provide conceptual guidance, simple research and training. RAPA completed studies on problem soil management throughout the region and following discussions at a meeting in 1989, a network was set up. In cooperation

* Bangladesh, Burma, Indonesia, Nepal, Pakistan, Philippines, Sri Lanka, Thailand

** covering land in parts of Argentina, Brazil, Paraguay and Uruguay at a scale of 1:1 million

*** China, Indonesia, Malaysia, Papua New Guinea, Philippines, Thailand

with other agencies, assistance and technical advice were given to 12 institutes in ten countries* with research into the effects of soil erosion on productivity. A national soil conservation policy was being elaborated for Lesotho and an on-going project was elaborating final details.

- 1.22 The findings of the Eighth Annual Meeting (1988) of the joint WHO/FAO/UNEP Panel of Experts on Environmental Management for Vector Control were published. They considered the "Education and Training Needs for Planning, Design and Implementation of Environmental Management for Vector Control". Guidelines for the incorporation of health safeguards into irrigation projects through inter-sectoral cooperation are being finalized. RAFR provided advice to the African Ministerial Conference on the Environment for the preparation of curricula for training courses on the environmental impact of water resource development.
- 1.23 Effects of Programme Reductions: Having completed macro-level mapping using the methodologies for agro-ecological zone and population supporting capacities of lands, it was intended to adapt these for application in more micro-level planning at national and sub-national levels. However, delays have occurred in the completion of studies in Indonesia, Kenya, Malaysia, Philippines and Thailand. The assessment of water resources and irrigation potentials at sub-regional levels in Africa, following the Lomé Conference, has been postponed as well as other follow-up activities. The installation of the integrated FAO Geographic Information System (GIS) has been slowed down and it has not been possible to check the computerized digitized data for the 1:5 million Soil Map of the World for all continents. This would have enabled maps to be produced for particular purposes and regions on request. Work could not be commenced on the build-up of a computerized farm data bank for use in development planning and management of large farms.
- 1.24 In cooperation with the International Institute of Tropical Agriculture (IITA), FAO has supported a network of contracts with five research institutions in Africa** seeking alternatives to shifting cultivation. Activities have ranged from collection of basic data on fallowing to investigation of land preparation methods, soil tillage and levels of input use. Because of financial constraints, none of these activities could be supported in 1988. Support for a tillage network planned for the Chaco Region comprising Argentina, Bolivia and Paraguay has similarly had to be suspended. Studies by RAPA on the relationship between soil erosion and fertility had to be suspended in Indonesia and Thailand. All training courses on soil management and organic recycling planned for 1988 were also postponed. Networking activities have suffered generally, including technical support for the organization of an integrated plant nutrition systems network, and the provision of catalytic research contracts was severely curtailed.

* Botswana, Brazil, Ethiopia, Indonesia, Kenya, Lesotho, Mozambique, Spain, Tanzania, Thailand

** Cameroon, Gambia, Malawi, Nigeria, Zambia

Initiation of a network on the management of gypsiferous soils in the Near East* had to be postponed due to financial constraints, as did work to promote a network on water-lifting devices in Africa. Networks on soils in Africa were largely moribund in the absence of FAO-RAFR financial support and in Asia, work suffered on organic recycling and organic fertilizers.

- 1.25 At its 10th Session in April 1987, the Commission on Fertilizers recommended a number of studies to be carried out to serve member governments as background information for their fertilizer strategies. Because of financial constraints, coinciding with the departure of staff, work had to be postponed and the session of the Commission, which normally meets biennially, had to be postponed until 1990.
- 1.26 FAO had taken a lead in the promotion of research on the relationship between soil erosion and decline in soil fertility, with a view to quantifying resultant economic losses. The research for this was planned or was already being implemented in ten countries** but activities have been greatly reduced because of financial constraints.

Crops - Programme 2.1.2

Inter-disciplinary Activities

- 1.27 The Programme is heavily involved in inter-departmental activities related to such areas as research and technology development, roots, tubers and plantains, and agro-forestry. An important new area has been that of plant biotechnology, for which a working group has been established and meetings programmed. RAPA commissioned three country studies*** on the role of biotechnology for crop improvement. Another inter-disciplinary working group at Headquarters began work on the development of farming systems which would allow settled agriculture in the tropical forests of the humid tropics while maintaining the resource base. Initial studies were designed to evaluate farmers' practices in Brazil. RAPA has established a multi-disciplinary network on sustained production in areas subject to monsoonal aberration. Joint activities in work on nitrogen fixation and bio-fertilizers have been referred to in the previous discussion on Programme 2.1.1 - Natural Resources. Eight rice development projects in Africa and two in Guyana and Haiti were provided with nitrogen fixing plants (*azolla* and *sesbania rostrata*) and promising results were obtained on the most suitable application methods and timing of application. Contributions were made to meetings organized by the Commodity Policies and Trade Sub-programme (2.1.8.3) on, for example, horticulture in Latin America.
- 1.28 The FAO/WHO Panel of Experts on Pesticide Residues in Food and the Environment has evaluated over 160 different pesticides and through the Codex Alimentarius Commission, more than 200 maximum residue levels in foods have been adopted.

* Iraq, Algeria and Tunisia

** Botswana, Brazil, Ethiopia, Indonesia, Kenya, Lesotho, Mozambique, Spain, Tanzania, Thailand

*** China, India, Republic of Korea

- 1.29 The Prevention of Food Losses (PFL) Programme is an important area of inter-disciplinary activity. During 1988, 15 projects with a total value of US\$ 2,751,000 were funded and became operational, bringing the number of operational projects to 35 with a total value of US\$ 18,084,000,* thus restoring the high level of the programme following the previous downward trend in approvals. An increasing number of PFL operational and pipeline projects have expanded crop and disciplinary coverage, taking account of the total post-harvest system, with emphasis also placed on roots, tubers, fruits and vegetables. A West African sub-regional network on rice post-harvest technology was established. The Larger Grain Borer continues to spread from the original areas of infestation in East Africa. A workshop was held in Tanzania during 1988 to review control and containment measures with 18 participating Latin America countries. A project has been approved to train extension staff on the application of appropriate post-harvest techniques for the drying, handling, storage and processing of cereals. The FAO/ECA joint division has completed five country case studies on food losses.** In cooperation with the International Centre for Insect Physiology and Ecology (ICIPE), a pilot project has been conducted in Kenya on small farmer integrated pest management.
- 1.30 A joint FAO/Italy team undertook an evaluation of six Italian-funded projects in the PFL Programme, three of which were to construct rice parboiling plants. It noted that in some cases the rationale for undertaking projects and the results expected from them were not clearly stated. Projects aimed solely at providing equipment were found to be useful to recipient countries, but it was unrealistic to expect impact from such projects beyond that derived from use of the equipment. It was also considered that the time taken by FAO to issue contracts and purchase equipment was excessive. The mission recommended that preference be given to projects which go beyond loss assessment and prevention and that highest priority be given to those which encourage farmers and small entrepreneurs to improve their post-harvest operations. It also made recommendations to improve project operations, e.g. more realistic workplans and counterpart contributions and improving training to ensure project sustainability. An internal review of PFL's activities noted that disproportionate attention had been given to loss assessment rather than loss reduction. Sustainability of results was identified as the key issue for projects and the importance of incentive structures and investment mobilization to reduce food losses was stressed. Within this context, there has been a growing awareness that post-harvest food loss prevention could not rely primarily on public sector programmes. In cooperation with Netherlands, studies were undertaken in Indonesia and Nepal on the involvement of farmers, traders and small-scale industry in post-harvest programmes and ways in which their input could be increased.

* US\$ 2.74 million PFL special account; US\$ 6.61 million Trust Funds; US\$ 8.73 million UNDP. Of the number of projects, 22 were in Africa, 7 in Asia and the Pacific, 2 in Latin America and the Caribbean, 2 in the Near East, North Africa and Europe, and one global.

** Madagascar, Malawi, Somalia, Uganda, Zambia

Sub-programme Implementation

- 1.31 Genetic Resources: By March 1989, 87 countries adhered to the International Undertaking on Plant Genetic Resources and 94 had joined the Commission. The Commission met in April 1989 and considered reports on the coverage of base collections, in situ conservation and the implications of biotechnology for the Undertaking. The Commission requested FAO to prepare periodic reports on the state of the world's plant genetic resources and initiate a global information and early warning system. A study should be prepared for the establishment of a network of in situ conservation areas. Codes of conduct should be developed for international collectors and on the application of biotechnology. FAO was also asked to develop guidelines on the rights of communities to draw benefits from innovations introduced by them or their ancestors, but exploited by others. Concern was expressed at the proliferation of initiatives in the field of conservation and FAO was requested to play a coordinating role. A memorandum of understanding should be drawn up with IBPGR.
- 1.32 The International Fund for Plant Genetic Resources had, by March 1989, received pledges of over US\$ 350,000, mostly in support of training activities. Field activities to strengthen the conservation of genetic material have long been a feature of projects concerned with plant breeding and 22 specialized projects have now been initiated. Twenty-four positive replies had been received from countries which were prepared to place germplasm collections at the disposal of the network of base genetic resource collections. While most of these countries preferred to keep their collections under national control, they were generally prepared to open them to FAO inspection and make material freely available to other countries. Cooperation has also continued with IBPGR, for example in describing sesame and safflower genetic resources. The Information System approved by the Commission would be based on IBPGR descriptions for basic materials and those of FAO for developed varieties. Using guidelines developed for maize, millet, rice, sorghum and wheat, information has begun to be entered into an FAO-maintained data bank. FAO descriptors placed more emphasis on economic criteria than did those of the IBPGR and there was some need for harmonisation.
- 1.33 Crop Improvement and Management: As with the Seeds Sub-programme (see below), this Sub-programme was very heavily committed to the support of the field programme, for which it backstopped 200 experts and consultants in 1989.
- 1.34 Unfortunately, because of financial constraints, Headquarters-sponsored trial programmes have had to be discontinued (see below), but RAFR has supported 96 on-farm trials dealing with inter-cropped maize, sorghum and groundnuts in Ghana and in Liberia with cassava and rice. Cassava trials resulted in the selection of new varieties. In cooperation with RLAC, five sub-regional networks for the development and transfer of technology on food crops have been supported in Latin America. These networks have now trained over 600 nationals through courses and exchange programmes. TCP support has been used to undertake work involving some ten countries in varietal assessment for pigeon peas, maintenance of pigeon pea germplasm and evaluation of pod borer in pigeon peas. In cooperation with ICRISAT using UNDP funding, RAPA organised 4 workshops on coarse grains. The European cooperative networks on soyabean and sunflower continued to produce annual newsletters distributed in 58 countries. In Africa, plans were formulated to develop village soyabean production and consumption

through the introduction of small-scale processing and appropriate varieties. A UNDP-supported network on coarse grains and food legumes in Asia has initiated a regular newsletter. It provided short courses covering 100 individuals and a further 4 courses were planned for 1989. Six working groups have been formed for collaborative action on jointly identified constraints, exchange of information and transfer of crop and rhizobial germplasm. Following socio-economic studies conducted in 7 countries,* more emphasis has been placed on farm level trials and demonstrations.

- 1.35 In addition to continued support for the International Rice Commission Secretariat, a network approach has been promoted in rice. In cooperation with IRRI and RAPA, consultancy advice has been used to support the development of hybrid rice in several Asian countries,** drawing on the experience of China and developed countries. In West Africa,*** consultancy and training have been employed to extend positive experience with wetland rice from a UNDP/FAO project in Sierra Leone. An Italian-funded FAO project supported on farm trials and demonstrations. Use of nitrogen fixing Azolla and Sesbania was also encouraged as well as fish/rice culture, particularly through consultancy and Regular Programme-funded visits to China by scientists from Burkina Faso and Tanzania. In-putting of information began for a computerised data bank, country by country, on all aspects of rice production.
- 1.36 Work in industrial crops has continued to foster a network approach. In particular, coconut networks were assisted by UNDP in Asia and separately in the Pacific while a meeting was also organised for Latin America. The establishment of an inter-regional cooperative research network on cotton was supported by REUR and RNEA. Meetings were supported for cotton networks in Central America and Asia. RAFR has supported attendance at a meeting of the African Oil Palm Development Association. A TCP project was designed to foster essential oil development in Bhutan and in Africa, a consultant has reviewed market potential. Following a consultation on edible oil crops, RAPA established a network for this purpose. FAO continued to provide samples of seeds of cotton and oil crops to countries requesting them for trial purposes. Several hundred hectares of Simarouba (a source of edible oil) have been planted in Burma with seeds and advice provided by FAO. Safflower seeds of several varieties were planted in Spain for multiplication and then distributed to ten countries for observation purposes.
- 1.37 Horticulture provides a way in which small farmers and peri-urban dwellers can improve both income and nutrition through intensive cultivation. Root and tuber crops, on the other hand, have been neglected in comparison with cereals as a basic food source, including the full range of fruit, nut, vegetable and root crops as well as

* Bangladesh, India, Indonesia, Nepal, Philippines, Sri Lanka, Thailand

** India, Democratic Republic of Korea, Sri Lanka, Viet Nam and in cooperation with IRRI, Indonesia and Republic of Korea

*** Gambia, Ghana, Guinea, Guinea Bissau

mushrooms and ornamentals. High priority has been given to the identification of potential national projects and through a mixture of workshops, consultancies and small research contracts, inter-country cooperation has been encouraged for tropical fruits in the South Pacific, temperate tree crops in hilly areas of Central and Southern Asia, citrus in Latin America and the Caribbean, nuts in Southern Europe, Near East and North Africa, and root crops in West Africa and the Caribbean. The FAO-initiated Mediterranean Fruit Crop Improvement Council continued to produce a biannual newsletter.

- 1.38 In Latin America, a network has been established for the exchange of improved vegetable varieties, particularly tomatoes and garlic. In cooperation with RAPA, a regional network project has been formulated for Southern Asia with focus on minor fruit crops such as rambutan, durian, mangosteen and litchi. In Sahelian West Africa, a regional project is encouraging vegetable production, including the use of improved varieties and past experience of vegetable growing in the semi-arid areas of Africa has been assimilated in a handbook. National projects formulated for Africa have concentrated on traditional vegetables, home gardens and production in semi-urban areas to improve workers' nutrition and incomes.
- 1.39 FAO has continued to develop its agrometeorology data systems, which form an important input into planning and are used in the Global Information and Early Warning System. The computerised system is divided into two well-established and one new sub-system. The first two sub-systems provide worldwide long-term monthly precipitation data series, in some cases with up to 200 years of information, monthly averages for precipitation, maximum and minimum temperature, humidity, windspeed, sunshine, radiation and evapo-transpiration potential. Historical time series have been published since 1986 for the main developing regions. CROPMON, the newest sub-system, was begun in 1986 and relies heavily on the network of early warning projects. The system, which started with coverage of a few African countries, had expanded by 1988 to include some 35 African and five Asian countries. Information was collected at 10-day intervals and was used to assess probable yields of the major national cereal crops. In the CILSS and SADCC countries, where adequate yield data exist, it has been used to predict production. The results are suitable to be prepared in the form of maps. Basic data have been provided to a growing number of external users (some 150 individual requests in 1988).
- 1.40 Seeds: The Seed Improvement and Development Programme (SIDP) which had been evaluated by an independent team of consultants in 1987, with the report presented to the FAO Conference, continued to have an extremely high field orientation with some 20 projects formulated each year and 94 field projects backstopped during 1988. The DANIDA-financed regional project for Asia was extended, with emphasis on providing training in all aspects of seed development. A number of training guidelines were released during the reporting period. These included guides for micro-propagation and multiplication of cassava, sweet potatoes and citrus. A manual was also prepared on multiplication of hybrids. Work continued to update the computerised seed information system. The listing for varieties of 30 major crop species was being supplemented with a description of each variety including agro-ecological adaptability. An assessment of developing country seed requirements, first released in 1985, was updated. A seed exchange service continued to be provided for trials and breeding purposes and some 8,400 samples were despatched in 1988 as well as 29,000 donations of vegetable seed for use in Africa.

- 1.41 Plant Protection: The negotiations in the Uruguay round of GATT, in particular the Working Group on Sanitary and Phytosanitary Regulations and Barriers in the Negotiating Group on Agriculture, has had implications for the work on plant quarantine in FAO. A technical consultation was organized on harmonization of procedures, risk analysis and information exchange to provide technical inputs for the Working Group. It is envisaged that this will further strengthen FAO's role in information exchange and the provision of technical advice.
- 1.42 By 1989, 94 countries had adhered to the International Plant Protection Convention and 48 had accepted amendments agreed at the 1979 FAO Conference. FAO was mandated under the Convention to exchange information related to all aspects of plant quarantine. This work has been carried out in close collaboration with regional plant protection organizations with which meetings were organized in 1988. A micro-computer database on the distribution of pests of quarantine importance has been prepared and was expected to be available on diskette to interested users during 1989. Loose-leaf, easily updatable digests of quarantine legislation and regulations were being prepared for all member countries and approximately 100 digests have been printed to date. Under contract with the Commonwealth Agricultural Bureaux International, work was under way to prepare data sheets on pests and biological agents of plant quarantine importance. In cooperation with IBPGR and with support from other organizations, expert groups have begun to consider crop-specific guidelines for the safe and efficient exchange of germplasm, starting with cocoa, bananas and plantains and root crops. Several of these guidelines have been printed and distributed.
- 1.43 The Code of Conduct on the Distribution and Use of Pesticides was adopted by the FAO Conference in 1985. At the 1987 Conference, it was decided that the Code should be amended so that exporting countries would inform importers of any restrictions concerning the use of the product in their own countries and the product would not then be shipped without the prior agreement of the importer. This principle is commonly referred to as "Prior Informed Consent". An expert consultation and a Government Consultation were held in order to develop a precise concept acceptable to all parties. A baseline survey has been completed on the present application of the Code in member countries. Following discussion by the Panel of Experts on Pesticide Specifications, new guidelines for registration requirements and application standards were proposed as appendices to the Code. To support developing countries in the introduction of registration and control schemes, including the necessary analytical facilities, funds were being sought for regional programmes and were obtained from Japan for the Asia and Pacific region and from UNDP for Africa.
- 1.44 The emphasis on an integrated pest management approach was continued. In this context, the term "pest" was understood to include pathogens and weeds. The concept included agronomic and cropping practices, use of biological control agents, plant resistance and pesticide application. Activities continued to be guided by the FAO/UNEP Panel of Experts on Integrated Pest Control which met in 1989. Work concentrated on situations where there was a clear mis- or over-use of pesticides. A major activity has been the South-East Asian programme on rice, which was funded by Australia and the Netherlands. The project has had wide-ranging training activities which supported programmes, between 1980 and 1988, for training 28,500 extension workers. These, in their turn, have trained over 200,000 farmers. One effect has already been considerable changes in attitude to pesticide

use, including government import policy in, for example, Indonesia. Conversely, surveys of pest problems of vegetables grown under cover and citrus in the Near East and North Africa showed that there was almost total reliance on chemicals for control. Other regional projects have been approved for integrated pest management for vegetables in South-East Asia and for jute and kenaf in Asia. National projects were under way on cotton in Indonesia and Sudan; in Thailand for minor crops; and in Chile for fruit fly control. In Africa, a regional project in cooperation with IITA provided training on biological control, for cassava mealy-bugs and green spider mites. A West African workshop was held in September to lay the basis for a network on pesticide management.

- 1.45 A regional Mediterranean fruit fly trapping network was established for Central America, where the FAO/IAEA Joint Division has also been active, but large-scale eradication awaited funding. Several projects were directed to the control of the larger grain borer, a recently introduced pest in Africa, while through a UNDP-funded project, FAO provided for training activities in the Africa-wide Biological Control Programme. Under the auspices of the Asia and Pacific Plant Protection Commission, RAPA organised working groups on fruit flies, post-entry quarantine and IPM in vegetables.
- 1.46 A survey utilizing 35 case studies was made in the Mediterranean and Near East, of the virus and virus-like diseases of citrus, grapes and stone fruits. A UNDP project was then approved to strengthen control of such diseases. Also in the Near East and North Africa, support was given to the Arab Society of Plant Protection in producing its newsletter and distribution maps for pests and diseases were published. UNDP regional projects were addressing the problem of citrus greening in Asia and Bayoud disease of date palm in the Near East.
- 1.47 Work on weed control has emphasized the control of striga in Africa. UNDP projects were executed in two countries,* while RP-funded trials were commissioned in two other countries.** A workshop held jointly with the OAU in 1988 discussed results and made recommendations on the most suitable combination of measures for the small farmer and the establishment of a network. The Near East working group on improved weed management has produced a biannual newsletter.
- 1.48 In 1986 and 1987, large-scale outbreaks of grasshoppers in the Sahel required rapidly coordinated national and international intervention. The Emergency Centre for Locust Operations, set up in 1986, continued operations in 1988 and 1989 to coordinate continued ground and aerial spraying for the major desert locust outbreak. Committees were formed in affected countries and meetings organized among donors and recipients at regular intervals. The total funds generated for the coordinated campaign amounted to US\$ 200 million in 1988. Partly as a result of this coordinated action, the locust plague has been contained. Longer term activities were continued in support of the various regional organizations. A study was initiated for a major upgrading of the existing monitoring and forecasting system. In addition, proposals have been prepared for coordinated locust research.

* Cameroon, Gambia

** Nigeria, Zimbabwe

One of the contributory factors to the scope of the recent emergency in Africa was the weakness of national pest control organizations. The lack of well-established national structures has also contributed to the very limited progress in the control of sedentary pests. A new initiative has thus been launched for a coordinated international programme to strengthen long-term capability in pest management in Africa (Special Programmes for Pest Control in Africa). Reports have been completed, analysing the plant protection situation in most African countries. During the reporting period, five additional countries* were covered.

- 1.49 Agricultural Engineering and Prevention of Food Losses: Staff of the Sub-programme have been heavily committed to technical backstopping of the field programme. Formulation of agricultural mechanization strategies continued to receive emphasis and with UNDP assistance, a regional training course was held in Zimbabwe. RAPA completed a study on the status of agricultural mechanization in six countries.** In Malawi, a preparatory workshop was held on the subject, in preparation for longer term assistance. The Panel on Mechanization discussed the problems of machinery rehabilitation, in particular: the root causes for machinery not achieving economic life; the organization of replacement component supply and maintenance; and ways of mobilising small-scale entrepreneurs to recondition components. Blacksmiths have an important role in the maintenance of equipment and in the manufacture of simple tools. A series of blacksmith training manuals were released, as well as a publication on village technology. Projects for training and equipping local blacksmiths were ongoing in Liberia, Niger and Zambia.
- 1.50 Following the joint FAO/Italy evaluation of seven Italian-funded agricultural mechanization projects in Africa, which made recommendations concerning the appropriate design of mechanisation projects and the operation of the equipment provided, new procurement procedures have been initiated to ensure prompt delivery, commissioning and servicing from contractors and suppliers.
- 1.51 Food and Agricultural Industries is the subject of a separate Sub-programme in-depth review (see Chapter Seven).

Effects of Programme Reductions

- 1.52 Although there was progress in implementing the Undertaking on Plant Genetic Resources, there were also significant delays. A session of the Commission Working Group had to be cancelled and work on initiating a plant genetic resources information system was postponed. Studies to assess training needs for plant genetic resources at country level and to initiate network activities for evaluation and utilisation of existing genetic resource collections in Africa also had to be delayed. Due to vacant posts, work in several areas of crop production, in particular on cereals other than rice and pulses and grain legumes, was virtually halted. This was also the case with work on weed control and the control of vertebrate pests. There have been delays in completing

* Botswana, Ghana, Lesotho, Liberia, Swaziland

** China, Indonesia, Republic of Korea, Malaysia, Pakistan, Thailand

the database for treatment of plant pests and updating the resultant manuals, and integrated pest management activities could not be expanded, as planned, for tree crops.

- 1.53 FAO continued to provide the secretariat for the inter-disciplinary International Rice Commission (IRC), which had 54 members in 1988, of which 48 were developing countries. The newsletter has provided a unique forum for information on national rice research and production programmes, summaries of applied technology development and information on the world outlook for production and trade and on meetings and publications of international interest. During the period under review, the newsletter has addressed such issues as swamp rice development in Africa, resistance of rice to various diseases, systems for paddy and fish cultivation, post-harvest rice handling, rice mechanisation and hybrid rice. As a result of financial constraints, this newsletter also had to be cut back from two to one issue per year and from 1988, articles appeared in the original language only.
- 1.54 During the 1986-88 period, SIDP has witnessed a marked downturn in Regular Programme activities as a greater proportion of the diminished staff resources available had to be committed to backstopping the Field Programme. Whereas in 1986, guidelines were published on the seed requirements of food crops, hybrid seed production, seed potato multiplication and the conduct of field trials, and two training videos and five slide sets were issued, the pace of this activity could not be maintained. An important recommendation of the evaluation of the SIDP was that more attention should be given to overall policy formulation and planning for seed development. Workshops dealing with this and programme implementation were organised in Asia and the Sahelian countries, but a similar workshop for the Near East and North Africa and some ten national workshops had to be cancelled. Financial constraints have also made it impossible to place SIDP training activities in a more structured framework and the Regular Programme allocation for training and demonstration equipment has been suspended.

Livestock - Programme 2.1.3

Inter-disciplinary Activities

- 1.55 The Programme has taken a lead in highlighting the importance of biotechnology in the livestock sector, with particular regard to the preservation of genetic resources, livestock breeding and disease control. A special issue of the World Animal Review dealt with biotechnology and articles addressed this topic also in other issues. A bibliography on animal biotechnology has been initiated with four issues per year. Networks have been set up in Asia and Latin America. Applied research is being funded with Regular Programme seed money in national research institutions. This includes work on open nucleus breeding, which allows a large number of offspring to be produced from females of high genetic quality and facilitates testing sires through their siblings rather than offspring. Ten contracts were awarded in 1989 for work on cattle, buffaloes and pigs* and a training course held for participants in the Programme. Biotechnological research on

* Including Argentina (dairy cattle), China (pigs and cattle), Cuba (dairy cattle), Pakistan (buffaloes), Senegal (dual purpose cattle).

vaccine production and diagnosis of specific disease strains has been supported in five countries.* In Asia, UNDP funds have been earmarked for network support.

- 1.56 Work on biological nitrogen fixation for pastures and fodder, in cooperation with Programme 2.1.1, concentrated on site-specific adaptive research and in transferring now proven inoculants to field use by farmers. Regular Programme and UNEP resources have been used to support demonstrations and training to make inoculated seed more freely available, and to provide small items of equipment.** In Brazil, Regular Programme funds have supported facilities to produce inoculants on a semi-commercial basis. All in all, direct contracts were placed in eight countries*** and in a further six countries**** through the Latin American Association of Rhizobiology.
- 1.57 In support of the Pan African Rinderpest Campaign, a joint FAO/IAEA programme in sero-monitoring was designed to monitor the efficacy of vaccination programmes. Small contracts were provided to laboratories for work on vaccine control and sero-monitoring***** with the intention of fostering a network approach. A computerized information system on rinderpest has been developed. Support continued to be provided for updating the Code of Principles for milk and milk products in the framework of the Codex Alimentarius Commission. Following an expert consultation in 1987 to examine goals and structure, an FAO Commission on Livestock Development for Latin America and the Caribbean was established. It held its first meeting in Uruguay during 1988.
- 1.58 The Programme for the Control of African Animal Trypanosomiasis and Related Development, guided by a Commission, has adopted an integrated approach which relates control measures to settlement and land-use, following the recommendations of the evaluation of the Programme by independent consultants in 1987. Support continued to be given to research institutions***** through contracts for the refinement of field control techniques. The Joint FAO/IAEA Division continued to improve the application of the sterile insect technique in control of the tsetse fly. A project for Ethiopia, including the development of pesticide-impregnated screens and the use of slow release trypanocidal drugs for use in areas of low challenge, has been submitted to Italy for Trust Fund support. Results of work on treating cattle with pesticides effective against both ticks and tsetse have proved a particularly encouraging method of control in Cameroon, Ethiopia and Zanzibar. In cooperation with the International Trypanotolerance Centre, a manual has been published on the use of trypanotolerant cattle in tsetse-infested areas.

* Brazil, China, Cuba, India, Uruguay

** Ethiopia, Kenya, Senegal

*** Ethiopia, Iraq, Jordan, Kenya, Morocco, Senegal, Tunisia, Yemen P.D.R.

**** Bolivia, Brazil, Colombia, Cuba, Panama, Uruguay

***** Burkina Faso, Côte d'Ivoire, Ethiopia, Mali, Niger, Nigeria, Senegal, Somalia

***** Burkina Faso, Cameroon, Ethiopia, Ghana, Mali, Uganda

Sub-programme Implementation

- 1.59 Grassland, Forage and Feed Resources: Programmes on pastures and forage have continued to foster a network approach with seed money for small contracts, equipment, training and meetings provided under the Regular Programme, often in association with other sources of funding, in particular UNEP and Unesco-MAB, but also including, for example, the Commonwealth Secretariat and the Inter-American Development Bank. The network activities provide an example of what can be achieved with small catalytic FAO inputs. The emphasis in arid and semi-arid areas, in collaboration with the Forestry Department, has been on the introduction of fodder trees, especially Prosopis. The International Prosopis Association, formed with FAO support, has assisted with distribution of a newsletter and seed exchange. A small contract in Chile was awarded to examine plantation management aspects of Prosopis. In Brazil, another Prosopis species was found to provide a highly attractive alternative to maize production in marginal areas.
- 1.60 RNEA has facilitated exchanges of fodder trees and shrubs as well as salt-tolerant forage species for trials.* In order to develop a practical methodology for the rehabilitation of degraded and semi-arid range sites, RNEA has provided support to three national institutions** for the conduct of trials. The European Research Network on the Utilization of Shrubs as Fodder in Dry Regions has identified four species suitable for the Mediterranean and has started to produce a network bulletin.
- 1.61 With Regular Programme support, research has been initiated in Tunisia on medic/cereal rotations and in Chile, lucerne varieties have been selected for their resistance to salinity. A UNDP project has been under way for support of a Himalayan network encouraging research information exchange and training. A TCP project has been approved to develop a grazing master plan for Nepal by extrapolating existing information to similar agro-ecological areas. In Asia,*** following training activities financed by the Regular Programme, TCP funds have been used to support pilot demonstration activities, including forage production under industrial tree crops. In Southern Brazil, a grazing management/demonstration trial received support and in the Sahel, a contract to a Senegalese institution has been providing information over several years on nomadic and transhumant grazing practices and their effects on pastures. A RLAC-supported "International Group for the Promotion of Rangelands in Latin America" has issued a training manual on range management and has undertaken courses for university lecturers.
- 1.62 To encourage the uptake of technology, the distribution of planting material and the promotion of seed production have become increasingly important. Support has normally consisted of contracts and small items of equipment. In Morocco, a regional training course was organized on medic seed production. For pasture networks in the southern cone of

* Egypt, Islamic Republic of Iran, Jordan, Morocco, Pakistan, Sudan, Syria, Tunisia

** Islamic Republic of Iran, Sudan, Syria

*** Malaysia, Philippines, Thailand

Latin America, IBPGR as well as Regular Programme funds have been used to support multiplication of selected indigenous legumes and their distribution.

- 1.63 Work has continued on the role of crop residues and agro-industrial by-products for animal feeding. Attention has been paid to the improved utilization of marginal pastures and other nitrogen-deficient fibrous feeds. Following development by a TCP project in Senegal of a new technique for urea-molasses block-making, several TCP projects* were undertaken and the technology is now being applied in some 20 countries. Special efforts were devoted to the introduction of urea-treatment in straw. Three TCP projects were implemented** and the technology has been introduced to other countries through UNDP projects. A new technology, based on the use of sugarcane juice as a substitute for maize grain, was developed through a TCP project in the Dominican Republic in the early 1980s and is now being extended to six other countries.*** Task Forces for the promotion of these technologies have been established in francophone and anglophone Africa and Latin America and the Caribbean and an initial meeting was held for each area. It is intended that task force members should become trainers in their own countries and in the region. A bibliography was initiated on animal feeding and six issues appeared in the first year (1988) covering: shrubs, fodder trees and browse; straws and stovers; and sugarcane.
- 1.64 Animal Health was covered in depth in the 1986-87 Review of the Regular Programme. Management of national veterinary services was a subject of growing importance and a manual was published.
- 1.65 The network, established in cooperation with WHO, of 20 world and regional reference laboratories for major diseases, has continued together with the separate laboratory for Foot-and-Mouth Disease. The laboratories, 9 of which were in developing countries, covered 29 major diseases including African Swine Fever, Rinderpest, Haemorrhagic Septicaemia and Bovine and Contagious Caprine Pleuro-pneumonia. The regional reference centre for Haemorrhagic Septicaemia in Sri Lanka has provided a basis for activities to improve vaccine quality. The FAO/WHO/OIE information system for national reporting of 127 communicable veterinary diseases covered 170 countries, including the USSR and the German Democratic Republic, which are not members of FAO. Information from this reporting system was fully computerized for the FAO/WHO/OIE Animal Health Yearbook.
- 1.66 Sub-regional centres, based on existing facilities in Senegal and Ethiopia and covering the Africa Region between them, began work with Regular Programme and TCP assistance in building up quality control and training centres for major veterinary vaccines. These activities have now been further strengthened with the initiation of two UNDP projects. Also with UNDP assistance, an animal disease diagnostic centre is being set up for Africa through the established institutional structure in

* Burkina Faso, Cameroon, Islamic Republic of Iran, Mali, Senegal, Somalia, Sudan

** Islamic Republic of Iran, Niger, Sudan

*** Belize, Colombia, Cuba, Haiti, Mauritius, Philippines

Zimbabwe. The centre is intended to develop diagnostic kits which could be used in small field laboratories. In the Near East, a Trust Fund project provided assistance designed to harmonize disease control policies and regulations and to strengthen surveillance systems.

- 1.67 The control of emergency diseases remained a high priority. In collaboration with the Joint FAO/IAEA Division (AGE), a comprehensive action plan related to the control and eventual eradication of the American screwworm was prepared and Regular Programme and TCP funds were allocated for surveys, control activities and training. Until its recent appearance into North Africa, the screwworm was found only in the Western Hemisphere, primarily in the southern United States, Central America, the Caribbean Islands and South America as far south as Argentina. The disease, myiasis, was not considered as notifiable disease for most countries outside the Americas.
- 1.68 The European Commission for the Control of Foot-and-Mouth Disease continued to assist in the maintenance of a buffer zone in South-eastern Europe which has successfully protected the European continent from invasion by exotic types of FMD virus. Rinderpest occurred for the first time in 40 years in Sri Lanka but was quickly brought under control with the assistance of two TCP projects. At the end of 1987, a serious epidemic of Rift Valley fever occurred in West Africa and FAO and OIE assisted the Government of Senegal in organizing a Regional Workshop on the disease, followed by a FAO/WHO training course in 1988. Consultant assistance and a research contract were also provided to strengthen regional capability in handling the disease.
- 1.69 The campaign for global eradication of rinderpest has begun with multi-donor support. Following the start of the Pan-African Rinderpest Campaign (PARC), FAO continued to work with countries and donors to promote control programmes in the South Asian sub-regions (SAREC). FAO also started rinderpest campaigns in the Near East with UNDP approval of the Western Asia Rinderpest Eradication Campaign (WAREC). An FAO Trust Fund programme at PARC Headquarters in Nairobi offered epidemiological, diagnostic and "cold chain" facilities. Support for communications was expanded with TCP funding.
- 1.70 A DANIDA Trust Fund programme for control of ticks and tick-borne diseases has been under way in East, Central and Southern Africa. This has obtained significant results in immunization against East Coast Fever (using the infection/treatment method) and on the economics and ecology of tick control. The indications are that intensive (weekly) tick control is not always cost-effective and that appropriate strategies need to be developed for different breeding systems and ecological zones. An independent evaluation confirmed the value of this programme and a further phase was approved in January 1989. This project, complemented by UNDP assistance, is supporting immunization in six countries.* Two Trust Fund projects (DANIDA and Netherlands) commenced work in 1988 for the production and quality control of vaccines against East Coast Fever, Babesiosis and Anaplasmosis. In collaboration with CARICOM, IICA and USDA, a regional programme has been planned for the eradication of cattle heart-water carrying ticks from the Caribbean. A consultation was also organised on tick eradication for the Americas.

* Burundi, Malawi, Tanzania, Uganda, Zambia, Zimbabwe

- 1.71 Since 1983, RLAC has supported a network of veterinary research and diagnostic laboratories which includes 650 professionals in 15 countries. Information is shared on diagnostic techniques and training. A bibliographic service is provided. The network was used to distribute diagnostic reagents for hemoparasites, post-natal diarrhoeas and pig viral diseases. The network is focussing on hemoparasites, neonatal diarrhoea and viral diseases of swine. A Caribbean network for cooperation in animal development has also been initiated.
- 1.72 Genetic Resources: In 1986, the FAO/UNEP panel on animal genetic resources recommended the establishment of regional gene banks and computerized regional data banks. A global animal data bank has been established in cooperation with the European Association of Animal Production (EAAP) in the Federal Republic of Germany. Regional animal gene banks have been set-up* in Africa, Asia and Latin America for the storage of semen and embryos from endangered breeds and training has been provided. Support from the Regular Programme has been provided for the establishment of nucleus breeding herds of indigenous pigs in China, Philippines and Viet Nam.
- 1.73 The Artificial Insemination and Breeding Development Programme provided 80,000 doses of bull semen** during 1988, a considerable increase on the previous average of 50,000 doses per year. In 1987, with support from an Italian Organization and the Regular Programme, the FAO Bull Semen Bank was established near Rome with a storage capacity of 500,000 doses of deep frozen semen. The Bank executes many of the donations and in 1988 received 83,000 doses.*** Semen donated from developed countries was stored in the Bank and FAO was thus able to respond quickly to requests from member countries. A bank has also been set up in Thailand to store semen of indigenous cattle and buffaloes. Through a Netherlands Trust Fund, 11 liquid nitrogen plants were maintained for artificial insemination programmes in seven African countries.****
- 1.74 Dairy Development: Since its establishment in 1985, the International Dairy Development Programme has provided a framework for more systematically designed dairy development focussed on the needs of the small-scale producers and for integrating all the key FAO activities in support of dairy development, including the International Scheme for the Coordination of Dairy Development (ISCDD) and the FAO/DANIDA Dairy Development Training Programme. During 1987-89, further progress was made in the initiation and implementation of a series of model projects for integrated dairy development. The model project in Ecuador is now under full implementation with assistance from WFP and technical assistance is likely from the Netherlands. Implementation has also begun in Tanzania, with the dairy extension module receiving support from UNDP. A similar project in Indonesia is awaiting implementation, pending finalization of arrangements for external donor support. A fourth project is under preparation in Syria, and preliminary missions have visited China, Mexico and Nigeria.

* Argentina, Brazil, China, Ethiopia, India, Mexico, Senegal

** To Cape Verde, Côte d'Ivoire, Cyprus, Ethiopia, Guyana, Somalia, Turkey, Uganda, Viet Nam

*** From Germany (F.R.), Ireland, Italy, U.K.

**** Egypt, Ethiopia, Rwanda, Somalia, Tanzania, Zaire, Zanzibar

- 1.75 In line with the IDDP's thrust, the current phase (1985-89) of the FAO/DANIDA Dairy Development and Training Programme had been reoriented from the traditional emphasis on dairy training aspects to assisting directly in the smallholder dairy development through pilot outreach activities. The Programme was evaluated by a Joint FAO/DANIDA mission at the end of 1988. The evaluation found that while the pace and progress in implementation varied significantly between three developing regions covered by the Programme, a substantial achievement has been made in carrying out outreach support to groups of rural women and farmers engaged in dairying, especially in Kenya and Tanzania. A total of some 3,800 persons were covered in training throughout the three regions, 210 through regional courses and 3,600 through national courses: of the latter, some 3,000 producers were trained through self-teaching methods in seven countries of Latin America and the Caribbean. The Programme promoted TCDC among the participating countries, especially in East Africa* and in Latin America. However, the evaluation concluded that an approach with emphasis on outreach support was too ambitious for a regionally structured Programme and that its future phase should be focussed on strengthening institutional capacity for dairy manpower training and integration with national programmes in support of smallholder dairy development.
- 1.76 Meat Development: Emphasis has now been placed on the provision of specialist short-term advice to countries particularly for existing slaughter house operations, rather than broad based sub-sector review and programming missions. Other work has included planning of new abattoirs in metropolitan cities (India); on evaluation of existing or projected training facilities for meat industry personnel (Argentina and Ecuador). An FAO cooperative network on applied research on simple methods of meat preservation was initiated and a manual on the subject published. In order to promote increased off-take of meat, the idea of small-scale slaughterhouses with satellite small-scale industries was introduced to utilize by-products. Designs have been published for a model slaughterhouse which can be built up in a modular fashion, adding on units for operations such as meat cutting to the central slaughter unit. Work began on constructing the first one in Rarotonga (Cook Islands) with TCP funding and funds are being sought for several other projects.
- 1.77 Livestock Production: Work under the Sub-programme has concentrated on livestock in traditional small farm production systems. Following a series of consultancy studies of Draught Animal Power (DAP) in African countries, a training video has been prepared and a training course was organized in Benin (1988). Preparatory work was initiated on four training manuals.
- 1.78 The Work Programme on small ruminants has been implemented within the framework of the research and development networks in Africa, Asia, Latin America and the Near East and North Africa. Work in the RNEA region suffered particularly from a shortage of funds. Following a meeting in Côte d'Ivoire in 1987, a sub-regional** small ruminant-alley farming systems project has been approved with Dutch Funding and a package of training materials has been prepared, including three videos

* Kenya, Tanzania and Zimbabwe

** Benin, Ghana, Nigeria

and four training manuals. In South-East Asia,* a UNDP project has concentrated on sheep and goats, including their production under tree crops. A workshop held in Malaysia during 1988 planned four sub-regional projects on integrated livestock tree cropping systems. A sub-regional project has been proposed to establish an Awassi sheep semen bank. The European sheep and goats network issued a book on goat nutrition. The computerized inventory of sheep and goat research, development and training projects has been considerably expanded and now contains information on more than 300 projects.

- 1.79 Following an Expert Consultation (1987) on small-scale pig production in Asia, a manual on pig feeding based on the exploitation of local and by-product feeds has been produced and a series of four training courses on pig production in China have been initiated, as well as a nucleus pig breeding programme in the Philippines. Following an expert consultation on rural poultry production, training manuals on chicken, duck and geese production were being prepared and a training workshop on rural poultry production and the establishment and training of a Regional Task force on Rural Poultry Production in Africa were planned for implementation in 1989.

Effects of Financial Constraints

- 1.80 No major areas of work have been entirely eliminated and extensive use has been made of extra-budgetary funding to support activities, especially in disease control. Nevertheless, integral aspects of all programmes were cut back, such as a consultation on integrated tsetse control and a seminar on foot-and-mouth disease control and eradication as well as support to foot-and-mouth control in Latin America. Probably the single most important elimination, however, has been the suspension of the World Animal Review, which had been produced four times a year until 1988. It provided a widely read medium for exchange of views and technical information.

Research and Technology Development - Programme 2.1.4

Inter-disciplinary Activities

- 1.81 Much of the work of this Programme is by definition inter-disciplinary. The Environment and Energy Coordinating Centre serviced the activities of the Inter-Departmental Working Group on Environment and Energy. The Research Development Centre continued to serve as FAO's focal point on science and technology for development and prepared several contributions to the UN system on this subject, including an end-of-decade review of the Vienna Programme of Action on science and technology in FAO. The Centre worked closely with technical divisions on biotechnology and on research institution-building projects and advisory missions which normally had technical as well as planning, managerial and organizational inputs. In support of the Global Information and Early Warning System (GIEWS) and the Emergency Centre for Locust Operations (ECLO), the Remote Sensing Centre completed the development and installation of the ARTEMIS environmental monitoring

* Indonesia, Malaysia, Philippines

system, using real-time METEOSAT and NOAA satellite data for Africa, the Near East and South West Asia. The Remote Sensing Centre also cooperated with the Forestry and Fisheries Departments and with the divisions of the Agriculture Department by providing remote sensing technical advice and project backstopping.

- 1.82 The work of the FAO/IAEA Joint Division was increasingly integrated with that of the rest of FAO. Particularly important examples were work on nitrogen fixation (see 2.1.1 Natural Resources) and Trypanosomiasis Control (see 2.1.3 Livestock). Also in cooperation with Programme 2.1.3 Livestock, disease diagnostic kits have been distributed. Divisions within FAO and organizations such as IARCs were cooperating in the production of regular AGRIS bibliographies on specific topics, for example, animal biotechnology, plant protection, faba bean and lentils (produced with ICARDA) and wheat, rye and triticale (produced with CIMMYT).
- 1.83 Research Development: Attention has continued to be given to training in research organization and management. A yearly research management course of six weeks' duration has been organized jointly with CIRED in France since 1986 and another regional research management training course was conducted in Chile in 1989 with co-sponsorship from FAO-RLAC, IICA and ISNAR. In addition, work continued on a research management training manual. In Côte d'Ivoire, advice was given on the development of agricultural research and human resource management and in Senegal, assistance was given to the national research institute in orienting its rice research programme. The Research Development Centre also participated in a SPAAR working group to prepare a master plan for research in Tanzania and in a national workshop that reviewed the role and impact of research on agricultural development in Morocco.
- 1.84 Inter-country cooperation was promoted through support to the regional chapters of the International Federation for Agricultural Research Systems for Development (IFARD) in Africa and Latin America and the Caribbean. The Association of Agricultural Research Institutions in the Near East and North Africa, for which the secretariat is provided by RNEA, continued to expand its activities. A review of agricultural research priorities in the Arab countries was prepared and presented at the first meeting of the Committee on Arab Agricultural Research. Assistance was provided to the member countries of the Gulf Cooperation Council, in the preparation of a proposal for the establishment of collaborative agricultural research networks.
- 1.85 FAO, together with UNDP and the World Bank, is a co-sponsor of the Consultative Group on International Agricultural Research (CGIAR) and hosts the Secretariat for its Technical Advisory Committee (TAC). During the reporting period, the Research Development Centre organized placement of Associate Professional Officers supported by the Government of Italy in specific projects at CGIAR centres.
- 1.86 The Secretariat of the Technical Advisory Committee assisted TAC in planning and executing the External Programme Reviews of IRRI, ICARDA and CIMMYT, and finalizing that of ILCA. Proposals were developed for a timetable of future external programme, commodity and activity reviews. A comprehensive review on the use of quantitative models for setting priorities in agricultural research was completed and procedures for the continuous monitoring of evolving CGIAR priorities were considered and approved by TAC. The new CGIAR Resource Allocation Process, developed in cooperation with the CGIAR Secretariat, was implemented, beginning in 1987, and the TAC Secretariat provided the

programmatic analyses for ten centres. Several policy documents were finalized and considered by TAC and the CGIAR. These included Sustainable Agricultural Production: Implications for International Agricultural Research; CGIAR Policy on Plant Genetic Resources; the Role of Biotechnology in the CGIAR; Relationships between CGIAR and Non-CGIAR Centres; and Sharing of Responsibilities among CGIAR Centres. TAC also completed a paper on the sharing of international responsibilities between CGIAR Centres and national institutions in developing countries. At the request of the Group, TAC began examining a possible expansion of the CGIAR to include subject-matter areas and/or institutes involved in international agricultural research in developing countries that are currently funded outside the CGIAR umbrella - the so-called non-associated centres. The TAC Secretariat was extensively involved in the development of criteria for assessment of the subject-matter areas; analytical procedures and the provision of logistical support for the review panels which will do the assessments. The Committee completed its study of vegetables as a new initiative in the CGIAR and similar proposals on aquaculture and coconuts were initiated.

- 1.87 Nuclear Techniques in Food and Agriculture: Results of a research network programme, involving 13 research institutes, on nitrogen fixation by Azolla in rice ecosystems indicated that rice yield responses to Azolla were similar to an equivalent application of 60 kg N/ha. A new coordinated research network deals with problems of declining fertility in fragile tropical soils and the growing fuelwood crisis in developing countries. In an extension of the existing programmes on nitrogen fixation by trees, pasture and grain legumes, attempts are being made to use molecular biology to monitor the fate of inoculants introduced into soils in the field.
- 1.88 Cooperative research was continued among 17 scientists from developing and developed countries, using mutation techniques for doubled haploids in cereal breeding. With the use of radio-isotopes and mutagenic agents for genetic analysis of crop plants, a review was made of the application of molecular genetic methods. A new programme was started, based on a research network involving 11 institutes and using novel isotopic approaches to identify genotypic variability in crop plants grown under nutrient and water stress conditions. Genetic variability existing in grain legumes for high nitrogen fixation is being exploited to select varieties of grain legumes in Latin America. Emphasis was also placed on organizing a new coordinated research network focussing on improvement of basic food crops in Africa. New mutant varieties with improved characters such as resistance to diseases, stiff straw and earliness were released. Information about these varieties are continuously compiled in a database and published in the Mutation Breeding Newsletter.
- 1.89 Nuclear techniques were applied in animal production and health through several research network programmes. These included the development of radiation-attenuated vaccines against animal parasites, development of new diagnostic tests and validation methods for a number of important diseases including rinderpest, brucellosis, babesiosis and trypanosomiasis. Work has continued on the use of Immunoassay methods in integrated animal reproduction and nutrition studies.
- 1.90 Coordinated research networks continued to work on refining laboratory and field practices for eradication of the Mediterranean fruit fly and several species of tsetse. High priority was given to diets for mass

rearing, development and assessment of medfly genetically sexed strains, and techniques to monitor the impact of sterile male releases in integrated tsetse control programmes.

- 1.91 Research networks examined the safety to consumers and environmental damage due to pesticides, including residues in treated stored products and fungicide residues in food plants. The bio-availability of bound residues in produce is still a matter of interest. The fate and occurrence of persistent pesticides and their residues have been followed and measured under tropical conditions in soils, food chains and rice/fish/Azolla ecosystems through a research network with 26 participants. To minimize the environmental damage without sacrificing efficacy, the controlled release of pesticides has been investigated in relation to tsetse control by screens, and weed control in rice.
- 1.92 An International Conference on the Acceptance, Control of and Trade in Irradiated Food was jointly convened by FAO, IAEA, WHO, ITC-UNCTAD/GATT in 1988. It adopted by consensus an "International Document on Food Irradiation" that recognizes food irradiation as a process which can reduce post-harvest food losses and can make available a larger quantity and a wider variety of foodstuffs for consumers. It has the potential to reduce the incidence of food-borne diseases, especially in solid foods, and can also be an effective quarantine treatment for certain foods and thus contribute to international trade. However, widespread application and trade in irradiated foods, will require regulatory control by governments and the acceptance of the process by industry and consumers.
- 1.93 AGRIS and CARIS: The International Information System for the Agricultural Sciences and Technology, AGRIS, was incorporated under Programme 2.1.4 at the beginning of 1988. AGRIS shares a compatible methodology with CARIS, the Current Agricultural Research Information System, and uses the same classification and indexing tools. The separate biennial technical consultations for AGRIS and CARIS recommended that future sessions should be merged. The thesaurus AGROVOC, which was developed with the assistance of the Commission of the European Communities (CEC), was introduced to serve both systems in English, French and Spanish, with the result that information can be searched in any one of the three languages. An Arabic version was being developed under an FAO project and Danish, German, Italian and Portuguese versions were being prepared and updated in EEC member countries with CEC support.
- 1.94 AGRIS is a world-wide bibliographic information network for agriculture covering 135 countries and 19 regional and international centres. At the end of 1988, the AGRIS database consisted of more than 1.5 million citations with 10,000 new ones added every month. The proportion of these, including abstracts, has now increased to around 15 percent. The major printed monthly output of the system, Agrindex, has been issued since 1987 in French and Spanish, in addition to the English version published since 1975. In return for their contributions, participating centres could receive Agrindex on magnetic tape and special outputs such as national bibliographies and specific searches. The AGRIS database was available on-line via telecommunication networks and its utilization, which had been growing steadily, has stabilised at around 2000 connect/hours per year (compared to 560 in 1981). In addition to specialist subject-matter bibliographies, national bibliographies were prepared for AGRIS Centres and in support of FAO projects. Individual scientists also received bibliographic computer

printouts, targeted at their specific interests. This service was provided free to developing countries and on a cost-recovery basis to developed countries.

- 1.95 CARIS provided developing countries with a mechanism to collect and disseminate information on their on-going agricultural research projects and exchange this information among themselves and with developed countries. The number of national and regional participating centres reached 112 by the end of 1988 and the global CARIS database, which was updated continuously, included 16,000 current agricultural research projects in 70 developing countries. It was accessible on-line within FAO and searchable in English, French or Spanish. Participating centres contributed their national data in printed form, on tape or on diskette and received in return the laser printed master copy of their CARIS directories, as well as any part of the global database on tape or on diskette. The system has enabled many developing countries to produce for the first time inventories of their on-going research activities. AGREP, the similar system coordinated by the CEC, was being made compatible with CARIS. Also SPAAR, the Special Programme for African Agricultural Research, has developed its information system with donor-supported projects to be as compatible as possible with CARIS and exchange of information was initiated between the two systems.
- 1.96 Support continued to be provided to developing countries for setting-up and strengthening their agricultural documentation and information services.
- 1.97 Remote Sensing Technology: A satellite monitoring system (ARTEMIS) continued to be implemented for precipitation and vegetation conditions in Africa using real-time data from METEOSTAT and NOAA satellites. ARTEMIS has been supported through Dutch trust funds and was installed in FAO with the cooperation of the National Aerospace Laboratory of the Netherlands. The programme was evaluated during 1989. The mission's findings indicated that a comprehensive system had been built up and outputs were being used in the Global Information and Early Warning System (GIEWS) and by the Emergency Centre for Locust Operations (ECLO). However, further integration of users' needs with the output of the system was important both at Headquarters and the Regional Offices. There was also a need for training and awareness-building in the system's possibilities, particularly for potential users in land resources, crops, forestry and fisheries. Consultation with users in system development had been inadequate and links to other FAO information systems also needed to be developed. A follow-up programme is now being finalised which will address these problems. In addition, a joint study was initiated with the European Space Agency to test the usefulness of satellite radar imagery in agricultural and forestry land use mapping.
- 1.98 Support to field projects expanded during 1988 to cover 66 countries. Japanese-funded trust fund projects in Eastern and Southern Africa were developing local capacity to monitor precipitation and vegetation based on satellite imagery. Land-use mapping programmes were initiated in five countries* using remote sensing. Soils investigations in Botswana and Poland also utilized remote sensing techniques to assist

* Ecuador, Indonesia, Lebanon, Malawi, Saudi Arabia

respectively in land resource mapping and determination of soil moisture levels in grasslands. A TCP project produced a methodology for the use of high resolution satellite data for agricultural and marine applications in the Maldives.

- 1.99 Training in agricultural, forestry and fishery applications has always formed an important aspect of the Remote Sensing Centre's work and an Italian trust fund project continued to support courses of two to four weeks' duration. Other UN agencies have collaborated closely in the inter-regional course organized at FAO Headquarters. Training manuals were prepared on fundamentals of remote sensing, radar imagery interpretation and multithematic interpretation of second generation satellite data.
- 1.100 Environment and Energy: FAO's activities with regard to the environment are extensively reviewed in Chapter Twelve. Work in energy has included drawing up of a methodological approach for rural energy planning in Asia through the UNDP/ESCAP Regional Energy Development Programme and in Africa in consultation with national authorities. Also in support of policy development, four village level surveys* were commissioned to better understand the flow of agricultural residues and their fuel and fertilizer potentials, and a study was undertaken on the economics of solar drying for agricultural products. A practical manual was begun with designs of dryers for agriculture and fisheries. Assistance was provided for the training centre on biogas at Chengdu in China, where training was provided to some 20 scientists and technicians each year, mainly for Asian countries.
- 1.101 The 21 working groups of the European Cooperative Networks on Rural Energy Groups include over 400 institutions. They continued to facilitate research and the flow of information between European and developing countries. Workshops and consultations were organized on such topics as energy conservation, producing and converting biomass for energy, solar drying and heating, use of geothermal energy and industrial heat effluents for greenhouse heating. Guidelines have been prepared on solar drying and greenhouse energy technologies and used in training courses. Also in Europe, the FAO/UNDP project on Integrated Rural Energy Systems developed a computerized model which was tested at demonstration sites.
- 1.102 In Latin America and the Caribbean, three former energy networks on solar, wind and biomass covering 32 countries, of which relatively few members were active, were merged into a rural energy network in the interest of cost-effectiveness and with the intention of concentrating on training and exchange of information on such topics as the operation and maintenance of biodigesters, solar drying and rural energy extension. In support of the network, RLAC prepared a "distance learning" paper on alternative sources of energy. In Asia and the Pacific, the sub-group on biogas of the Organic Recycling Network continued to be active and in Africa, RAFR initiated a new biogas network in West Africa.** The network on Rice Husk Gasification for Asia and the Pacific was active and a Rural Energy Bulletin for the region continued to be produced by the Regional Office.

* China, India, Niger, Thailand

** Benin, Burkina Faso, Ghana, Mali, Niger, Togo

- 1.103 In order to develop a more integrated approach to energy development in FAO, a comprehensive summary of all the Organization's energy-related activities was reviewed by the Inter-departmental Working Group on Environment and Energy.

Effects of Financial Constraints

- 1.104 FAO has been developing a series of training manuals on agricultural research planning organization and management. As a result of the financial crisis, this work was severely curtailed. Following the Chernobyl disaster, FAO took the problems of radionuclide contamination in agriculture as a priority area of activity, but training activities and studies have had to be cancelled. The new revised edition of the multilingual thesaurus used for AGRIS and CARIS had to be postponed, as well as self-teaching material for users of the system. AGRIS could not be produced on compact disk as planned. This would have provided a very small and easily transportable version. It became impossible to respond to all the requests by AGRIS users for information. A newsletter serving AGRIS and CARIS users also had to be suspended and the preparation and dissemination of a quarterly remote sensing newsletter was postponed.

Rural Development - Programme 2.1.5

Inter-disciplinary Activities

- 1.105 As the Tenth Anniversary of WCARRD approached, follow-up continued to be a major area for inter-disciplinary activities. FAO prepared a report on the "Review and Analysis of Agrarian Reform and Rural Development" which was considered by ECOSOC in 1988. In 1989, a series of consultations in the Near East and North Africa dealt with WCARRD issues of an inter-disciplinary nature, including the effects of migration on rural development and the implications of mechanization.
- 1.106 The Programme continued to provide assistance to the secretariat of the ACC Task Force on Rural Development and to publish its newsletter. The joint FAO/ECA division is cooperating in an inter-disciplinary study of 20 sample countries, to review the performance and effectiveness of their rural development strategies and programmes in reaching the poor. The Eleventh Biennial Consultation between FAO and Trade Unions was held. At the field level, two workshops, one in Asia and the other in Latin America, concentrated on rural workers' self-help activities in agro-forestry.
- 1.107 World Food Day activities in 1988 and 1989 focussed on rural youth and food and the environment, respectively. All relevant FAO Programmes were involved and contributed to the identification of issues and the preparation of background materials for use by national committees. Posters, leaflets and other information materials were increasingly produced by individual countries for use by schools, government offices and farmers' organizations.
- 1.108 Population activities cut across programmes of the Organization and thirty-five inter-regional, regional and country projects were implemented. Project activities involved the integration of population issues into agricultural extension; field-level nutrition training; development support communication programmes for rural youth; national

studies on the inter-relationships between women, population and agricultural development; and applications of a computerized agricultural and population simulation system for planning (CAPPA). Six UNFPA-funded FAO Regional Population Advisers in Africa, Asia and the Pacific, Latin America and the Caribbean, and the Near East and North Africa provided advice to Member Governments and assisted with the formulation and backstopping of projects.

- 1.109 Agricultural Education, Extension and Training: Extension was the subject of a full review in the 1986-87 Review of the Regular Programme. In follow-up to the findings of this Review, a Global Consultation on Agricultural Extension was organized to take place in October 1989. A particular issue was cost-effectiveness in extension and a survey was initiated with all member countries. Case studies were undertaken in 24 countries, covering all the developing regions and examining five different extension approaches, including training and visit (T and V) and participatory techniques. The extension coverage of women, who often make up the bulk of the agricultural population, has remained an area of focus. A multi-donor project covering five African countries* has prepared training materials and has organised workshops. A UNFPA/FAO global project has been promoting the integration of population concerns into agricultural education in nine countries.** Through the programme, national policies have been reviewed and ways of ensuring closer links between the Ministries of Agriculture and Education have been examined. Training materials were prepared and pilot activities were initiated in one or two districts of each country. These have been closely monitored to determine their replicability. Population issues are also being integrated with rural youth programmes in Sierra Leone, Zambia and Zimbabwe, where the development and assessment of training material formed an important part of the programme which is now being extended to Latin America.
- 1.110 In agricultural education, a study has been undertaken based on developments in 24 major institutions to determine trends in planning, management and application of cost-effective education techniques. RNEA organised a national workshop for Sudan on curriculum development.
- 1.111 Development Support Communication activities have continued to stress the application of rural radio and visual aids, including filmstrips and video recordings. Earlier experience with video in Latin America continues to be extended into Africa, using experts from the region, for example on a project in Mali. Regular Programme resources have been used to support the development of a communication package in support of the Pan African Rinderpest Campaign. Training in the production of low-cost group media techniques has been provided, particularly in the context of UNFPA-supported activities. RAPA organized a workshop in the production of training material.
- 1.112 Agrarian Reform and Land Settlement: Three workshops were held in Africa. The major conclusions highlighted human resource development as a basic need that will enable countries to conceive, operationalise and monitor agrarian reform. The role of decentralisation and assistance in institution-building to execute these programmes was

* Kenya, Malawi, Sierra Leone, Zambia, Zimbabwe

** Honduras, Jamaica, Kenya, Malawi, Morocco, Rwanda, Sri Lanka, Thailand, Tunisia

stressed, including support to research and inter-country exchange of experience. RAFR has reviewed settlement needs in areas freed from onchocerciasis. In the Near East and North Africa, RNEA has responded to requests from countries for advice on land registration and consolidation* and has begun a review of land tenure in the region. It was found that land redistribution alone was inadequate to provide income-earning opportunities to all rural families. In cooperation with the Rural Institutions and Employment Sub-programme, three case studies** were carried out to examine alternative employment opportunities. A study also began on the effects of alternative technologies on employment in Africa. The first issue was to cover women in food processing. As part of the commemoration of the tenth anniversary of WCARRD, a series of eight meetings are being held in the different regions and two publications are being prepared, one dealing with some of the main development issues in Central America and on the problems of the indigenous populations in Latin America and the Caribbean.

- 1.113 Rural Institutions and Employment: Work on cooperatives has continued to emphasize improved management. In collaboration with the German Foundation for International Development (DSE), practical training was provided in the conduct of feasibility studies and the introduction of improved management and financial systems.*** A guide published on the monitoring and evaluation of small farmers' cooperatives has been put into practical application by 500 cooperatives in India. Country studies in Latin America**** examined the role of agricultural cooperatives in alleviating rural poverty. It was concluded that for the cooperatives to play a more significant role, management must be improved and measures introduced to ensure the participation of small farmers; further advice and training have been provided during 1989. The case studies of organizations and institutions involved in delivering agricultural services to small farmers in Africa and the Near East***** were discussed at workshops and studies are in preparation for the Caribbean region. It was concluded that although the problems of small farmers were considered at policy level, there was a lack of concern with their problems in the field. Both institutional structures and participatory methodologies for reaching the farmers were lacking.
- 1.114 Experience from people's participation projects benefitting some 11,000 farmers in ten countries has been used to develop guidelines on the introduction of this concept into larger scale agricultural and rural development programmes. In backstopping ongoing people's participation projects, the emphasis was on developing training material for participatory monitoring and management. People's participation projects are now beginning to show some success. In Ghana, churches

* Mauritania, Turkey, Yemen Arab Republic

** Peru, Sri Lanka, Turkey

*** Burkina Faso, Senegal, Togo

**** Argentina, Colombia, Guatemala, Nicaragua, Panama

***** Egypt, Ghana, Jordan, Malawi, Morocco, Sierra Leone, Syria, Tanzania, Tunisia, Zambia

have promoted 253 groups covering 3,500 small farmers, half of whom are women. Some US\$ 170,000 has been made available for production loans with a 80% repayment rate. In Sri Lanka, 239 groups cover 2,300 small farmers, of whom 60% are women. Traditional farm activities, brick-making and new processing activities have been encouraged. Nearly US\$ 10,000 have been mobilised in savings and the government is taking up the approach for replication elsewhere.

- 1.115 Women in Agricultural Production and Rural Development: The Plan of Action for Integration of Women in Development was agreed to by the FAO Council in 1988. Priority areas have been selected and work is proceeding to ensure attention to issues of women in agriculture, including: training in appraisal and monitoring; the revitalisation of home economics and agricultural curricula; the preparation of guidelines and checklists; improved documentation and communications; increased inter-agency cooperation; and increasing female professional staff in FAO. Three pilot training courses for FAO staff on gender issues and agricultural development were held. A 1988 consultation focussed on the integration of gender issues in the planning and evaluation of institutional changes on women in development programmes. Case studies have been initiated on the relationship of agricultural development, population and women in Africa, Latin America and Asia.* In addition, country studies on women in irrigated agriculture were carried out in Africa and Asia.** Curriculum guidelines for the improvement of home economics training to incorporate household resource allocation and management were tested in three countries.*** In Southeast Asia, a workshop addressed the problem of linkages between the various government departments and non-governmental organizations concerned in decentralised planning for women's development. Studies of women in agriculture in the Near East, Latin America and Africa were prepared for the Round Tables and Government Consultations, for the 10th Anniversary of WCARRD.
- 1.116 RLAC prepared an inventory of potential funding sources for women's development projects in Paraguay and a national workshop in Chile dealt with the assessment of viability in women's development projects. Seed money was provided for income-generating activities in Brazil and Costa Rica. A survey was made, with TCP funding, of the status and participation of women in the Caribbean region. As part of its cooperation with ASEAN, RAPA provided assistance in the development of a source book on home economics in extension. A European working party on women in rural development prepared guidelines on the global management approach to rural families and a bibliography on people's participation in the decision-making process in rural communities. At its 5th Session, it examined the role of women in the development of agri-tourism as an additional income-generating activity in rural areas and decided to establish networks to examine socio-economic factors influencing the status of women.

* El Salvador, Honduras, Indonesia, Lesotho, Malaysia, Nicaragua, Philippines, Sierra Leone, Tanzania, Thailand, Zimbabwe

** Botswana, India, Madagascar, Malawi, Pakistan, Zimbabwe

*** Malawi, Nigeria, Thailand

- 1.117 Marketing: Increasing emphasis was placed on formulation and implementation of policies required to achieve more effective and efficient agricultural marketing. A discussion paper on "Agricultural Marketing Liberalization and Privatization - Implementation Issues" was issued and 14 case studies* were prepared for the African Regional Seminar on Food Marketing Policy Adjustment.
- 1.118 Many national marketing agencies receive subsidies to support non-profitable activities. In such situations, management inefficiency in procurement and distribution is often difficult to isolate and correct. FAO has developed a methodology to evaluate the economic efficiency of public marketing agencies and has drafted a manual on the subject, which was discussed at a regional meeting for Asia and the Pacific. Following testing in the Philippines, a revised manual was being prepared.
- 1.119 TCDC activities have been promoted to develop and improve agricultural marketing agencies. The Association of Food Marketing Agencies in Eastern and Southern Africa (AFMESA) held a workshop in Dar-es-Salaam to discuss the role of food marketing boards in a changed policy environment. The FAO/ECA joint division studied the improvement of food marketing institutions and the harmonisation of food prices. FAO works closely with the Association of Food Marketing Agencies in Asia and the Pacific (AFMA), which is now supported through a UNDP project. RNEA provided support to the foundation meeting and to the finalization of the constitution and by-laws for the Association of Food Marketing Agencies in the Near East and North Africa (AFMANENA). In Latin America, RLAC prepared five country case studies in preparation for a meeting on staple food marketing in Andean countries** and supported the activities of the newly formed Network in Agricultural Marketing Food Supply in Latin America.
- 1.120 Policy aspects have also received emphasis in FAO's input marketing activities. Advisory missions on this topic were mounted to Burkina Faso and Uruguay. A fertilizer marketing policy workshop was held in Zambia and a Manual on Fertilizer Marketing for Retailers is under preparation, with assistance from the Fertilizer Industry Advisory Committee (FIAC). FAO, with FIAC support, has also published results of studies of fertilizer marketing costs and margins in 13 countries.*** These were designed to increase awareness of factors leading to high prices for farmers.
- 1.121 Agricultural Banking and Credit: Most work within this Sub-programme was undertaken within the Scheme for Agricultural Credit Development (SACRED), which gives access to institutions and organizations in developed countries interested in supporting the development of rural financial systems as well as the target institutions in developing countries themselves. Thus, FAO acts as a broker between institutions providing assistance and those needing it. The exchange of experience

* Ethiopia, Gambia, Ghana, Kenya, Liberia, Mozambique, Nigeria, Sierra Leone, Somalia, Sudan, Tanzania, Uganda, Zambia, Zimbabwe

** Bolivia, Colombia, Ecuador, Peru, Venezuela

*** Argentina, Burkina Faso, Gambia, Ghana, Madagascar, Nicaragua, Rwanda, Somalia, Sudan, Tanzania, Zaire, Zambia, Zimbabwe

and the provision of training opportunities is also promoted. In June 1988, the fourth technical consultation of SACRED correspondents was held. This serves as a forum for discussion on matters of mutual cooperation. In the past few years, emphasis in the Sub-programme has switched from agricultural credit to rural finance, including both savings and lending operations. More attention is now paid to the role of informal groups in the rural financial system and their linkages with formal financial institutions. This subject has received special attention from the Asia and Pacific Regional Agricultural Credit Association (APRACA), which has organized a number of activities, including studies, workshops and seminars.

Effects of Financial Constraints

- 1.122 The most seriously affected programme areas, in comparative terms, have been Agrarian Reform and Land Settlement, Women in Agricultural Production and Rural Development and Marketing, although work in all Sub-programmes areas has been reduced. For example, the Marketing Sub-programme has been promoting the development of cereal banks, as a village-based approach in improving food security. A manual on the establishment, operation and management of cereal banks has been issued and two training workshops held,* but further workshops and an in-depth review of the cereal bank programme have had to be postponed. Activities to provide marketing support for roots and tubers and for marketing extension have also been suspended.
- 1.123 Activities in the Women in Agricultural Production and Rural Development Sub-programme were curtailed due to staff shortages. This limited assistance to countries in such areas as training institutions and development of curricula. A study of the differential impact of crises and disasters (drought, etc.) on males and females was postponed. In the Agrarian Reform and Land Settlement Sub-programme, major delayed activities included the Government Consultation on WCARRD Follow-up in Africa, which was re-scheduled to 1989, and the publication of "Dynamics of Land Tenure and Agrarian Systems in Africa". TCDC activities also suffered, particularly in support of the regional agricultural credit associations and the associations for food marketing in Africa and Latin America and the Caribbean.

Nutrition - Programme 2.1.6

Inter-disciplinary Activities

- 1.124 The Nutrition Programme participated in a number of inter-agency groups and activities, in particular the Joint FAO/WHO Codex Alimentarius Commission discussed below and the ACC Task Force on Nutrition. Joint activities have included discussion on the use of the Codex standards by GATT in the context of the Uruguay round and development with WHO of step-by-step approaches to calculating energy requirements and dietary intake of vitamin A. There has been cooperation in the Inter-agency Food and Nutrition Surveillance Programme (IFNS) and a contribution has been made to the Social Dimensions of Adjustment Programme of the World Bank. Cooperation with other concerned Sub-programmes could have been further strengthened in such areas as the use of traditional food plants.

* Chad, Niger

Sub-programme Implementation

- 1.125 Food and Nutrition Assessment: Some 80 nutrition country profiles are in different stages of preparation, for inclusion in the Organization's corporate database for access by internal and external users. Procedures were developed for profile updating. Regional IFNS meetings held during 1988 identified training in management and the use of surveillance data for planning as a priority. Project development and training activities are now stressing these aspects.* Nutrition surveillance also continued to be emphasized in Early Warning and Food Information Systems. A practical manual for setting up food and nutrition surveillance systems has been designed and is being applied in Latin America.** This is designed to raise the application and use of food and nutrition indicators in agricultural sector planning and implementation. A manual was published commercially describing, for planners and nutritionists, the calculation of energy requirements according to the methodology finalised at a joint FAO/WHO/UNU consultation. Included with the manual is a specially developed software package which performs the calculations step by step according to options chosen by the user. Work was also published jointly with WHO on vitamin and mineral requirements and preparatory background documentation was begun with WHO and IAEA on trace elements in human nutrition. Activities were also initiated for the Sixth World Food Survey.
- 1.126 Nutrition Programmes: In contribution to the UN programme for the control and prevention of vitamin A deficiency, studies were supported in Bangladesh and India to evaluate a methodology for measuring the dietary intake of vitamin A rich foods and the effectiveness of different interventions. National booklets*** for extension workers were produced on vitamin A rich plants and ways of preventing deficiency. Project preparation missions were organised to 11 countries**** and field projects began work in Malawi and Nepal as well as a network for Asian countries.***** The promotion of underexploited traditional food crops was pursued more vigorously in Africa and extended to Asia. Three national workshops were held in Africa***** and national recipe competitions were organised.***** Studies were made of the use of traditional foods in six Asian countries***** attending a regional workshop. In Nigeria and Zambia, the contribution

*	Antigua, Ethiopia, Grenada, India, Nepal, Somalia, Sudan
**	Argentina, Dominican Republic, Guatemala, Mexico, Paraguay, Peru
***	Malawi, Nepal, Philippines, Tanzania
****	Bangladesh, Brazil, Burkina Faso, Haiti, Mali, Mauritania, Niger, Sudan, Tanzania, Viet Nam, Zambia
*****	Bangladesh, China, India, Indonesia, Nepal
*****	Sierra Leone, Somalia, Uganda
*****	Nigeria, Sierra Leone, Somalia, Uganda
*****	Bangladesh, Indonesia, Nepal, Pakistan, Philippines, Thailand

of traditional food crops to national diet was reviewed and a resource book on traditional food crops in semi-arid lands of Africa was published. RNEA organized sub-regional studies of traditional foods in Egypt, Sudan, the Gulf and Maghreb States which were discussed at a technical consultation. Contracts will be placed with research institutions to examine the potential for commercial production and processing of a range of traditional crops in 1990. A study was published by RLAC on underexploited traditional Andean crops and their contribution to nutrition.

- 1.127 An assessment was made of the need for trained nutritionists in eight African countries* and information on the use of mass media in national nutrition education programmes was assembled from seven countries.** Efforts were continued to introduce nutrition training into agricultural education institutions and extension through workshops, seminars and training courses conducted in 13 countries.*** Existing training materials for this purpose were translated for use in Arabic-speaking countries and China. RLAC also issued guidelines on this subject. A population module was added to the comprehensive nutrition training packages and tested in eight countries**** and is now available in FAO working languages, as well as Bahasa Indonesia, Thai and Somali.
- 1.128 Food Quality and Standards: In the context of the GATT Uruguay Round, discussions have taken place on the use of Codex standards as a point of reference for non-tariff barriers to international trade as regards controls on additives, sanitary, phytosanitary and other food quality restrictions. The Commission continued its work aimed at promoting both consumer protection and food trade. Joint FAO/WHO proposals on radio-nuclide contamination were presented in 1989. FAO has supported the Commission in providing advice for a more uniform interpretation of its food labelling recommendations. Similarly, new proposals are under consideration for extending to all foods the Commission's current recommendations on food additives currently limited to specific commodities. Draft recommendations on residue levels of hormones and hormone-like substances are also being studied.
- 1.129 A Joint FAO/WHO Expert Committee on Food Additives (JECFA) met in 1988 to prepare toxicological evaluations and chemical specifications for 14 additives including antioxidants, food colours, flavouring agents and sweeteners. A number of metals and contaminants such as aluminium, arsenic, cadmium and iodine were also evaluated. In 1989, a JECFA meeting reviewed the safety and use of a number of veterinary drugs. The evaluations were submitted to the Codex Committee on Food Additives and Contaminants.

* Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Liberia, Morocco, Nigeria, Sierra Leone

** Bangladesh, Egypt, India, Indonesia, Malaysia, Nepal, Pakistan

*** Bangladesh, Bolivia, China, Ethiopia, India, Kenya, Lesotho, Nepal, Pakistan, Peru, Somalia, Sudan, Uganda

**** Burkina Faso, Cape Verde, Chile, Egypt, Indonesia, Philippines, Somalia, Thailand

- 1.130 A new Codex Committee, hosted by the Government of Mexico, has begun work on standards for fresh tropical fruits and vegetables, in close association with the UN Economic Commission for Europe and OECD. It is expected that this work will assist developing countries in particular in improving their market opportunities for such high-value produce.
- 1.131 The final texts of 9 Codex standards and recommended Codes of Practice adopted by the Seventeenth Session of the Codex Alimentarius Commission were published in early 1988. The Executive Committee of the Commission has endorsed the proposal to publish Codex standards and other texts in a more accessible form, together with a condensed version which would serve as a model for countries wishing to update or institute national food regulations. In the current biennium, five more countries* have joined the Commission, bringing its total membership to 135. Participation by developing countries in the Commission's sessions continued to increase.
- 1.132 National training activities have emphasized control and analysis of contaminants. Mycotoxins are a significant health hazard in tropical countries. Expert discussions, training activities and national projects have addressed this problem, particularly in Africa and a training package in mycotoxins analysis has been prepared. Training for control and analysis of radio-nuclide contamination of foods, particularly those moving in international trade, has been initiated with a training programme for regional course leaders and the first two workshops for Asia and the Pacific and the Near East and North Africa. Similarly, a regional workshop on pesticide residue analysis was held for Asia and the Pacific. Other country level activities, including the preparation of manuals, were designed more generally to strengthen food control procedures and strategies, in particular related national food exports and imports.
- 1.133 The safety of street foods has become a growing area of concern. Efforts have continued to document the significance of the problem** and the economic and social importance of the street food industry, including the role of women and children. An expert consultation on street foods concluded that a first step must be the recognition of the industry by national governments. This would enable controls to be introduced and revenue generated. Training activities were undertaken for street vendors and they were encouraged to band together to represent their interests, execute educational programmes and to introduce self-discipline.
- 1.134 Nutrition Policy at Country Level was covered in depth in the 1986-87 Review of the Regular Programme (see also Chapter Eleven of this Review). A key focus for the Sub-programme was the incorporation of nutrition issues into rural development plans and programmes. A training package has been finalised, following testing in the Philippines and Indonesia and is now being adapted for use in other regions. Sub-regional workshops in Africa examined how nutrition planning could be integrated in the fisheries and aquaculture sectors and similar workshops looked at the forestry sector in East Africa and Asia.

* Antigua and Barbados, Equatorial Guinea, Honduras, Yemen Arab Republic, Rwanda

** Studies in Malaysia, Nepal and Nigeria

- 1.135 Assistance, funded under the Regular Programme for developing food and nutrition policy and planning activities, has been provided directly to 12 countries.* The primary emphasis of this assistance has been on strengthening attention to nutrition issues by existing planning institutions and projects, particularly in Ministries of Agriculture. The strengthening of AFRONUS, a network of African Food and Nutrition Scientists, has been encouraged by support to the African Food and Nutrition Congress and for a publication popularising the network. With UNFPA funding and using national institutions and specialists, an assessment has been made of changing urban food needs, food production and demography.** Papers were discussed during five national seminars*** and material has been condensed into a publication. RNEA contracted studies**** on changing food consumption patterns and their effects on food demand and nutrition and two studies were carried out by the countries themselves.***** It was found that in urban areas there had been a marked shift in consumption towards imported western foods. Accompanying this shift there has been a decline in deficiency diseases but an increase in complaints such as cardio-vascular diseases related to western style eating. Based on work in Brazil, a methodology has been developed to identify, using limited data bases, the food consumption patterns of different socio-economic groupings. This will allow changes in food demand patterns to be better predicted in the face of urbanisation and changing income levels.

Effects of Financial Constraints

- 1.136 The financial constraints have evidently led to an overall reduction in activity. Particularly noteworthy has been the cancellation of activities on risk mapping and the development of nutrition indicators for early warning systems. Field testing of the training module on including nutritional considerations in rural development projects had to be limited to Asia. The finalisation of a project-specific survey manual and guidelines for nutrition in the forestry and fisheries sectors were postponed. An international workshop which had been designed to draw practical conclusions from the study of new urban food demand, food production and population was cancelled. Training programmes on radio-nuclide contamination planned in follow-up to the Chernobyl disaster could also have been expedited if additional funds had been available.

* Bangladesh, Botswana, Cameroon, China, Ghana, India, Laos, Malawi, Peru, Viet Nam, Zaire, Zimbabwe

** Abidjan, Bogota, Caracas, Casablanca, Dakar, Jakarta, Kinshasa, Manila, Nairobi, Rio de Janeiro, Tunis, Yaoundé

*** Côte d'Ivoire, Indonesia, Philippines, Venezuela

**** Bahrain, Egypt, Jordan, Syria, Tunisia

***** Iraq, Lebanon

Food and Agricultural Information and Analysis - Programme 2.1.7

Inter-disciplinary Activities

- 1.137 The World Food Report has been integrated into the State of Food and Agriculture (SOFA). Contributions are drawn from throughout FAO. Similarly, much of the work of Sub-programmes related to statistics is carried out through collaboration with the other programmes concerned, for example that on agricultural inputs with 2.1.1 - Natural Resources Development and 2.1.2 - Crops, and that on food consumption with 2.1.6 - Nutrition. In particular, the development of socio-economic indicators has continued with Programme 2.1.5 - Rural Development. Guidelines were prepared for establishing statistics on poverty lines, on women in agriculture and on landlessness. In cooperation with Programme 2.1.6 Nutrition, a review was initiated to build up country profiles on food consumption behaviour. Preliminary work on the application of remote sensing in obtaining land-use data was another important inter-disciplinary activity. The Global Information and Early Warning System is dependent upon inputs from several programmes, including Remote Sensing and reports on locusts and grasshoppers from Programme 2.1.2 Crops.
- 1.138 The ambitious concept of a World Agricultural Information Centre has now been launched. Its objective is to integrate FAO's information systems in agriculture, forestry, fisheries and food and provide on-line access to external users. As a first step since mid-1988 AGROTEL, an on-line system has been operational on a trial basis, which allows external institutions* to interrogate AGROSTAT on-line.

Sub-programme Implementation

- 1.139 Statistical Processing and Analysis: The Sub-programme has continued to maintain and update world-wide and long-term statistical series on production, trade and utilization of crops, livestock and livestock products, as well as on land use, agricultural population and labour force (including projections), agricultural inputs (machinery, fertilizers, pesticides), food supplies, prices, economic accounts and the periodic world food surveys. Information was disseminated through yearbooks (production, trade, fertilizer), quarterly bulletins, magnetic tapes and printed material. It was provided to, and used extensively by, other FAO programmes, regional offices, and by international organizations, governments, research institutes, universities and industry. Some 600 individual external requests for statistical information were met in 1988, of which a quarter originated from developing countries. This figure compared with the total of around 70 requests per annum in the 1980-83 period. Over 40 percent of the needs were met by supply of tapes, disks, etc., rather than in paper form.
- 1.140 Situation and Outlook: is the subject of an in-depth review in Chapter Eight of this edition of the Review of the Regular Programme.

* Eurostat, International Tropical Timber Organization, OECD, USDA, USAID, World Bank

- 1.141 Food Information and Early Warning System: The work of the Global Information and Early Warning System (GIEWS) continued to be accorded high priority in 1988-89. The number of crop assessment missions and Headquarters staff on-the-spot harvest evaluations increased, with some 40 taking place during 1988 as compared with an average of 20 per year in the previous biennium. The network of non-governmental organizations sharing information with the system expanded to 23. The number of projects designed to strengthen national and sub-regional early warning systems has also grown steadily. As of December 1988, 11 projects had been completed, 20 projects were operational (16 national and 4 regional) and 10 other projects were about to begin. Over the last two years, substantial technical advances have also been made by the System in the analysis of crop conditions through agro-meteorological and remote sensing techniques. Progress has also been made with the expanded use of computer applications in the analysis of the crop and food supply outlook, including retrieval and updating of information from the FAO central computer facility, and use of the ARTEMIS remote sensing system and agro-meteorological database.
- 1.142 Over the past two years, the Food Outlook report has been streamlined to focus greater attention on the major developments in world food security. Comprehensive, up-to-date information on the crop and food supply position in individual developing countries has been disseminated through the monthly report "Foodcrops and Shortages", which has been further expanded. Following better harvests of cereals and other basic foods in most countries of Sub-Saharan Africa in 1988, the System's special report on Africa is again giving increased emphasis to the requirements of a number of African countries for exceptional assistance with the disposal of surpluses in cereals. Special reports provided an overview, individual country reports and summaries of imports, food aid requirements and pledges and utilization of surpluses. Developments in the desert locust situation are also reported in greater detail. The system has continued to employ special reporting procedures whenever an emerging food shortage or surplus is foreseen, through Special Alerts which were telexed to potential bilateral and multilateral donors, government capitals and selected non-governmental organizations. Special Alerts and special GIEWS/WFP telex reports have dealt with both deterioration of food supply prospects in individual countries as well as in groups of countries in all of the major developing regions of the world.
- 1.143 Statistical Development: Regional supplements to the Programme for the 1990 World Census of Agriculture were published in 1989, drawing attention to particular aspects to be considered in each of the FAO regions. A manual on sampling was also issued. Four regional training courses were conducted on the Census of Agriculture, of which three in Africa. Sessions of the Asia and the Pacific and African Commission on Agricultural Statistics in 1988 and 1989 respectively discussed new approaches to data collection including the use of remote sensing. Studies were carried out on the use of household surveys to collect agricultural statistics in five African countries* and the findings were discussed at a Commonwealth Workshop on the Food Supply Information Systems for Africa. In cooperation with the World Bank, five country studies** were carried out, comparing objective and

* Benin, Cape Verde, Nigeria, Sierra Leone, Zaire

** Benin, Central African Republic, Kenya, Niger, Zimbabwe

subjective methods of estimating crop areas and yields. RAFR emphasized an information systems approach to statistics and a study was completed for Ghana. The approach emphasizes pragmatism in the collection of essential information and was disseminated through two seminars.* Guidelines were published on socio-economic indicators of agrarian reform and rural development. A data bank of statistics on women in agriculture was initiated in 1989. Four workshops, attended by 80 participants from the African and the Caribbean countries, were jointly organized at FAO Headquarters during the biennium with the Munich Centre for Advanced Training in Applied Statistics for Developing Countries. These formed part of the Centre's four-month course on "Strengthening the statistical system for food policies and strategies".

Effects of Programme Reductions

- 1.144 The user-friendly AGROSTAT Information System was further developed during the period and on-line access was made available to an increasing number of internal users but the handbook for AGROSTAT could not be prepared. It was intended that AGROSTAT should be made available in a micro-computer form for use by national statistical offices in developing countries. Although some advances were made, progress on this was also severely limited by financial constraints and external assistance was being sought.
- 1.145 Meetings of two regional statutory bodies for Statistics were postponed. Activities have been discontinued on the development of methodologies for constructing agricultural product trade matrices, animal feed balances at country level, marketing costs and margins and the use of remote sensing in estimating land use statistics. Work was also severely delayed on the analysis of food consumption surveys and analysis of the 1980 round of the World Census of Agriculture as well as Manuals on the establishment of poverty lines and socio-economic groups and on the surveys for collecting statistics on women in agriculture and on food consumption. A number of publications had to be suspended, including long-term series on per caput crop and livestock production and food supplies, 1984-86 average food balance sheets and long term series for trade in selected commodities. Manuals on land use statistics, agricultural machinery statistics and the analysis of food consumption data could also not be produced. The inclusion of a special chapter on specific commodity and trade topics in the FAO Commodity Review and Outlook was suspended. Special commodity and trade reports on tomato products and tobacco planned for 1988 were abandoned, together with the envisaged expansion of market monitoring for these products and others considered to have development or export potential, including roots, tubers and tropical fruits.
- 1.146 The World Food Report was discontinued in 1988, but some of its modern presentational features were incorporated in the 1989 version of SOFA. Although every effort has been made to safeguard the major priority areas of the Global Information and Early Warning System, following the reduction in resources available in 1987 and 1988, the number of issues of "Food Outlook" have been reduced. The reports on the outlook for world food supplies and the coverage of non-cereal basic foods were also less detailed than before. The planned computer link-up with the

* Sierra Leone, Togo

ICC network in Geneva in order to give governments immediate access to the latest GIEWS information has been slowed down. Ongoing monitoring of crop conditions and the food supply position in Africa, Asia and Latin America was adversely affected for some time, while the proposed strengthening in monitoring of the crop conditions in Asia during the monsoon season was postponed. Two regional workshops on the design and operation of national early warning systems were also postponed.

Food and Agricultural Policy - Programme 2.1.8

Inter-disciplinary Activities

- 1.147 The Programme interacts widely on policy aspects with other FAO programmes. Global and regional studies as well as multi-disciplinary missions required participation from a wide range of Headquarters units as well as regional offices and sometimes external organizations. Work on the formulation of food strategies and programmes has been back-stopped jointly with Programme 2.1.6 - Nutrition. Price policy and marketing issues have been handled jointly. For example, in Pakistan a series of papers were prepared for the Agricultural Price Commission, through TCP assistance. In Africa, consultations were convened by FAO-HQ, RAFR and USAID on agricultural market intervention and price policies. This work was in collaboration with the newly formed Association of Agricultural Development Planners in Africa. Papers have been subsequently synthesized and published. Activities in agribusiness development were begun in 1988 with an assessment mission to Thailand. Work was also initiated on analytical tools for the integration of environmental considerations into the planning process.
- 1.148 Following the recommendations of the 1986 FAO Regional Conference for Latin America and the Caribbean, the major study on agricultural and rural development in the region was carried out and presented to the Regional Conference in 1988. The study analyzed economic and social development, rural poverty, food systems and food security, natural resources, environment, crops, livestock, fisheries and forestry in the region. An action plan was presented which aims at achieving two closely related objectives, i.e. (i) reorientation of non-agricultural policies in favour of the rural areas with emphasis on basic socio-economic infrastructure to attract private investment; and (ii) a shift in emphasis within agriculture for the benefit of medium and small-scale producers. The Regional Conference approved and issued a revised version of the Plan of Action. It requested the Director-General to assist requesting governments of the region to put into effect proposals contained in the Plan of Action.
- 1.149 An expert meeting in 1988 considered the sustainability of ECDC and TCDC arrangements promoted by FAO. It was considered that inter-country activities were most likely to be viable when the benefits were readily perceived, the interest was in accord with common national objectives and resource requirements were modest. Management schemes for common resources such as water bodies and threats such as those to regional environments were considered to offer potential for ECDC. ECDC organizations were obvious instruments for the expression of collective interest in structural adjustment issues. Research and training were important avenues for TCDC.

Sub-programme Implementation

- 1.150 Global Perspective Studies and Agricultural Policy Analysis: On the recommendation of the 1987 Session of the FAO Conference, Agriculture: Toward 2000 was revised and co-published commercially. The regional study "European Agriculture: Policy Issues and Options to 2000" was also being prepared for co-publication following its consideration by the FAO Regional Conference for Europe in 1988. The Regional Conference considered that the study was a valuable contribution to the debate on needed policy reform. A follow-up expert consultation was convened in 1989 on Research in Agricultural Economics and Policy in Europe.
- 1.151 In 1988 and 1989, work was initiated to contribute to the UN-wide International Development Strategy (IDS) for the Fourth UN Development Decade (1990s). A first paper on "Major Issues in World Food and Agriculture in the 1990s" has been prepared and submitted to the Working Group on the IDS of the Committee for Development Planning. A progress report on Guidelines 7, 8 and 12 for International Agricultural Adjustment was prepared for submission to the present session of the Conference (see also Chapter Eleven of this document).
- 1.152 Policy analysis on the process of structural adjustment and its impact on food and agriculture pointed to the need for careful consideration of the characteristics of rural societies and the differential impact of measures on different groups of the population. Special mechanisms were needed to transmit the stimuli provided by policies and suggestions were made for future research and the design of more discriminating policies. Two studies surveyed concepts and practices of structural adjustment programmes with regard to short-term effects of policy reforms on agricultural production, trade and nutrition. A computerised model was developed and applied to several countries to simulate effects of stabilisation measures and structural reforms such as trade liberalization. A survey of literature and information on the effects of alternative policies on the rural poor was undertaken. Additional studies focussed on structural adjustment and agricultural labour markets in Sub-Saharan countries, proper sequencing of adjustment policies in Sub-Saharan countries, small farmers in the process of structural reform, reforms of agricultural institutions, and on the importance of real exchange rates for agricultural performance. A methodology was developed for the analysis of agricultural taxation at country level and the evaluation of net transfer of resources to and from the agricultural sector. Preparation has begun of practical guidelines (a) for monitoring the impact of structural adjustment programmes on the agricultural sector, (b) to strengthen FAO's technical assistance to governments for the preparation of documents for Round Table discussions with funding agencies, and (c) to provide improved assistance to governments to prepare the agricultural components of adjustment programmes (see also Chapter Eleven of this document).
- 1.153 A study on external assistance to agriculture has been published, covering a review of the trends, modalities and policies for the period 1974-86. While agriculture's share in total commitments of public external assistance has increased in the period under consideration, the growth of commitments to this sector has slowed down substantially in the 1980s as compared to the 1970s. Africa is being given higher priority and this is reflected in a substantial increase of this region's share in total commitments to agriculture. An analysis of the relationships between agricultural growth and external flows of

concessional and non-concessional assistance to this sector has been made and this indicates that aid to agriculture seems to have more leverage in the poorer developing countries. The coverage of the data bank on external assistance has been expanded to include technical assistance.

- 1.154 Commodity Policies and Trade: During 1988-89, the Committee on Commodity Problems met once and there were 18 meetings of inter-governmental groups covering individual commodities, as well as monthly meetings of the Consultative Sub-Committee on Surplus Disposal. A number of the inter-governmental groups decided to encourage the Director-General to approach the Common Fund, once operational, with a view to their being designated as eligible bodies for sponsoring and following-up on projects to be financed by the Fund. The Inter-governmental Group on Jute, Kenaf and Allied Fibres and the Group on Hard Fibres continued to operate informal price arrangements for raw jute, sisal fibre, sisal twine and abaca. A jute information network is operated under the auspices of the Group. The Inter-governmental Group on Bananas endorsed the recommendation of an expert consultation to enhance market monitoring through an information network system. The Sub-group on Hides and Skins, at its meeting in 1989, also considered the establishment of a multi-disciplinary information network to promote ECDC in the sector.
- 1.155 A number of the Groups focussed on technical improvements which could enhance export earnings. These included assessment of ways of implementing quality standards for tea entering international trade; new uses for jute, harnessing also new production and processing technology; an assessment of technical assistance needs of developing countries in the hides and skins sector, undertaken in collaboration with other FAO units and UNIDO; analysis of market prospects for processed citrus products and assessment of ECDC opportunities regarding citrus in the southern hemisphere, in collaboration with the Agriculture Department; and assessment of research and development needs for bananas. Commodity and trade policy analysis and recommendations continued to feature in the work of a number of the Inter-governmental Groups, notably those on Rice, Meat and Oilseeds, Oils and Fats, while the Sub-group on Hides and Skins began a major analytical assessment of trade barriers and their impact in its sector of concern. Also in the policy area, support to the programmes of other organizations, particularly the GATT, continued, while at the country level, commodity policy advice and related activities were undertaken or under way in several developing countries. RLAC completed four commodity studies under an agreement for complementary activities with the Latin America Integration Association (ALADI). Another study analysed the supply and demand for basic grains in Central America and the potential to reduce imports. In cooperation with CIAT, RLAC published a study on regional demand for meats. The FAO/ECA joint division cooperated in a study of trade in staple food crops and also examined the availability of storage facilities in Eastern and Southern Africa.
- 1.156 World Food Security: The Committee on World Food Security (CFS) met annually. At its 1988 session, it considered measures to improve access to food by the poor and reviewed the case studies on national food security programmes in Tanzania and Niger. It also reviewed the future orientation of the Food Security Assistance Scheme in the light of the independent evaluation of the FSAS which was presented to the Twenty-fourth Session of the FAO Conference in 1987. The report highlighted the main achievements and constraints facing the FSAS. It

indicated the need to better coordinate pricing policies and cereal stocks at the national level as well as to develop comprehensive assistance programmes which focus on medium and long-term requirements of developing countries. The main recommendations cited the need for both donor and recipient countries to work within the broader concept of food security, which links production requirements, stability in the flow of food supplies, and access to food by the poorest segments of the population. It recommended that FAO broaden its range of food security activities to include more policy advice within the broader concept of food security and upgrade in-house mechanisms to ensure the coordination of activities, including the constitution of task forces for specific countries. The Committee broadly endorsed the new terms of reference for the FSAS and the creation of an upgraded Steering Committee and country task forces. A Director-General's Bulletin was issued reflecting these decisions and a Steering Committee, comprised of the Assistant Directors-General for Agriculture, Development, Economic and Social Policy (ES) and Programme, Budget and Evaluation was established under the chairmanship of the ADG, ES. Consultations have been held with FSAS donors to discuss the orientation and approaches of the new programme for formulation of comprehensive national food security programmes and obtain their support. Preparatory work has begun in Chad, Niger, Tanzania and Zambia.

- 1.157 During 1989, the CFS reviewed a case study of policies and programmes for achieving food security in India. Ways of ensuring that structural adjustment programmes do not have a negative impact on food security were also considered. In this context, the Committee also made recommendations for an expanded FAO role in cooperation with the IMF and the World Bank, in providing policy advice to countries in the design of structural adjustment programmes and in making available related technical assistance.
- 1.158 Agricultural Planning Assistance: Work in agricultural planning assistance has continued to emphasize projects and training to develop institutional capability. Two projects have begun work specifically linked to the structural adjustment process* and several more are in the pipeline. There has been an upsurge in requests for policy advice with thirty-one countries recently indicating their interest.** More detail on the policy review missions (e.g. Indonesia, Tanzania and Senegal) are given in Chapter Eleven of this document.
- 1.159 UNDP has expressed its strong interest in FAO's support to countries in the conduct of policy review Round Tables. Assistance has now been provided to four countries.*** The Organization's earlier work on price policies has led to continued requests for advice in this area. The countries assisted have included Bangladesh, Bolivia and Pakistan where, as noted above, the Agricultural Price Commission was assisted in defining its policies through a series of TCP-supported consultancies to prepare issue papers.

* Guinea, Senegal

** By early 1989, advisory activities had been completed in Cyprus, Indonesia, Jordan, Laos, Malta and Viet Nam

*** Cape Verde, Chad, Gambia, Guinea Bissau

- 1.160 Policy advisory activities continued to be supported by Regular Programme financed studies. In Asia, a report based on six country reviews* broke new ground, in that it examined not only the soundness of price policies but the factors for success in their implementation. It was observed that the implementation of price policies across a wide range of commodities often exceeded government resources. There needed to be a single price formulation agency and a public agency entrusted with implementing the policy. Paradoxically, pan-territorial pricing was found to favour the private sector, which was not forced to buy on all markets as were public agencies. A paper on agricultural price policies in the Near East, based on six country studies,** concluded that policies which subsidised consumers through artificially low prices to farmers should be avoided. World market prices should generally serve as a reference point for internal policies. Subsidies distorted the functioning of the market and, where they could not be avoided, needed to be explicit and destined for a clearly defined target population.
- 1.161 A study on Intra-regional Labour Mobility and Agricultural Development in the Near East Region was discussed at the 1988 FAO Regional Conference and has been published in an up-dated and expanded version. Recommendations were formulated for both the countries themselves and FAO. These included the necessity for contingency plans and funds to be established in case there should be problems with returning migrants and the role of realistic exchange and interest rates, as well as positive agricultural development policies and availability of technology to encourage remittances for investment in agriculture. The role of appropriate mechanization in labour-rich and labour-scarce economies was also considered.
- 1.162 Studies were prepared in Latin America on the effects of the economic crisis on agriculture. It was found that agriculture had been less affected than other sectors, partly as a result of continuing high national demand for food as opposed to industrial products. However, investment in the agricultural sector and rural services has been declining. At a subsequent meeting, guidelines for readjustment put forward included the integration of agricultural and macro-economic policy, the active participation of public and private institutions in the planning process, the decentralization of operative decision-making and the intensification of the use of computer-assisted planning techniques.
- 1.163 The application of multi-level planning structures continued to be an area of interest and in Latin America, a publication based on five case studies*** concluded that there had been an upsurge in decentralised planning and demand for better conceived and more realistic policies. In general, decentralisation efforts have been most effective where a direct link to the centre was maintained and all the authorities concerned with rural development planned jointly. The involvement of non-governmental organizations in both planning and implementation was effective.

* Bangladesh, India, Indonesia, Nepal, Pakistan, Republic of Korea

** Algeria, Egypt, Libya, Morocco, Syria, Tunisia

*** Brazil, Chile, Colombia, Mexico, Peru

- 1.164 In addition to the wide-ranging field programme, training continued to be a priority in order to strengthen institutional planning capability. A training programme for policy analysis, including materials and exercises, has been partially developed with focus on Africa and the first pilot course was conducted in Tanzania.
- 1.165 Training in sector analysis through the Computerized System for Agricultural and Population Planning Assistance and Training (CAPPA) has expanded. Demand for this ESPT-developed computer software is coming from international organizations such as the World Bank and from several universities, as well as member countries and regional training institutions (see also Chapter Eleven of this document). To support this programme, training material has been produced, including a manual on application of CAPPA. The production of a CAPPA trainers' kit and of computer aid devices are under way. Projects for in-service training of government staff in agricultural project planning have increased. This training included micro-computer applications in project analysis through the Data Analysis and Simulation Programme (DASI). Training material covering a wide range of topics has been produced and adapted to local needs.
- 1.166 Training in the area of decentralized planning has been expanded and methodological work on adaptation of planning tools and techniques has been started. A publication on training for decentralized planning, reviewing decentralized planning experiences in countries and outlining training programmes, was produced and an expert consultation was organised on the same topic. Training needs assessment was carried out in Jordan, Morocco and Sudan by RNEA. Also in the Near East and North Africa, training courses were conducted in collaboration with regional training institutions of the Arab League and Islamic Conference. The FAO/ECA joint division has also prepared materials on investment planning and organized a training course.
- 1.167 In Africa, training in project management was identified as a severe weakness and RAFFR launched a cooperative network. In preparation for this, a survey of project performance factors was completed as well as a survey of training facilities.

Effects of Financial Constraints

- 1.168 Activities had to be postponed or cancelled in all Sub-programmes. In Agricultural Planning Assistance, direct assistance to member countries and project formulation suffered particularly. The increase in the number of ongoing and pipeline projects meant that there was a large increase in technical backstopping requirements. In Africa, case studies on rice policy issues suffered serious delays and those on decentralized planning were cancelled altogether. In Latin America, activities relating to the review of agricultural policies and direct assistance in setting up monitoring and evaluation systems were severely curtailed. The publication on "Agricultural Planning Situation in Latin America and the Caribbean" was postponed to 1989. In the Near East, case studies on regional decentralization for agricultural planning had to be postponed, which resulted in phasing the preparation of guidelines on the subject over a longer period. Case studies on agricultural planning systems in selected countries of the Near East had to be cancelled. In Asia and the Pacific, analytical work on the design of information systems and on the organization of multi-level planning for agricultural and rural development was postponed. Activities relating to regional cooperation issues and

assistance to regional groupings, e.g. ASEAN and SAARC, had to be given up. Work on critical agricultural policy issues associated with stabilization and structural adjustment programmes was postponed. Efforts to develop training networks were also set back and training in rural energy planning had to be suspended. The adoption of the newly developed programme in policy analysis concerning Asia and the Pacific and the Near East and North Africa was also delayed indefinitely.

Outlook and Issues

- 1.169 Effects of Resource Constraints: The results of budgetary shortfalls in executing the planned activities of the Major Programme have been discussed in the context of overall implementation by Programmes. The most immediate serious effects have been observed in training, where the number of trainees in 1988-89 was 36 percent below the figure for 1986-87. The number of meetings declined by 7 percent and publications by 5 percent. The latter does not reflect the reduction in preparatory activities, which will become evident in publications during the 1990-91 biennium. Efforts were made to maintain technical backstopping and direct support to member countries. Nevertheless, work-months for both declined by 6 and 7 percent respectively.
- 1.170 Training on such topics as organic recycling had to be suspended. Publications and training materials of considerable value, e.g. on irrigation management, crop protection and research management have been delayed as has the publication of the 1980 round of national agricultural censuses. Initiatives to provide guidance to countries on pollution of water resulting from agricultural activities have been curtailed and so has the work on the dangers of radio-nuclide contamination, to quote but two examples. The unpredictable budget shortfalls have not lent themselves to rational planning. Sufficient savings could only be made by leaving many posts unoccupied as they fell vacant although efforts have been made to fill posts in major disciplines. Two examples will serve to illustrate the grave impact of the situation. The number of staff dealing with research development was reduced to three Headquarters officers; and there was for a time no Headquarters officer in the Crop Improvement and Management Sub-programme responsible for pulses, grain legumes or cereals other than rice; by the end of the period under review, one officer was covering this wide range of major food crops. In some areas of work, no expertise remained, e.g. weed science, hides and skins and vertebrate pests.
- 1.171 Some areas of work have been drastically reduced or eliminated. This has included, for example, composite flour, where the expected impact had not been achieved, and investigations on quantifying economic losses due to soil erosion and the application of rapid appraisal and other survey techniques for nutrition purposes. The computer link-up designed to give countries immediate access to the Global Information and Early Warning System has been slowed down. Simple facilities which enable developing countries to make the best use of FAO facilities have been damaged; for example the catalogue listing slide sets produced by the Major Programme, which can be useful in training and extension, is out of print. More limited print runs of documents have meant that, while the required number have been distributed to Ministries, copies may not be available for training and guidance in public and private institutions which were intended to make use of the documents. Full implications of the cuts will show themselves further in future years.

- 1.172 Efforts to increase efficiency and effectiveness have also, in some cases, been negatively affected; for example the build-up of data banks for rice and horticulture, which would greatly facilitate the technical backstopping of projects. Administrative and clearance procedures have been increased to ensure that resources are not utilized for activities with less than absolute priority. This has resulted in growing demands on a reduced number of staff in carrying out their technical duties. In general, staff morale has suffered and supervision over quality has sometimes had to give way to the quantitative maintenance of output.
- 1.173 Most important have been the cutbacks striking at the core outputs of the Regular Programme, such as the slow-down in activities concerning the Undertaking on Plant Genetic Resources, postponements in the establishment of a World Agricultural Information Centre, which constitutes a major challenge for FAO, and the slow pace at which it has been possible to examine FAO's role in bio-technology.
- 1.174 Issues: Financial constraints and staff cuts have highlighted the underlying issues facing the Major Programme. The complexity of sustainable agricultural development has led member countries to identify a range of priorities, but the resources which the Major Programme can bring to bear have diminished.
- 1.175 The Major Programme has attempted to meet the situation through a variety of means. Collaborative arrangements have been increased with other agencies; for example the Pan-African Rinderpest Campaign has been organized with multi-donor support and the EEC is playing a particularly leading role. Various cooperative arrangements already exist with other UN agencies. The strengthening of the joint division with IAEA and the effective work of the Codex Alimentarius Commission provide a useful pointer for future joint activities in other areas such as nutrition, agricultural industry, mechanization and agro-meteorology. Increased use has been made of extra-budgetary resources for the technical backstopping of field projects. At the working level, direct support by other organizations has been substituted for Regular Programme or trust funds in publications, training, etc. There has also been productive cooperation with the IARCs, for example the organization of joint training activities with IRRI and the advisory missions with ISNAR.
- 1.176 All these collaborative arrangements served to mobilize resources from elsewhere in areas of concern to FAO and minimise the duplication of effort. However, putting together small components from many agencies into a package has been time-consuming. Joint programmes with other agencies were generally subject to dual planning and reporting requirements. In some cases, the most efficient framework may be a clear division of labour, for example with IARCs on certain commodities. In other cases, more joint planning and harmonization of procedures may reduce the need for consultation at later stages.
- 1.177 One of the greatest strengths of the Major Programme lies in its inter-disciplinary approach which facilitates pooling of inputs on a given development problem. Prominent examples included the studies completed on Africa, Latin America and the Caribbean and Europe, as well as the study on the feasibility of expanding the provision of agricultural inputs as aid in kind. Work in the area of the Environment and Special Action Programmes such as PFL also demonstrated the importance of inter-disciplinary activity, as did the inter-departmental working groups such as those on agro-forestry and on

geographic information systems. Here, too, the benefits of initial planning and budgeting followed by division of work were evident. The approach to population activities, where resources were distributed through a non-executive coordinating point, showed advantages in maintaining the inter-disciplinary nature of the Programme.

- 1.178 The inter-action between the Field and Regular Programmes has provided an invaluable means by which technologies and strategies were developed in such areas as irrigation water management, integrated pest management, extension and training. Although the Field Programme backstopped by the Major Programme has not been growing in real terms, its complexity has called for a level of technical backstopping which has been difficult to meet. Projects are increasingly calling for highly specialised expertise. The projects are smaller and may have no permanent expatriate staff, a distinct departure from the large project teams of the past. Overall guidance and coherence to the project has to be provided from Headquarters and national staff often have fewer links to institutions, other than FAO, from which they can seek advice. Heavy demands are also placed on the Major Programme for project appraisal. An experienced team of experts could orient a loosely formulated project but this is more difficult for consultants and national staff, necessitating a well-formulated project at the outset.
- 1.179 The backstopping load does not fall evenly on all Programmes. The Crops and Livestock Programmes have a particularly heavy load to bear in proportion to their overall resources. This is even more the case at Sub-programme level where, for example, the Seeds Sub-programme was backstopping some 200 experts and consultants with three Headquarters technical officers. Collaborative arrangements, especially with the IARCs, could assist in overcoming the backstopping difficulties, but resources are not available to fund this. Increased networking of field experts with other projects could also be helpful. This had been done, to some extent, within the Fertilizer Programme.
- 1.180 Sub-regional inter-country networks have formed an increasingly important mechanism through which the Major Programme has attempted to draw countries together for their mutual benefit. It has been envisaged that networks could provide an inter-active avenue of communication ensuring that FAO's own outputs of training, publications, etc., were appropriate and reached their target audience. They have also, as in the case of those promoted by the FAO/IAEA joint division, succeeded in mobilizing local manpower and financial inputs to complement international resources. The European Networks have become self-sustaining and substantial exchanges and inputs are made by the members in well-established networks elsewhere, such as those for agricultural credit and pastures.
- 1.181 There has, however, also been evidence of a need for caution. It is evident that the level of activity of some networks is widely disparate. In cases when networks are functioning well, their success is, to a large extent, dependent on continued external technical and financial support which generates a multiplier effect. Considering the conditions facing many developing countries, it is difficult to envisage that networks will become self-sustaining in the immediate future. Once started, networks appear to require continued inputs either from the Regular Programme or from project funds. In view of the financial constraints, care will need to be taken to limit the number of networks which can be supported under a given Sub-programme, and to assess in good time the long-term potential of networks and their prospect for sustainability.

CHAPTER TWO

FISHERIES

Major Programme 2.2

Objectives and Strategy

- 2.1 The long-term objectives of FAO's programmes in fisheries are to assist Member Nations (1) to make the best use of fishery resources as food for their expanding populations and (2) to upgrade the socio-economic conditions, including food security, of small fishing and fish farming communities based on both marine and inland waters; and (3) to promote the rational management and development of the world's fisheries resources. Other features of the Programmes are assistance in training, transfer of appropriate technologies, the promotion of TCDC and ECDC and the provision of timely and reliable data on all aspects of fisheries.
- 2.2 These objectives have been reinforced by the 1984 World Conference on Fisheries Management and Development, which endorsed the Strategy proposed by FAO and approved the following five Programmes of Action: (1) planning, management and development of fisheries; (2) development of small-scale fisheries; (3) aquaculture development; (4) international trade in fish and fishery products; and (5) the promotion of the role of fisheries in alleviating under-nutrition. Specifically, these Programmes of Action cover the following aspects:
- (a) fishery policy formulation, planning and legislation as well as management, monitoring and evaluation of fish resources;
 - (b) support to integrated small-scale fishery development programmes and projects;
 - (c) development of regional aquaculture information and research networks, training, aquaculture development planning and applied research for aquaculture technology development in rural areas;
 - (d) fish marketing information networks, promotion of international collaboration on the economic and technical aspects of fish trade, training and support to marketing efficiency and quality control;
 - (e) fish technology research, improved handling of fish, reduction of post-harvest wastes, increased use of under-utilized fish species and monitoring of consumption patterns, especially among the poorest segment of the population.
- 2.3 As of April 1989, extra-budgetary resources for field projects approved or under implementation amounted to US\$ 232.1 million; expenditures were estimated at US\$ 28.5 million during 1988 (excluding support cost). The major source of extra-budgetary resources continues to be UNDP, 70 percent of the total budgets of field projects, and Trust Fund donors, which account for the remainder. The total contributions committed for the implementation of the five Action Programmes have amounted to US\$ 15.7 million in 1988 and some US\$ 18.6 million have been committed for 1989, of which US\$ 8.2 million by UNDP and

US\$ 5.5 million by Nordic countries. In view of the increasing support for activities linked to the Action Programmes, which during the biennium surpassed the initial target of US\$ 15 million, the Committee on Fisheries, during its Eighth Session in April 1989, recommended that the annual target for 1990-1991 be raised to US\$ 20 million.

Fisheries Information (Programme 2.2.1)

- 2.4 The Programme is designed to collect and disseminate data and information on all aspects of fisheries and related aquatic sciences. This includes bibliographic references to world literature and statistics on catches, vessels, processing and trade in fishery products. It also provides assistance to developing countries in building their capabilities in data collection, analysis and storage.
- 2.5 During 1988-89, the activities focussed on the updating of statistical and technical information services and on establishing the groundwork for the extension of existing cooperative networks to new regions and organizations. However, because of financial constraints, other planned activities such as direct technical assistance to countries for the development of fishery statistical systems and the upgrading of computer equipment used for processing and storing fishery data and information were curtailed.
- 2.6 New developments on the Aquatic Sciences and Fisheries Information System (ASFIS) included the adherence of Cuba and the participation of FAO representatives in meetings and training sessions to promote new fisheries information activities in Asia and Africa. The network is presently composed of FAO, IOC, UNOALOS, UNEP and twelve Member Nations.
- 2.7 A special effort led to the publication, for the first time, of a bulletin of aquaculture statistics in 1989. Greater detail and better understanding of statistics on both capture fisheries and aquaculture was achieved in China, which is one of the leading world producers.
- 2.8 In 1988-89, priority was given to the core activity of collecting and disseminating fishery statistics. A regional synopsis of fishery data was prepared for the monitoring of trends in marine and inland fisheries, aquaculture, and trade in fishery products in the Asia and Pacific region. A Bulletin on Fisheries Fleet Statistics covering the period 1970-1988 was published. Statistical bulletins for CEEF and GFCM were also prepared to complement data regularly published in the FAO Statistical Yearbook. However, some activities were postponed due to shortage of funds for consultants, contracts, and publications. These involved the updating of species classifications, collection of data on commercially important reptiles and amphibians and the publication of a handbook on fishery statistics.
- 2.9 FAO's initiatives have been able to establish a basis for the coordination of data in Southeast Asia, the South Pacific and Latin America along the lines of the Coordinating Working Party for Atlantic Fishery Statistics, which ensures high quality statistics and more consistent reporting. Closer collaboration was established with the Southeast Asian Fisheries Development Center (SEAFDEC) in fisheries information. FAO, which participated in a seminar on fishery and aquaculture information in Southeast Asia, made arrangements to set up a common system of fishery data collection in Southeast Asia to serve

the needs of both FAO and SEAFDEC. During 1988 alone, 290 requests for fisheries and aquaculture data and information from institutions and individuals in the Asia and Pacific region were dealt with by RAPA.

- 2.10 Advice on the better use of staff and equipment was provided to Algeria, Oman and Tunisia through on-going fisheries and marine research activities in these countries. Cooperation in resource evaluation, management and administration was also encouraged through FAO's regional fisheries bodies (GFCM and IOFC) and through regular backstopping visits.
- 2.11 During the biennium, the compilation of data on the Gulfs fisheries collected by the UNDP/FAO Regional Project on Fisheries Survey was carried out in collaboration with the Kuwait Institute for Scientific Research. A database for fisheries in this region is now established. Manuals on stock assessment methodology and guidelines for training of fishermen and fisheries management have been sent to the concerned authorities in the region.
- 2.12 In 1988-89, RAFR continued work on the inventory of fisheries training, education and research institutions in Africa and of fisheries manpower and commercial fishing companies with a view to preparing reference directories.

Fisheries Exploitation and Utilization Programme (2.2.2)

- 2.13 The Programme is responsible for the implementation of some important elements of Action Programme No. 1 and is entirely responsible for Action Programme No. 2 (Development of small-scale Fisheries), No. 3 (Aquaculture Development), No. 4 (International Trade in Fish and Fishery Products) and No. 5 (Promotion of the Role of Fisheries in alleviating under-nutrition).
- 2.14 During 1988-89, the major thrust of activities of Sub-Programme 2.2.2.1 (Marine Resources and Environment) was to obtain improved knowledge of marine fishery resources, as support to the planning and effective management practices for rational resource exploitation and conservation.
- 2.15 Despite a cut of about 35 percent in non-staff resources and a reduction of professional and secretarial staff, the Sub-programme continued to fulfil its basic functions of providing biological data on resources and stocks, elaborating technical papers and manuals on stock assessment and methodology, preparing resources reviews and assisting FAO fisheries bodies and field projects. Work on resource surveys concentrated on the Western Central Pacific and the Caribbean as well as on West Africa. Documents reviewing the status of stocks were prepared for the Southeast Atlantic areas and for tuna in the Eastern Central Atlantic and the Indian Ocean. The regular worldwide stock review was also prepared for the COFI session.
- 2.16 During the biennium, emphasis was placed on the production and dissemination of appropriate computer software for stock analysis. Bioeconomic models were developed and applied in various countries. Two other models were being produced for use in workshops during 1989. A software package on cohort analysis was distributed and two others were in an advanced stage of preparation for length frequency analysis and production modelling.

- 2.17 In view of the growing interest in the Asia and Pacific region on the establishment of artificial reefs for resource enhancement and management, studies were carried out on the experiences of three countries in artificial reefs.* Another such study on the experiences of the Republic of Korea was planned during 1989. The countries of the region have also expressed interest in the use of fish aggregating devices. Consequently, studies of this topic were planned for three countries in 1989.**
- 2.18 The factors influencing the trends and future prospects of marine fisheries in six countries,*** completed in the previous biennium, were synthesized into a regional report to be published in 1989. The studies indicate the existence of untapped fishery resources in off-shore waters which could be exploited.
- 2.19 A manual on remote sensing and fisheries was published during the biennium and another on remote sensing applications to tuna fisheries is in its final stage of preparation.
- 2.20 A network research programme to study the problem of overfishing of shrimp in Southeast Asia has been developed in collaboration with IOC, as recommended by SCORRAD. Close cooperation has been maintained with the Network of Aquaculture Centres in Asia and its establishment as a self-supporting inter-governmental organization was promoted in hitherto non-member countries.*****
- 2.21 The preparation of species catalogues, species synopses and identification sheets has continued to receive extra-budgetary support. In 1988 three species catalogues and four species synopses were prepared. A field guide was also prepared for Senegal. A computerized species data base is under development.
- 2.22 Support continued to be given to FAO fisheries bodies and field projects. Workshops on shrimp management were organized for the Guyana-Brazil area and in Mexico. A training course on stock assessment was organized for CEEAF and with FAO's support, a special working group on the Mauritanian EEZ resources was organized on the initiative of the Government of Mauritania. Advisory missions were undertaken for four countries.***** Assistance was provided to Thailand in the preparation of a project on oceanic tuna purse seining and on the production and processing of agar-bearing seaweeds. Thailand was also assisted in a review of extension services for small-scale fisheries at the provincial level. The existing arrangements in Sri Lanka for the monitoring of the catches, costs and earnings of fishing boats were reviewed and proposals made for the improvement of the system.

* Malaysia, Philippines and Thailand

** Indonesia, Maldives and Sri Lanka

*** India, Indonesia, Malaysia, Maldives, Sri Lanka and Thailand

**** Bhutan, Burma, Laos and Viet Nam

***** Algeria, Libya, Malta and Tunisia

- 2.23 Technical support has continued to be provided to the nine regional fishery bodies and their subsidiaries. A new trend has been noted within national and regional groupings such as EIFAC, GFCM and COPESCAL. These bodies are assuming greater responsibility for the operation and funding of working parties and symposia. Local networks dealing with specific technical activities have been set up and have resulted in increased technical cooperation among member countries. Formal networks on fisheries resources and aquaculture are increasingly being coordinated by the Regional Offices or by individual projects.
- 2.24 Sub-Programme 2.2.2.2 (Inland Fisheries and Aquaculture) has continued to assist member countries in the development and expansion of rural aquaculture programmes. High priority has been given to aspects of the environment including pollution of the seas. This topic has received particular attention during the biennium, reflecting current concerns for the preservation of the natural environment and biological diversity. Work on more traditional inland fisheries has also been supported, but with a lower priority, with particular attention to the collection and dissemination of material on river and reservoir fisheries.
- 2.25 An Aquaculture Steering Committee has been established to coordinate the Department's work on aquaculture. An Aquaculture Development Coordinating Programme has also been established to ensure increased collaboration among regional aquaculture programmes and projects.
- 2.26 Special consideration was given during the biennium to the development of aquaculture in the Least Developed Countries of Asia and the Pacific region. In Laos assistance was provided for the formulation of a follow-up project to strengthen aquaculture through the introduction of cage fish culture in reservoirs. In Burma, a major project proposal was formulated for applied research in freshwater fisheries and aquaculture and in Viet Nam, support was given to the formulation and implementation of two important projects covering seaweed production and processing and hormone production for induced fish breeding.
- 2.27 Rapid growth of shrimp culture is one of the most remarkable developments of Asian aquaculture. The unexpectedly rapid growth of the industry has raised several technical and socio-economic concerns. During the biennium, RAPA prepared a comprehensive study on the development of shrimp culture in Asia which analysed trends and attempted a forecast of its future development. Socio-economic studies were commissioned by RAPA to investigate the optimal size of shrimp hatcheries and the optimal intensity of the grow-out phase. A workshop is planned during 1989 to disseminate the experiences gained by small and medium-scale shrimp hatcheries in Thailand.
- 2.28 A study was commissioned to review factors which hinder the development of aquaculture in the Pacific islands. The study identifies species and culture techniques which are economically and socially suitable for introduction into island economies. The findings and recommendations of the study were discussed at the Seventh Session of the IPFC Working Party of experts on aquaculture in 1988; the study is planned to be published in 1989.
- 2.29 Kuwait and Libya received assistance in the planning and development of their aquaculture. Two regional projects aimed at the development of fish culture and the promotion of research and training activities were negotiated and project documents were prepared for funding by UNDP (Mediterranean Aquaculture Project, MEDRAP) and by Italy (Aquaculture

in the Mediterranean, AQUAMED). Both projects are to start implementation in 1989. A report entitled "Status of the Fish Culture in the Near East region" was also prepared during the biennium.

- 2.30 A series of assessments were made on the status of aquaculture for 11 African countries. A total of 23 countries have been reviewed so far. In Latin America, reviews have been carried out for 18 countries through close cooperation with the Italian-funded regional AQUILA project. During the next biennium, it is planned to extend such assessments to other countries and regions.
- 2.31 Remote sensing imagery has provided a useful tool for determining suitable locations for aquaculture. A combination of satellite imagery interpretation and yield information based on land form and drainage patterns has been used to detect locations for closer ground search of individual pond sites. A training course in Southeast Asia was organized on this topic and another course was planned for Latin America during 1989. A study on the Use of High Resolution Satellite data for Agricultural and Marine Application in the Maldives was published in 1988.
- 2.32 The series of training guides in support of extension for aquaculture has continued with the production of a guide on the construction of pond farms. A manual on pond management is being completed for publication in 1989.
- 2.33 In view of current concerns on biological diversity and its importance for the sustainability of production in natural ecosystems, work on the impact of species transfers has been emphasized. An updated register on the introduction of inland aquatic species was published as a Technical Paper and contacts have been made to obtain agreement on a standard Code of Practice in limiting the adverse effects of introduced species. The code has already been accepted by the European Inland Fisheries Advisory Commission. Consultations have continued with the other regional bodies interested in inland waters. An allied activity has been undertaken in Papua New Guinea, where a study is under way covering the Sepik River system the native fauna of which is so impoverished that fish catch from the system is unduly low. The project activities are expected to lead to proposals for the introduction of species to provide for richer and more diversified fishery.
- 2.34 Activities in the field of marine pollution were maintained throughout the biennium. Programmes continued in the Mediterranean and the West and Central African region while others have started in Eastern Africa. Hazard assessment documents for specific marine pollutants were prepared. A scientific seminar in West Africa summarized the results to date and directed the programme towards establishing a long-term regional monitoring network. In the Caribbean region FAO has supported a training course on bioassay techniques to assess risk to marine life.
- 2.35 In the field of freshwater pollution, the Working Parties of EIFAC and CIFA continued their work on fish farm effluent and on pollution control in Africa, although the latter activity was considerably slowed down due to financial cuts. A report on inland water pollution in selected Latin American countries was also finalized during the biennium.

- 2.36 FAO continued to co-sponsor the IMO/FAO/Unesco/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on Scientific Aspects of Marine Pollution (GESAMP), which is to finalize its second report on the Health of the Oceans. Apart from promoting awareness of the effects of pollution on marine living resources, FAO, in cooperation with UNEP, contributed to regional reports on the state of the marine environment in Southeast Asia and West, Central and Eastern Africa. Other activities within GESAMP included inputs on marine pollution management, organochlorine compounds in the sea and long-term effects of low-level contaminants.
- 2.37 In Latin America and the Caribbean, work was mainly focussed on the two technical cooperation Networks in the region: the Network on Aquaculture and the Caribbean Network on Artisanal Fisheries and Aquaculture. Training was the paramount activity. Ten natural science graduates from four Caribbean countries* successfully completed a twelve-week post graduate course in Tilapia farming. An international workshop on the socio-economic impacts of Penaeid shrimp, held in Panama, analyzed problems in the exchange of information, the need to adapt and not simply transfer technologies, conflicts of interest which arise in the use of the resources and the training needs in areas such as pathology and marketing. A course held in St. Lucia provided participants from the English-speaking Caribbean countries with the technical and practical knowledge of seamoss cultivation, which has a promising potential in the region. Training manuals and publications connected to the courses were also completed.
- 2.38 New activities of the RLAC included the preparation of a regional directory of specialists in genetics, nutrition and pathology of aquatic species and the study on improving the operation of urban fish markets and the promotion of exports.
- 2.39 The activities of Sub-programme 2.2.2.3 (Fish Production) were seriously affected by reduced resources for staff and non-staff components. These included:
- the design of small fishing vessels;
 - energy saving for small-scale fisheries;
 - fishing technology directed towards the exploitation of under-developed species;
 - engineering aspects of fishing gear designs;
 - landing places for small-scale fishermen; and
 - production of manuals and training series documents in fishing methods.
- 2.40 In the area of credit to small-scale fisherfolk, the Sub-programme made substantial inputs to investment missions and supported national and regional projects with a view to stimulating the interest of lending institutions in the development of small-scale fisheries.

* Barbados, Guyana, Jamaica and Trinidad and Tobago

- 2.41 Backstopping has been provided to the regional project on "Development of Fishery Cooperatives and CFCs" which gives technical and material assistance to four countries of the Near East region* in developing small- scale fishing communities. National fisheries development projects were also identified for two other countries,** the implementation of which was to start in 1989.
- 2.42 In spite of financial constraints, a number of important achievements were noted under the Sub-programme. In 1988, two inter-regional programmes were established with extra-budgetary support. One for the Cooperative Use of Vessels for Fisheries Research, Development and Training and the other a Clearing House for Fisheries Advisory Services. Some other inter-regional projects are under active donor consideration. Priority was given to the technical backstopping of field projects, ranging from harvesting to primary markets at artisanal and industrial levels.
- 2.43 The Clearing House data base has been created with the support of Regular Programme funds and UNDP financing. More than 5,000 individuals and 500 institutions and manufacturers are entered. The latter was foreseen to increase to 4,000 names by the end of 1989.
- 2.44 Work on fisheries programmes specifically directed at women and youth has continued with the preparation of filmstrips, bibliographies, and regular review of field projects with respect to their impact on women. Advisory services to field projects were strengthened and a number of new projects in training were formulated. Cooperation with IOC, IMO and ICOD has resulted in the launching and execution of a project to develop guidelines for the management, operation and use of research vessels, with associated training courses. During the biennium a paper on Standardized System for the Marking and Identification of Fishing Vessels was elaborated for presentation to the Committee on Fisheries.
- 2.45 Another important area of work under the Sub-programme concerns fishing technology. Research activities have included the design and construction of small fishing vessels for artisanal fisheries, the review of new materials for their construction with special regard to the replacement of the dugout canoe and the promotion of new technologies related to off-shore fisheries of under-utilized stocks.
- 2.46 Sub-programme 2.2.2.4 (Fish Utilization and Marketing) is central to the implementation of Programmes of Action No. 4 and No. 5. Emphasis was given to the promotion of international trade in fish and fishery products as well as the development and transfer of new and improved fish technology, including the development of new fish products. For example, following a successful TCP project on training in fish smoking technology in Ghana, the improved Chorkor smoking oven has been introduced in several other countries in the region.*** The oven has proven to be the best type of smoking kilns for artisanal fisheries in terms of capacity, durability, fuel efficiency, ease of operation and

* Somalia, Sudan, A.R. Yemen and PDR Yemen

** Libya and Qatar

*** Benin, Cameroon, Côte d'Ivoire, the Gambia, Guinea, Guinea Bissau, Sierra Leone and Togo

quality of products. A booklet on artisanal fish packaging was under preparation by RAFR with a view to enhancing product presentation and thereby promoting fish trade. Other regional programmes include: workshops on fish technology and quality control and training on quality assurance and fish inspection of fish and fishery products.

- 2.47 Work has continued on the FAO global network of fish marketing information systems which coordinates regional marketing information and technical advisory services and the GLOBEFISH data bank at Rome headquarters. The network has received substantial support from member countries. A number of developed countries and institutions have been sponsoring the activities of the GLOBEFISH data bank.
- 2.48 In the course of the biennium, some practical fish trade promotion activities were carried out in collaboration with industry. Industry briefings and buyer-seller meetings were organized in Morocco and Bahrain and in cooperation with INFOFISH, two international trade conferences were held, one in January 1988 ("Shrimp 88") which attracted more than 600 participants and one in April 1989 ("Squid 89"). INFOFISH became an independent Inter-Governmental Organization in March 1987 and since then has held regular sessions of its Governing Council. So far, nine countries have deposited ratification instruments with the Director-General. The Organization has developed extensive fish marketing information and technical advisory activities serving the needs of the industry in the region.
- 2.49 The Regional Cooperative Programme on Fish Technology in Africa continues to gain momentum. A booklet evaluating past activities and performance which drew planning and operational lessons from the experiences gained so far was recently published by RAFR. The results should provide the basis for the preparation of guidelines to assist member countries in the identification, selection, design and implementation of TCDC programmes. The network of Asian fish technology research institutes has expanded its cooperative research activities with continued support from Australia.

Fisheries Policy (Programme 2.2.3)

- 2.50 Activities under Sub-Programme 2.2.3.1 (Fisheries Policy and Planning) have been reviewed in-depth in Chapter Nine of this Review.
- 2.51 Under Sub-programme 2.2.3.2 (International Coordination and Liaison), Secretariat and administrative support was maintained to the network of FAO regional fishery bodies, their subsidiary committees and working parties. Liaison and cooperation was maintained throughout the biennium with sister UN agencies and other international and regional organizations concerned with fisheries.
- 2.52 Twenty-four sessions and meetings originally scheduled to be held in 1987 were reprogrammed into the 1988-89 biennium. To mitigate travel costs of participants, in a number of cases the meetings of technical working groups were held at the time of the statutory sessions. In addition to the formal reports of these sessions and meetings, a notable number of technical papers were published in 1988-89.
- 2.53 Continued support during 1988-89 was provided to the Indo-Pacific Fishery Commission (IPFC) and the Indian Ocean Fisheries Commission (IOFC). Sessions were held of the IOFC Committee for the Development and Management of Fisheries in the Bay of Bengal, the IOFC Committee

for the Development and Management of Fisheries in the Southwest Indian Ocean, and the IPFC Working Party of Experts on Aquaculture, the IPFC Working Party on Inland Fisheries and the IPFC Working Party on Fish Technology and Marketing. The establishment of an arrangement to cover the Red Sea region has been a major task during the biennium. Negotiations have been initiated among countries bordering the Red Sea to join the IOFC and to extend the geographical coverage of the Committee for the Gulfs to the Red Sea and Gulf of Aden areas. As a result of recent efforts, Egypt has recently joined IOFC.

- 2.54 The Seventh Session of the CECAF Sub-Committee on Management of Resources within the Limits of National Jurisdiction was held in Santa Cruz de Tenerife, Spain, in September 1988. A Workshop was held on the implications of the Law of the Sea Convention on Management and Development of Fisheries in the region. The session further discussed management issues taken since the Sixth Session, the state of stocks and recommendations for resource management and fisheries statistics.
- 2.55 The Eleventh Session of the Fishery Committee for the Eastern Central Atlantic (CECAF) and the Eighth Session of the CECAF Sub-Committee on Fishery Development were held in Douala, Cameroon, in December 1988. The sessions emphasized in particular the role of States in providing necessary physical and institutional infrastructures for industrial fisheries development. Concern was expressed over the problems of over-fishing, shortage of foreign exchange and other constraints connected with the levels of economic development within the region. It was recommended that FAO organize a regional training workshop on fishery project identification and formulation. Management of fisheries resources and development issues, especially in respect of financing of fisheries development in the region, were highlighted.
- 2.56 The Fifteenth Session of the European Inland Fisheries Advisory Commission (EIFAC) was held in Goteburg, Sweden, in May 1988. The session reviewed EIFAC activities in the fields of fishery biology and management, fish culture and diseases, and water pollution control. The Commission decided its future programme of work and, in particular, the activities which should be carried out until the session scheduled to take place in Czechoslovakia in 1990. A four-day Symposium on Management Schemes for Inland Fisheries was held in conjunction with the session, treating of various aspects of European inland fisheries management, specifically management objectives.
- 2.57 The Sixth Session of the IPFC Committee for the Development and Management of Fisheries in the South China Sea was held in 1988. The Session emphasized the need for effective enforcement of regulatory measures in respect of demersal fish stocks. It assigned priority to the initiation of a new research programme of the 'red tide' phenomenon and indicated regional priorities.
- 2.58 The Seventh Session of the IPFC Working Party of Experts on Aquaculture was held in 1988. The Session concentrated on the progress and problems of coastal aquaculture, viz- crustacean, mollusc and seaweed farming. The achievements and constraints of aquaculture development in the Pacific island countries were also discussed with the participation of a significant number of observers representing these countries. The Session identified priority areas for research and development work during the next inter-sessional period and recommended suitable actions to the IPFC and its member governments to further assist aquaculture developments in the region.

- 2.59 The Sixth Session of the IOFC Committee for the Development and Management of Fisheries in the Bay of Bengal was held in 1989. The Session gave highest priority to environmental protection and identified new areas of work to be undertaken. It recommended desirable approaches to coastal aquaculture development, including linkage with rural development activities in coastal areas, reconsideration of land use and land lease policies and the preparation and implementation of integrated master plans for the development of coastal areas.

Effects of Financial Constraints

- 2.60 Budgetary restrictions delayed planned work for the upgrading of the computer systems used for managing fishery statistics and other data of the Fisheries Department. System design studies and purchases of equipment and software had to be cancelled. As a consequence, the delivery of many outputs was slowed down or put in abeyance. The risk of loss of valuable data files through the use of unconventional data processing practices increased owing to insufficient capacity. Support to the FAO-wide Geographic Information System also had to be postponed.
- 2.61 The expert consultations on fishery statistical systems which were to be held in Mexico and Zambia were cancelled, as well as all travel to provide technical assistance and training for newly developing fisheries information centres in developing countries. This included planned support to China, Indonesia and the Philippines. Training was limited to a single session in Rome with participants funded from extra-budgetary sources.
- 2.62 Staffing of the Fisheries Branch Library at Headquarters was reduced during 1988 and many of its services were curtailed or postponed.
- 2.63 Delay until March 1988 in the approval of funds for contracts resulted in a reduction in the number of monthly issues of Aquatic Sciences and Fisheries Abstracts. The result is a backlog and less timely coverage of the world fisheries literature.

Outlook and Issues

- 2.64 The focus of national and international assistance is increasingly being directed towards small-scale fisheries and rural fishing communities which produce about half of the world supply of food fish. Prospects for increased supply of food fish are good in aquaculture and inland fisheries. Activities in this field are expected to have a significant impact on overall fish production by the year 2000.
- 2.65 Another important area for increasing fish supplies is better utilization practices for rescuing discarded fish from trawling; the reduction of post-harvest losses and the enhanced use of small pelagic species and other unconventional species like squid and micro-pelagic fish for human consumption.
- 2.66 Management and rational utilization of fishery resources will continue to receive high priority under the Major Programme. Policy advice and the development of self-reliance through training and the transfer of technologies are seen as key areas of work for the next biennium.

- 2.67 Closer integration with other technical units within FAO would enhance the work related to coastal area development. Other important issues are aquaculture's contribution to rural development and support for the protection of the aquatic environment, particularly in coastal development.
- 2.68 Activities concerning the upgrading of data storage and processing will continue to be of priority in order to provide member countries and the international community with adequate and timely data for long-term planning and regular monitoring and assessment of environmental and resource trends.

CHAPTER THREE

FORESTRY

Major Programme 2.3

Objectives and Strategy

- 3.1 The Forestry objectives and related programmes continue to reflect the priorities recommended by the Committee on Forestry and the FAO Council, i.e. to implement and monitor the Forestry Development Strategy which was approved by the Twenty-first Session of the FAO Conference in 1981. This strategy has been consolidated further through the Tropical Forestry Action Plan (TFAP).
- 3.2 The long-term objectives of the Major Programme are thus to:
(i) enhance the conservation, management and sustained utilization of forest resources while ensuring widespread participation and sharing of benefits among all people concerned, particularly the most vulnerable groups; (ii) optimize the environmental contribution of forests and trees to a stable and productive land and water base for agricultural and rural development; (iii) diversify and intensify the contribution of forest and tree products to the economy; (iv) strengthen the policy and institutional framework for an effective contribution of forestry to development.
- 3.3 The implementation strategy pursued in Forestry during the 1988-89 biennium is reported in detail under each Programme. The strategy focused on: (i) integrating trees and forests with other land uses, particularly in arid lands and mountainous watersheds; (ii) raising the productivity and broadening the range of goods and services produced by the forests on a sustainable basis; (iii) improving the contribution of forestry to food security; (iv) developing suitable approaches and arrangements to enlarge the share of socio-economic benefits of forestry activities and to achieve their equitable distribution in rural areas; (v) promoting increased participation of large numbers of rural people particularly in self-help, self-sustained forestry programmes; (vi) promoting a broader and more efficient use of the resource through appropriate forest-based industries, including small-scale enterprises; and (vii) adapting and strengthening the institutional framework of forestry to meet the new orientation of forestry for development.
- 3.4 The major embracing activity of the Department during 1988-89 was the Tropical Forestry Action Plan. This special Action Plan aims at coordinating efforts both inside and outside FAO, for the planning, organization and implementation of activities to develop and conserve the significant tropical forest resources of the world and enhancement of their contribution to the welfare of the local population.
- 3.5 Intense support was given to the implementation of the TFAP, in terms of direct involvement of staff in the preparation of national, sub-regional and regional plans and of activities geared at strengthening the methodological approaches to forestry sector reviews and plans. Particular attention was given to improving planning methodologies, to the coverage of linkages between forestry and other economic sectors and to the strengthening of WCARRD issues in the TFAP.

Forest Resources and Environment (Programme 2.3.1)

- 3.6 The Programme continued to assist tropical countries in the inventory and monitoring of their forest resources. The micro-computer version of the Forest Inventory Data Processing System (FIDAPS) was fully documented and disseminated to developing countries, in many cases through existing networks established with FAO's assistance. An interim report on the status of forest resources in 129 countries was prepared and published. The data were processed in the Forest Resources Information System (FORIS), now expanded to 129 countries from 76 in the previous biennium, and also now including temperate countries. The World Framework and Definitions for the 1990 Global Forest Resources Assessment was published and a multi-donor trust fund for the Assessment became operational early 1989. This important report will be an updated and expanded version of the FAO/UNEP Report on Tropical Forest Resources, including both tropical and temperate forests.
- 3.7 Computerized vegetation maps were finalized for Africa in 1988, as an input to FAO's Geographical Information System (GIS) and activities in 1989 focussed on forest productivity zoning in Africa using GIS technology. Vegetation maps for Asia and the Pacific and for Latin America were finalized in 1989, providing a basis for regional and national studies in renewable natural resource management. Pilot studies on the use of NOAA/AVHRR satellite data for assessment of forest resources and deforestation were carried out in close cooperation with UNEP. Further development of this new technology took place in 1989 with results to be applied to the 1990 Forest Resources Assessment.
- 3.8 Reviews of management techniques and systems for tropical broadleaf forests for Asia and Africa were completed and submitted for publication. A similar review of natural forest management in Latin America is in process. Studies by leading national authorities, which will serve as an input to the Latin American review, have been completed for Brazil, French Guyana, Mexico, Peru and Venezuela, and are under preparation for Central America, Suriname and Colombia. RAPA collaborated with IUFRO on the organization of a symposium on pests and diseases of forest plantations. The symposium highlighted the need for intensified work on pests such as Psyllid which wiped out large areas of Leucanea leucocephala plantations in the Asia and Pacific region.
- 3.9 The contribution to the FAO Geographic Information System (GIS) included the finalization of vegetation maps for Africa, Asia and the Pacific and the preparation of the data base for Latin America. The assessment and monitoring of forest resources will remain an important activity of the Forest Resources and Environment Programme. Following the joint FAO/ECE/FINNIDA ad hoc meeting of experts on global forest resource assessment in October 1987, the forest resource enquiry for the temperate-zone regions was drafted and circulated for comment to experts. After final approval by the Joint FAO/ECE Working Party on Forest Economics and Statistics in December 1989, it will be circulated to countries in 1990.
- 3.10 The two FAO-assisted TCDC networks on seed collection, conservation, evaluation and exchange of genetic materials in the dry and humid

tropics operated with the participation of 11 countries.* In addition, there are two sub-regional projects for the Sahel and South East Asia on the subject. Assistance to in situ conservation of woody perennials through national institutions continued in Brazil, Cameroon, Malaysia, Peru, and P.D.R. Yemen within the framework of the FAO/UNEP project on the Conservation of Forest Genetic Resources. Seeds for seed production stands were provided to national institutions in all major regions for the establishment of ex situ conservation. Work was initiated on species selection and the matching of species to specific plantation sites with a view to preparing computer software as an aid in this process. A case study was under preparation on species for salt affected wastelands.

- 3.11 Technical cooperation was provided to the organization of a meeting on Global Wild Fire Challenges, sponsored by the US and Canadian Forest Services, held in 1989. FAO field projects presented case studies and FAO officers submitted a keynote paper on forest resources affected by fire and a review of FAO's work in this field during the last 18 years. A training course on forest fire management was held in Spain in 1989, with participants from 10 countries in North Africa and the Near East. A fire training programme, including periodic training courses initially for foresters from the Mediterranean, Middle East and North Africa was prepared in collaboration with the Instituto Nacional para la Conservación de la Naturaleza (Spain) and Centre International de Hautes Etudes Agronomiques Méditerranéennes. In addition, a guide on controlled burning for prevention of wild bush-fires in savanna woodlands was completed.
- 3.12 FAO's support to national institutes in the field of conservation and seed collection/evaluation were guided by recommendations of the FAO Panel of Experts on Forest Gene Resources. Two informal TCDC networks in the field of forest genetic resources (one for the humid tropics, one for the dry tropics) are operational and coordinated by FAO. Both networks concentrate on multipurpose woody species. Activities include plant exploration, seed collection, evaluation of genetic materials collected, and their conservation, enhancement and use. Exchange of reproductive materials for experimental purposes, and of know-how and information, are central to activities of these networks. RNEA activities were oriented towards strengthening forestry research networks operating under the aegis of Silva Mediterranea. These include forest fire control, multi-purpose species for desertification control, silviculture of Cedrus sp. and Pinus pinea and selection of conifer stands for seed production.
- 3.13 FIDAPS, Forest Inventory Data Processing System for mainframe and microcomputer, has been disseminated to national forestry institutions in developing countries on request; a TCDC network in application and use is operated for the system.
- 3.14 A review on the status of watershed management in Latin America was conducted with extra-budgetary funds. Due to limited funds, the production of a video film on watershed management in Latin America had to be completed with documentation from only three countries (Venezuela, Colombia and Honduras) leaving out four countries (Panama, Jamaica, Peru and Chile). Support was given to the organization of meetings of

* Burkina Faso, Chile, China, India, Indonesia, Mexico, Pakistan, Papua New Guinea, Peru, Senegal, Sudan

three statutory bodies: the Sixteenth Session of the Working Party on the Management of Mountain Watersheds (Aix-en-Provence, France, 14-24 June 1988), the Ninth Session of the AFC Working Party on Wildlife Management and National Parks (Blantyre, Malawi, 26-28 April 1989), and the Fourteenth Session of Silva Mediterranea (Athens, Greece, 9-13 October 1989). A training course on sand dune stabilization was conducted in Burkina Faso.

- 3.15 Support was given to the three regional bulletins on wildlife and protected areas as well as to the regional network on National Parks and Wildlife Management for Latin America and the Caribbean, which also continued to benefit from financial support from UNEP through a Regional Project. Activities of the network included education and training for protected areas, management of mountain ecosystems and production and management of important wildlife species. RLAC finalized and published "Wildlife Management for Rural Development" as well as the Spanish version of National Parks Planning, the English version having been previously published as Conservation Guide No 17. A review on the role of bush meat in the diet of rural communities was published under the title "Wildlife and Food Security". An arid zone forestry network was established for the Sahelian countries and a bulletin was sponsored in order to promote TCDC in areas such as sand dune stabilization, shelterbelts and dryland afforestation.
- 3.16 Significant staff time was devoted to support the TFAP: participation in missions in Bolivia and Guinea, presentation of TFAP at the IUCN General Assembly (Costa Rica, May 1988), assessment of projects identified in countries where TFAP has been achieved in order to determine contribution to environmental conservation and review of documentation on several TFAP exercises.
- 3.17 A workshop on People's Participation in Upland Conservation was funded by Finland and held in Bangkok, Thailand, 22-28 November 1988. A study was completed on use of forest fallows as an improved system for rural people practicing shifting cultivation. A regional project on Agroforestry for Latin America and the Caribbean was designed, in response to a recommendation of the Latin American Regional Conference. The project will be submitted for Trust Fund financing. Workshops and information exchange were organized by the Agroforestry Network in Latin America and the Caribbean. In addition, an agroforestry workshop was organized in Jamaica by the Caribbean Upper Watershed Management Network. Work was initiated in the preparation of guidelines for monitoring and evaluation of participatory watershed management, which is to be pursued with extra-budgetary funds. The guide on grazing in forest lands was revised and published, as well as a guide on multi-purpose species of the Sudano-Sahelian zone. The manual on production and economy of wood fuel, with particular reference to the Sahel was completed and published. A monograph for important fuelwood trees for the rural people in the Sahel was also included in the study. Significant time was devoted to contribute to the International Scheme for the Conservation of African Lands. A survey on agrosilvipastoral systems in Algeria, Libya, Morocco, Pakistan, Somalia, Sudan, Syria and Tunisia was prepared and will be published in December 1989.

Forest Industries and Trade (Programme 2.3.2)

- 3.18 During 1988-89, the programme continued to support national and sub-regional plans for sound development of forest industries, promotion of improved utilization of existing forest resources through reduction of

waste and strengthening of national capabilities in training in the fields of charcoal manufacture and forest harvesting. Work was also undertaken to support marketing of tropical timber products and new activities were initiated in this field.

- 3.19 Assistance was provided to China in a study of the possibilities of establishing blockboard production facilities and to the ASEAN countries (Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore and Thailand) in the planning of the pulp and paper sector to meet the demand in these countries. The latter assistance was provided through technical support to the Asia-Pacific Forest Industries Development Group, funded by UNDP. Similarly, through support to the Field Programme, assistance was provided to the CEPGL countries (Communauté économique des pays des grands lacs: Burundi, Rwanda and Zaïre) for the establishment of a forest industry in northern Zaïre to provide sawn timber and panels to those countries.
- 3.20 A training course was organized with Austrian extra-budgetary support in harvesting management. Two training courses were organized in Africa on efficient methods of charcoal manufacture. Similarly, three regional studies covering Africa, Latin America and Asia and the Pacific and a global study were undertaken into the training needs in the field of forest harvesting operations. The results were followed up by an expert consultation held in 1989 in Kotka, Finland.
- 3.21 Work on trade in tropical timber concentrated on the development of the monthly bulletin "Tropical Forest Products in World Timber Trade" in cooperation with the International Tropical Timber Organization (ITTO). The introduction of the revised nomenclature of the Customs Cooperations Council and the harmonized system required complete redesign of the Bulletin and the supporting computer programmes. Editions of the Bulletin, covering 1988 and 1989 were published. It is hoped that through cooperation with ITTO and the African Timber Organization (ATO), data from more countries will be incorporated into the Bulletin and that publication can be speeded up through exchange of computer-readable data.
- 3.22 JEUR organized the Seventeenth Session of the Joint FAO/ECE/ILO Committee on Forest Working Techniques and Training of Forest Workers at Geneva in August 1988. Seminars were held in the German Democratic Republic in May on reforestation methods after harvesting, in particular artificial regeneration, and in September 1988 in France on the employment of contractors in forest work. The proceedings of these seminars will be published. In 1989, seminars are planned in Finland on vocational training of professional forest workers; in Belgium on the impact of mechanization of forest operations on the soil; and in Turkey on the mechanization of harvesting operations in mountainous terrain.
- 3.23 Two expert consultations were held during the biennium. In 1988, a consultation was held in Beijing, China, on the demand and supply of pulp and paper in developing countries. As a follow-up to the expert consultation on wood-based panels, held in Rome in 1987, work was initiated for a joint FAO/UNIDO Seminar on Wood Products in Construction in Latin America and the Caribbean.
- 3.24 Assistance was provided through financial and staff inputs to the Latin American Network on Dendroenergy which is coordinated by the FAO Regional Office for Latin America and the Caribbean. Workshops in Brazil and Costa Rica on dendroenergy emphasized the use of fuelwood for electricity.

Forest Investment and Institutions 2.3.3

- 3.25 The activities of this Programme focussed on institutional development, international information and perspectives for the future of the forestry sector planning, the involvement of rural people as managers and direct beneficiaries of sustainable forestry.
- 3.26 Following the study on Forestry Policies in Europe covering 28 countries which was requested by the Twenty-second Session of the European Forestry Commission, a summary of the national studies and a comparative study on these policies was published in the FAO Forestry Paper series. These studies have demonstrated that the fundamental problem in forestry policy in Europe is how to convert a general interest in forests into assertive action on the part of the public and governments. Entries in the World Compendium of Forestry and Forest Products Research Institution were computerized. Documents entitled "Guidelines for increasing public and political awareness of the importance of forests and forestry" aimed at staff in forestry services and "Forestry and forest products research planning and management", aimed at research directors, programme and project leaders as well as heads of university faculties of forestry engaged in research were prepared in 1989, as well as an "Introduction to Ergonomics in Forestry for Developing Countries". FAO Forestry Paper No. 85 "Forestry Extension Curricula" and the Spanish version of FAO Forestry Paper No. 66 "Forestry Extension Organization" were published. The Fifteenth Session of the Advisory Committee on Forestry Education originally planned for 1987 will be held in Antalya, Turkey, from 20-24 November 1989.
- 3.27 The Declaration of the policy implications of the study "European Timber Trends and Prospects to the Year 2000 and Beyond", adopted by the Joint Session of the European Forestry Commission and the ECE Timber Committee at Geneva in October 1987, was published and widely disseminated. It was endorsed by the Seventeenth FAO Regional Conference for Europe at Cracow in August 1988. JEUR continued to monitor the market for forest products in the ECE region and to issue market reviews and statistics in the FAO/ECE Timber Bulletin series.
- 3.28 The programme of collection and publication of international statistics on the forestry sector was maintained with regular editions of the Yearbook of Forest Products, Pulp and Paper Capacities and Forest Product Prices. These series are used as the source of forestry sector data in UN and other international organizations.
- 3.29 In order to stimulate timely delivery of accurate data to these various statistical series, the exchange of data in computer readable form with preformatted electronic questionnaires has been initiated and is being utilized by a number of correspondents in developing as well as developed countries. This has been supported by country missions to promote the use of this technology. In support of standardization in international statistics of the forestry sector, the classification and definitions of forest products has been computerized and cross-related to other international classifications such as the UN Standard International Trade Classification and the Customs Cooperation Council Harmonized System. This is being developed as a model for the FAO World Agricultural Information Centre.
- 3.30 In the programme reviewing the perspective for the outlook of the forestry sector, a revised and updated version of "Forest Products World Outlook Projections" was published including both product and

country tables. A report on wood-based energy and substitution among fuels in Africa was completed and a world model to estimate the development of fuelwood consumption was completed. Collaboration with the Pulp and Paper Industry, through the FAO Advisory Committee of Experts, on the outlook for pulp and paper continued with the preparation of a review of prospects for a number of paper products by a joint FAO-industry team.

- 3.31 During 1988, activities were increasingly oriented towards supporting the implementation of the Tropical Forestry Action Plan. A study entitled "Tropical Forestry Action Plan: Latin America and the Caribbean" was produced in English and Spanish as well as executive summaries, published separately, in English, French and Spanish. A Special Conference on the Tropical Forestry Action Plan for Latin America and the Caribbean was held in Kingston, Jamaica, on 21 April 1988, in conjunction with the Sixteenth Session of the Latin American Forestry Commission. The purpose of the Special Conference was to raise awareness in the Region of the threats of forest resources mismanagement and deforestation. The study served as framework for the discussions. The Plan was unanimously approved by the Special Conference as well as by the Latin American Forestry Commission. The concepts of the Action Plan were incorporated in the special study "Potentials for Agricultural and Rural Development in Latin America and the Caribbean" which was approved by the FAO Regional Conference. A video programme entitled "Bosques para nuestro Desarrollo", describing the main features of the Tropical Forestry Action Plan for Latin America and the Caribbean was completed. The video programme together with the document mentioned previously were distributed widely in Latin America and the Caribbean as well as to major donors and international agencies. Twenty-seven countries in the Region are now participating in the international efforts to implement the Tropical Forestry Action Plan. The regionalisation of the Tropical Forestry Action Plan was later extended and studies at regional level, dealing with the application of the Tropical Forestry Action Plan in Africa and Asia were prepared. These studies were presented to the Regional Forestry Commissions concerned and they provided the basis for discussion of the relevance of the Tropical Forestry Action Plan approaches to regional situations.
- 3.32 Considerable work also focussed on TFAP exercises and sector reviews at country level either through direct staff participation or through support activities such as the preparation of country profiles. Guidelines for planning TFAP exercises at the country level were produced. The analytical approaches required to deal with the proper integration of inter-sectoral development linkages of forestry activities in sector reviews were the subject of a separate study. The study "Trade in Forest Products: A Study of the Barriers faced by Developing Countries" was completed and published as Forestry Paper 83. The document focuses on the nature and size of trade barriers affecting forestry products exported from developing countries, the efforts aimed at reducing trade barriers and the policy measures which countries could adopt to reduce the impact of protectionism. A draft of the study "Development Impacts of Forest-Based Industry: Their Nature and Control" was completed. The document focuses on a reassessment of the development impacts of forest industries and reviews critically conventional development thinking on the subject.

- 3.33 An "Annotated Bibliography" on planning self-help, participatory forestry projects was prepared. The bibliography has Latin America and the Caribbean as a focus and was produced as a first step in the preparation of a selection of articles on the subject, to be used in training activities. A book of readings on planning self-help fuelwood projects is also under preparation.
- 3.34 The Joint FAO/ECE Working Party on Forest Economics and Statistics held its Sixteenth Session in February 1988 and will hold the Seventeenth Session in December 1989. Activities between the two sessions included a meeting of the team of specialists on methodologies and data base for long-term studies, further work on roundwood prices and specifications and on forest resource assessment (mentioned under Programme 2.3.1) and the completion and publication of a study of productivity, profitability and relative prices in the forest industries.
- 3.35 Community Forestry Development continues to focus on developing approaches and support for new types of activities promoting trees as a sustainable resource for rural development with rural people as the direct managers and beneficiaries. Work within the Regular Programme is implemented and expanded through activities in the framework of the Special Action Programme on Forests, Trees and People supported by Sweden. In strengthening the socio-economic information base required to support community forestry activities, the focus has been placed this biennium on developing better appraisal and participatory monitoring and evaluation tools. This included case studies of information flows in six small forestry projects as well as three consultations and two workshops in collaboration with NGOs and other organizations and development of reference materials. Studies were carried out to develop better understanding of tenure, local institutions and indigenous resource management as a basis for designing forestry activities in which benefits reach the poor. This work has resulted in training and reference documents.
- 3.36 The Expert Consultation on Forestry and Food Security, held in 1988, produced a base of information on links between forestry and food security. Some 31 papers on production, environmental, socio-economic and institutional aspects were presented and a Forestry Paper was published which synthesized the material developed. Evidence presented at the Consultation showed that, in addition to the contribution of forests and trees to maintaining a stable environment for sustained food production, wild foods also play a significant role in improving the diets of the most vulnerable groups. However, the most substantial contribution to food security is in the form of income generated through the gathering, processing and sale of a wide gamut of wood and non-wood products of trees and forests. Recent socio-economic studies show that, in many cases, these forestry activities constitute a major, if not a unique, source of cash income for the rural poor, particularly for women who are mainly responsible for the food supply of the household.
- 3.37 In collaboration with the Nutrition Division, reference material was produced and Asian and African regional workshops were held on forestry and nutrition. The workshops brought together forestry project implementers, forestry policy personnel and national nutritionists to study ways to directly improve the nutritional impact of forestry projects and national policies. Studies and analysis of the importance of non-timber forest products were initiated in relation to field projects and two reference documents were produced.

- 3.38 Efforts were made to ensure that people's participation, impact on most vulnerable groups and women's issues were addressed by associating appropriate local consultants with the TFAP forestry sector reviews in Mexico and Tanzania. Funding will be sought to continue such consultancies in future TFAP missions. A film strip was developed with GI on women's participation in forestry community in Sudan. During the filming, extension officers learned to make and use film strips and the one finished product, as both film strip and video are to be used in a series of strategies used by projects which have successfully included women. A field-level manual for designing and implementing projects, which address the concerns of women, is being readied for press. It is expected to support future FAO training programmes on gender issues.
- 3.39 A revised monitoring and evaluation guideline for wood stove projects was developed as were several case studies on stove programmes as seen from the perspective of the stove users. One case study showed women in India moving from activities exclusively related to stoves to self-help efforts to manage their environment more effectively, thus illustrating the use of stove programmes as an entry point to involvement in broader forest resource activities. Within the RLAC Distance Training and Orientation Series, a technical document addressed to regional decision makers explained the social significance of wood for rural energy.
- 3.40 New initiatives were started with ESHA with a regional workshop in Asia and Central America which brought together national leaders of rural workers' organizations to study the potential for their memberships of self-help forestry activities. These leaders represent hundreds of thousands of members many of whom are involved in forestry efforts but need and want technical assistance. Another workshop is under preparation for Latin America.

Effects of Financial Constraints

- 3.41 Many Forestry activities had to be cancelled or postponed during the biennium. In Forest Resources and Environment, activities related to the development of new remote sensing technologies and productivity zoning was delayed due to budget shortfalls. A study on development and management of bamboo resources was postponed, although this type of information is increasingly requested by developing countries, particularly those in Asia. The further development and testing of the micro-computer version of FIDAPS was deferred and development of software for forest management was truncated due to lack of funds. Activities in support of plantation establishment and in species/site matching were cut back. A seminar on forest fire management and control was cancelled. No activities were conducted in the fields of atmospheric pollution and acid rain due to budget cuts. Although the software is available, the Forest and Wildlands Conversation Information System (FOWCIS) could not be implemented because funds were unavailable for data entry. Numerous publications had to be deferred, and translation and publication of documents in languages other than English were particularly affected. Other cancelled programmes included those on assessment of management programmes for mangroves and people's participation in upland conservation.
- 3.42 The Forest Industries and Trade Programme was unable to complete several priority activities due to funding restrictions. Activities particularly affected were those relating to residues identification and utilization, non-wood forest products and marketing of tropical timber.

- 3.43 Under Forest Investment and Institutions, a seminar on extension techniques for francophone African countries and studies on the introduction of forestry in agricultural and rural extension curricula were suspended due to budget constraints. One of the most visible results of the financial constraints was the suspension of the publication of UNASYLVA, the unique international forestry sector journal. This constituted a serious loss to international communication in forestry. Work on promotion of rural employment and income through forestry and forest processing suffered due to staff and funding reductions. Case studies on forest-based small-scale enterprises were delayed, including a study which focussed on issues for women involved in such enterprises. Fuelwood activities also suffered; a workshop in Latin America on planning self-help fuelwood projects could not be held.

Outlook and Issues

- 3.44 The Tropical Forestry Action Plan, with its five Action Programme components (forestry in land use, forest-based industrial development, fuelwood and energy, conservation of tropical ecosystems, and institutional development) is an overall conceptual framework for action in tropical forestry. It is intended that governments and agencies concerned should use this frame as a common reference for the formulation of their tropical forestry programmes and for the harmonization of action between them. FAO has been engaged in assisting governments in preparing their plans and this work will continue into the 1990-91 biennium.
- 3.45 Global concern about tropical forest destruction and changes in land use, and their consequences on climate change as a result of the greenhouse effect, has put pressure on FAO to generate data and to propose action which places the Organization in a crucial position to deal with the environmental issues which will dominate in the 1990s. This has led the Forestry Department to take a more active role in international fora and in the design of international efforts to mobilize financial resources for sustainable development and environmental conservation, in line with the report of the Brundtland Commission. The seriously limited staff resources have been put under heavy stress by these developments, by the TFAP, and by the need to support an expanding field programme. Inadequate resources to respond to changing trends which give higher importance to environment and to sustainable management of the resource base constitute the main constraint.
- 3.46 Assessment and monitoring of forest resources will remain an important activity. The continuation of forest resources assessment and the progressive integration of the relevant data with that related to other land uses in the Geographic Information System will permit refining analysis at world, regional and national levels, on land use, natural resources and food, fodder and fibre production. Selection and conservation of forest genetic resources will likewise remain a priority area given the increased planting efforts in most developing countries, particularly of multi-purpose trees and shrubs.
- 3.47 Forests and trees are an important part of the resource base on which agricultural production is based, particularly in mountainous areas and arid lands. This is gaining increasing recognition at highest political levels. The Programme has contributed, in many different ways and within its own limited resources, to this change of attitude

and efforts must continue. The actual and potential contribution of wildlife to rural development tends to be underestimated because only a small part of it enters commercial markets. Emphasis laid on this subject during the 1987-88 biennium will have to be maintained in the future, particularly as regards Africa.

- 3.48 In Forest Industries and Trade, the emphasis on planning and management of harvesting operations and forest industries will continue. However, the scope will be widened to strengthen the activities which relate to non-wood forest products and small-scale forest-based rural industry enterprises, including marketing, reduction of waste and utilization of residues and small-diameter timber. Environmental issues will also be addressed more emphatically than before in all aspects of this Programme. Trade and marketing will be given a more integrated place in the development of forest-based industries in order to ensure maximization of the social and economic benefits which can be derived from sustained utilization of the forest resources.
- 3.49 The Forest Investment and Institutions Programme will increase its focus on improving sectoral planning capabilities, on strengthening the understanding of necessary policy adaptation and the related advice capacity and on developing more effective institutional arrangements. Critical issues related to people's participation in forestry will continue to be explored and approaches to be developed for more effective participatory design, implementation and monitoring of self-help forestry activities. Special consideration will continue to be given to these and related issues in the implementation of the TFAP.

CHAPTER FOUR

INFORMATION BASE RELATED TO THE PERFORMANCE OF TECHNICAL AND ECONOMIC PROGRAMMES

Major Programmes 2.1 Agriculture, 2.2 Fisheries, 2.3 Forestry

- 4.1 The chapter presents a quantitative summary of the resources committed, the activities completed and the outputs produced by the three Major Programmes: Agriculture, Fisheries and Forestry. Although the emphasis may vary, all the three Major Programmes apply various combinations of similar activities to achieve intended results. These activities include: courses, workshops and study tours for training; meetings and expert consultations to exchange information and adopt policies, strategies and technical recommendations; publications in specialized fields for direct use by member countries and other organizations; advice to countries on technical, socio-economic and managerial problems in the sectors covered by FAO; and the technical backstopping of field projects. The outputs of a Major Programme are generally complementary. For example, an expert consultation may review a draft training manual which is then released as a publication and subsequently used as teaching material in training courses organized by field projects, with technical backstopping from Headquarters or Regional Offices.
- 4.2 The various means of action, including data bases, are summarized in the tables which follow. Care needs to be exercised in drawing hasty conclusions on the basis of the aggregate figures. Nevertheless, in several tables the effects of the present financial constraints are clearly discernible.

Resources

- 4.3 The 1988-89 approved budget for the three Major Programmes was US\$ 233,466,000, of which approximately one-half was designated for expenditure during 1988. In view of the financial constraints, actual expenditures for 1988 amounted to US\$ 93.1 million, a shortfall of 20.2%. There have not been any significant shifts in the distribution of resources among the Major Programmes during recent biennia. Major Programme 2.1 Agriculture accounts for 77.8% of the total approved budget for Technical and Economic Programmes (see Table 4.1), with heavy concentration on the largest programmes: Crops (2.1.2), Rural Development (2.1.5), Food and Agricultural Information and Analysis (2.1.7) and Food and Agricultural Policy (2.1.8), each of which accounts for 11% to 12% of the approved budget. Fisheries and Forestry represent 13% and 9% of the approved budget of the three Major Programmes combined. Within Fisheries, Programme 2.2.2 Fisheries Exploitation and Utilization accounts for almost 47% of the resources. It covers a wide range of activities related to the five Programmes of Action identified by the World Conference on Fisheries Management and Development. In Forestry, Programme 2.3.3 (Forest Investment and Institutions) which covers institutional support, policy advice, training and community forestry accounts for 36% of resources allocated, while Programme 2.3.1 Forest Resources and Environment, another important field of work of the Major Programme, absorbs close to 26% of the resources of the Major Programme.

- 4.4 The technical and economic programmes all support a large number of extra-budgetary funded field projects. The overall ratio of extra-budgetary to Regular Programme expenditure in 1988 stood at 3.5:1. This represents an increase after some years of declining ratios. The growth of extra-budgetary expenditures has only now begun to exceed the annual rate of inflation. Particularly encouraging is the growth in support to Special Action Programmes.
- 4.5 However, there are divergencies in the distribution of extra-budgetary resources among the various Programmes. While the levels of extra-budgetary support were very encouraging for such Programmes as Natural Resources, Crops, Livestock, Rural Development, Fisheries Exploitation and Utilization, Forest Resources and Environment and Forest Investment and Institutions, they remained disappointing for such Programmes as Nutrition, Research and Technology Development, and Food and Agricultural Policy.

Training Courses, Workshops and Study Tours

- 4.6 Training activities constitute one of FAO's major areas of work in assisting member countries in the development of their human resources. Table 4.2 provides an overall picture of training activities organized by Headquarters and the Regional Offices of the three Major Programmes in their specialized fields. Table 4.2a gives the share of training activities carried out by the Regional Offices.
- 4.7 As can be seen from Table 4.2, the increase in Regular Programme resources during 1984-85 had a direct positive effect on training. The number of training activities rose from 472 in 1982-83 to 860 in 1984-85, an increase of 82%. On the other hand, the financial constraints in 1986-87 led to a decline of 12% in training activities, followed by a further estimated decline of 20% in the 1988-89 biennium.
- 4.8 When compared with 1984-85, the decline in training activities during 1986-87 was 10% in Forestry, 11% in Agriculture and 29% in Fisheries. However, a small increase occurred in the number of trainees for Major Programme Agriculture while for Major Programmes Fisheries and Forestry, the number of trainees rose by 35% and 32% respectively. In fact, the number of trainees per training course rose from 16 to 30 in Major Programme Fisheries and from 15 to 22 in Major Programme Forestry. However, it is estimated that for the three Major Programmes combined, the number of trainees may decline by as much as 34% in 1988-89 compared with 1986-87. In general, the average number of trainees per course has remained relatively stable since 1982 at around 20 participants per training activity.
- 4.9 Major Programme Agriculture accounts for almost 90% of training activities and trainees. The financial constraints affected the training activities of this Major Programme more seriously than others, both at Headquarters and the Regional Offices. The Programmes where training activities suffered most in 1986-87 were Programme 2.1.3 (Livestock), Programme 2.1.1 (Natural Resources) and Programme 2.1.6 (Nutrition). In the case of Livestock, this was partly due to the phasing out of national training activities under the regional dairy training programmes, which now concentrate more on the establishment of model demonstration projects. Reductions in training activities were made during the current biennium and affected also Programme 2.1.2 (Crops), Programme 2.1.4 (Research and Technology Development) and Programme 2.1.8 (Food and Agricultural Policy).

Table 4.2: Training Courses, Workshops and Study Tours*
Major Programmes: 2.1 Agriculture, 2.2 Fisheries, 2.3 Forestry

Programme	Activities				Trainees			
	1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.	1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.
2.1.1 Natural Resources	75	93	67	48	1 198	1 692	1 381	904
2.1.2 Crops**	70	159	172	108	1 014	3 196	5 354	2 114
2.1.3 Livestock	107	170	74	46	2 460	3 928	1 904	648
2.1.4 Research and Technology Development	28	51	97	59	372	852	1 793	1 136
2.1.5 Rural Development	89	164	144	145	2 237	4 143	3 522	3 596
2.1.6 Nutrition	42	64	39	48	1 315	1 590	923	1 007
2.1.7 Food and Agricultural Information and Analysis	5	17	17	12	90	376	450	244
2.1.8 Food and Agricultural Policy	10	49	75	56	185	871	1 561	987
2.1 Sub-total	426	767	685	522	8 871	16 648	16 888	10 636
2.2.1 Fisheries Information	-	5	3	3	-	88	17	56
2.2.2 Fisheries Exploitation and Utilization	19	37	24	36	341	455	436	586
2.2.3 Fisheries Policy	-	10	10	18	-	550	640	550
2.2 Sub-total	19	52	37	57	341	810	1 093	1 192
2.3.1 Forest Resources and Environment	10	14	17	21	234	179	434	457
2.3.2 Forest Industries	6	2	6	4	150	37	112	86
2.3.3 Forest Investment and Institutions	7	13	4	6	114	160	34	107
2.3.4 Forestry for Rural Development***	4	12	10	-	68	236	228	-
2.3 Sub-total	27	41	37	31	566	612	808	650
TOTAL	472	860	759	610	9 778	18 070	18 789	12 478

* Includes all training activities organized and implemented by units at FAO Headquarters and the Regional Offices irrespective of the source of funds; it excludes training activities carried out by field projects

** There was a large increase under Programme 2.1.2 in 1987 due to concentrated training for the locust control emergency

*** As of the 1988-89 biennium activities for Programme 2.3.4 have been integrated under the three Programmes 2.3.1, 2.3.2 and 2.3.3

Table 4.2a: Training Courses, Workshops and Study Tours*
(Regional Offices)

		<u>Activities</u>				<u>Trainees</u>			
		1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.	1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.
<u>Major Programme</u>									
2.1	Agriculture								
	RAFR	7	27	38	31	121	713	1075	731
	RAPA	77	104	93	63	1 624	2 378	1 765	1 157
	REUR	2	1	8	4	22	18	145	120
	RLAC	50	94	56	60	639	1 650	1 427	1 185
	RNEA	5	25	44	49	157	682	749	960
	Sub-Total	141	251	239	207	2 563	5 441	5 161	4 153
2.2	Fisheries								
	RAFR	1	4	7	6	1	68	135	139
	RAPA	1	-	-	1	76	-	-	25
	RLAC	3	12	9	6	16	180	98	80
	RNEA	-	1	-	-	-	10	-	-
	Sub-Total	5	17	16	13	93	258	233	244
2.3	Forestry								
	RAFR	2	1	2	1	60	16	65	5
	RAPA	-	4	6	-	-	102	61	-
	RLAC	5	18	14	18	80	184	336	419
	RNEA	1	-	1	3	28	-	25	25
	Sub-Total	8	23	23	22	168	302	487	449
	All Regions								
	RAFR	10	32	47	38	182	797	1 275	875
	RAPA	78	108	99	64	1 700	2 480	1 826	1 182
	REUR	2	1	8	4	22	18	145	120
	RLAC	58	124	77	84	735	2 014	1 861	1 684
	RNEA	6	26	45	52	185	692	774	985
Total		154	291	278	242	2 824	6 001	5 881	4 846

* Includes all training activities organized and implemented by Regional Offices irrespective of the source of funds; it excludes training activities carried out by field projects

- 4.10 The contribution of the Regional Offices to training is evident. In 1986-87, this amounted to 37% of FAO's Regular Programme training activities and 31% of total trainees. In 1986-87, Regional Offices' share in Forestry training was 62% of training activities and 60% of trainees. The most active in training have been RAPA and RLAC. RLAC, for example, supported network training activities for some 600 participants per year.
- 4.11 For Major Programme Agriculture, the emphasis of training has been on professional and managerial staff, which made up 69% of the total in 1988-89 as compared with 44% in 1986-87. There was far less decline in the number of national professionals trained than in other categories (only 15%). The proportion of women trained under the Regular Programme has remained relatively constant in recent years and stood at 18%, almost the same level (20%) as evident in the Field Programmes. There was evidence of a continued stress on training women not only in traditional subjects such as rural development and nutrition, but also in technical areas such as water development and management, crop protection, fisheries and forestry.
- 4.12 In 1987, the most recent year for which figures are available, field projects which are not covered in the tables backstopped by the technical programmes trained some 70,000 nationals, of which 66% were primary producers and low-level staff and 33% were trained on field days.

Meetings, Seminars and Expert Consultations

- 4.13 In 1986-87 there were 604 meetings, seminars and expert consultations held with 22,264 national participants. The declines in comparison to 1984-85 were 7% in number of meetings and 11% in terms of national participants. Further reductions took place in 1988-89 due to the financial constraints. The number of meetings were expected to decline by 3% and the number of national participants by 27% (see Table 4.3). In terms of the number of meetings, the decline in 1988-89 was expected to be more significant in Major Programmes 2.2 Fisheries (15%) and 2.3 Forestry (11%). Meetings were reduced for Programmes 2.2.1 and 2.2.3 Fisheries Information and Fisheries Policy and for Programme 2.3.1 Forest Resources and Environment. Major Programme 2.1 Agriculture has maintained its position. In the current biennium, the decline in the number of national participants was most marked for the Regional Offices (see Table 4.3a), particularly for RLAC which, during the past two biennia, had maintained a relatively high level of meetings in support of network and TCDC activities in the region. The only marked rise has been in Programme 2.1.4 Research and Technology Development, where the number of meetings rose from 47 and 43 during the past two biennia to an expected number of 97 meetings during 1988-89. This jump is mainly due to Sub-programme 2.1.4.2 Agricultural Applications of Isotope Research which, alone, reported some 59 meetings with 1,177 participants for the present biennium. The overall number of participants also declined during 1988-89 compared with 1986-87. The sharpest fall was noted under Major Programme 2.2 Fisheries (41%), followed by Agriculture (28%) and Forestry (9%).

Table 4.3: Meetings, Seminars and Expert Consultations*
Major Programmes: 2.1 Agriculture, 2.2 Fisheries, 2.3 Forestry

Programme	Number of Meetings				Number of National Participants			
	1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.	1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.
2.1.1 Natural Resources	45	36	38	41	1 648	1 243	1 500	793
2.1.2 Crops	43	125	119	91	1 148	3 373	3 650	2 313
2.1.3 Livestock	46	73	55	47	1 215	2 335	1 301	831
2.1.4 Research and Technology Development	39	47	43	97	1 563	1 607	1 766	2 063
2.1.5 Rural Development	59	92	74	73	2 249	3 615	2 588	1 599
2.1.6 Nutrition	34	39	63	52	2 858	2 866	3 490	2 591
2.1.7 Food and Agricultural Information and Analysis	10	16	19	17	435	469	689	358
2.1.8 Food and Agricultural Policy	25	51	48	40	1 416	3 205	2 707	2 236
2.1 Sub-total	301	479	459	458	12 532	18 263	17 691	12 784
2.2.1 Fisheries Information	1	2	8	3	10	24	105	50
2.2.2 Fisheries Exploitation and Utilization	45	44	20	24	983	944	512	441
2.2.3 Fisheries Policy	67	61	54	43	2 729	3 144	1 666	850
2.2 Sub-total	113	107	82	70	3 722	4 112	2 283	1 341
2.3.1 Forest Resources and Environment	16	21	19	16	374	705	524	596
2.3.2 Forest Industries	10	6	8	13	477	178	286	557
2.3.3 Forest Investment and Institutions	20	20	26	27	841	1 177	1 283	937
2.3.4 Forestry for Rural Development**	11	16	10	-	74	516	197	-
2.3 Sub-total	57	63	63	56	1 966	2 576	2 290	2 090
TOTAL	471	649	604	584	18 220	24 951	22 264	16 215

* Includes meetings organized and implemented by units at FAO Headquarters and the Regional Offices. Some of these meetings were partially or entirely financed from extra-budgetary funds

** As of the 1988-89 biennium activities for Programme 2.3.4 have been integrated under the three Programmes 2.3.1, 2.3.2 and 2.3.3

Table 4.3a: Meetings, Seminars and Expert Consultations*
(Regional Offices)

		Number of Meetings				Number of National Participants			
		1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.	1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.
<u>Major Programme</u>									
2.1	Agriculture								
	RAFR	14	35	48	39	553	1 629	1 435	741
	RAPA	41	43	49	43	1 200	1 025	1 300	759
	REUR	18	26	24	37	689	1 066	916	983
	RLAC	16	56	54	36	439	1 409	2 074	667
	RNEA	8	26	21	19	292	1 040	715	559
	Sub-Total	97	186	196	174	3 173	6 169	6 440	3 709
2.2	Fisheries								
	RAFR	1	5	5	11	18	150	132	334
	RAPA	5	9	8	4	134	206	179	71
	RLAC	3	5	1	-	44	166	19	-
	RNEA	1	2	2	-	76	26	21	-
	Sub-Total	10	21	16	15	272	548	351	405
2.3	Forestry								
	RAFR	4	8	4	4	202	276	140	142
	RAPA	3	1	1	3	50	30	15	54
	REUR	11	11	12	19	538	448	615	838
	RLAC	10	5	8	2	94	98	198	42
	RNEA	1	1	2	2	46	34	83	52
	Sub-Total	29	26	27	30	930	886	1 051	1 128
All Regions									
	RAFR	19	48	57	54	773	2 055	1 707	1 217
	RAPA	49	53	58	50	1 384	1 261	1 494	884
	REUR	29	37	36	56	1 227	1 514	1 531	1 821
	RLAC	29	66	63	38	577	1 673	2 291	709
	RNEA	10	29	25	21	414	1 100	819	611
	Grand Total	136	233	239	219	4 375	7 603	7 842	5 242

* Some of these meetings were partially or entirely financed from extra-budgetary funds

Publications

- 4.14 Table 4.4 provides an overall view of the production of publications in FAO specialized fields; Table 4.4a shows the share of the Regional Offices in publications. An estimated 1,516 publications were issued in 1988-89, a decline of 4% compared with 1986-87. The reduction was most marked for the Regional Offices (17%). The full effect of the financial constraints will not, however, be felt until later, when the work which had begun in 1988 would normally be published. This is particularly the case for training and research manuals and technical and case studies. Thus, while these both show an increase over 1986-87, the number of periodicals, newsletters, etc., is markedly down, with several publications being suspended, such as the World Animal Review, and the number of issues of other publications has been reduced, e.g. the International Rice Commission Newsletter. In some cases, alternative means were found for publishing technical articles, for example by the FAO/IAEA Joint Division, which had some 50 substantive articles published in scientific journals. There was an encouraging overall upward trend in the publication of training materials.

Direct Support to Member Countries

- 4.15 Advisory visits and assistance in the formulation and conduct of national policies, plans and projects form an important aspect of the work of all programmes, with Regional Offices accounting for 24% of the total work months of support during the recent two biennia (see Tables 4.5 and 4.5a). This support absorbs approximately 20% of the work months of the technical staff at Headquarters and the Regional Offices. The proportion has risen during the present biennium due to the high number of unfilled posts. Direct support to member countries for all Major Programmes reached an all time high in 1984-85 with some 4,348 work months of direct support. During the present biennium, this has declined by 12% to the total of some 3,840 work months.
- 4.16 The largest share of the work months spent in direct support to member countries is seen in Major Programme 2.1 Agriculture, accounting for 83% of the total work months of staff and consultants in the two recent biennia. This support under the Major Programme Agriculture dropped by 16% to some 3,117 work months during 1988-89 in comparison with the 1984-85 level. The estimated drop in 1988-89 for Major Programme 2.3 was 26% compared with 1984-85. The reduced number of Regular Programme staff and reductions in travel funds meant that the drop was equally marked in staff and consultants. RAFR, RAPA and RLAC had particularly steep falls in the number of consultancies they could offer. The only exception has been Major Programme 2.2 Fisheries, which increased from 333 work months in 1984-85 to 509 work months in 1988-89, an increase of almost 53%, particularly related to Programme 2.2.2 Fisheries Exploitation and Utilization. Major Programme Fisheries has given high priority to the follow-up of the Action Programmes as approved by the World Conference on Fisheries Management and Development.

Technical Backstopping

- 4.17 Data on the technical backstopping of field projects is given in Table 4.6 and the role played by the Regional Offices in Table 4.6a. As a result of the trend towards smaller projects with less full-time expatriate staff, the demand for technical backstopping has increased.

Table 4.4: Publications
Major Programmes: 2.1 Agriculture, 2.2 Fisheries, 2.3 Forestry*

Programme	1982-83	1984-85	1986-87	1988-89 Estimate
2.1.1 Natural Resources	76	196	84	111
2.1.2 Crops	226	170	249	217
2.1.3 Livestock	108	142	127	123
2.1.4 Research and Technology Development	68	110	132	222 **
2.1.5 Rural Development	107	169	196	151
2.1.6 Nutrition	83	155	108	103
2.1.7 Food and Agricultural Information and Analysis	76	141	135	94
2.1.8 Food and Agricultural Policy	128	160	152	96
2.1 Sub-total	872	1 243	1 183	1 117
2.2.1 Fisheries Information	65	64	69	43
2.2.2 Fisheries Exploitation and Utilization	96	96	122	136
2.2.3 Fisheries Policy	47	56	61	51
2.2 Sub-total	208	216	252	230
2.3.1 Forest Resources and Environment	33	49	63	89
2.3.2 Forest Industries	46	50	38	33
2.3.3 Forest Investment and Institutions	29	44	29	47
2.3.4 Forestry for Rural Development***	16	31	20	-
2.3 Sub-total	124	174	150	169
TOTAL	1 204	1 633	1 585	1 516
<u>Types of Publications</u>				
- Periodicals, reference documents, and newsletters	558	660	765	656
- Training and research manuals	161	245	229	246
- Technical documents and case studies	485	728	591	614
TOTAL	1 204	1 633	1 585	1 516

* Includes publications produced at FAO Headquarters and Regional Offices.
Excludes working papers

** Includes some 50 journal papers completed by AGE staff, published in major
journals which have no budgetary implications

*** As of the 1988-89 biennium activities for Programme 2.3.4 have been
integrated under the three Programmes 2.3.1, 2.3.2 and 2.3.3

Table 4.4a: Publications
(Regional Offices)*

<u>Programme</u>	<u>1982-83</u>	<u>1984-85</u>	<u>1986-87</u>	<u>1988-89</u> <u>Estimate</u>
2.1 Agriculture				
RAFR	4	26	113	53
RAPA	35	97	98	78
REUR	13	14	40	43
RLAC	42	131	226	189
RNEA	5	67	75	67
Sub-Total	99**	335	552	430
2.2 Fisheries				
RAFR	2	4	10	6
RAPA	2	2	8	5
RLAC	2	6	17	15
RNEA	-	2	4	1
Sub-Total	6	14	39	27
2.3 Forestry				
RAFR	-	2	6	13
RAPA	16	14	10	9
REUR	8	22	23	25
RLAC	6	12	36	53
RNEA	2	2	5	2
Sub-Total	32	52	81	102
All Regions				
RAFR	6	32	129	72
RAPA	53	113	116	92
REUR	21	36	63	68
RLAC	50	149	280	257
RNEA	7	71	84	70
TOTAL	137	401	672	559

* Excludes Working Papers

** Figures refers to 1983 only

Table 4.5: Work Months of Direct Support to Member Countries
FAO Staff and Consultants*
 Major Programmes: 2.1 Agriculture, 2.2 Fisheries, 2.3 Forestry

Programme	Staff				Consultants			
	1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.	1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.
2.1.1 Natural Resources	202	165	173	139	154	270	191	121
2.1.2 Crops	332	537	398	330	301	353	313	362
2.1.3 Livestock	295	191	224	196	137	324	159	116
2.1.4 Research and Technology Development	75	136	119	172	53	158	161	263
2.1.5 Rural Development	334	274	266	313	257	491	338	333
2.1.6 Nutrition	81	79	91	78	190	204	127	108
2.1.7 Food and Agricultural Information and Analysis	24	71	84	48	17	20	50	24
2.1.8 Food and Agricultural Policy	207	209	228	207	233	252	259	307
2.1 Sub-total	1 550	1 662	1 583	1 483	1 332	2 067	1 598	1 634
2.2.1 Fisheries Information	3	7	3	5	3	3	5	2
2.2.2 Fisheries Exploitation and Utilization	102	108	95	167	40	52	67	194
2.2.3 Fisheries Policy	31	43	78	98	44	120	78	43
2.2 Sub-total	136	158	176	270	87	175	150	239
2.3.1 Forest Resources and Environment	50	40	67	40	41	30	44	30
2.3.2 Forest Industries	24	33	32	34	5	17	18	19
2.3.3 Forest Investment and Institutions	27	35	19	42	13	36	16	47
2.3.4 Forestry for Rural Development**	35	41	48	-	64	54	46	-
2.3 Sub-total	136	149	166	116	123	137	124	96
TOTAL	1 822	1 969	1 925	1 869	1 542	2 379	1 872	1 969

* Includes direct support from units at FAO Headquarters and Regional Offices. For FAO staff only time spent in the field; for consultants entire duration of assignment

** As of the 1988-89 biennium activities for Programme 2.3.4 have been integrated under the three Programmes 2.3.1, 2.3.2 and 2.3.3

Table 4.5a: Work Months of Direct Support to Member Countries
FAO Staff and Consultants*
(Regional Offices)

		Staff				Consultants			
		1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.	1982- 1983	1984- 1985	1986- 1987	1988- 1989 Est.
<u>Major Programme</u>									
2.1	Agriculture								
	RAFR	146	68	86	79	104	65	108	49
	RAPA	109	132	130	115	74	114	93	32
	REUR	2	12	11	31	3	19	19	19
	RLAC	31	89	42	42	72	126	30	17
	RNEA	85	113	171	244	46	97	142	132
	Sub-Total	373	414	440	511	299	421	392	249
2.2	Fisheries								
	RAFR	6	3	6	9	-	11	15	7
	RAPA	1	6	5	4	-	-	3	-
	RLAC	4	10	2	2	5	3	-	-
	RNEA	12	18	3	21	3	50	5	9
	Sub-Total	23	37	16	36	8	19	23	16
2.3	Forestry								
	RAFR	2	4	3	1	2	1	8	5
	RAPA	11	14	9	14	-	15	20	10
	RLAC	16	8	3	4	8	12	5	5
	RNEA	9	7	9	10	4	4	8	28
	Sub-Total	38	33	24	29	14	32	41	48
All Regions									
	RAFR	154	75	95	89	106	77	131	61
	RAPA	121	152	144	133	74	129	116	42
	REUR	2	12	11	31	3	19	19	19
	RLAC	51	107	47	48	85	141	35	22
	RNEA	106	138	183	275	53	106	155	169
	TOTAL	434	484	480	576	321	472	456	313

* For FAO staff only time spent in the field; for consultants entire duration of assignment

Table 4.6: Technical Backstopping of Field Projects
Major Programmes: 2.1 Agriculture, 2.2 Fisheries, 2.3 Forestry*

Programme	Number of Experts and Consultants				Work Months of Backstopping**			
	1982-1983	1984-1985	1986-1987	1988-1989 Est.	1982-1983	1984-1985	1986-1987	1988-1989 Est.
2.1.1 Natural Resources	814	882	870	914	431	413	406	347
2.1.2 Crops	2 393	2 590	2 235	1 995	716	591	683	556
2.1.3 Livestock	1 046	937	1 064	1 009	291	279	310	309
2.1.4 Research and Technology Development	458	349	608	671	169	370	545	370
2.1.5 Rural Development	852	1 073	896	1 169	565	579	640	437
2.1.6 Nutrition	171	274	246	285	97	159	176	225
2.1.7 Food and Agricultural Information and Analysis	20	182	240	320	16	94	107	121
2.1.8 Food and Agricultural Policy	633	588	725	880	281	269	331	414
2.1 Sub-total	***	***	***	***	2 566	2 754	3 198	2 779
2.2.1 Fisheries Information	8	15	52	51	2	3	30	18
2.2.2 Fisheries Exploitation and Utilization	771	680	671	613	364	318	321	228
2.2.3 Fisheries Policy	130	107	86	99	59	77	110	98
2.2 Sub-total	***	***	***	***	425	398	461	344
2.3.1 Forest Resources and Environment	499	583	566	572	69	61	69	51
2.3.2 Forest Industries	116	240	205	184	68	71	59	56
2.3.3 Forest Investment and Institutions	231	304	170	430	63	81	32	76
2.3.4 Forestry for Rural Development****	200	253	243	-	50	67	50	-
2.3 Sub-total	***	***	***	***	250	280	209	183
TOTAL	***	***	***	***	3 241	3 432	3 869	3 306

* Includes technical backstopping provided by units at Headquarters and Regional Offices

** Professional staff only

*** Not additive as many experts and consultants are backstopped by more than one Programme. As more than one Sub-Programme within a Programme may backstop an expert or consultant, these figures also contain an element of double counting

****As of the 1988-89 biennium activities for Programme 2.3.4 have been integrated under the three Programmes 2.3.1, 2.3.2 and 2.3.3

Table 4.6a: Technical Backstopping of Field Projects
(Regional Offices)

		Number of Experts and Consultants				Work Months of Backstopping*			
		1982-1983	1984-1985	1986-1987	1988-1989 Est.	1982-1983	1984-1985	1986-1987	1988-1989 Est.
<u>Major Programme</u>									
2.1	Agriculture								
	RAFR	79	126	107	123	58	73	67	49
	RAPA	140	161	205	176	84	75	124	115
	REUR	4	11	103	101	10	8	48	23
	RLAC	64	166	216	125	28	60	136	65
	RNEA	118	236	276	306	49	121	112	155
	Sub-Total	**	**	**	**	229	337	487	407
2.2	Fisheries								
	RAFR	2	10	24	10	2	2	5	5
	RAPA	8	36	49	18	5	15	15	15
	RLAC	7	12	26	22	3	6	10	8
	RNEA	4	4	7	11	2	2	22	25
	Sub-Total	**	**	**	**	12	25	52	53
2.3	Forestry								
	RAFR	14	38	15	5	1	4	3	2
	RAPA	10	42	36	43	29	14	17	14
	RLAC	16	18	26	19	8	7	11	7
	RNEA	12	28	65	72	5	8	10	11
	Sub-Total	**	**	**	**	43	33	41	34
<u>All Regions</u>									
	RAFR	95	174	146	138	61	79	75	56
	RAPA	158	239	290	237	118	104	156	144
	REUR	4	11	103	101	10	8	48	23
	RLAC	87	196	268	166	39	73	157	80
	RNEA	134	268	348	389	56	131	144	19
Total		**	**	**	**	284	395	580	494

* Professional staff only

** Not additive as many experts and consultants are backstopped by more than one Programme. As more than one Sub-Programme within a Programme may backstop an expert or consultant, these figures also contain an element of double counting

In 1986-87, the total work months of backstopping reached nearly 3 869, a 13% increase over 1984-85. However, with financial constraints, the demand for the technical backstopping of field projects could not be met and the reduction in work months for 1988-89 is expected to be of the order of 15%. The drop was expected to be more severe in Major Programme Fisheries (25%) than in Major Programmes Agriculture and Forestry (13% each). Over one-third of professional staff time under the three Major Programmes is spent on technical backstopping, and for some Programmes this activity absorbs more than half of professional staff time.

- 4.18 In Headquarters units with depleted staff resources during 1988, such as those for field food crops, technical backstopping appeared to be claiming large proportions of the staff time. All Headquarters based Programmes have provided substantial backstopping, averaging 0.3-0.4 work months per expert or consultant deployed. While most of the Headquarters based Programmes suffered a loss in work months of backstopping during the current biennium, there was a sharp increase in the case of Programme 2.1.6 (Nutrition), Programme 2.1.8 (Food and Agricultural Policy) and Programme 2.3.3 (Forest Investment and Institutions). Regional Offices are less directly involved with field projects than are Headquarters units, although their technical backstopping role has regularly increased since 1982-83. With the exception of RNEA, all other Regional Offices have reported a decrease in technical backstopping during the current biennium.

Data Bases

- 4.19 The importance of data bases in the Major Programme's work has been steadily growing (see Table 4.7). They now contain some 9,000 million characters (megabytes) of information, of which nearly 6,000 megabytes is numeric data. The largest data bases have been AGRIS (2,645 megabytes) dealing with text (under Programme 2.1.4 Research and Technology Development), the remote sensing data base ARTEMIS (1,600 megabytes under Programme 2.1.4), AGROSTAT (600 megabytes under Programme 2.1.7 Food and Agricultural Information and Analysis), which contains basic agricultural statistics for all countries, and the Aquatic Sciences and Fisheries Information System (530 megabytes under Programme 2.2.1 Fisheries Information). There is a growing number of small data bases in both Headquarters and the Regional Offices dealing with specialist information, for example, plant protection, sheep and goat information, and nutrition country profiles. Many of these latter data bases, as with AGRIS, consist mainly of text rather than numeric tabular information. AGRIS, which is hosted on the IAEA computer in Vienna, is the first of the systems to be available on line but in many cases, data can be supplied to external users in computer readable form (i.e. diskettes or tapes).

Table 4.7: Current Computerized Data Bases by Programme/Operational Unit

<u>Programme Code</u>	<u>Operational Unit</u>	<u>Title of Data Bases</u>
2.1.1 Natural Resources	AGL	- Agro-ecological Zones (AEZ) - Population Potentials - Geographic Information System - Crop Water Irrigation Schedule - Fertilizer Programme Trials and Demonstrations
	RAPA	- Natural Resources Statistics - All RAPA countries and world - FAO Fertilizer Programme Data (BGD, INS, NEP, PAK, PHI, THA) - Fertilizer Response - Thailand (9 crops) - Organic Recycling Network
2.1.2 Crops	AGS	- Farm equipment specifications
	AGP	- Code of Conduct on Pesticides - Plant Quarantine System - Information System for Improved Plant Protection - Seed Information System - Agro-climatic Data System) - Agro-meteorological Data Systems)
	RAPA	- Selected Indicators of Crops Production in Asia-Pacific Region 1961-87
2.1.3 Livestock	AGA	- Sheep and Goat Information Network - Animal Health
2.1.4 Research and Technology Development	GI	- AGRIS - CARIS
	AGR	- ARTEMIS
2.1.5 Rural Development	ESH	- Socio-Economic Indicators WCARRD
2.1.6 Nutrition	ESN	- FAO/WHO Food Additives - Nutrition Country Profiles

<u>Programme Code</u>	<u>Operational Unit</u>	<u>Title of Data Bases</u>
2.1.6. Nutrition (cont'd)	RAPA	<ul style="list-style-type: none"> - Food Production for Nutritional Adequacy in Asia-Pacific Region - Availability of Dietary Calories - Indicators for Identification of Nutritionally at Risk Communities and Geographical Areas
2.1.7 Food and Agricultural Information and Analysis	ESC	<ul style="list-style-type: none"> - Raw Material Information System - Cereals System Food Security (GIEWS) - Food Cereal Balance Sheet - Oils, Oilseeds, Fats System - Fibre Consumption
	ESS	<ul style="list-style-type: none"> - AGROSTAT - World Census of Agriculture - Fertilizer Data - Socio-economic Indicators (see also WCARRD ESH above) - Demographic Estimates and Projections - Food Consumption Income and Expenditures - Trade Matrices
	RAPA	<ul style="list-style-type: none"> - Agricultural Censuses in Asia-Pacific Region - Their Design, Operations and Methodological Problems
	RLAC	<ul style="list-style-type: none"> - AGROSTAT - JLAC/ESS
	JEUR	<ul style="list-style-type: none"> - Average prices paid and received by farmers in Europe and North America
2.1.8 Food and Agricultural Policy	ESD	<ul style="list-style-type: none"> - Global Perspective Study
	ESP	<ul style="list-style-type: none"> - SOFA - World and Regional Review - External Assistance to Agriculture
	ESC	<ul style="list-style-type: none"> - World Food Model - Food Consumption Surveys and Income Elasticities - Compendium of Macro-economic Indicators
	RAPA	<ul style="list-style-type: none"> - Data on Agricultural Commodities in Asia and Pacific Region, 1976-86 - Data on Agricultural Commodities in Asia and Pacific Region, 1977-87

<u>Programme Code</u>	<u>Operational Unit</u>	<u>Title of Data Bases</u>
2.2.1 Fisheries Informa- tion	FIDI	- FISHDAB Trade and Production - FISHDAB Catches and Landings - FISHDAB Fishing Fleets/Fisherman - ASFIS
2.2.2 Fisheries Exploitation and Utilization	FIDI	- FIIU - FIIT
2.3.1 Forest Resources and Environment	RAPA	- Forest Resources
2.3.2 Forest Industries and Trade	FODP	- Tropical Forestry Products World Trade - Forest Products Directions of Trade
	RAPA	- Forestry Production and Trade
2.3.3 Forest Investment and Institutions	FODP	- Forestry Production, Consumption, Trade - Forest Product Prices - Pulp and Paper Capacities - Wood Based Panels - Forest Resources
	RAPA	- Forestry Education - Forestry Research
	JEUR	- Timber - Timtrade - Forest Resources - Forest Fires

CHAPTER FIVE

TECHNICAL COOPERATION AND DEVELOPMENT SUPPORT

- 5.1 This chapter reviews the activities of the Development Department, which cover the Technical Cooperation Programme (Major Programme 4), Field Programme Planning and Liaison (Major Programme 3.1), Investment (Major Programme 3.2), Special Programmes (Major Programme 3.3) and FAO Representatives (Major Programme 3.4).

I. TECHNICAL COOPERATION PROGRAMME Major Programme 4

Objective

- 5.2 The Technical Cooperation Programme (TCP) was established to provide a quick response to requests for urgent or unprogrammed assistance. The Programme gives emphasis to increased food and agricultural production in developing countries and in raising the income of small producers and rural workers. TCP projects should be of high priority to the country and should ensure the fullest participation of the government. Most of TCP funds are allocated to the least developed countries (LDCs) and to low income/food deficit countries.
- 5.3 Assistance is provided to governments through small-scale projects which fall within seven categories: training, advisory services, emergencies, investment, formulation/programming missions, TCDC and support to development. The budgetary appropriation for the 1988-89 biennium amounts to US\$ 63.1 million or 12.8 percent of the Regular Programme resources.
- 5.4 The TCP unit within the Field Programme Development Division (DDF) is responsible for day-to-day management of the programme, appraisal of incoming requests, liaison with the technical and operations units at Headquarters and field support during implementation.

Progress and Achievements

- 5.5 TCP has continued to provide critical support to FAO's field programme through the provision of technical services and inputs. About 60 percent of TCP projects are of direct support to member countries; the remaining 40 percent are linked to other external programmes operating in developing countries. By March 1989, TCP-approved projects had reached 3,954 for a total of US\$ 298 million.
- 5.6 Submissions for TCP assistance declined from 589 requests in 1986 to 324 in 1988. Approvals went down from 394 projects in 1986 to 257 in 1988 at a total cost of US\$ 27.9 million. During the biennium, the most important areas for TCP assistance have been: the provision of advisory services 33.7% (up from 29.6% in 1986); training 22.7% (down from 32.7% in 1986) and emergency assistance 21.5% (22.1% in 1986). Although allocations among the various categories vary from year to year, these three categories have generally absorbed 70% or more of TCP resources.

- 5.7 The decline in the number of requests for TCP assistance reflects the closure of the ARPA Programme in May 1988, under which more than 100 TCP projects were approved and an additional US\$ 15 million of Regular Programme 1984-85 funds were transferred to the TCP budget. Owing to this transfer, TCP approvals reached 462 projects in 1985 up from an average of 403 in the preceding and succeeding years. The ARPA Programme was reviewed in late-1988 and its findings are presented in the Review of Field Programmes 1988-89.
- 5.8 The allocation for investment support has increased since 1986 and reached 10.5% of approvals in 1988. This upward trend may be significant for the future programming of TCP funds as past allocations for this category had remained stable since 1983 (7.2% of total allocation). Funds provided for formulation/programming missions (category F) have also increased reaching 6.7% of the Programme allocations in 1988 up from 3.7% in 1986.
- 5.9 TCDC, a new category included in the Programme since 1986, received 4.8% of the resources, up from 2.6% in 1986. Expectations for a rapid increase of funding for this category during the biennium have not materialized because of difficulties in complying with the strict criteria set by the Programme so as to avoid any deviation from the TCP concept. In effect, for TCDC assistance the concerned governments must agree to meet local costs leaving external inputs to be covered by TCP.
- 5.10 Support to development, a category which includes the supply of small quantities of inputs, received 0.1% of resources due to the closure of humanitarian activities in support of liberation movements.
- 5.11 Regional distribution of assistance under the Programme has remained the same as for other biennia. Africa received 42.5% of TCP funding, followed by Asia and the Pacific (21.7%), Latin America and the Caribbean (18.2%), Near East and North Africa (15.7%) and Europe (1.9%).
- 5.12 The rate of approval of four requests for every five received did not change during the biennium. Improvements introduced in the management of the programme within the TCP unit in past biennia have proven fruitful. Good cooperation with the FAO Representatives and technical and operational units allows the TCP unit to process requests with relatively few delays.

Outlook and Issues

- 5.13 Promotion of TCP activities will continue to be pursued during the next biennium, specially in support of investment in the agricultural sector, TCDC and programme/planning missions. Increased involvement of FAO representations at the country level is being sought for the screening of incoming requests and the monitoring of progress achieved under the programme. At Headquarters, the TCP unit will continue to provide support to member countries through the appraisal, formulation and screening of requests as well as improving the lead time required for approval of incoming requests.
- 5.14 TCP assistance has proved its worth and developing member countries reiterated their satisfaction with its performance.

II. FIELD PROGRAMME PLANNING AND LIAISON

Major Programme 3.1

Objective

- 5.15 The main purpose of the Major Programme is to provide assistance to member governments in assessing their technical cooperation requirements and identifying relevant programmes and projects in accordance with their national priorities.
- 5.16 The Field Programme Development Division (DDF) is responsible for the implementation of the Major Programme through: the development of a sound field programme and project pipelines meeting the requirements of recipient countries and corresponding to FAO's policies and priorities; the mobilization of extra-budgetary resources; liaison with bilateral and multilateral organizations; monitoring of FAO's field programmes; coordination of FAO's support to WFP activities; the promotion of technical cooperation among developing countries (TCDC); management of the Technical Cooperation Programme (TCP); and support to FAO representations at country and regional levels.
- 5.17 Regular Programme resources allocated for the Major Programme during the 1988-89 biennium amounted to US\$ 5.8 million. Extra-budgetary allocations in support of the Major Programme rose to US\$ 9.8 million.

Progress and Achievements

- 5.18 Overall field programme delivery in 1987-88 (extra-budgetary sources from UNDP, Trust Funds and Regular Programme resources from TCP) reached US\$ 654.3 million compared with US\$ 606.1 million in 1985-86. UNDP-financed projects increased during this period, from an average of 757 on-going projects with a total delivery of US\$ 244.7 million in 1985-86 to 905 on-going projects with a delivery of US\$ 283.2 million in 1987-88. This reflected both the improved resource position of UNDP and the start of the Fourth Programming cycle. The introduction of improved field programme procedures, in close collaboration with the UNDP regional bureaux, have facilitated the flow of information and a quick response to incoming requests for assistance. Further qualitative changes are being planned for streamlining project design, speeding up project formulation activities and improving the monitoring of the field programme.
- 5.19 Project expenditures under Trust Fund totalled US\$ 307.5 million in 1987-88, a 3% increase over the 1985-86 expenditures of US\$ 298.8 million. Delivery of Trust Fund projects has continued to exceed that of UNDP funded projects, a trend noted since 1983. Italy continued to be the largest single donor to the Programme covering 19% of the Trust Funds, followed by Netherlands with 13%, the World Bank and Saudi Arabia with 8% each. The return to the relatively high levels of project financing reflected increased donor support to the Programme as well as the appreciation of major donor currencies against the US dollar. The streamlining of Trust Fund procedures was undertaken during the biennium through the Field Programme Committee and have been defined in the DGB 87/10.
- 5.20 Liaison with the donor community within the FAO/Government Cooperative Programme has also been reinforced through regular review meetings held to monitor on-going programmes, pipeline proposals, financial

requirements and donor priorities. Funding is increasingly being channelled through special technical and/or special action programmes to ensure full use of the FAO project pipeline and to provide a global coverage to the specific needs identified in recipient countries.

- 5.21 Unilateral Trust Fund approvals have shown a sharp decline, from US\$ 107 million in 1985-86 to US\$ 34 million in 1987-88; expenditures also decreased from US\$ 76.8 million to US\$ 60.8 million. The trend may be seen as a reflection of current lending policies of financing institutions and their consequent effect on technical assistance projects linked to the availability of funds at the national level.
- 5.22 The focus of the overall field programme has remained on Africa with 48% of total expenditures followed by Asia and the Pacific 25%, Near East and North Africa 13%, Latin America and the Caribbean 8%, and Europe 1%. The remaining 5% were spent on inter-regional and global activities. The share of project approvals reflected the same geographical distribution.
- 5.23 An integrated monitoring system to cover the whole of the project cycle, including the implementation stage, is being strengthened. It will allow DDF to be increasingly involved in the coordination of in-house appraisal and monitoring activities of field programmes and projects.
- 5.24 The FAO/WFP Liaison Unit within DDF is responsible for providing the World Food Programme with the technical support it needs and requests. To this effect, the Unit identifies, mobilizes and coordinates FAO's resources. This technical support is provided at all stages of the project cycle: planning, formulation, appraisal, implementation, evaluation. During 1987-88, FAO has participated in 121 WFP missions for project appraisal and evaluation.
- 5.25 FAO's support to WFP increased during 1987-88. FAO contributed to the formulation of 42 WFP projects in 1987 and 47 in 1988 worth US\$ 536 and US\$ 670 million, respectively. The introduction of WFP's new project cycle, reflecting the concern of the Programme for better project preparation and implementation, has resulted in a larger volume of FAO's technical services, especially the participation of FAO experts in WFP-sponsored missions. However, there is still scope for improvements in the implementation of the new project cycle, in particular at the preliminary appraisal stage.
- 5.26 The main thrust of TCDC activities for the biennium has centred on: inventories of capacities and needs of member countries for TCDC in the fields of agriculture, forestry and fisheries; the organization of sectoral TCDC programming exercises to match identified needs and available know-how; the identification of "unique experiences" or simple technologies available in developing countries and their dissemination through workshops and seminars; and exploration of possible funding sources for follow-up activities within technical cooperation networks.
- 5.27 The Associate Professional Officers' Scheme has been further streamlined in line with the conclusions and recommendations of recent donor meetings. Commitments from 14 donors to the Programme reached an all-time high of 379 officers during 1988 for a total cost of about US\$ 17 million.

- 5.28 Other activities undertaken by DDF during the period under review included detailed country reviews, carried out in conjunction with UNDP, which have resulted in a larger volume of UNDP assistance to FAO-executed projects in Africa and the identification of 43 projects worth US\$ 110 million for the IGADD Donor Conference in support of TCDC networks. Guidelines on FAO policy and project management requirements for government-executed projects have been drafted during the biennium and systematic country reviews have been initiated in countries with large country programmes such as India and Viet Nam to provide a sharp focus for technical cooperation activities and to assess requirements of foreign assistance.

Outlook and Issues

- 5.29 Varying trends emerge in FAO's field programme calling for a diversification in the services from FAO during the process of project identification, formulation, appraisal and implementation. Increasingly, the donor community is providing financial resources for such services. DDF has taken a series of steps to further strengthen the services to be provided by FAO in these areas. The review and appraisal process of project requests is being systematically streamlined; monitoring of projects is being reinforced through the application of recently issued directives; specific training of DDF personnel in project formulation/appraisal has been initiated and will be intensified during the next biennium; consistent with greater efforts to apply a programme approach, more country reviews are planned to bring together in-house expertise and to coordinate the assistance provided in FAO's specialized fields of activity.

III. INVESTMENT

Major Programme 3.2

Objective

- 5.30 The objective of the Major Programme 3.2 is to mobilize domestic and external resources for agricultural and rural development, including fisheries and forestry, through the formulation of investment projects for presentation to international and regional financing institutions. Emphasis is given to investments aimed at rapidly increasing the production capacity, efficiency and export earnings of member countries. Support is also provided in the form of sector and sub-sector studies in order to establish investment priorities and provide a basis for policy dialogue between governments and financing institutions. The Regular Programme allocation for the 1988-89 biennium was US\$ 19.3 million.
- 5.31 The Major Programme is implemented by the Investment Centre (DDC), through the FAO/World Bank Cooperative Programme (CP) established in 1964 and the Investment Support Programme (ISP) established in 1970. Seventy-five percent of the CP is paid for by the World Bank, while missions mounted on behalf of financing institutions cooperating with the ISP are reimbursed in part through cost-sharing arrangements. During the biennium, the World Bank's allocations (US\$ 16.7 million) and reimbursement levels have remained much the same as in the previous biennia (for details see Chapter Three of the Review of Field Programmes 1988-89).

Progress and Achievements

- 5.32 During 1987-1988, some 85 investment projects prepared earlier by the Investment Centre were approved by financing institutions, for total investments of US\$ 3 003.5 million, of which US\$ 1 924.6 million were external loans and credits, the balance being provided by the recipient countries.
- 5.33 The sub-sector distribution of the approved projects showed little change from the pattern of previous biennia. The major share (32%) of external resources was for general agricultural and rural development (mainly food crops), followed by irrigation and drainage (17%), cash crops (13%), livestock (8%), forestry (8%), agricultural credit (6%), fisheries (5%), the remaining 11% being for agricultural services, marketing, storage, agro-industries, etc.
- 5.34 Fifty-two of the projects were in Sub-Saharan countries (61%), involving total investments of US\$ 1 409.6 million, of which US\$ 1 005.6 million were external loans; 13 projects were approved in Asia totalling US\$ 670.7 million, including US\$ 422.3 million in loans. The share of activities in Latin America and the Caribbean and the Near East and North Africa remained unchanged during this period, representing respectively 12% and 11% of the approved projects, and 10% and 12% of the loans granted.
- 5.35 A large proportion of the projects was financed on concessional terms, mainly by IDA, IFAD and the African Development Fund. Of the 85 projects approved, 75% were supported by concessional loans totalling US\$ 1 195 million or 62% of total loans. This trend reflects the focus of the Investment Centre's activities on Africa and on countries with low GDP.
- 5.36 In 1987-88, 559 missions were fielded by the Investment Centre, of which 393 were under its direct technical responsibility and the remainder under responsibility of the financing institutions. Thirty-eight percent of total missions were for project preparation, 26% for project identification and 12% for sector and sub-sector reviews. The balance concerned the elaboration of project completion reports to assess achievements up to the end of loan disbursement, participation in project appraisal and supervision of on-going projects. Sector and sub-sector studies under the Centre's own responsibility increased from 10 in 1986 to 12 in 1987 and 15 in 1988.

FAO/World Bank Cooperative Programme

- 5.37 The CP is the older and larger part of the Investment Centre and has accounted for the major part of investments approved to date. World Bank/IDA lending to agriculture fluctuated from US\$ 4 777 million in FY 1986* to US\$ 2 930 million in FY 1987 and US\$ 4 494 million in FY 1988. CP's share of agricultural projects approved by the World Bank returned to around one-third in FY 1987 and 1988, after a drop to 20% in FY 1986. However, the share of loans for CP-assisted projects decreased from 30% in FY 1987 to 10% in FY 1988, due largely to the focus on smaller sized projects in African countries with low absorptive capacity.

* World Bank's Fiscal Year (July 1985-June 1986)

- 5.38 During 1987-1988, 33 CP-assisted projects were approved for total investments of US\$ 2 136 million, including US\$ 983 million in WB/IDA loans and credits and US\$ 281 million in co-financing from other external sources. The CP also made a considerable contribution to the formulation of three other WB projects. The CP worked on a total of 78 projects and 15 sector/sub-sector studies during these two years, involving 212 missions under CP responsibility; it also participated in 152 World Bank missions.
- 5.39 In view of the expected substantial increase in the Bank's lending volume following the recently-approved increase in its capital, demands on the services of the CP are expected to continue at a high level. The CP's work will continue to concentrate on Africa, and especially sub-Saharan Africa, in line with the high priority given by the World Bank to this continent.

Investment Support Programme

- 5.40 The Investment Support Programme (ISP) was established to provide assistance to member countries in identifying investment proposals for funding by institutions other than the World Bank. Main cooperating institutions under this Programme are IFAD, the African Development Bank/Fund and the UN Capital Development Fund.
- 5.41 Fifty-two projects prepared with ISP assistance were approved during this period, for total investments of US\$ 867 million, including loans of US\$ 660 million. During 1987-88, the ISP worked on 98 projects (of which 70% were in Sub-Saharan Africa) and on 8 sub-sector studies. Collaboration with IFAD continued to be particularly strong. Twenty-three or almost half the projects approved by IFAD during this period were prepared with ISP assistance, for IFAD loans of US\$ 244 million.
- 5.42 Lending for agriculture by the African Development Bank and Fund decreased from a record of US\$ 889.6 million in 1987 to approximately US\$ 407.7 million in 1988. While cooperation with the AfDB has continued at a high level (34 missions during 1987-88, of which 13 were for general identification), projects approved fell from an average of 6 or 7 over recent years to 3 projects in 1988, making a total of 10 projects approved during the two years, financed with concessional loans of US\$ 113.6 million from the African Development Fund. The fall in the number of projects approved was largely due to emphasis by most countries of Sub-Saharan Africa on economic restructuring, reduction in external borrowing and increased AfDB co-financing with the World Bank. Following AfDB's reorganization in 1987, and in view of its increased capital resources, joint activities are expected to continue at least at the same level in 1989.
- 5.43 Since 1987, there has been a marked increase in ISP work with the UN Capital Development Fund (UNCDF) which supports small projects in the poorest countries. Eleven projects were approved during 1987-88, with US\$ 21.3 million from UNCDF, plus US\$ 3.7 million from UNDP for related technical assistance. All but one of these projects were in Africa. A further increase in cooperation with UNCDF is expected for 1989.
- 5.44 In collaboration with FAO technical divisions, the Investment Centre continued to follow up UNDP/FAO projects with investment potential. Ten of the 85 Investment Centre-assisted projects approved during 1987-88 were originally identified as a result of this work. During this period, Investment Centre missions visited 59 UNDP/FAO projects and identified investment proposals totalling US\$ 230 million.

Outlook and Issues

- 5.45 Demand for the Investment Centre's services is inevitably linked to availability of funds and lending priorities of member governments and cooperating financing institutions. Decreased borrowing by indebted countries, especially in Sub-Saharan Africa, and the stress on structural and sectoral adjustment will certainly affect the level of project preparation work by the Investment Centre and thus the volume of lending attributed to its work in future. The involvement of the Centre in sector and sub-sector studies is expected to continue in order to provide both member governments and lending institutions with a framework through which lending strategies can be developed and policy dialogue undertaken. Collaboration with FAO's field projects and technical divisions in order to identify the investment possibilities of UNDP/FAO projects will also continue to receive strong support by the Investment Centre.

IV. ~~FREEDOM-FROM-HUNGER CAMPAIGN/ACTION FOR DEVELOPMENT~~ **Programme 3.3.1**

Objective

- 5.46 The Special Programme "Freedom-from-Hunger Campaign/Action for Development" (FFHC/AD) assists regional and national NGOs and local peoples' organizations in developing countries in formulating development projects geared towards attaining food security and self-sustaining agriculture and providing technical and organizational training for NGO staff and peasant organization leaders; mobilizing resources from NGO donors and other partners in developed countries; and promoting exchange of information and experience among NGOs in developing and developed countries. In this connection, the Programme participates in the promotion of public debate on poverty-oriented rural development and dissemination of information on development issues and educational material in food, agriculture and rural development. Regular Programme support for Programme 3.3.1 for the 1988-89 biennium amounted to US\$ 1.1 million. Extra-budgetary support costs amounted to US\$ 0.3 million.

Progress and Achievements

- 5.47 The cancellation of the fourth International FFHC/AD Consultation, as a part of programme reductions, hampered FFHC/AD fund-raising activities during the biennium, since it constitutes an important forum for discussions among NGOs from developing countries and NGO donors.
- 5.48 Despite this handicap, project approvals for FAO execution under the FFHC/AD increased from US\$ 2 million in 1983-85 to US\$ 5.2 million in 1986-88. Allocations to the Programme for 1989 from the UNDP alone are expected to reach US\$ 1.6 million to cover activities in Burkina Faso and Sierra Leone. During the biennium, over 50 organizations in Africa, Asia and Latin America were assisted by FFHC/AD in project formulation and evaluation.
- 5.49 During 1987-88, 170 projects were prepared under the Programme, an increase of 15% over 1985-86. The number of project requests received from the field have increased rapidly, from 80 in 1986 to 100 in 1988. The FFHC/AD project pipeline at end 1988 included projects worth

US\$ 11.9 million, of which US\$ 9.6 million for Africa. In Latin America, efforts concentrate on helping build up NGOs' technical capacity in order to sustain the relevance of their efforts to a regional food security strategy.

- 5.50 FFHC/AD maintains a reference service which continuously reviews educational material on food and agriculture. A bi-monthly publication "Development Education Exchange Papers" (DEEP), distributed in most member countries, promotes the diffusion of new ideas and experiences among NGOs, both from the North and the South. During the biennium, DEEP was distributed to approximately 9,000 readers as compared to 7,500 in 1986-87.

Outlook

- 5.51 Within the UN system, FFHC/AD long-standing relations with the NGO sector are recognized by specialized agencies seeking to include NGOs in the planning and implementation of their village level activities. The increase in funds channelled through this programme both from NGO partners and from member governments and multilateral agencies testifies to the confidence which the programme has gained since its inception. Increased demand for services is expected in the next biennium. As a result of systematic training geared to enable NGOs to deal with the problems of low productivity and food self-sufficiency, an increased demand for FFHC/AD services is expected in the next biennium both from the developing regions and from donor partners aware of the need for promoting a more sustainable agriculture.

V. FAO REPRESENTATIVES

Major Programme 3.4

Objective

- 5.52 The Regular Programme's appropriation for the 1988-89 biennium for Major Programme 3.4 amounted to US\$ 47.6 million and the host country receivable contributions to the Programme amounted to US\$ 2.2 million. Extra-budgetary allocations, mainly Trust Fund, amounted to US\$ 1.2 million. However, Regular Programme and Trust Fund allocations were subsequently reduced to US\$ 43.4 million and US\$ 897,000 respectively due to financial constraints suffered during the period.

Progress and Achievements

- 5.53 A total of 105 countries are being covered by either full representation or double/special accreditation. Staffing within the FAO Representations is maintained at a strict minimum. In most cases, it comprises two professionals, (FAO Representative and Programme Officer), a total of 8 international administrative/secretarial staff and locally-recruited staff for administrative/programme/logistical support. The number of FAO Representations has remained unchanged (74) during the biennium. The programmed increase of four additional offices has been postponed due to the financial constraints experienced during the biennium. Two Programme Officers continued to be outposted to countries covered by double accreditation where the scale of FAO-sponsored activities warranted closer support.

- 5.54 In order to maintain the pace of the decentralization process, emphasis has been given during the biennium to the strengthening of existing representations through the selective upgrading of a number of Programme Officers posts and increasing career development possibilities within the Programme. Emphasis has been given to the selection of new candidates with experience and post-graduate education in the fields of agricultural economics and rural development. The rosters of candidates have also been expanded to provide for a wider choice of suitable personnel. Experience and training in project formulation and programme analysis is also being emphasized to provide for maximum efficiency in the screening of incoming requests for assistance and streamlining support to member countries.
- 5.55 Owing to the financial difficulties, the training courses at Headquarters for programme officers/assistants in project formulation and evaluation have not been pursued. In the previous biennium, two courses had been held for administrative staff in Latin America and the Caribbean and the Near East and North Africa which completed the global coverage of administrative seminars and brought the total number of trained administrative staff to 86 participants. The administrative seminars were also suspended for this biennium. The training courses are meant to familiarize staff with FAO rules and regulations in administration and finance as well as in project formulation and evaluation. Since the inception of these courses which were launched in 1983, there has been quite a turn-over of administrative/programming staff. While the internationally-recruited administrative/programming staff have the opportunity of being briefed at Headquarters while in transit, the locally-recruited administrative/programming staff cannot benefit from the same possibility. It is envisaged to reactivate the administrative/programming training courses in the next biennium.
- 5.56 Increased involvement of FAO Representations in support of national Project Directors has been noted in recent years, especially in countries with a large share of nationally executed projects. Administrative support in the recruitment of local personnel, the elaboration of field purchase orders, international bidding and management of the imprest account is increasingly being demanded from the FAO Representations as projects of this type have rapidly expanded in Asia and Latin America.
- 5.57 The FAO Representative's role as technical adviser and/or channel of communication for the identification of available technical expertise in the areas of agriculture, forestry and fisheries is increasingly recognized. Rapid response to ad hoc requests for specialized services and technical advice is increasingly being demanded by host governments, thus creating a need for improved communications between FAO's technical divisions and government staff. Headquarters' demand for continuous reporting on the host country's food and agricultural situation has also increased with the expansion of FAO's regular monitoring activities. The FAO Representative's six-monthly reports have proven to be an effective means for regular data-gathering on important trends related to agricultural development and the impact of FAO's activities at the country level.
- 5.58 The role of the FAO Representations in project and programme development continued to expand, especially with regard to the screening of requests and the monitoring of the TCP Country Programme. Increased involvement of the FAO Representatives is foreseen in the preparation and appraisal of project requests to help streamline DDF's country project pipeline.

Outlook and Issues

- 5.59 Support to Member Countries through the FAO Representations is increasingly seen as a valuable tool for the provision of timely technical advice at the country level in the specialized fields of FAO activity. During the biennium, improved country reports have become a valuable source of information for FAO technical divisions and Operations Units. A new trend has been noted in the increased involvement of FAO Representatives in the operational backstopping of projects under national direction. Other responsibilities such as the screening of incoming requests for technical assistance has continued to expand, placing additional demands on the quality of staff in the Representations. Improvements introduced in the recruitment of new Programme Officers, and the upgrading of existing posts in countries with large technical assistance programmes are aimed at strengthening FAO's decentralization process.
- 5.60 Requests for the services provided by the FAO Representations evidence the importance attributed by Member Countries to the availability of specialized advice at the country level. During the next biennium, FAO will continue to upgrade the services provided through its Country Offices. Emphasis will be placed on training of present staff in the fields of project formulation and administrative support.

CHAPTER SIX

SUPPORTING SERVICES

- 6.1 The chapter covers administrative and support services provided to FAO Regular and Field Programme activities under Major Programmes 5.1 - Information and Documentation - and 5.2 - Administration.

I. INFORMATION AND DOCUMENTATION

Major Programme 5.1

- 6.2 The aim of this Major Programme is:
- to contribute to greater public awareness of the world food and agricultural problems and increased public and institutional support to FAO programmes (Programme 5.1.1);
 - to ensure timely provision of up-to-date technical material and bibliographic information in support of all programme activities both at FAO Headquarters and in the field; to coordinate the inter-library cooperative network AGLINET; to provide training in the management of agricultural libraries in FAO projects and FAO Representatives' Offices (Programme 5.1.2);
 - to ensure that the Organization's needs for publications, periodicals, main documents, working papers and information material are met promptly and economically (Programme 5.1.3).

Progress and Achievements

Public Information (Programme 5.1.1)

- 6.3 During the period under review, the main focus of the programme remained on world food security and the locust threat to Africa and the Near East as well as on FAO's regular assessments of the world food situation.
- 6.4 Current Information: A series of staff-written news features outlined the food security situation in various regions of the world with special emphasis on the Africa Region. The special information campaign launched in 1986 was intensified, focussing on measures needed and taken to combat locusts and, in particular, the activities of the Emergency Centre for Locust Operations (ECLO). During 1988, 15 press releases were issued on the subject, many receiving worldwide coverage through the wires of international agencies such as the Associated Press, Reuters and Agence France Presse. Press briefings and interviews were held to increase public awareness and mobilize support for the campaign. A 17-minute video programme was also produced for screening at the FAO Locust Campaign Planning Meeting held in April 1988.

- 6.5 Major television outlets were supplied direct or through such channels as Eurovision with video footage on the locust threat, while interviews were arranged with FAO officials for radio and television. Footage was also supplied on the flood damage in Sudan.
- 6.6 Regional Conferences were given wide coverage. Contacts with regional and sub-regional news agencies continued to be maintained for expanded coverage of FAO field activities. Although financial constraints reduced travel for media contacts and field reportage missions, media interest in FAO's technical work continued covering subjects such as the discovery of "wheatless bread" and environmental issues.
- 6.7 Cooperation with RAI led to the production of a special 90-minute programme entitled "Africa Africa" and two programmes of 50 minutes each on Italian-financed FAO-executed projects in Latin America and Africa. RAI and other Italian television outlets have given in-depth coverage to FAO activities during the period under review.
- 6.8 Approximately 250 press releases and 150 radio programmes were produced in various languages. Topics covered included World Food Security, World Food Day and the Locust Campaign. Until mid-July 1988, when operations were suspended due to financial constraints, the film library answered to over 3,000 film/video requests and screened some 700 films/videos. Video requests have marked an increase of 42% with respect to the past biennium.
- 6.9 Some 5,000 requests from the public were handled during the biennium and visits for over 15,000 persons were organized during 1987-88.
- 6.10 Information Materials: Production methods have undergone a rapid change during the period under review through the full integration of visual media activities with editorial and writing activities. The change is typified by the installation in early 1988 of a computer system which has been used: to produce graphic presentations and display texts for exhibits; to design booklets and prepare newsletters such as "Newslink". The system is operated as a joint venture with the Aquaculture Development and Coordination Programme and two other projects which provided the bulk of the funds for its acquisition.
- 6.11 Following the cancellation of the World Food Report, a new booklet covering FAO's yearly activities has been published, using the new desk-top technology at a fraction of the cost of the previous annual publication. At the same time, the experience gained from preparation of the World Food Report was used to revise the appearance and presentation of "The State of Food and Agriculture".
- 6.12 Support to technical departments in the presentation and preparation of information materials - audio-visual programmes, displays, pamphlets, bulletins and booklets - increased considerably during the biennium. In addition to SOFA, work centered on major publications such as an information pack on aquaculture, a kit for use in the Pan-African Rinderpest Campaign (PARC) and booklets such as "Attacking Rural Poverty" (FAO/the Netherlands cooperation), "Japanese Agriculture: Lessons for Development" (FAO/Japan cooperation), "FAO e l'Italia" (FAO/Italy cooperation), "Fish for Food and Development" (FAO's fisheries programmes and priorities), "Fighting Hunger" (World Food Day publication). A popular version of the FAO Plan of Action for Integration of Women in Development was also prepared as well as pamphlets on the European Foot-and-Mouth Commission, the Work of FAO's Investment Centre and WAICENT (World Agriculture Information Centre).

Over 15 technical units received graphics or audio-visual assistance such as cover designs (e.g. WCARRD anniversary publications, Information Centre handbook), illustrations (plant genetic resources), cartographic presentations (aquaculture, plants of economic importance and locust distribution), overhead projector cells (land and water), displays (plant genetic resources, AGRIS, Globefish, rural youth) and slide presentations (forestry development, women in fisheries, world rice situation).

- 6.13 Major exhibits were mounted in Brussels, Hokkaido, Verona and FAO's Headquarters. An unusual exhibit was prepared for the "Agricoltreno" - a travelling exhibition train which, starting on World Food Day, toured major centres in Italy. As in the past, stands were prepared for the annual agricultural fair at Novi Sad.
- 6.14 The Photo Library continued to attract visitors and requests for material from its collection of 14,000 colour slides and 40,000 black and white pictures all indexed. In 1988, the Photo Laboratory produced a total of approximately 50,000 colour prints and slides and black and white prints. Already in the first quarter of 1989, it had produced over 40,000 slides and prints, reflecting an increasing reliance on internal production and increased capacity as a result of the modernization of facilities in recent years.
- 6.15 Ceres: The production of Ceres was suspended during 1988. Only four out of the six planned issues were produced due to austerity measures undertaken during the year. The suspension will cover a total of 11 issues, including all of 1989 and the early part of 1990, when it is planned to be relaunched.

Library (Programme 5.1.2)

- 6.16 The collection, indexing and microfiching of FAO's documents constitute an important responsibility of the services provided by the David Lubin Memorial Library. Some 5 800 documents were added to the FAO bibliographic data base, which now contains nearly 109,000 FAO titles. During 1987-88, acquisitions of outside material and periodical subscriptions had to be substantially reduced due to austerity measures. The reduction, of close to 50% of subscriptions and book purchases, was also affected by the sharp rise in the prices of books. Closer contact with the technical divisions have been sought to redefine priorities for the acquisition of books and monitor user needs.
- 6.17 User Services: Priority was given to responding to user requests in lieu of regular distribution of standard outputs. On-line search of internal and external bibliographic data bases continued for the technical divisions, field projects and researchers in member countries at the same level as the previous biennium, but with a noticeable increase in relevance. Document delivery resulting from searches was speeded through on line ordering. The "Selective Dissemination of Information" service was improved and provided 550 SDI profiles every two months to projects and users mainly in developing countries. Bimonthly "Current bibliography" was sent to 3,700 recipients.
- 6.18 The FAO data base is also available for on-line consultation within FAO and is being increasingly accessed directly by the technical divisions. Outside subscriptions to FAO documents on microfiche reached 27, of which 5 were from developing countries.

- 6.19 Twenty-seven libraries are now members of AGLINET (International Network of Agricultural Libraries) coordinated by the FAO Library; ten were represented at the technical meeting held in June, in conjunction with the AGRIS Technical Consultation. Representatives reviewed present problems encountered and made recommendations for further development of the network.

Publications (Programme 5.1.3)

Production and Distribution

- 6.20 Overall production of publications and main documents was lower during 1988 than in previous years; however, sales revenue increased to around US\$ 1,000,000 through an intensification of promotion activities. Publications Promotion Officers travelled to seven countries during the year to improve contacts for the dissemination of FAO publications and printed materials, identify new sales outlets and discuss quota distribution with government officials.
- 6.21 Internal Printing's output decreased by some 23 million page-impressions during 1988 (compared with 1987) as a result of austerity measures taken to reduce by 40% the production of main documents and priced publications; output from the Composition Unit also decreased by some 8 million words.
- 6.22 Cost and efficiency of distribution services have been under constant scrutiny during the period. In consultation with the Publications Committee more stringent measures have been applied to requests for free publications. All mailing lists for free distribution have been examined and pruned. Measures introduced have resulted in a reduction of almost 30% in the dispatch of free publications. Alternative shipping arrangements have been sought with a view to increasing efficiency and reducing costs in bulky despatches of books and other publications.
- 6.23 Efforts have continued to reduce overtime and the use of temporary staff. Overtime was reduced by 60% during 1988 as compared to 1988.
- 6.24 A new computerized system for word processing, desk top publishing and graphics was introduced for the Translators Service, Editorial Branch and Composition Unit. This innovation, at a time of severe staff constraints allowed for a more rational use of human resources. Further efficiency efforts included a review initiated during 1988 to standardize all of FAO's publication/document formats to reduce processing time and ensure a consistent image in all of the Organization's technical documents as requested by the Programme Committee.
- 6.25 Financial constraints during 1988 impeded the recruitment of new staff to cover vacant posts. This caused considerable stress on available staff at all levels of the Division and contributed to difficulties in the day-to-day supervision of regular activities and the quality of outputs. Proposals are being studied to better adapt the Divisional structure to the new possibilities offered by modern techniques.

Document Processing

- 6.26 Requests made for document processing were 9,488 during 1988, showing a marked decrease of 23% compared with the yearly average in the last biennium of 12,370. Wordage of documentation for meetings also decreased by 36% during 1988, reaching 3,085,350 words compared with the 4,829,800 words recorded during the 1986/87 biennium.
- 6.27 The reductions are in line with the Organization's policy to reduce the length of documentation and focus on the more technical material required for regular meetings and publications.

Outlook and Issues

- 6.28 Due to austerity measures introduced throughout the Organization, information support activities were significantly reduced at the field level. Activities during the biennium have concentrated on support to the technical divisions in planning and preparing publications and related material as well as maintaining an adequate coverage of Regular Programme activities. The acquisition of a desk-top publishing system through extra-budgetary funding has allowed for a more cost-effective production which is expected to represent further savings and improved quality of the Division's work during the next biennium.
- 6.29 Bibliographic services provided by FAO have continued to be in high demand. Considerable efforts have been made throughout the biennium to maintain the same level of activities albeit with considerably reduced resources. Support to users both at Headquarters and in the field has improved through more user-oriented briefings and promotion. New approaches to office automation and sustainability of services provided are being sought to improve delivery through cost-effective measures.

II. ADMINISTRATION

Major Programme 5.2

Administrative Services (Programme 5.2.1)

- 6.30 During 1988, backstopping has been provided by the Administrative Services Division to 60 field projects. Due to the financial constraints in the Regular Programme budget, on-the-spot advice could only be provided to administrative staff in selected FAOR offices. An average of 16 internationally-recruited Administrative Officers were posted in field projects during 1988. This reflects a decrease of 11% in relation to 1987 and of 20% in relation to 1986. There is an increasing concern within AFS over the Division's capacity to provide adequate support services to the field programme, especially in countries with a high level of government-operated projects and taking into consideration the present decentralization process. The effects of the reduction of personnel in this programme need to be closely monitored to ensure that no loss in the quality of the support and no delayed input delivery is reflected in FAO's field programme.
- 6.31 Procurement: In dollar terms, procurement has increased since 1987 by approximately 10% to US\$ 77,499,000. The number of transactions has remained steady at approximately 7,000 although an increase is noted in the average value of purchase orders of US\$ 21,000 per order. The number of orders by which procurement was undertaken by competitive

bidding has decreased from 57% in 1987 to 54% in 1988. The major reason for this decrease is the regular procurement of vehicles by waiver to comply with the standardization practices recommended by UNDP.

- 6.32 Major difficulties continue to be found, particularly due to insufficient forward planning for the procurement of equipment and supplies as soon as the project is formulated. Clearly-defined specifications need to be provided by both field projects and Operating Divisions in order to improve delivery. There has been a slight increase noted in the value of procurements by Field Purchase Orders (FPOs). As an increased assistance has been required by field projects in the proper preparation of FPOs and their correct placement with suppliers, more systematic briefing and training by the staff of Purchasing and Control Branch, both in Headquarters and in the field is necessary to ensure adequate support to field projects.
- 6.33 Contracts: The number of contracts, amendments and renewals processed by AFSC during 1988 has continued to show a net decline as compared to the years of the previous biennium. During this year they remained at 16% below the 1987 level. At the same time the total amount committed in 1988 showed an increase of almost 73% with respect to 1987 (US\$ 25 million). This was mainly due to an increase in the amounts committed through TF-funded contracts, of which one contract alone amounted to US\$ 18,400,000.
- 6.34 Buildings: The number of contracts initiated by the unit increased from 68 in 1987 to 77 in 1988. The total amount involved increased by 16% to US\$ 3,495,486. Revision of the cleaning contract, finalized in August 1988, resulted in a yearly saving of Lit. 600 million. During the biennium, efforts have continued to be made in the rationalization of maintenance work programmes. Results are encouraging. Improved maintenance programmes and the introduction of shifts has resulted in a marked decrease of overtime from 2,270 hours in 1987 to 619 hours in 1988.
- 6.35 The Financial Bill worth Lit. 25 billion for improvements of Headquarters accommodation has been approved by the Host Government in late 1988 and work is planned to start as of mid-1989. The initial phase concerns the expansion of parking space through the construction of a three-storey parking lot. A new eight-storey Building F linking Buildings C and D is planned to be constructed during the next biennium. Further expansion of the premises is planned for Building A during 1991-93.
- 6.36 Communications: The pouch schedule was revised in 1988 and consequently, expenditures for first-class pouch decreased by 59%, of second-class pouch by 22%. Volume and expenditures of regular mail further declined, as in 1987.
- 6.37 There has been a marked trend in the diversification of the communications requirements. While outgoing cables decreased by 8% and incoming traffic remained constant, during 1988, outgoing facsimile traffic increased by as much as 139%, and incoming traffic grew by 113% over 1987. Preparations for the implementation of a fully automatic telex system are under way for the next biennium. At the same time, savings have been made in AFST as overtime has also been reduced, passing from 914 hours in 1987 to 690 hours in 1988.

Financial Services (Programme 5.2.2)

- 6.38 The FINSYS Personal Accounts Subsystem was in full operation as of February 1989. Operational Testing of FINSYS Phase I Payroll was completed and payroll operations under FINSYS began in April 1989. During the biennium, support to FINSYS development has continued to receive the highest priority. Phase II of FINSYS, which includes the following Subsystems: Project Maintenance, Budget Maintenance, Payments Authorization, General Ledger, Treasury and Financial Reports and Inquiries, completed the Unit Testing stage in April 1989. In the following months, work continued in the areas of Work on the Conversion, Organizational Change and the Integration of FINSYS Phase I with Phase II. The implementation of FINSYS Phase II is scheduled to occur in stages and is estimated to be completed by January 1990.
- 6.39 Phase III of FINSYS provides for the automation of the Organization's Travel administration procedures. In December 1988, a review was completed of the Detailed Design for this Subsystem. Unit Testing for the Travel Subsystem is scheduled in the Fall of 1989 with full implementation of the Travel Subsystem in January 1990.
- 6.40 Live operation of both Phase I and Phase II of FINSYS will provide the Organization, through the Financial Services Division, with a greatly improved ability to process financial data and to exercise efficient and effective control over its financial resources. Major benefits will also be derived from the detailed commitment and expenditure information to be provided by FINSYS Phase II, as on-line information is made available to managers to facilitate their day-to-day decision-making responsibilities.
- 6.41 The financial crisis with the resulting cash flow problems and several key staff vacancies have put severe strains on Treasury operation. This, together with the extensive preparations for implementation of FINSYS Phase II, has caused serious backlogs in certain Treasury areas. A consultant's review of Treasury operations was conducted during late 1988 to ascertain how operations may be further improved.
- 6.42 Diversion of staff from Regular Programme activities for the development of FINSYS and the need to concentrate on the monitoring of the financial crisis has aggravated the staffing resource situation. Owing to the severe staff and resources restrictions, only limited efforts were possible during the biennium to develop personnel computer applications for streamlining the preparation of monthly financial reports, and yearly and biennial financial statements. Cash flow forecast models were developed for particular use in monitoring and reporting on the Regular Programme cash crisis but development work on areas of major importance such as FAO Representatives' and Project Field Accounts (control, operational support and training) and Trust Fund financial procedures and related administrative support functions could not be pursued. Even the strict minimum operational level maintenance work could not be maintained at the level of acceptable standards.
- 6.43 Travel policies and procedures have been reviewed. Changes have been effected. Updated air travel standards have been adopted and implemented, generating considerable savings for the Organization. These changes are being included into FINSYS Phase III Travel Subsystem.
- 6.44 Payroll Operations have undergone a significant organizational change as a result of the implementation of Phase I; further changes to

increase efficiency and effectiveness will be forthcoming while retrofitting FINSYS Phase II to Phase I. Since April 1989, staff have received clearer information on salary payments and their indebtedness to the Organization. Further improvements are planned for early 1990.

Computer Services (Programme 5.2.3)

- 6.45 Usage of computing resources at the Computer Services Centre continued to increase at a rate of 30 percent per year. In April 1987, a second mainframe computer was installed and became operational to meet the Organization's computing needs for large administrative and financial systems. At the end of 1988, the number of terminals and micro-computers with terminal emulations and desk-top printers connected to the system had increased to over 450 directly connected terminals, 135 printers and over 100 access points through the various departmental computers. Monitoring of computing resource needs of the users are carried out on a continuing basis to plan further system hardware and software upgradings. During 1988, the Computer Centre undertook major site improvements to ameliorate the stability and reliability of its office facilities. These included the installation of an Uninterrupted Power supply.
- 6.46 During the biennium, new releases of DATACOM products were installed to provide extensive support to users of the DBMS environment in the operational testing and production of FINSYS/PERSYS.
- 6.47 Office Automation facilities were enhanced through the installation of a microcomputer laboratory to provide hardware and software support to the in-house and field computer user groups. During 1988, the Centre's computers were connected to the Italian "packet" switching network. Communication equipment was rationalized, interconnection with other Departmental minicomputers was made and connection was established to the International Computing Centre (ICC) in Geneva and the International Fund for Agricultural Development (IFAD) in Rome. The link with IFAD will allow the Centre to gain access to ICC using the satellite link when it becomes operational. Electronic Mail and Automated Telex application features of Office Automation were developed, installed and partially released for operation.
- 6.48 During 1987 and 1988, work on departmental plans on medium-term computer needs continued, based on which AFC will prepare an overall Organization-wide strategy for automatic data processing. The study will provide AFC with the necessary framework for long-range staff and computing resource planning to supplement AFC medium-term plans prepared during the preceding biennium.

Personnel Services (Programme 5.2.4)

- 6.49 Phase I of FINSYS-PERSYS has been now fully implemented effective from April 1989 payroll cycle. A substantial amount of Professional and General Service staff time has been dedicated to its introduction considerably affecting routine work. The effort involved extensive data input and its verification; preparation of office procedures, including work distribution, security controls and forms review. In addition to testing and updating activities, both old and new systems have been maintained on a parallel basis for several months to ensure accuracy of data. The financial crisis and the resulting austerity measures introduced throughout the Organization created an additional

workload, since continually updated information and statistics were required by senior management and the actions arising from the measures had to be processed. Some activities such as the review of codification of posts/appointment status; review of Post Descriptions; and the development of biennial steps for the General Service category had to be postponed. Staff have also been extensively involved in meetings of the Preparatory Working Group on Comprehensive Review of conditions of service of professional and higher categories mandated by the General Assembly and then in the deliberations of the consultant team reviewing Personnel Division. Implementation of the published classification standards for General Service posts in the field was progressively introduced, and standards for General Service posts in Rome are being finalized.

- 6.50 An updated review of the medical insurance plans for staff members with fixed-term and continuing appointments confirmed the growth in medical costs and the impact that these might have on future coverage. A number of measures aiming at cost containment in this area were implemented during 1989.
- 6.51 Although the number of vacant Professional posts available decreased during the biennium, efforts continued to be made to accelerate recruitment procedures and to increase the number of applications from countries that were under- or non-represented in the Organization. Four countries not previously represented achieved equitable geographical representation during 1988. Increased applications from female candidates have also been sought.
- 6.52 To optimize available human resources, an Ad Hoc Committee on Redeployment was set up to review all requests for Professional and General Service vacancy announcements prior to advertisement. As a result of the Committee's efforts, a significant number of staff were satisfactorily redeployed.
- 6.53 The development of the Recruitment Subsystem under PERSYS was undertaken during 1988 and testing of this Subsystem, which includes the establishment of one uniform candidate roster for the whole Organization, was initiated at the beginning of 1989.
- 6.54 In February 1988, the voluntary language training programme was suspended but other related activities have continued such as language examinations; language recruitment tests; self-access language learning facilities to field and Headquarters staff, and field language training. Staff training resources have been substantially reduced but training has continued in the areas of Project Formulation, training of National Project Directors, Performance Appraisal Interviewing, Word Processing, PERSYS, and briefing of Field Staff. New developments include training for nationals in project formulation, implementation, monitoring and evaluation; the development and delivery within the Regional Office for the Near East of a workshop on the use of Video for Agricultural Information, Training and Extension; and the introduction of self-access, primarily video-based, learning materials at Headquarters.
- 6.55 The workload of the Medical Service increased during the biennium. Due to more limited staff resources, availability of medical staff for unannounced visits of a non-emergency nature has been reduced.

Outlook and Issues

- 6.56 Economy measures introduced during the biennium will continue to be pursued through further rationalization of activities, computerization of financial and Personnel Services as well as automatization of the telecommunications sector. The FINSYS/PERSYS is expected to become fully operational at the end of 1989.
- 6.57 The introduction of shifts in the distribution of work within the various administrative services has resulted in a significant reduction of overtime costs. However, further reductions in personnel will require a careful assessment in supervisory requirements, especially in relation to field project support.

PART TWO

Part Two of the present Review is an in-depth review of selected Sub-Programmes. The subjects covered are:

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|---------------|---|---|
| Chapter Seven | : | Food and Agricultural Industries
(Sub-Programme 2.1.2.6) |
| Chapter Eight | : | Situation and Outlook
(Sub-Programme 2.1.7.2) |
| Chapter Nine | : | Fisheries Policy and Planning
(Sub-Programme 2.2.3.1) |
| Chapter Ten | : | Forestry Training and Institutions
(Sub-Programme 2.3.3.1) |

In all the in-depth reviews, both Headquarters-based activities and their related field components are covered. This makes it possible to treat the subject matter in a comprehensive way, focusing on achievements and potential impact. The time-span of the in-depth reviews covers performance in the past five to six years.

The basic format followed in each chapter is as follows:

- Rationale: A brief analysis of the global problem to which the Sub-programme is addressed, and of the objectives set by FAO in tackling the problem, the core activities covered, the linkage with other FAO programmes, and the results and impact expected;
- Resources: The Regular Programme resources devoted to the Sub-programme and the volume of extra-budgetary resources attracted. The profile of field projects is given;
- Output: The nature of the output produced by the Sub-programme under appropriate sub-headings and the appropriateness and utility of the output is discussed;
- Effects and Impact: The use of outputs and the results generated by the Sub-programme. This section also describes impact to the extent possible, including the result of the field projects associated with the Sub-programme;
- Outlook and Issues: The outlook for the Sub-programme and the major issues which emerge from the in-depth assessment.

CHAPTER SEVEN

FOOD AND AGRICULTURAL INDUSTRIES

Sub-Programme 2.1.2.6

Rationale

- 7.1 Even in subsistence economies, little agricultural produce is directly utilized without some degree of handling, conservation or processing. The growth of urbanization and income in developing countries necessitates the processing of an increasing share of total agricultural production. The market outlet that sustainable agro-industry provides to farmers is the most practical and effective means of departure from subsistence agriculture as well as an additional source of income and employment for the rural and urban population.
- 7.2 Agro-industries can provide a major market for primary agricultural products. The scope of the market depends on the country's level of economic development. In most developing countries, only 10-20 percent of the agricultural output undergoes industrial processing, compared with 80 percent in developed countries. There are also differences among developing countries. In low-income developing countries, with per caput annual GNP of less than US\$ 250, the per capita sale of processed foods is only one-tenth of those developing countries with per caput annual GNP of US\$ 1,000 or more.
- 7.3 "Agriculture: Toward 2000" has foreseen a doubling in the volume of processed agricultural products between 1980 and 2000. The consumption of processed food commodities, which have a high income elasticity of demand, is projected to grow at 5% per annum compared with 3% for basic staples.
- 7.4 The role of agro-industries in economic development is often underestimated. In developing countries, these industries account for about 25% of all industrial employment, compared with 10-11% in developed countries, and in terms of value contribute nearly 20% of the manufacturing output (one-third in the least developed countries). Agro-industries in developing countries are relatively labour-intensive and, therefore, are the main source of industrial employment; the number of jobs in agro-industries has been increasing at an annual rate of 6% over the last decade. Other favourable characteristics of agro-industries are: diversity in the technology used, wide-ranging scale of operation, greater potential for growth with equity participation, their suitability for women's activities and their contribution to food security and nutrition.

Objective

- 7.5 The objective of the Sub-programme is to assist member countries to develop food and agricultural products' processing through the promotion, selection, development and transfer of new and improved technologies.

- 7.6 Given the scope of the objective, the implementation strategy of the Sub-programme has emphasized the maintenance of closer links with activities covering plant and animal production, nutrition and marketing. Coordination and exchange of information is maintained with other UN agencies and related international institutions engaged in the development of agro-industries.
- 7.7 The implementation strategy has maintained a balance between: the promotion of new activities, the development of appropriate agricultural processing technologies in rural areas of developing countries, and adaptive research in selected areas with greater economic and nutritional impact in low-income countries. In recent years, the latter has included the utilization of indigenous flour for human consumption as a substitute for imported wheat or wheat products.
- 7.8 The major activities pursued by the Sub-programme have consisted of:
- Food processing and upgrading of traditional food technologies - the aim has been to enhance the shelf-life, the marketability and consumer acceptability of traditional foods as well as the development of high value-added products with export potential. It has covered such commodity groups as cereals, oil seeds, roots, tubers, plantains, nuts, fruits, vegetables, cocoa, coffee, sugar and tea;
 - Indigenous flours and composites - the effort has been mainly directed towards developing products exclusively made from indigenous flours. This also has included the food processing component of the organization-wide programme for the development of roots, tubers and plantain;
 - Apiculture development - this activity has covered the expansion and upgrading of beekeeping technologies, including the introduction of more productive European types of honey bees, improved equipment and modern management methods, honey bee disease control methods, honey and other products processing and quality control;
 - Hides and skins improvement and utilization of animal by-products - the aim has been to disseminate - through demonstration, extension and training - improved techniques for flaying, curing and preservation of hides and skins and the use of blood, bones, horns, hooves and intestines to produce marketable commodities (glue, gut, animal feed, fertilizer);
 - Natural fibres - this activity has involved the development and dissemination of primary processing techniques of natural fibres at the farm and village levels in order to improve farm-gate prices. It has also included the grading, testing and primary processing of higher priced textile raw materials, such as alpaca, cashmere, mohair, wool and high quality cotton;
 - Sericulture development - this activity has aimed to stimulate and develop improved silk production through extension and training covering all aspects of sericulture technology;
 - Application of new and emerging technologies in food and non-food processing - this line of activities covered the identification,

evaluation and transfer of recent developments in biotechnology for food production; agricultural and agro-industry residues utilization, bio-energy production and conservation; utilization of solar and renewable energy for heating and cooking; food irradiation and extrusion cooking.

- 7.9 It should be pointed out that 22 other technical Sub-programmes include minor or major components of processing and preservation which are complementary with the activities of the Sub-programme 2.1.2.6 but which are handled directly by the concerned Sub-programmes. Because of the multi-disciplinary nature of agro-industries, the activities of Sub-programme 2.1.2.6 must be seen in the light of potential interactions with the work of the other 22 technical Sub-programmes as listed below.*

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- * 2.1.2.3 Seeds: for quality control, processing, storage and distribution of improved seeds;
 - 2.1.2.4 Crop Protection: for pathology and control of post-harvest diseases;
 - 2.1.2.5 Agricultural Engineering and Prevention of Food Losses: for agro-industry engineering as well as storage, conditioning and handling equipment;
 - 2.1.3.1 Grassland, Forage and Feed Resources: for diversification of animal feeding systems through processed crops or crops residues;
 - 2.1.3.4 Dairy Development: for technologies of milk processing at village level and utilization of alternative sources of energy to power dairy processing units;
 - 2.1.3.5 Meat Development: for modular small- and medium-scale integrated meat and animal by-product industries;
 - 2.1.4.1 Research Development: for agro-industry technologies assessment and transfer;
 - 2.1.4.2 Agricultural Applications of Isotope Research and Bio-technology: for biological conversion of biomass and food preservation and processing;
 - 2.1.4.5 Environment and Energy: for bioenergy assessment and planning and decentralized energy technologies in agriculture and rural areas;
 - 2.1.5.3 Rural Institutions and Employment: for income-generating activities through rural cooperatives and women's groups;
 - 2.1.5.4 Women in Agricultural Production and Rural Development: for rural activities such as apiculture, sericulture, agricultural produce processing - through appropriate technology and management for women;
 - 2.1.5.5 Marketing: for integrated marketing models linking the supply of agricultural raw materials with credit and agro-processing activities;
 - 2.1.6.2 Nutrition Programme: for promoting consumption of traditional plant foods through appropriate handling and processing techniques;
 - 2.1.6.3 Food Quality and Standards: for quality control and safety inspection of processed foods and the preparation of Codex standards and guidelines for application on specific agro-industrial food commodities;
 - 2.1.6.4 Nutrition Policy at Country Level: for the effects of urbanization on food consumption patterns and its implications for food conservation and processing industry;

- 7.10 Contacts have been maintained with UNIDO in agro-industrial development (based on an agreement signed in 1969 and further clarified in 1972 and 1976) and with WHO, ITC-UNCTAD, GATT and IAEA (through the FAO/IAEA Joint Division).
- 7.11 An Inter-Secretariat Committee of FAO and UNIDO has met every two years to coordinate programme activities and clarify policy issues. Joint Technical Working Groups have been set up and have met regularly on specific areas of collaboration, i.e. on Food and Agricultural Product Conservation and Processing Industries, Agricultural Machinery, Fisheries Industries, Forestry Industries and the UNIDO System of Consultations.

Resources

- 7.12 During the six years (1984-89), the Regular Programme resources for the Sub-programme have amounted to approximately US\$ 5.4 million. Because of financial difficulties, there has been a relative decline in the Regular Programme resources in real terms, though in nominal terms the annual average rate of growth has been 5 percent (Table 7.1). It should be noted that 22 percent of the resources has gone to field programme support. In addition, the FAO Regional Offices have devoted annually about 30 work/months of agro-industry officers and consultants services to food and agricultural industries activities, including some travel funds.
- 7.13 In the period under review, the Sub-programme supported 250 field projects either entirely concerned with food and agricultural industries (118 projects) or with a food and agricultural product processing component (132 projects). The budgets of these projects have amounted to US\$ 96.5 million of which 44 percent has gone to Asia and the Pacific and 33 percent to Africa (Table 7.2). Out of the 250 projects, 104 projects were funded by TCP to a total value of US\$ 15.3 million; the remaining were mostly UNDP-funded projects.

* Footnote continued:

- 2.1.8.1 Global Perspective Studies: for world food and agricultural situation and perspective studies;
- 2.1.8.2 Agricultural Policy Analysis: for agro-industrial policy analysis and advice;
- 2.1.8.3 Commodity Policies and Trade: for the analysis of agro-industrial produce problems for major tradeable commodities and raw materials and the formulation of agro-industrial commodity and trade policies;
- 2.1.8.5 Agricultural Planning Assistance: for agro-industrial planning and related sector analysis at national and sub-regional levels;
- 2.2.2.4 Fish Utilization and Marketing: for the rational utilization of fishery resources through development of fish industries and reduction of post-harvest losses;
- 2.3.2.1 Development of Forest Industries: for wood energy technologies;
- 2.3.3.4 Community Forestry Development: for developing small-scale forest-based enterprises and improving wood energy programmes at the village level.

Table 7.1: Regular Programme Resources and Use by Programme Element
(1984-89)

	1984	1985	1986	1987	1988	1989*	Total
	US\$ '000						
Budget allocations	735	785	1 161	781	939	1 022	5 423
of which %:							
- Food processing and up- grading of traditional food technologies	37	30	25	21	12	13	22
- Indigenous flours and composites	5	5	5	11	7	7	7
- Apiculture	3	10	11	21	11	5	10
- Hides and skins and animal by-products	14	13	11	2	2	5	8
- Natural fibres	5	6	7	9	10	7	7
- Sericulture development	13	13	13	14	16	14	14
- Application of new and emerging technologies in food and non-food processing	4	4	9	8	13	18	10
- Field Programme support	19	19	19	14	29	31	22
Technical staff (w/m)	79	77	69	60	55	55	395

* Provisional estimates

Table 7.2: Field Component of Sub-Programme 2.1.2.6
(1984-88)

Region	Africa	Asia and the Pacific	Latin America and the Caribbean	Near East North Africa & Europe	Total
Amount (US\$ '000)	32 255	42 034	4 793	17 485	96 567
Number of Projects	84	93	26	47	250
of which:					
• Food processing and up- grading of traditional food technologies	43	43	10	20	116
• Indigenous flours and composites	1	-	1	-	2
• Apiculture	19	11	8	17	55
• Hides and skins and animal by-products	8	2	1	1	12
• Natural fibres	5	13	2	2	22
• Sericulture development	5	12	1	4	22
• Application of new and emerging technologies in food and non-food processing	3	12	3	3	21

Activities and Output

- 7.14 The overall achievements of the Sub-programme during 1984-88 are shown in Table 7.3, i.e. training activities, technical meetings, publications, direct support to member countries and assistance to agro-industry field projects. These figures exclude similar achievements under field projects. A sharp decline in the number of countries assisted during 1988 was due to financial difficulties facing the Organization.

Table 7.3: Sub-Programme Achievements
(1984-88)

	1984	1985	1986	1987	1988
Number of training activities	3	2	1	2	1
Number of trainees	50	38	22	18	10
Number of technical meetings	1	1	3	1	2
Number of participants	4	30	42	5	16
Number of publications	10	4	4	3	13
RP Direct Support:					
- number of assistance missions	31	27	29	31	16
- number of countries assisted*	43	45	46	42	30
RP Technical Backstopping:					
- number of projects *	89	94	102	156	97
- number of expert/consultants*	80	112	127	140	121

* The number of countries assisted, the number of projects and the number of expert/consultants are not additive

- 7.15 The Sub-programme pursues the priorities as established by the FAO governing bodies, namely:

- food conservation in most needy areas;
- small-scale labour intensive/low capital processing units, particularly for women's groups;
- use of indigenous materials; import substitution;

- strengthening of R and D capability; inter-country information exchange;
- medium-level training.

The Committee on Agriculture, at its Eighth Session (1985), reviewed and endorsed the actions and conclusions of the COAG Paper 85/7 "Processing of Food and Non-Food Agricultural Products". The most salient achievements of the Sub-programme are highlighted in this section.

a. Food Processing and Up-grading of Traditional Food Technologies

- 7.16 These activities cover the entire agri-food sector (post-harvest handling, storage and processing, product and process development, institution-building, training, extension and the promotion of information exchange through TCDC). More than 50 percent of the Sub-programme's work has catered for agri-food handling and processing; 55 countries were assisted in the planning, formulation and establishment of agro-industrial projects.
- 7.17 In seven countries*, improved milling technologies of indigenous grains (maize, millet and sorghum) at village level were introduced and in four countries**, village milling units were established and managed by women's groups, thereby eliminating the drudgery of hand pounding.
- 7.18 Rice milling improvement has taken a prominent place and ranged from the rehabilitation of existing rice mills (Ghana, Guinea Bissau) to the establishment of processing units in ten countries.*** Rice parboiling was introduced in several countries (Egypt, Burma, Philippines) to reduce milling losses. Work was also carried out on the development of rice husk as a source of energy.
- 7.19 Village and community based processing units for fruits and vegetables, serving both local and export markets, were developed in 23 countries.**** These units have contributed to a reduction in post-harvest losses as well as fostering artisanal processing and product preservation skills of rural entrepreneurs and women's groups. In Africa, practical training in simple methods of fruit and vegetable preservation have improved tomato, mango and citrus products for rural markets. Shelf-life of fresh fruits and vegetables has been prolonged

* Colombia, Ecuador, Ghana, Philippines, Senegal, Viet Nam, Zambia

** Burkina Faso, Gambia, Mali and Zaire

*** Burma, Chad, China, Gambia, Guinea, Guinea Bissau, Laos, Madagascar, Sierra Leone, Viet Nam

**** Barbados, Benin, Bhutan, Burkina Faso, China, Djibouti, El Salvador, Ghana, Guinea, Guinea Bissau, Guyana, Lesotho, Niger, Pakistan, Peru, Rwanda, Senegal, Sri Lanka, Thailand, Uganda, United Arab Emirates, Viet Nam and Yemen P.D.R.

by improving post-harvest handling and storage techniques in 15 countries.* Storage methods were improved by the introduction of controlled atmosphere techniques in developing countries. Assistance in date processing was given to seven countries** resulting in improved handling, processing and packaging. Advice to Bahrain resulted in the establishment of a commercial date packaging plant in that country.

- 7.20 Technical assistance given to Mozambique resulted in the consolidation of its cashew processing industry which is a vital source of foreign exchange for the country. Through a technical cooperation project in Viet Nam, a new cashew nut processing factory is under construction.
- 7.21 One regional and three national projects (Syria, Tunisia and Yugoslavia) have led to the improvement of olive processing and refining, oil conservation and quality control. Six other countries*** were assisted in improving the processing of palm oil, rape seed, and other oilseeds. The Sub-programme was instrumental in the creation of the African Oil Palm Development Association involving 11 countries, seven of which received technical missions.**** A regional network on oil palm industries was established in Latin America involving ten countries***** which has resulted in greater exchange of information on processing equipment and a substantial increase in the production of palm oil in the region.
- 7.22 Data on traditional food technologies in developing countries were collected and analyzed. This work was reviewed by an Expert Consultation on Traditional Food Processing Technologies, held in Arusha (Tanzania) in November 1986 and areas for improvement were identified. One direct result was the preparation of a Compendium of Traditional Food Processing Technologies in Africa to be published in 1989.
- 7.23 With assistance from the Sub-programme, a network on Agro-Industrial Development with initial membership of seven countries***** was established in Latin America, which made it possible to improve the shelf-life of fruits for export to Europe. Training courses in the Caribbean countries have produced educational material on small-scale

* Bangladesh, Bhutan, China, Colombia, Egypt, Democratic Republic of Korea, Korea (Republic of), Mexico, Pakistan, Sri Lanka, St. Vincent and the Grenadines, Tunisia, Viet Nam, Yemen Arab Republic and Yemen P.D.R.

** Bahrain, Egypt, India, Oman, Pakistan, Saudi Arabia and Yemen P.D.R.

*** Brazil, China, India, Sudan, Thailand and Viet Nam

**** Angola, Cameroon, Côte d'Ivoire, Ghana, Liberia, Nigeria and Zaire

***** Brazil, Colombia, Costa Rica, Ecuador, Honduras, Mexico, Nicaragua, Panama, Peru and Venezuela

***** Colombia, Costa Rica, Ecuador, Mexico, Panama, Peru and Venezuela

agro-industries. A technical study to rehabilitate the Food Research Institute of Suwon, Republic of Korea was completed in 1987. The Government has since developed plans and has committed funds for an expanded and sophisticated Research Centre.

- 7.24 In 1989, two Regional Training Workshops on Food Packaging were organized with TCP assistance, one for francophone African countries and another for Arabic speaking countries. During the period under review, the Sub-programme published 13 documents on different aspects of the agri-food industry.*

b. Indigenous Flours and Composites

- 7.25 Imported wheat has continued to replace a large proportion of indigenous cereals and other starch crops in people's diet in many developing countries, especially in sub-Saharan Africa. Trade imbalances and increasing foreign debt are more than often an undesirable consequence. FAO's composite flour programme has continued its work with research and field projects, though it is evident that in order to make a serious impact in reducing the use of imported wheat, a much broader based approach will be required.
- 7.26 An evaluation by an independent consultant of 13 completed FAO technical cooperation projects, as well as similar projects implemented by bilateral aid agencies** has confirmed the technical feasibility of composite flour but has underlined the fact that success depended on the presence of a sound economic policy framework, i.e. appropriate price structure for local produce and a wheat import policy which does not run counter to the interests of local producers and processors.

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- * . Design and Operation of Cold Stores in Developing Countries (AGS Bulletin No. 19/2 - 1985, E F S)
 . Small-Scale Cane Processing and Residue Utilization (AGS Bulletin No. 39 - 1985)
 . Fruit Juice Processing (AGS Bulletin No. 13 - 1986)
 . Rice Testing Methods and Equipment (AGS Bulletin No. 18 - 1986)
 . Rice Processing Machines (AGS Bulletin No. 37 - 1986)
 . Proceedings of the Expert Consultation on Upgrading Traditional Food Technologies (Two volumes - 1987)
 . Food Losses Prevention in Perishable Crops (AGS Bulletin No. 43 - 1988)
 . Artisanal Processing and Storage of Fruits and Vegetables (1988)
 . Traditional Post-harvest Technology of Perishable Tropical Staples (AGS Bulletin No. 59 - 1988)
 . Tomato Preservation: Three Techniques for Artisanal Processing (1988)
 . Rice Milling Equipment and Maintenance (1988)
 . Manual on Black and Green Table Olive Processing (1989)
 . Compendium on Traditional Food Technologies (1989)

- ** GTC/FRG, USAID, ODA/UK, IDRC/Canada, Netherlands, Australia and Italy

- 7.27 Recent work on wheatless bread which can be made from barley, cassava, maize, millet, rice, sago or sorghum has proved very promising. Legume flours were added when additional protein was required. A successful Press Conference, held recently at FAO Headquarters, has generated a flood of requests for more technical information and for country projects. It is expected that the demand for this new technology will increase substantially in the coming years. Three publications have been issued on this subject by the Sub-programme.*
- 7.28 The Sub-programme has also emphasised the processing of local cereals, legumes and roots and tubers into flour as foods for the rural populations. Belize was assisted in developing techniques for the use of banana flour and other banana products. Similarly, women's groups in four African countries** were assisted in improving the handling and processing of cassava, maize and other indigenous grains, thereby contributing to food security at the village level.

c. Apiculture

- 7.29 The productivity of traditional apiculture as practised in most developing countries is low. By upgrading beekeeping technology the Sub-programme has contributed to rural employment, especially for women and with modest investment the income and nutritional status of the rural population has increased. Pollination has improved, resulting in higher crop yields. Other achievements of the Sub-programme have been the introduction and breeding of European-type honeybees under a wide range of ecological conditions, the production and packaging of better quality honey, beeswax, royal jelly and pollen, and the strengthening of national apiculture centres through research and training.
- 7.30 During the period under review, 41 countries*** received assistance in training, research, experimentation and extension related to bee breeding and management (e.g. queen bee rearing techniques including artificial insemination), pest and disease control, establishment of apiculture units, product packaging and marketing. In Latin America and the Caribbean, the Sub-programme helped control the spread of African bees through new management methods and five countries were assisted

* . Composite flour processing and utilization (Brochure 1985)
 . Review of the barriers to indigenous flours development in Africa (1987)
 . Bread without Wheat (New Scientist - 28 April 1988)

** Burkina Faso, Burundi, Sierra Leone and Zaire

*** Afghanistan, Algeria, Benin, Brazil, Burkina Faso, Burma, Cape Verde, Cuba, Djibouti, Egypt, El Salvador, Ethiopia, Gabon, Ghana, Guinea, Guinea Bissau, Guyana, Honduras, India, Indonesia, Iran, Iraq, Kuwait, Lebanon, Libya, Madagascar, Maldives, Mali, Mauritius, Mexico, Morocco, Mozambique, Pakistan, Peru, Republic of Korea, Sao Tomé and Príncipe, Saudi Arabia, Seychelles, Sudan, Turkey and Viet Nam

through technical cooperation projects.* In Africa, good results were achieved through demonstration, extension, applied research and the rehabilitation of national apiculture centres. In Asia and the Pacific, projects succeeded in establishing and strengthening national apiculture centres. In the Near East Region, good results were achieved in the control of honeybee diseases and a sub-regional project assisted Arab countries to improve the technical capabilities of their beekeepers. Since 1985, the Sub-programme has published 10 technical documents and manuals on the subject of apiculture.**

d. Hides and Skins and Animal By-products

- 7.31 Despite the high density of livestock, a number of developing countries are net importers of leather and leather products and more than 50 percent of their local hides and skins, as well as other animal by-products are wasted due to lack of technical know-how and proper economic exploitation.
- 7.32 In this area, assistance was provided to ten countries.*** For example, a project in Zambia trained 352 local personnel in the slaughtering, flaying, fleshing, curing and preservation of hides and skins. Correct techniques were propagated and demonstrated through radio and television programmes. A grading system was introduced, standards established and legislation drafted to regulate the trade. Good results were also achieved in animal by-products; the main abattoirs in the country now process blood and tallow which are sold to the private sector to be used for the manufacture of blood meal and soap.
- 7.33 Similar results were obtained in a project in Tanzania where the recovered quantities increased by 50 percent while the value rose by over 152 percent for goat and sheep skins, and by 200 percent for cattle hides. The increased revenue was entirely due to the introduction of the wet salting technique by the project for the curing of hides and

* Brazil, El Salvador, Guyana, Honduras and Mexico

** . Tropical and Sub-Tropical Beekeeping (AGS Bulletin No. 68 - 1986)
 . Beekeeping in Asia (AGS Bulletin No. 68/4 - 1987)
 . Honeybee Diseases and Enemies in Asia (AGS Bulletin No. 68/5 - 1987)
 . Bibliographical Review of Honeybee Mites and their Control (AGS Bulletin No. 68/6 - 1987)
 . Honeybee Varroa Mite Disease (including cassettes and explanatory booklet, E, F, 1988)
 . Proceedings of the Workshop on Parasite Bee Mites and their Control (1989)
 . Beekeeping in Latin America (AGS Bulletin 1989)
 . Beekeeping in Africa (AGS Bulletin 1989)
 . Quality Control of Honey and Beeswax (AGS Bulletin 1989)
 . Manual on Practical Beekeeping in Latin America (1989)

*** Botswana, Ethiopia, India, Jordan, the Philippines, Qatar, Somalia, Tanzania, Turkey and Zambia

skins. A biogas unit completed at one of the slaughterhouses demonstrated the use of abattoir waste for the generation of heat and light and for keeping the surroundings clean.

- 7.34 Assistance was given to 12 countries* through advisory missions. The missions to Mexico, the South Pacific, the Caribbean and the Gulf countries resulted in establishing the potential for developing shark by-products including skins for shagreen and exotic leather, edible gelatine and shark liver oil. A video training kit and three technical documents were produced.**

e. Natural Fibres

- 7.35 The thrust of the Sub-programme has been on the scouring, grading, testing and processing of wool, mohair, alpaca, cashmere, cotton and jute. Labour-intensive small-scale or cottage industries, requiring relatively low capital investment, were developed in Lesotho based on wool and mohair, in Bangladesh using natural dyes on cotton and in Peru using alpaca. These industries assisted both by Regular Programme and field projects (e.g. Burma, Chile, China, Egypt, India, Lesotho and Viet Nam) have mainly benefited rural women.
- 7.36 In Pakistan, two successive UNDP/FAO projects introduced a cotton-grading and marketing system which, through guaranteed prices for graded seed cotton, has raised the incomes of the producers by 15 percent. As a result, private industry has re-introduced cotton pre- and post-ginning cleaning and has assisted in the training of cotton graders. This success has highlighted the need for upgrading the entire cotton industry of Pakistan from breeding to manufacturing and has led to a loan of US\$ 80 million by the Asian Development Bank.
- 7.37 Support was given to several developing countries in reorganizing and strengthening their institutions, e.g. to the Jute Research Institute of Bangladesh in natural fibres research and development; to the Shandong Cotton Research Centre and Mitzi Experimental Station of China; to the Cotton Arbitration and Testing Organization of Egypt; to the Cotton Export Corporation of Pakistan; to the Cotton Authority of Tanzania and to Nha No Cotton Research Station of Viet Nam. A regional project on jute and kenaf development involving Bangladesh, India, Nepal and Thailand is pending. Two studies were published on the handling and processing natural fibres.***

* Botswana, China, Egypt, Gambia, Ghana, Lesotho, Malawi, Qatar, Senegal, Sierra Leone, Yemen P.D.R. and Zimbabwe

** . Video training kit on preparation and processing of hides and skins (1985)
 . Economics of animal by-products (1988)
 . Handbook on rural use of animal by-products (1989)
 . Hides and skins improvement in developing countries (AGS Bulletin No. 67 - 1989)

*** . Handling, Grading and Disposal of Wool (AGS Bulletin No. 55 - 1985)
 . The Retting of Jute (AGS Bulletin No. 60 - 1987)

f. Sericulture Development

- 7.38 The Sub-programme has been particularly active in the development of sericulture as improvements in the production and processing of natural silk can bring high returns to small farmers, particularly to rural women. The results of the Sub-programme have included improvements in mulberry cultivation, silkworm breeding, cocoon production and disease control, silkworm egg production and silk reeling, as well as training and extension in processing up to finished fabric.
- 7.39 Assistance in silk production was provided to 15 countries.* Through a project in Sri Lanka, national cocoon production was increased from 12 to 52 tons; a new variety of silkworm was bred for cool areas and silk production was increased from less than 1 ton to an average of 3 to 4 tons annually. Twelve technical officers were trained overseas, 167 technicians trained locally and 214 farmers received on-the-job training. As a result of Regular Programme missions to Africa, a bilateral donor in cooperation with FAO, will distribute improved mulberry saplings to African countries for adaptability to local conditions.
- 7.40 Five consecutive annual training courses on all aspects of sericulture were organized by the Sub-programme with UNDP funding at the Regional Sericulture Training Centre at Guangzhou, China. The TCDC and institutional network activities of the Centre have also received direct support from the Sub-programme. Training materials and manuals were produced and 97 participants from 17 countries were trained at the Centre. For advanced studies, the Sub-programme sponsored a course at the Kyung Pook National University, Republic of Korea, which offers M.Sc. and Ph.D. degrees in sericulture. Five manuals on sericulture were prepared.** Five video tapes on mulberry cultivation, silkworm egg production, silkworm rearing, silkworm diseases and cocoon drying were prepared and reproduced and are available for training purposes. A set of 100 slides on the same subjects has also been prepared.

g. Application of New and Emerging Technologies in Food and Non-food Processing

- 7.41 This component of the Sub-programme deals with the introduction of the latest available applicable technologies into rural food and non-food agro-industrial activities in developing countries. The focus has been on: (i) energy production and conservation, (ii) biotechnology in food and non-food processing, and (iii) agricultural residues and animal waste utilization.

* China, Colombia, Egypt, Kenya, Madagascar, Morocco, Nepal, Pakistan, the Philippines, Republic of Korea, Sri Lanka, Thailand, Tunisia, Turkey and Viet Nam

** . Manual on Mulberry Cultivation (1988)
 . Manual on Silkworm Rearing (1988)
 . Manual on Silkworm Diseases (1989)
 . Manual on Silkworm Egg Production (1989)
 . Manual on Silkworm Training (1989)

- 7.42 Energy production and conservation: Agro-industry is a major user of energy. Activities in this area include the application of low-energy processing ~~methods~~ such as pickling and salting, and the utilization of alternative sources of energy subject to their technical and economic feasibility. For instance, rice husk fired boilers were installed in a project in Burma. Extraction equipment for essential oils and aromatic plants in Nepal was fuelled by the plant residues. A publication on Producergas was issued.* Solar drying of fruits and vegetables at the village level was completed in four countries.** The Proceedings of an Expert Consultation on Sun Drying was published.***
- 7.43 Biotechnology in food and non-food processing: The role of micro-organisms in agro-industries is a vast one. Breadmaking, pickling, fermented food and also non-food uses such as retting, biogas and effluent treatment are beneficial uses of microbes. On the other hand, food spoilage due to improper storage or processing is caused by micro-organisms and adequate measures are required to prevent harmful effects. Thus, microbial processes form part and parcel of the Sub-programme. Application of new techniques in genetic engineering, molecular cell technology and tissue culture, may open ways and means for an increased and more efficient use of microbes in agro-processing. There is a vast ongoing research activity in this field, mainly promoted and largely sponsored by transnational corporations, which could have a considerable impact on agriculture, agro-industry and renewable energy sources. The Sub-programme has concentrated on identifying applications of appropriate biotechnology that could yield measurable results.
- 7.44 The Joint FAO/IAEA Research Coordination Meeting held in Dubrovnik, Yugoslavia in 1986, analyzed the factors influencing the Utilization of Food Irradiation Processes and, in the same year, the International Consultation Group on Food Irradiation held in Ottawa, Canada, discussed the marketing and public relation issues of food irradiation. The Sub-programme played an active role in the preparation and implementation of both meetings. In 1987, a field mission to the Caribbean countries examined the possibility of using food irradiation as a replacement for ethylene dibromide fumigation for fruit disinfestation.
- 7.45 The Sub-programme cooperated in the preparation and organization of the International Conference on the Acceptance, Control of and Trade in Irradiated Foods which was sponsored by FAO, IAEA, WHO and ITC/UNCTAD/GATT in Geneva, Switzerland, in December 1988. Through the FAO Standing Committee on Radiation Effects, the Sub-programme assisted in preparing guidelines on the role of FAO in radiation effects resulting from radio-nuclide contamination of food and agricultural products. This issue became crucial after the Chernobyl nuclear accident.

* . Producergas Technology for Rural Applications (AGS Bulletin No. 61 - 1985)

** Burkina Faso, Djibouti, Ghana and Niger

*** Proceedings of the Expert Consultation on Planning the Development of Sun-drying Techniques in Africa (1985, E.F.)

- 7.46 National food research institutes of four developing countries were assisted in research on new technologies for food conservation and processing.* An examination is underway to explore the possibility of introducing Asian fermentation techniques into African countries. An FAO ethnobotanic survey revealed that a number of items from tropical rainforests, including pharmaceuticals, pigments, biocides, gums, perfumes and others, could be developed to benefit local people.
- 7.47 Residue utilization: Agricultural and agro-industrial activities frequently produce residues that could be utilized alternatively for animal feed, fertilizer or energy. The work of the Sub-programme has increased awareness of improved residue utilization by publishing a Directory of Institutions, Compendium of Technologies and a Bibliography. It has further been instrumental in inserting residue utilization components in existing food processing projects. For instance, the extraction of rice bran oil and other rice by-products utilization formed an integral part of projects in India and Laos. Special attention to olive residues was given to olive projects in Yugoslavia, Tunisia and to a Regional Project. Bagasse was intensively researched as a resource material in a Brazilian project. A publication on "Rural Use of Lignocellulosic Residues" was issued.**
- 7.48 A project on animal waste management and utilization in Singapore was successful in solving the problem of disposal of solid wastes and environmental pollution caused by pig wastes formerly discharged into island estuaries and small streams. Development activities were concentrated on the evaluation of pig farm systems which combined waste treatment and resource recovery. Another successful project in Malaysia (Animal Waste Management and Pollution Control) provided the Government with a comprehensive plan to take the country's pig farming into the year 2000 with due consideration of environmental and social constraints.
- 7.49 In addition to the major activities in food and non-food processing, the Sub-programme has also dealt with less common requests such as development of minor export crops (mainly spices) in Sri Lanka, establishment of an animal feed mill in Bhutan, rubber processing in Papua New Guinea and Viet Nam, and the extraction of essential oils and aromatic plants in Nepal.

h. Agro-industrial Planning, Programming and Investment Projects Preparation

- 7.50 In developing countries, a greater recognition of agro-industries is leading governments to formulate agricultural plans with an agro-industrial perspective. This includes specific objectives of locating

* . The Food Irradiation Centre and Vegetable Research Centre and the South China Tropical Crop Testing Centre;
 . The Food Technology Centre of Seoul, Republic of Korea;
 . The Horticultural Research Centre of Colombo, Sri Lanka;
 . The Food Research Centre of Shambat, Sudan

** Rural Use of Lignocellulosic Residues, 1989

agro-based industries in rural rather than only in urban areas, as the economic and social disadvantages of large urban centres are becoming more evident to both governments and industries. Another trend is the recognition of the competence of transnational firms in agro-industrial development and the potential advantages of entering into joint ventures with them.

- 7.51 During the period under review the Sub-programme, in cooperation with the Policy Analysis Division, carried out several activities in this field of work. Support was provided to Bolivia in planning and programming which led to agro-industrial development of the Yungas de la Paz area. In Algeria, similar results were obtained by the preparation of an agro-food development programme. With the assistance of UNDP/FAO projects, agro-industrial development was integrated in the agricultural development plans of Afghanistan, Mauritius and Nicaragua. In particular, the Nicaragua project conducted a diagnostic survey of the agro-industrial sector, which resulted in the preparation of a strategic framework for its development and the formulation of specific agro-industry policy recommendations for sugar, coffee, milk, meat, cotton, citrus, animal feeds and vegetable oil. In Mexico, an FAO-executed project, financed by the Mexican Government, has contributed to the establishment of a planning system for national agro-industrial development through intensive training and extension at different levels, including "egido" farmers owning small agro-industries in rural areas. Since 1980, the project has trained some 8,000 staff from public sector organizations and about 11,000 persons from the private sector. During recent years, the project has been cooperating with FAO in assisting other countries in the region.

Effects and Impact

- 7.52 Considering the diversity of the disciplines and sub-sectors covered by the Sub-programme, the effects and impact of its work have been grouped under six headings:
- (i) Contribution to Rural Development
- 7.53 A large number of activities under the Sub-programme have contributed to rural development by assisting member countries to expand the volume of marketable products to increase food availability for improved nutrition in rural areas, to raise the value-added of primary agricultural products and to generate additional employment. For example, a project in Burundi has trained over 100 rural women in the processing of cassava into gari for local consumption through the use of machinery supplied by the project. In Turkey, a Regular Programme mission was followed by a TCP project on apiculture training in Erzurum Province, in which the equipment component was provided by the World Bank.
- 7.54 Field projects in support of rice processing and the upgrading of indigenous grain milling technologies have contributed to an increased supply of acceptable food products for rural and urban populations in the beneficiary countries. In Sierra Leone, improved drying techniques and the introduction of rice milling equipment have increased both the output of milled rice as well as farmers' incomes. A successful FAO sponsored training institute for rice processing in Egypt supported by three international donors has prompted the host country to request its change into an International Training Centre. Projects or project

components concerned with fruit and vegetable processing and canning have stimulated the production of cash crops by small farmers in rural areas. For example, in a Lesotho village, women were taught and encouraged to grow asparagus. This has led to a modern commercial canning factory currently in operation and which is exporting canned produce to EEC countries. In Uganda, a local cooperative was assisted through TCP in upgrading its pineapple processing facilities, resulting in increased product output and quality. All these activities have contributed to the generation of new employment and additional income, as well as opening internal and export markets for food products.

(ii) Import Substitution of Processed Agricultural Products

- 7.55 Activities concerning indigenous flours and composites with the objective of reducing dependence on imported wheat flour have not proved as effective as originally expected. Research work tended to stretch over a period of many years and was mainly focussed on the technical problems of the baking industry using indigenous flours. However, as mentioned in paragraph 7.26, the use of local grain flours as a substitute for imported wheat flour, though technically feasible and acceptable, has not proved successful because domestic supplies of local grains were not sufficient or because of the lack of incentive due to the absence of adequate pricing policies.
- 7.56 By initiating local processing activities, the Sub-programme has without doubt contributed to import substitution, though the effect is difficult to quantify. Improved and increased use of hides and skins has led to less need for importation of leather goods. Likewise, local fruit and vegetable canning will have reduced imports. The start of local breeding of silkworm eggs has not only reduced reliance on outside sources, but has facilitated the access to this production requirement for silk producers.

(iii) Increasing Production and Income Earning

- 7.57 The apiculture and sericulture activities requiring only modest investments have generated tangible results in beneficiary countries. The field projects in these sub-sectors have increased the production of both bee products and silk, as well as generating employment and income, in particular for rural women. For instance, in Sri Lanka fresh cocoon yields were increased from 200 to 500 kg per ha through a FAO-assisted project. In Mali, a Regular Programme consultancy in apiculture development led to TCP assistance followed by a UNDP funded project. This, in turn, has generated interest from a bilateral donor for additional assistance. This multiplier effect will ensure increased incomes for a much larger segment of the population than the Sub-programme would have been able to achieve on its own. Other examples where processing activities have induced increased production and income are found in hides and skins improvement, cotton grading and marketing, and fruits and vegetable canning.

(iv) Improving Market Value of Farm Produce

- 7.58 To a large extent, the activities of the Sub-programme have helped to improve the quality of agricultural produce, to facilitate the access of the product to large and stable markets and to reduce losses. These aspects have been particularly noticeable in the case of projects for upgrading milling technologies, improved processing of dates, edible oil

and cashew, improving storage facilities and packaging methods and upgrading the primary processing of natural fibres and hides and skins. For example, a UNDP/FAO project in Syria has contributed significantly to better wool quality and price through improvements in processing technology. Other projects in Burma, Papua New Guinea and Viet Nam have generated appreciable effects on their rubber industry by improving processing techniques. Projects in Pakistan, in particular, proved very successful in the reorganization and modernization of the entire cotton industry. As a result of a hides and skins improvement project in Zambia, both the availability and price of raw hides and skins increased substantially.

(v) Improved Resource Utilization

- 7.59 Assistance projects related to the handling and processing of hides, skins and animal by-products in Ethiopia, India, Kenya, Pakistan, Tanzania, Turkey and Zambia have contributed significantly to the upgrading of a previously neglected resource. In Zambia, as a result of assistance provided by the project to the private sector, a specific type of bark, not previously utilized, was collected and sold for vegetable tanning to a company, which established a processing unit for cutting and crushing it; this helped to reduce imports of tanning materials as well as to contribute to the expansion of the tanning industry.
- 7.60 The concept of making more and better use of available resources has been reflected in the Sub-programme's work on agricultural residues in cooperation with other Sub-programmes. The emphasis has been on enlarging the information base and making it available to potential users. Where feasible and practical, residue utilization with special reference to increasing energy resources has been incorporated in existing projects.

(vi) Technological Improvement and Adaptation of New Technologies

- 7.61 Modern processing techniques are often fundamentally similar to the traditional ones, except their effectiveness is usually higher and the scale of operation larger. A common target of many projects supported by the Sub-programme has been to upgrade or modernize traditional technologies, without resorting to expensive technology. Tangible results have been achieved in food processing at village level, drying of perishables and milling of grains. In Burkina Faso and Ghana, improved technologies for drying fruits, vegetables and root crops have been introduced, thereby reducing losses due to seasonal gluts. In Burkina Faso, village tomato processing initiated by TCP, has led to similar projects in the country funded by bilateral aid. In Tonga, a small-scale unit was established to process snack foods using local raw material. In a particular aspect of a wool project in Lesotho, women members improved their production facilities by constructing five workshop buildings by themselves, thereby saving more than half the cost as quoted by a local contractor.
- 7.62 The research and development activities sponsored by the Sub-programme have shown that there are no severe obstacles to the transfer and application of advanced technologies to developing countries. However, success is dependent on the organizational and managerial capability of the recipient country and the commercial viability of the agro-industry output. In this connection, the Sub-programme has organized the exchange of information on improved technologies amongst member countries.

Outlook and Issues

- 7.63 In developing countries, there is an increased demand for assistance in integrated agro-industries development. This is caused by the need to improve the nutritional status of the rural population and to satisfy the rising demand for convenience foods from the growing urban population. Other contributing factors are the increased use of indigenous crops to replace imports and to move from subsistence to market agriculture. For these purposes, agro-industry serves as a major catalyst for agricultural development.
- 7.64 FAO's policy in the development of agro-industries has several dimensions, i.e. to make agro-processing technology available to developing countries, to promote priorities in adaptive research and to encourage the formulation of agro-industrial plans, policies and programmes as an integral part of agricultural sector planning.
- 7.65 In view of the limited absorptive capacity of many rural groups for external inputs in agro-industrial development and their difficulties in providing the necessary local inputs and raw materials, future FAO assistance should place more emphasis on arrangements for vertical integration. At the same time, the programmes for agro-industrial development need to be horizontally integrated with national and regional industrial development plans. Improved sectoral and area planning techniques would help achieve such integration, as most agro-industrial undertakings need to be formulated on the basis of geographic areas to ensure easy access to raw materials and other local resources.
- 7.66 National policy and planning for agro-industries should be modulated to bring together "top-down" and "bottom-up" planning processes with greater involvement of private entrepreneurs and farmers. Particular attention needs to be given to the removal of constraints related to physical infrastructure in rural areas and in establishing explicit links between agricultural production, marketing, handling and processing activities, including the selection of storage and distribution systems for finished products. Other aspects requiring greater emphasis are the training of entrepreneurs, agro-industry engineering, credit organization and improving export channels.
- 7.67 A key feature of future FAO policy for the development of agro-industries is the recognition that access to technologies is a multi-faceted phenomenon. Access could be accomplished more effectively through public domain research information in scientific and technical disciplines, development of indigenous research, joint ventures with private firms and technology imports. Future assistance should, therefore, take full account of this diversity of sources.
- 7.68 In recent years, FAO's Governing Bodies have recognized the potential for developing countries of investment by transnational corporations (TNCs). The predominance of TNCs in world agro-business is a fact of life. Furthermore, the growth of investment by TNCs in new technologies - especially biotechnology - and the likelihood that some of this investment could take place in developing countries, are other positive features. While TNC investment may provide significant economic advantages for the developing countries, it also confronts them with policy dilemmas. These considerations should be adequately incorporated in FAO's future policy of assistance to member countries.

- 7.69 To increase the effectiveness of FAO's future assistance in the development of food and agricultural industries, the Sub-programme needs to address, in the medium-term, two major problems. The first problem is the effective coordination of FAO's total resources devoted to agro-industry development. As stated earlier, at least 22 other Sub-programmes are to a greater or lesser extent involved in various aspects of agro-industries. The heterogeneity and complexity of food and agricultural industries have, in the past, justified the closer integration of each agro-industry branch with its respective production sub-sector, e.g. dairy and meat industry with animal production, forestry industry with forestry production, fish processing and preservation with fisheries, etc. However, it should be feasible, without any significant structural alteration, to establish greater coordination of activities under the existing technical units, e.g. through an inter-departmental working group on agro-industries. Such a mechanism for coordination could facilitate a more effective service by FAO to developing countries in their emerging agro-industrial problems.
- 7.70 The second problem is to strengthen coordination and cooperation with other UN agencies and with relevant transnational corporations interested in agro-business development in developing countries. The multidisciplinary nature of the tasks in assisting Member Nations in agro-industry is not entirely consistent with the formal division of work between agencies, which follows the traditional division by economic sectors. Considering the natural continuum that exists in the production/handling/processing/marketing/consumption chain, there are numerous operational areas common to FAO and UNIDO. As pointed out earlier, an Inter-agency Agreement between the two agencies was established, several Joint Technical Working Groups for specific areas of work were created and broad guidelines for cooperation were formulated. The primary mechanism for cooperation between FAO and UNIDO is the Inter-secretariat Committee, which meets annually and oversees the work carried out by the Joint Technical Working Groups. Over the 20 years of operation of the Inter-agency Agreement, a number of successful cooperative activities have been carried out and many areas of overlapping have been identified. However, this formal coordination mechanism has not led to joint programmes and projects in resolving overlapping activities.
- 7.71 In view of the new challenges that FAO would face in assisting Member Nations in their agro-industrial development, it would seem necessary to up-grade and strengthen future cooperation between FAO and UNIDO through an increasing number of joint programmes and projects and through increased flows of information exchange. In the common interest of Member Nations, the overlaps need to be resolved and joint activities promoted that would take into account, when necessary, other potential partners such as the International Trade Centre and the private sector.

CHAPTER EIGHT

SITUATION AND OUTLOOK

Sub-Programme 2.1.7.2

Rationale

- 8.1 The Constitution of FAO highlights the priority function of the Organization in collecting, analyzing, interpreting and disseminating information related to nutrition, food and agriculture. As the only inter-governmental organization specifically concerned with food and agriculture on a global scale, FAO has a unique role as an international centre of information in the field of its competence.
- 8.2 In order to serve the needs of its Member Nations and the public as well as other organizations within and outside the UN system, the Organization compiles, analyses and disseminates information on food and agriculture in a continuing and systematic manner. Apart from serving these external needs, the availability of timely, reliable and comprehensive information within FAO underpins its capacity for discharging the wide-ranging substantive functions, from harmonization of policies and programmes among the member governments to provision of technical support and cooperation with individual countries and other international organizations. In all these functions, the scope and quality of information are a critical determinant of the Organization's capacity for in-depth analysis of problems, for the formulation of technically sound and appropriate solutions, and for provision of advice to member countries.
- 8.3 Given the diversity of functions and the broad scope of subjects to be covered at global, regional and national levels, FAO's information activities have been both extensive and diverse in scope as well as closely linked to technical programmes. They comprise the basic, organization-wide statistical system covering the production, consumption and trade of food and agricultural products (including fisheries and forestry products), a large number of specialized statistical and data systems more narrowly focussed on particular technical subjects, as well as qualitative information on policy and institutional aspects and bibliographical and reference materials.
- 8.4 Essential and important as it is, the collection and analysis of information has many complex aspects. Information that is reliable and useful is generally scarce and costly to assemble. Even basic statistics on food and agriculture are not always available in satisfactory form in many developing countries, posing a particular problem for FAO, which must principally rely on national sources. Improving the quality of statistical information, including standardization for inter-country comparison, and its timely availability are a major concern in which FAO has been cooperating with member countries as well as other UN agencies. Frontiers of needed information are also constantly expanding in line with newly emerging issues and problems to be addressed. Not only are new data and statistics required, but the existing statistics must be of a quality to permit use for multiple application. As more detailed information is required, especially covering wider geographical areas, the organization of an information network becomes a complex task at

the international level. Furthermore, although the increasing efficiency of modern electronic data-processing methods has greatly facilitated the task of compilation and analysis of data, the organization and management of such complex information systems are also generating challenges.

- 8.5 The Programme 2.1.7 (Food and Agricultural Information and Analysis) covers most of the primary information functions of FAO, geared to meet the basic information requirements of the Organization as a whole. These include the development and operation of the FAO's main statistical systems on food and agriculture, food information and early warning system, and the situation and outlook system to monitor the status of food and agriculture in general, as well as the commodity and trade situation. The Programme provides the statistical and analytical information necessary for the formulation of appropriate food and agriculture policies and action programmes at the global, regional and national levels.

Objectives

- 8.6 Within the broad objectives of Programme 2.1.7, Sub-programme 2.1.7.2 (Situation and Outlook) is designed to fulfil one of the primary functions of the Organization, i.e., to monitor and report on the changing status and prospects of the world's food and agriculture in the context of global economic developments. Such global monitoring and analysis is essential to establish an overall framework for interpreting the evolution of food and agriculture in relation to the general economic and policy environment, sectoral and sub-sectoral changes in relation to the overall developments in food and agriculture, and for tracing patterns of change at the global, regional and national levels. As such, the information provides an essential ingredient to Member Nations, FAO and other international organizations in formulating a macro-framework for policy planning, analysis and adjustment.
- 8.7 The major emphasis has been on monitoring and reporting on the current status of food and agriculture in general, as well as on developments and prospects in commodity markets and trade, at the global, regional and national levels. In particular, the information collection and analysis on the state of food and agriculture is intended to provide not only a comprehensive assessment of the current status and prospects, but also policy-oriented analytical information regarding the effects of macro-economic and sectoral policies on food and agricultural production, trade and consumption. Similarly, monitoring and reporting on food and agricultural commodities is focussed on trends and near-term outlook in commodity markets and trade to facilitate timely action in formulating and adjusting commodity policies and strategies. The major outputs of the Sub-programme, the State of Food and Agriculture (SOFA) and the Commodity Review and Outlook (CRO), both published annually, serve as FAO's official annual reports on the current status of world food and agriculture.
- 8.8 The Sub-programme draws heavily on information collected by the major statistical systems of FAO and by outside organizations, but the two main components, the SOFA related activities and the commodity-related activities operate somewhat differently. In the former, the emphasis has been on the analysis of both quantitative and qualitative information, drawn from inside and outside the Organization: assessment of the situation and near-term prospects for the regional

and global economy is largely based on external sources. Under the commodity related activities, the monitoring function involves collection and storage of a substantial amount of current information - although the FAO statistical information series are also used - in order to facilitate current assessment and short-term projections on commodity markets and trade. The commodity information is used for the production of monitoring assessment reports on selected commodities under the Sub-programme, as well as for analytical work, such as various studies and reports submitted to the FAO inter-governmental commodity groups, under Sub-programme 2.1.8.3 (Commodity Policies and Trade) and for contributing to the Global Information and Early Warning System under Sub-programme 2.1.7.3. Throughout the Sub-programme activities, efforts have been directed at improving the coverage and quality of information and its use in enhancing the analytical content of reports and studies.

- 8.9 The major components of the Sub-programme over the last three biennia (1984-89) have been:
- (a) global reporting on the state of food and agriculture - this is focussed on the preparation and issuing of scheduled documents on the subject to the Governing Bodies, and especially the annual State of Food and Agriculture (SOFA) publication. The SOFA publication serves as the primary FAO reporting and assessment on the global situation of food and agriculture, not only to the Governing Bodies but also to other international organizations and the public at large. It also provides the basis for FAO's contribution on the subject to the World Food Council (WFC) and other UN agencies;
 - (b) monitoring and assessment of food and agriculture at national and regional levels - this is aimed at maintaining and improving systematic information at the regional and country level, covering statistical, factual, bibliographical and analytical information related to food and agriculture development. Apart from drawing on country and sector analyses from both inside and outside FAO, efforts have been made to improve broader policy-oriented information, such as national agricultural development plans, resources allocation/flows to agriculture, and development experience on selected issues. This information is used for the regional analysis in SOFA and complements FAO's basic statistical information in providing for the Organization's policy and planning work;
 - (c) work on the Commodity Review and Outlook - this covers the publication of the annual document as FAO's main report and analysis of the global food and agricultural commodity and trade developments. The publication provides an up-to-date assessment of the current situation and short-term outlook for the main, internationally traded commodities and markets;
 - (d) monitoring of commodity and trade situations and prospects - over 80 food and agricultural commodities of significance in international trade are being monitored with regard to their production, consumption, trade, and prices through a set of specialized commodity and trade information systems, including medium-term projections. The coverage has been increasingly expanded as regards commodities of particular interest to developing countries. A number of reports are prepared on the current status of selected commodities and on topical trade-oriented commodity problems.

- 8.10 The Sub-programme, with its broad scope of coverage of topics under food and agriculture, interacts with many Programmes and Sub-programmes across the major technical programmes of FAO, especially those related to the basic statistical work and policy and planning activities. It has links with: Programme 2.1.8 (Food and Agricultural Policy) by providing data/statistics and analytical information support for substantive work on agricultural policies and planning, commodity policies and trade and world food security; Programme 2.1.5 (Nutrition) for monitoring and reporting on nutritional status and problems; Programmes 2.2.1 (Fisheries Information), 2.2.3 (Fisheries Policy), 2.3.1 (Forest Resources and Environment), 2.3.3 (Forest Investment and Institutions) on basic statistics and analytical information on fisheries and forestry development, respectively. Within the Programme 2.1.7, the Sub-programme has close links with other Sub-programmes: 2.1.7.1 (Statistical Processing and Analysis) for basic statistical information on food and agriculture; 2.1.7.3 (Food Information and Early Warning System) for current information and outlook and food situation. Because of its global scope, an inter-departmental Working Group provides advisory and technical assistance to the production of the State of Food and Agriculture. The Sub-programme also involves substantial components of publication and data-base management, for which services are provided by Programmes 5.1.1 (Public Information), 5.1.3 (Publications) and 5.2.3 (Computer Services). The activities of the Sub-programme at Headquarters are coordinated with, and complemented by, those of the Regional Offices and Joint Agricultural Divisions with UN Economic Commissions for Africa, Europe, Latin America and the Caribbean and Western Asia.

Resources

- 8.11 During the last three biennia (1984-1989), the Sub-programme was allocated a total of some US\$ 11.7 million of Regular Programme funds, with a constant share of 17 percent of the Regular Programme resources for the Programme 2.1.7 (see Table 1). However, in terms of work/years budgeted, there has been a modest decline from 66.5 work/years in 1984/85 to 62.6 in 1988/89. The 1988/89 budget represented a small increase of about 3 percent over the previous biennium, with most of the increment devoted to strengthening the national and regional assessment work and the commodity and trade monitoring activities. This trend reflects the priority given to consolidating the information and monitoring work of FAO in general, with more effort directed to improving information gathering at the regional and national levels, as well as to improving the coverage of commodity information to include non-traditional commodities.
- 8.12 Several units of the Policy Analysis Division (ESP) and the Commodities and Trade Division (ESC) are responsible for the implementation of the various components of the Sub-programme. The Situation and Outlook Service (ESPS) of ESP has the primary responsibility for the SOFA while the work on monitoring and assessment of food and agriculture at the national and regional levels is shared between ESPS, the Joint Agricultural Divisions or Regional Offices, units in Fisheries and Forestry Departments, and the four regional groups of the Policy Analysis and Planning Assistance Service (ESPP) under the overall coordination of ESPS. The ESPP groups maintain a country economic reference system which collects and compiles mainly qualitative information and documents on agricultural development policies, development plans and other development issues from within and outside FAO. ESPS is a relatively small unit with 5 professional posts,

Table 1: Sub-programme 2.1.7.2
Allocation of Regular Programme Resources
(estimated percentage for 1984-89)

Key Components	1984-85	1986-87	1988-89
1. Global reporting on the state of food and agriculture	47%	36%	24%
2. Regional and national monitoring of food and agriculture	12%	21%	28%
3. The Commodity Review and Outlook	17%	18%	17%
4. Monitoring of commodity and trade situation and prospects	24%	25%	31%
Total	100%	100%	100%
Sub-programme allocation (in US\$ '000)	3 640	3 568	4 454
(as share of Programme 2.1.7)	18%	17%	17%

including the Chief: during much of the period under review the actual staffing was three professionals, supplemented by short-term consultants. The Commodity Policy and Projection Service (ESCP) of the Commodities and Trade Division has the main responsibility for coordinating the preparation of the Commodity Review and Outlook, while the work on monitoring of the commodity and trade situation and outlook as well as reports on commodity topics involves, apart from ESCP, the Basic Foodstuffs Service (ESCB) and the Raw Materials, Tropical and Horticultural Products Service (ESCR). To extend the coverage to all commodities, the Fishery and Forestry Departments contribute an assessment of their respective commodity groupings. ESCP comprises commodity policy and trade specialists and a commodity projection group to support the Division's computer applications.

- 8.13 The Sub-programme has no field project component of its own. However, in view of its function of information collection and reporting, it maintains a close working link with a number of international and bilateral organizations. These include the International Monetary Fund (primarily for the SOFA work), the World Bank (for both SOFA and commodity and trade work), the Organization for Economic Cooperation and Development (for both), General Agreement on Tariffs and Trade and independent commodity bodies (for commodity and trade work), UN Conference on Trade and Development (for both), several units of UN Headquarters (for SOFA work), as well as the Joint Agriculture Division and the UN Regional Economic Commissions (for SOFA work).

Output

- a. global reporting on the state of food and agriculture
- 8.14 This reporting is unique among the many FAO information activities in that it constitutes the only mechanism for presenting FAO's assessment

and analysis of the overall state of world food and agriculture. It reviews developments in the food and agriculture sector in the context of the global economic, financial and trade environment, relating at the global and regional levels the changing patterns of the production, trade and consumption in food and agriculture to the macro-environment, including significant policy developments. Apart from a synthesis assessment of global performance of the sector, it also covers highlights of agricultural and food developments at the regional levels as well as an analysis of selected subjects and issues affecting the sector.

- 8.15 The SOFA reporting, carried out annually since 1947, has involved three main reports, a set of two documents submitted to the FAO Council and Conference and the main publication entitled the State of Food and Agriculture (SOFA), which has been issued in the following year as a priced publication in all five FAO working languages. The two documents submitted to the Council/Conference, also entitled "the State of Food and Agriculture", comprise, (i) the preliminary report ("Mini-SOFA") with a summary assessment of global regional food and agricultural trends for the previous year, and (ii) the supplementary report ("Mini-SOFA supplement") updating the information and analysis for the past year and presenting first estimates for the current year. The main SOFA publication contains the updated and expanded information covered in the two preceding documents and also incorporates an additional section featuring selected special topics. In recent years, the target production cycle for these reports involved the preparation of the mini-SOFA during the first half of the year, the mini-SOFA supplement by September, the preparation of the special topic section during the second half and the first months of the following year.
- 8.16 The SOFA reporting, especially the main SOFA publication, has remained a difficult task, given the wide scope of work involved in relation to the modest resources available to the unit responsible. The substance of the work is inherently complex, covering a very broad array of subjects and issues at the global and regional level, not only for the food and agriculture sector but also the macro-economic environment at the world level. The information and expertise needed for broad analysis of macro-economic and agricultural linkages at such aggregate level are limited in FAO. Furthermore, the preparation of SOFA requires not only diverse sets of information and processed data but also multi-disciplinary inputs, requiring close collaboration from various technical units. The task of obtaining, editing and integrating such heterogeneous material entails a time-consuming process.
- 8.17 Throughout the three biennia, the thrust has been to improve the SOFA reporting, particularly the main SOFA publication in three ways: (a) strengthening the analytic content, especially to strengthen diagnostic aspects and policy-orientation; (b) streamlining coverage, especially by enhancing analysis at the regional and national level, and (c) ensuring timeliness in the production of the annual SOFA publication.
- 8.18 In terms of strengthening the analytical content, some progress has been achieved, especially in highlighting the important effects of macro-economic factors and policies. Although macro-economic development has been featured for some years in the World Review section, this has become increasingly more analytical, focussed on implications on agricultural development, not only in the global assessment but also in the assessment at the regional level.

Similarly, sharper focus is given to policy-oriented issues at all levels, but especially in the regional reviews in which attempts are made to provide "comparative analysis" of countries with contrasting policies and performance patterns.

- 8.19 This progress reflects the efforts made by the ESPS. A conscious effort has been made to ensure more timely flow of information from other organizations, especially IMF, the World Bank, OECD and the European Economic Commission. Close coordination has been maintained with the regional groups of ESPP, the Joint Agricultural Divisions and Regional Offices, in deepening the analytical content of the regional review. Improved data availability has made it possible to attempt a broader and more analytical review of particular subjects - for example, on the flows of external resources to agriculture, agricultural financing and food availability. Another area where ways and means for improvement are being examined is how to assess more systematically the medium-term outlook for food and agriculture within a perspective of likely developments of the macro-economic environment.
- 8.20 Regarding improvements in the coverage, two measures have been taken. Review at the regional level was re-instated, after several years of omission, beginning with the 1984 SOFA. Since the 1985 edition, this has become a separate chapter, covering the four developing regions (Africa, Asia and the Pacific, Latin America and the Caribbean, and the Near East and North Africa) and two developed regions. The latter, for the first time, covered Eastern Europe and the U.S.S.R. (under centrally-planned economies) in 1985. Together with the expansion in the regional coverage, the content has also been strengthened with emphasis on the highlights of macro-economic developments and food and agriculture sector performance as well as assessment of issues with policy implications. Within the resources available, efforts have been made to extend the coverage further to the national level, and increasingly attention is given to selected countries and groups of countries to provide sharper focus in assessing the effects of specific policy issues. For example, the coverage of China, and more recently of India, has been expanded to separate sections in the regional review.
- 8.21 Another improvement has been to restructure the format of the SOFA. Starting with the 1986 edition, the structure comprises three main chapters, the World Review, the Regional Review, and the Special Topic. The separation of regional reviews from the global review has facilitated a clearer and more focussed presentation of assessments on the macro-economic and global issues. This change has also been accompanied by other improvements in the presentation, including the lay-out of the text, table formats and use of boxed presentations. The editorial style of text has also become increasingly concise.
- 8.22 In 1988 it was decided to merge the World Food Report (prepared by GII) and the SOFA, resulting in a greater involvement of GII in the editorial and other documentation aspects, including a greater priority to the processing of the document in GIP. In order to implement the new cycle of production, the 1987 and 1988 editions were combined into one. As a result of this innovation, SOFA reverts to its earlier role of being a Conference or Council (depending on year) background document and is published in the summer of that year. In addition, it will be updated and revised by two discussion papers finalized in July and October which will be cross referenced to it.

8.23 The recent editions of the SOFA have covered the following topics:

- 1983 - "women in developing agriculture", calling attention to the particular problems of women on farms and rural areas, as well as their contribution to food production and marketing and to rural entrepreneurship;
- 1984 - "urbanization, agriculture and food systems", covering an overview of population, urbanization and migration between 1980-2000 in developing countries, the projected consequences for agricultural production, nutrition and food marketing as well as major policy options;
- 1985 - "energy use in agricultural production", providing a summary of commercial energy use for agriculture during 1972-82, highlighting a trend for increased energy use to agriculture in developing countries, especially in Asia and the Near East regions, but with a general trend for declining production response to the incremental energy use;
 - "environmental trends in food and agriculture", outlining briefly the need to limit adverse effects of food and agricultural production on the environment and highlighting some remedial approaches being developed in the developing regions;
 - "agricultural marketing and development", with a brief summary of issues related to enhancing the role of agricultural marketing, emphasizing the importance of the related infrastructure, policy incentives and support, and improved marketing management and operations;
- 1986 - "financing agricultural development", containing an in-depth review, largely based on a sample of 35 developing countries, of the source and role of both domestic and external flow of resources to agriculture in the macro-economic context, and subsequently exploring the expanded role of the private sector, through the promotion of foreign direct investment, and the mobilization of domestic savings, especially by encouraging the development of rural financial markets;
- 1987/88 - "changing priorities for agricultural science and technology", providing a global overview on the main agricultural research work (including fisheries and forestry) in developing countries, with special emphasis on the emerging priorities and concerns; and
- 1989 - "sustainable development and natural resource management" (being completed).

8.24 The final publication of the SOFA has suffered from delays; for example, the 1985 SOFA was published in January 1987. The need for more timely publication has been long acknowledged by the staff concerned, but it proved to be an elusive goal. A number of factors have accounted for this: the priority given to the qualitative improvements (as well as the preparation of the documents to the scheduled sessions of the Governing Bodies); the various stages of technical clearances; the complex cycle of producing the documents in five languages, which involves major translation and processing work by

GIP; and the need to release the publication simultaneously in the three major languages. Since 1987 closer collaboration has been established with the Department of General Affairs and Information, initially with the transfer of final editing responsibility from ESPS to GIP, and from 1988 with further collaboration with GII on style, layout and presentation.

- 8.25 Another output under the SOFA reporting is the report on the "Current World Food Situation", which is submitted each year to the annual session of the World Food Council (WFC) and to the mid-summer session of the FAO Council in the Conference year. This report is based on the information compiled and analyzed under the SOFA reporting system, but with focus on the near-term trends and perspective in food production/supply, trade and consumption, especially in developing countries. In recent years, the report has covered global macro-economic assessment, the current level of food production/supply, trade and consumption at the world and regional levels, and external resource flows to the food and agriculture sector. In line with the thrust of the SOFA reporting, increasing emphasis is being given to broad policy-oriented issues affecting the food and agriculture sector, as well as to more systematic assessment of food availability and access. For example, the report to the Ninety-first Session of the FAO Council (June 1987) highlighted the global issues of agricultural trade negotiations and agricultural policy adjustments, and contained an analysis of food availability (based on dietary energy supply) in 27 countries facing the most severe food and nutritional problems during 1980-85.

b. monitoring and assessment of food and agriculture at national and regional levels

- 8.26 Most of the activities are of a continuing nature, involving the regional bodies, as well as the regional groups in ESPP (including the country reference system) and ESPS. The thrust of this intelligence work continues to be on broad policy/planning oriented aspects, both at the regional and national levels. Greater emphasis is being given to improving the information base, so as to strengthen the capacity for making near-term assessments for the food and agriculture sector. While the information and the assessment findings feed directly into the SOFA reporting as well as more generally to the work under Programme 2.1.8 (Food and Agriculture Policy) and related field projects, there are several specific outputs directly emerging under this component.
- 8.27 Support to FAO Regional Offices and Joint Agricultural Divisions: With respect to the Regional Offices, the major substantive support is in the preparation of reports and studies to the FAO Regional Conferences. For example: for the African Regional Conferences (Thirteenth Session in 1984) a paper on "Agricultural Price Policies in Africa" was prepared; for the Nineteenth Regional Conference for Latin America and the Caribbean (August Session in 1986) a background paper on "Food and Agricultural Situation in Latin America and the Caribbean"; for the Twentieth Regional Conference for Latin America and the Caribbean (Recife Session in 1988), a substantial contribution was provided for the preparation of the main agenda item on "Potentials for Agricultural and Rural Development in Latin America and the Caribbean"; for the Near East Regional Conference (Nineteenth Session in 1988), two papers on the state of food and agriculture for the region and on "Inter-regional Labour Mobility and Agricultural Development in the Near East Region" were produced. In addition to assistance in

monitoring and reporting on the state of food and agriculture in their regions, the collaboration with the Joint Agricultural Divisions included support (as part of the FAO input) to the implementation and mid-term review of the United Nations Plan of Action for African Economic Recovery and Development (UNPAAERD) with the Economic Commission for Africa; and the preparation and presentation of a paper on "Regional Decentralization for Agricultural Development Planning" at the 1987 session of the Economic and Social Commission for Western Asia. Support has also been provided to the UN fora, including the preparation of a background paper on the food and agricultural sector to the special session of the UN General Assembly in 1986 in connection with the establishment of the UNPAAERD and a monitoring paper in 1988 to the forthcoming UNCTAD Conference on the Least Developed Countries.

8.28 Support to FAO's special studies: This included contributions to the revision/updating of the "Agriculture: Toward 2000" and the regional studies, "African Agriculture: Next 25 Years", "Potentials for Agricultural and Rural Development in Latin America and the Caribbean", and "European Agriculture: Policy Issues and Options to 2000". The information and analysis used in the preparation of the special chapter on "financing agricultural development" were provided as an input for the updating of the document "Agriculture: Toward 2000".

8.29 Country Tables: This publication ("Country Tables - Basic data on the Agriculture Sector") provides, in tabular form, the main statistical information about individual countries and several groupings of countries in terms of region, economic orientation and development status. It was initiated in 1980 and has been updated each year. The latest edition for 1988 covers 153 countries, including such non-FAO member countries as the U.S.S.R. and the German Democratic Republic. The statistics cover the basic parameters of the agricultural and food production and trade by key commodities, and selected indicators to reflect the importance of agriculture in the total economy (e.g. share of agricultural population and trade) and the resource structure and use for agriculture (e.g. irrigated area as percentage of arable land and fertilizer use per ha of arable land). The information is based on the AGROSTAT Information System, and is directly produced as a by-product of the SOFA work. This publication has been widely disseminated, including to representatives of Member Governments, and to other UN agencies.

c. the Commodity Review and Outlook

8.30 The Commodity Review and Outlook, issued annually since 1960 as a major FAO publication, is the principal vehicle for presenting the organization's assessment on the current trends and near-term prospects (in the two years covered) on the production, consumption and trade of key food and agricultural commodities entering international trade. With the aim of providing a global synthesis on the current international situation on the commodities, the recent thrust has been to enhance the utility of the report for decision-makers and planners concerned with international commodity trade, by expanding the assessment of the near-term trends and prospects as well as elaborating the impact of macro-economic and policy-oriented developments influencing trade at the global, regional and national levels. The review covers over 20 major groups of internationally traded commodities, including cereals and other food crops, livestock products, agricultural raw materials, fisheries and forestry products.

8.31 As a well-established publication, its format has been unchanged in recent years, and comprises three parts:

- (i) General Review on the Commodity Market, Situation and International Action - this includes (a) a global review of agricultural trade for the two year period, (b) short-term prospects on international commodity markets, including an assessment of key commodities outlook for the first part of the coming year, and (c) international policy responses to trade problems, especially of developing countries, highlighting recent international developments, such as the GATT Uruguay Round;
- (ii) Review and Outlook by Commodity - this covers the production and international trade (volumes, values, related prices) for individual or groups of commodities for the two-year period and the short-term market outlook;
- (iii) Special Feature - the section has covered selected issues and topics of interest in international commodity trade, often drawing on analyses and studies produced by FAO as part of its agricultural commodity work (see para. 8.34 below).

In addition, each report contains a "synoptic review of commodity consultations" occurring in the main year covered, with a summary of major international meetings and policy-related events both in FAO and in other fora connected with commodity and international trade issues.

8.32 Over the three biennia, efforts have been made to enhance further the analytical content of the publication and to ensure its timely publication. In terms of qualitative improvements, the thrust has been, in line with the overall aims of FAO's commodity work, to provide better insight into the dynamics of international commodity markets and to examine issues related to enhancing the participation of developing countries in these markets. As a result, the coverage of macro-economic and policy aspects has been emphasized, and assessments of market outlook have been strengthened.

8.33 In particular, several analytical sections have been featured in the General Review. The 1985/86 edition provided a section on "agricultural commodity trade issues in the second half of the 1980s", which assessed the impact of global trade on national commodity policies and examined the prospects for increased agricultural commodity trade among developing countries. The 1986/87 publication included a section on "macro-economic factors affecting medium-term commodity projections", which assessed the implications of three major factors - (i) slow-down in world economic growth coupled with intensive pressure on developing countries to increase exports to service external debts, (ii) effects of protectionist policies and technological changes on demand for commodities and economic growth and (iii) instabilities in foreign exchange markets and increasing globalization of the financial markets. The last two editions (1987/88 and 1988/89) have highlighted the discussions on food and agriculture trade under the Uruguay Round of multilateral trade negotiations. The section on international policy responses to trade problems, particularly of developing countries, has increasingly focussed, since the 1985/86 edition, on broad trade-related issues, such as the problem of servicing external debt, trade liberalization measures, stabilization of markets and export earnings and the prospects and constraints in ECDC.

- 8.34 Special Topics were included in each annual edition (excluding the 1987/88 and 1988/89 editions which were affected by economy measures). Most topics analyzed were of direct interest to many developing countries. These included: an analysis of the competitiveness of key agricultural raw materials (e.g. jute, sisal, wool, cotton and rubber) vis-à-vis synthetic substitutes during the decade following the first oil crisis in 1972 (the 1983/84 edition); a review of agricultural commodity trade among developing countries (the 1984/85 edition); two studies, one dealing with international trade in dairy products (with particular attention to the effects of the international market on national dairy development in developing countries) and the other with a summary presentation of a comprehensive survey on world banana economy during 1971-84 (the 1985/86 edition) and a study on world pulse economy between 1969/71 and 1979/81 (the 1986/87 edition). The study on pulses, on which statistics are scarce, provided a systematic overview of global production, consumption and trade of these crops in view of their importance as food in many developing countries. The study underscored the need for greater priority to be given to these crops to raise productivity and to stabilize the production level to meet the demand, especially in Africa, and to exploit the opportunity, still limited but of considerable potential for trade among developing countries.
- 8.35 The special topic on agricultural trade among developing countries was a synthesis of an FAO study and an FAO expert consultation in 1983, in preparation for FAO activities promoting trade among developing countries in the context of ECDC. While noting a rapid increase in agricultural trade among developing countries during 1970 and 1980, the review underlined a relatively small scale of this trade both as a share of the world share (about 7% in 1980) and share of the total foreign trade by developing countries (about one-third in 1980-82). Apart from the intra-regional orientation with concentration on relatively few commodities, three main types of constraints were pointed out: the inadequate growth of export commodity supplies on the necessary terms; restricted access to markets due to trade barriers; and problems relating to transport and communication, including market intelligence. After surveying the ECDC promotion efforts on trade under various regional and sub-regional groupings, the review highlighted the slow progress made so far, pointing out the need for broader approaches, taking into account costs and benefits of regional self-sufficiency in food, payment and clearing arrangements, regional coordination of national agricultural policies, incentives to trade, and trade information systems. The importance of policy measures at the national level was also stressed, particularly the adoption of export oriented production policies, reduction of disincentives to production and export, resource adjustment from declining to expanding export sectors, strengthening of production and market research, and improving marketing systems.
- 8.36 Timely publication of the Commodity Review and Outlook has constituted a problem in the past, but unlike the case of the main SOFA publication, the review has usually been published within the first half of the second year indicated in the title, the worst delay having been for the 1987/88 edition which was not available in all the three languages (English, French and Spanish) until September 1988. In order to avoid repeating such a delay and to improve the timeliness in general, new arrangements have been established with GIP starting with the 1988/89 edition.

d. monitoring of commodity and trade situations and prospects

- 8.37 Under this component, basic commodity intelligence information and analysis are maintained and updated for over 80 agricultural commodities to provide a factual basis for commodity and trade activities not only under this Sub-programme but also Sub-programme 2.1.7.3 (Food Information and Early Warning System), Sub-programme 2.1.8.3 (Commodity Policies and Trade) as well as for work under Sub-programme 2.1.8.4 (World Food Security). This involves some 30 commodity specialists in the three units of the Commodity and Trade Division (the Basic Foodstuffs Service, the Raw Materials, Tropical and Horticultural Products Service and the Commodity Policy and Projections Service), working with several specialized information systems. These include: (i) cereal system covering, on both commodity and country basis, information on the production, trade, stocks and utilization of main cereals (wheat, rice and coarse grains); (ii) raw material information system, covering the production, trade and consumption of sugar and tropical products (tea, coffee, cocoa, spices, bananas and other fruits), horticultural products (rubber, wine, tobacco), and soft and hard fibres (jute, kenaf, sisal, cotton, wool, silk and raw hides and skins); (iii) oilseeds, oils and meals system on the production, trade and consumption of oilseeds, oils, fats, oil cakes and oil meals; and (iv) fibre consumption system with data from world-wide apparel fibre consumption surveys (covering over 140 countries). These systems are supplemented by a livestock products system (meat and milk), a commodity projection model, and databanks on food consumption surveys and income elasticities as well as on macro-economic indicators.
- 8.38 During the three biennia (1984-89), efforts have been directed at improvements in two areas, improvement and rationalization of the information systems on one hand, and production of reports and studies on the other, designed to provide current and near-term intelligence on commodities of particular interest to developing countries, with a view to facilitating their participation in international commodity trade. New or enhanced computerized application systems have been introduced in all of the four main systems; the fibre consumption survey system in 1983-84, the oilseeds/oils/meals system in 1984-85, the cereal system in 1985-88 and the raw materials information system in 1986. This has permitted a greater efficiency in the systematic compilation and use of the data within these systems, as well as a better functional link between these systems and other statistical databases maintained in the mainframe computer of the Organization. In particular, progress made in the cereal system, which is still under development, has led to an integration of the commodity-wise and country-wise sub-systems into one inter-linked system. This has been especially helpful in the preparation of reports and studies on selected countries (which are increasingly requested by Inter-governmental Groups on various commodities for policy-oriented reviews) and in providing the situation and outlook information to FAO's Global Information and Early Warning System. Further improvements are planned, especially in connection with the development of the FAO World Agricultural Information Centre (WAICENT) as the main corporate database. This will include standardization and comparability of data, more effective integration of the main-frame computer based systems and micro-computer based systems, especially to enhance analytical and geographical use of data.
- 8.39 Similarly, some progress has been made in improving the basic data on food and agricultural commodities, especially traditional non-cereal crops, which are of special interest to developing countries. This has been particularly the case with respect to pulses and roots and tubers,

which have been, for the first time, incorporated into FAO's medium-term commodity projection for the 1985-90 period. As noted above in para. 8.34 the improved information on pulses also made it possible to produce a special chapter on "the world pulse economy" in the 1986/87 edition of the Commodity Review and Outlook. It is now planned to cover both pulses and roots and tubers in this publication.

- 8.40 Another area to which increasing attention has been given is tropical horticultural crops, including several tropical fruits (e.g. mango, papaya, kiwi) and off-season vegetables (tomatoes, cucumbers, okra). Although international trade in many of these products has been expanding in recent years, systematic information on the global basis is as yet very scarce throughout the world. Efforts have been made since 1985 to collect and compile the necessary data in a systematic fashion in cooperation with various international organizations (such as the UNCTAD/GATT International Trade Centre, and EEC). In view of keen interest expressed by many developing member countries, a series of regional workshops have been launched under the Sub-programme 2.1.8.3 to examine the prospects for expanding export of selected tropical horticultural products, to identify the scope for cooperation among developing countries in promoting export trade and in joint marketing efforts, as well as to establish information networks. So far three such workshops have been held, for Africa in 1985 (Nairobi), for Latin America and the Caribbean in 1987 (Bogotá) and for Asia and the Pacific in 1989 (Bangkok).
- 8.41 It should be noted that statistical information and data collected under the Sub-programme are routinely fed and incorporated into the central AGROSTAT system. In particular, for such commodities as pulses, roots and tubers, dairy products and horticultural commodities, the Sub-programme forms the primary source for expanding and consolidating the databases under the AGROSTAT system. Similarly, the World Apparel Fibre Consumption Surveys remain the only source for systematic information on these fibres. The efforts to improve the internal information systems under the Sub-programme have been accompanied by close collaboration with the Statistics Division in improving the compatibility between the two information systems and in validating statistics in each system.
- 8.42 Apart from providing inputs to a wide range of commodity and trade activities under the Sub-programme 2.1.8.3, including the preparation of analytical reports and studies to the 12 Inter-governmental Groups on selected commodities (which altogether held 15 meetings during 1986/87), a range of reports and studies have been published to disseminate information relevant to better understanding of global commodity trade and marketing, especially for developing countries. These have included:
- (i) agricultural commodity projections to 1990 - these medium-term projections on global production, demand and trade for major commodities, based on the new "world food model", cover the main commodities under "basic food and feed crops", "livestock products", "tropical beverage crops and fruit", and "agricultural raw materials" with highlights on the basic foodstuffs and on the implications for food security of prospective development and production, trade and demand (published in 1986);

- (ii) periodic statistical information and compendia on various commodity and trade aspects - these contain detailed statistics which form the basis for more analytical studies and reports, and included documents and tables on: income elasticities of demand for agricultural products (in 1986), annual publication on exports of cereals by source and destination (1984-89), rice export prices (in 1986), export price index for rice (updating the index base to 1982/84, in 1988), production and trade of oils/fats and oil cakes/meals and international market price information for oilseeds, oils, fats and oil cakes (both annual*), world meat economy in figures (1985), world banana economy (1986), world statistical compendium for hides, skins, leather and leather footwear (1986) and price compendium for raw hides, skins and derived products (1986). Also issued have been the updated editions of the World Apparel Fibre Survey (in 1985, 1987 and 1989) and quarterly statistical reports on jute;
- (iii) special commodity surveys and reports - these have often been based on studies undertaken to support the work under Sub-programmes 2.1.8.3 and 2.1.8.4, generally providing an overview assessment and outlook in the medium-term setting for specific commodities (covering production, trade, consumption). The major publications included: "Structure and Characteristics of the World White Maize Economy" (1984), "Structure and Characteristics of the World Sorghum Economy" (1988), "Feed Utilization Patterns and Implications for International Trade in Grains" (1984), "Aspects of the World Feed-Livestock Economy Structure, Changes and Prospects" (1989), "The World Market for Tropical Horticultural Products" (1985), "The World Banana Economy 1970-89 - Structure, Performance and Prospects (1986)", "The World Market for Tropical Horticultural Products - Prospects and Development Requirements" (1989), "Citrus Juices - Trends and Prospects in World Production and International Trade" (1989), "Economic Significance of Tobacco" (1989), "Impact of Changing Technological and Economic Factors on Markets for Natural Industrial Fibres" (1989) and "The World Hides, Skins and Derived Products Economy - Global Analysis of Recent Developments and Future Outlook" (1986).

Effects and Impact

- 8.43 The primary activity of the Sub-programme is to monitor, assess and a disseminate information on the current status of the world's food and agriculture as well as on international trade for the main commodities. Since it is clearly beyond the limited scope of this review to make any systematic assessment of the results and effects of such broad information activities, an attempt is made below to gauge the usefulness of the activities and outputs of the Sub-programme in terms of dissemination of relevant information to the policy makers of member countries and international organizations concerned particularly with the food and agriculture sector, as well as the public at large.

* These are statistical documents supporting the publications on "Evaluation of International Market Situation and Short-term Outlook for Fats and Oils for Oil Cakes and Meals", prepared each year for the Inter-governmental Group on Oilseeds, Oils and Fat

- 8.44 SOFA: As noted before, this annual publication is unique among many FAO publications in that it covers broadly and comprehensively the food and agriculture sector as a whole, at the global and regional level within the macro-economic setting. Following the suspension of the former World Food Report, it is now the only document to report and express FAO's official assessment on the annual and near-term developments in the sector. The number of improvements made in the substance and presentation of the document, including more timely publication, have helped to enhance its value as a more coherent and analytic report on wide-ranging subjects in the food and agriculture sector. Furthermore, the SOFA publication is also unique in the international context. While it may be comparable in some respects to some other publications, like the World Development Report of the World Bank and the World Food Situation and Prospects of the US Department of Agriculture, the SOFA remains unique in terms of its comprehensive coverage of the major aspects of the sector and truly global geographical coverage. Some of the information contained in the SOFA is routinely drawn upon by other international agencies (for example, the information on external aid to agriculture is frequently cited in the World Bank's publications).
- 8.45 It is also the largest FAO publication in terms of the number of copies issued. For example, the 1987/88 SOFA was printed with over 9,000 copies, of which some 3,900 copies, (or 45%) for sale as a priced publication. The remaining copies have been distributed without charge to the member countries (some 3,500 copies) and to the main deposit libraries around the world (over 300), other international organizations, non-governmental organizations (NGOs), the press and magazine agencies, and within FAO. In terms of sales, the SOFA has maintained the largest standing order of all FAO publications (some 900 copies), and the bulk of its sales (about two-thirds) is accounted for by the market in developed countries. As an expression of interest in the publication, it may be noted that the SOFA is translated into the national languages in some countries, for example in Japan. It is also notable that the annual editions of SOFA are routinely reviewed in a number of professional journals, and that many press agencies often enquire as to the timing of the next edition of the SOFA.
- 8.46 While the SOFA is widely disseminated, and has been the most popular FAO publication, it is difficult to gauge how the information is used by readers, especially in the absence of any systematic readership survey. The past problems to prepare, translate, print and distribute the main SOFA publication on a timely basis has undoubtedly reduced its value to non-member countries and other international organizations, although the "mini-SOFA" and its "supplement" have been released to and discussed by Member Countries on a timely basis. The improvements being made in the current biennium should significantly enhance the value of the SOFA publication, especially to those that have not been on the distribution list for the "mini-SOFA" and its supplement.
- 8.47 Commodity Review and Outlook: Like the SOFA, this is also a well-established and major FAO publication, which is unique in the world, both in terms of the broad coverage of subjects (ranging from the macro-economic assessment and global agricultural trade to the near-term outlook on international trade in major agricultural commodities) and the global geographic coverage. It is also unique in the manner it highlights aspects of particular interest to developing countries. Like the SOFA, the Commodity Review and Outlook is widely disseminated. For example, the 1987/88 edition was reproduced in some

7,500 copies, of which some 4,600 copies were distributed free to the member countries, libraries and international organizations (both official and private), with some 2,900 copies for sale, including nearly 600 sold on standing orders.

- 8.48 Commodity intelligence The commodity and trade information under the Sub-programme, as noted earlier, underpins FAO's work on the subject, especially under Sub-programme 2.1.8.3, and directly contributes to the FAO's activities on food security and to the FAO's statistical databases on commodities and trade. The information work has been well appreciated by the Committee on Commodity Problems and its constituent Inter-governmental Groups on various commodities, which realize that the analytical and policy-oriented documents submitted to international meetings rely on the basic information collected under the Sub-programme. In addition, the Inter-governmental Groups usually request that documentation, particularly on the market situation and outlook, should be circulated to member governments by the secretariat even when a meeting is cancelled, as happened on several occasions lately. Similarly, the series of special commodity studies designed to render international commodity markets more transparent have been highly appreciated. The information system is also unique internationally in terms of its comprehensive coverage, i.e. geographical scope, commodities covered and the combination of databases and their analytical applications, although there are a number of organizations working with narrower specializations. On some commodities, the FAO information system is the unique source: for example, the databases on pulses, roots and tubers, and tropical horticultural products. The World Apparel Fibre Consumption Survey is another case: and this survey has been reinstituted under the Sub-programme at the specific request of several member countries, including developed countries.
- 8.49 These unique qualities of FAO's commodity intelligence work have enabled FAO to play an important role in international fora on the agricultural commodity and trade matters. FAO works closely with the major international organizations active in commodity and trade matters in exchange of information and analysis, including GATT, UNCTAD, the World Bank and OECD. During the three biennia, collaboration with GATT and UNCTAD has been particularly intensive: FAO was the only international organization invited by the GATT contracting parties to participate in the Negotiating Groups on Agriculture and Tropical Products under the Uruguay Round of multilateral trade negotiations, and has provided the GATT secretariat and interested countries with technical support. With respect to UNCTAD, support has been given to the implementation of agreements reached under UNCTAD VII, especially to revitalize some aspects of its Integrated Programme for Commodities and to prepare commodity development programmes and projects to be financed under the Common Fund.
- 8.50 FAO has also established close collaboration with various international commodity councils (wheat, sugar, coffee, cocoa, rubber, jute, olive oil), the International Rice Commission, and other commodity bodies such as the Pepper Community, the Asian and Pacific Coconut Community and the African Groundnut Council. Technical support has also been provided to some of them. For example, following the International Agreement on Jute and Jute Products in which FAO assisted through UNCTAD, technical support has been provided to the International Jute Organization (IJO) based in Dhaka, in the preparation of research and

development projects for the major jute producing countries. An important part of such FAO support to these organizations has been to help strengthen an information exchange network regarding the commodity and trade among the major producing countries.

Outlook and Issues

- 8.51 The Sub-programme performs important functions, both to discharge the constitutional mandate of FAO in the collection and dissemination of relevant and timely information on food and agriculture and to support more substantive work of the Organization in policy analysis and planning and commodity and trade policy matters. In both SOFA-related work and commodity intelligence, the three biennia have seen considerable progress in improving the quality of the two major publications and in strengthening the information systems for monitoring and assessing the current situation and the near-term outlook. It is particularly welcome that throughout the major activities under the Sub-programme, efforts have been directed to strengthening the policy-oriented aspects. In the current international climate, in which agricultural and rural development is seen increasingly in an integrated fashion within the sector and in relation to the macro-economic environment, both at the global and national levels, the Sub-programme is likely to assume greater importance. Continued attention will be needed to ensure effective follow-through, on issues related to cost-effectiveness, the salient points of which are summarized below.
- 8.52 With regard to SOFA, the main points concern the annual publication:
- (i) strengthening collaboration and inputs from various units - the preparation of SOFA requires technical inputs from various units in FAO, especially for the special topics which often cover subjects of broad and inter-disciplinary nature. While the existing arrangements under the IDWG have provided a flexible mechanism for coordination purposes, these need to be buttressed by more effective means for securing adequate staff inputs from other units in a flexible way on key technical subjects to support ESPS, perhaps formalized through joint work planning. Such improvement is particularly necessary because of the relatively small size of the ESPS staff, and especially during times of financial constraint. The IDWG arrangements should also be more effectively used in planning the SOFA preparatory work and expediting various levels of technical clearances of the draft document;
 - (ii) improving the timeliness of the main publication - the new arrangements for the preparation and publication of the SOFA among ESPS, GII and GIP represent an important improvement, aimed at substantial reduction in production time. However, this will require further advanced planning of SOFA work, closer collaboration with GII in the preparation of the draft and adherence to the priority to be given to SOFA in translation and publication by GIP; and
 - (iii) further analytical improvements - one priority area for improvement where ESPS has been able to make only limited progress is the integration of the near-term outlook, involving the development of a methodology for tracing the effects and impact of macro-economic policies on the key aspects of agriculture and rural development. This is a fairly ambitious task, requiring further time and resources, that should be pursued in a practical manner.

- 8.53 Commodity intelligence work: The Commodity Review and Outlook is a well-established publication, and there are few issues concerning the publication as such, except the attention, as for SOFA publication, to ensuring its timely production and publication. On the commodity intelligence work in general, the achievements are certainly impressive and efforts should be continued along the existing lines in improving the coverage of the commodities and in promoting more effective integration of various information systems. However, this would require additional resources, including additional computer facilities. To ensure economy in the resource use and to facilitate selective concentration, it would be important in future to establish clear targets as to how far FAO could cost-effectively pursue further expansion of its commodity intelligence work. It would also be important to strengthen the information network at the country and regional levels, whenever feasible, in cooperation with various international commodity organizations and associations so that they can take over some of the routine information collection work now performed by FAO.
- 8.54 General The work under the Sub-programme involves considerable use of computer facilities, especially the mainframe computer. It appears, however, that during recent years timely access to the mainframe computer has not been always possible, with adverse effects on the timing in completing the technical work. While some negative effects arising from the development work on major information systems (like FINSYS and PERSYS) can be expected, sufficient computer services must be provided to minimize difficulties of technical users. Wider availability of micro-computers could ease some of these difficulties. Similarly, the publication process of the SOFA and the Commodity Review and Outlook could be further rationalized within GIP. The recent steps taken on these publications are welcomed and the momentum should not be lost. With regard to distribution of these publications, since the translation work into French, Spanish and Arabic appears to be a frequent delaying factor, the possibility should be considered of issuing the publication as the document becomes ready in each language, rather than waiting for the completion in all four languages. Finally, it would be useful to conduct a readership survey of these publications from time to time: in this connection, a proposal to establish a computerized management information system on distribution and sale of FAO publications will be most relevant.

CHAPTER NINE

FISHERIES POLICY AND PLANNING

Sub-Programme 2.2.3.1

Rationale

- 9.1 Fisheries development seeks to balance the use of a biological resource, fish, with the economic and nutritional needs of man. In the 1970s, a number of countries started extending their fisheries jurisdiction over waters off their coasts up to 200 miles. This development culminated in the adoption of the UN Convention on the Law of the Sea in 1982 which, *inter alia*, formally recognized the rights of coastal States to manage and develop the fish resources in their exclusive economic zones (EEZs). The exploitation of marine fisheries resources by distant fishing fleets off developing countries' coasts made the planning and management process extremely difficult. Fisheries specialists were generally biologists with limited background in planning and economics. Because of these factors, together with the relatively small size of the fisheries sectors in many developing countries, national fisheries planning capacities were weak. However, the mechanism of regional fisheries bodies provided a framework for support and cooperation.
- 9.2 A number of factors continue to complicate fisheries development, planning and management. Many fish stocks lie within the jurisdiction of two or more States and species such as tuna are highly migratory. As with the new legal regime of the seas, fisheries management has become a national responsibility, cooperation in their utilization is essential. Fish are also a communal resource and their balanced and sustainable use requires government intervention as well as participatory responsibility by fishing families. There is a general tendency to over-fish and use excessive numbers of fishing boats. This is true both for artisanal fishing and off-shore fishing by national and distant water fleets. Other factors which complicate fisheries planning and management include the inadequacy of the data bases, especially information on the size and composition of fishing fleets, the extent of fishing effort and the socio-economics of fishing communities. Fish is also a highly perishable commodity requiring sophisticated marketing arrangements if high levels of wastage are to be avoided.
- 9.3 In response to the above challenges, the Fisheries Policy and Planning Division was created in 1980 with the aim of providing comprehensive assistance in the planning and management of fisheries, particularly in the EEZs. Planning was foreseen to include provisions for legislation and control, institutional support including marketing and investment promotion. This was a dynamic process involving a collective effort of biologists, engineers, lawyers and institutions specialists with a strong economic and social perspective.

- 9.4 In 1984, FAO organized the World Conference on Fisheries Management and Development which adopted an internationally approved Strategy. The Sub-programme played a major role in organizing six expert consultations which resulted, together with other inputs, in studies which were utilised by the 1983 session of the Committee on Fisheries (COFI) in preparing for the World Conference.*
- 9.5 The World Fisheries Conference provided the thrust for subsequent activity by the Sub-programme. For the first time, there was international recognition of several complex factors affecting fisheries at all levels and the special needs of the developing countries in reaping the benefits offered by the new legal regime of the seas.

Objectives

- 9.6 Five Programmes of Action were endorsed by the Conference. Follow-up on the first Programme of Action, "The Planning, Management and Development of Fisheries", has been a special responsibility of Programme 2.2.3 Fisheries Policy. Among the important objectives falling under the purview of the Sub-programme 2.2.3.1 are:
- (i) substituting for weak national planning capacity on an interim basis through the provision of analytical studies and direct advice, while simultaneously building up national capability in planning and the analysis of information and statistics;
 - (ii) assisting national agencies in investment project identification, preparation and appraisal while strengthening their capability;
 - (iii) encouraging a more coordinated approach to fisheries projects supported by international and bilateral development agencies;
 - (iv) providing technical support in fisheries planning and management to the network of FAO regional fisheries bodies as well as national and regional projects.
- 9.7 The themes receiving emphasis have included the need for disinvestment in fishing capacity and policy analysis for the optimal use of EEZs. Recently, the Sub-programme is giving more attention to aquaculture, in close collaboration with Sub-programme 2.2.2.2 Inland Fisheries and Aquaculture and the UNDP/FAO Aquaculture Development and Coordination Programme. As a result of the special difficulties facing Africa, where many countries have a particularly weak institutional base in fisheries, attention has been focussed on that region.

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- * - Objectives, policies and strategies for fisheries development;
- Principles and techniques for fisheries management;
- Access to and control of fisheries in EEZs;
- Special problems of small-scale fisheries;
- Special problems of small developing island States;
- International collaboration in fisheries and the role of FAO.

Resources

- 9.8 The Sub-programme covers exclusively the work of the Fishery Development Planning Service in the Fishery Policy and Planning Division. The resources committed to the Sub-programme are shown in Table 9.1. The largest single resource change in the period under review occurred as a result of the completion of the extra-budgetary Norway/FAO/EEZ Umbrella Programme in 1986. Under this Programme, advisory missions in fisheries planning, development and management had been mounted. To some extent, this aspect of the Sub-programme's work was continued using Regular Programme and FAO-TCP funding for individual countries and an officer was outposted for 18 m/m in 1986-87 to East Africa using Regular Programme resources. In 1989, Norway confirmed its willingness to provide a further US\$ 150,000 to support policy planning, management and legal advisory work.

Table 9.1: Resources devoted to Sub-Programme 2.2.3.1
Fisheries Policy and Planning

	<u>R.P.</u> <u>Budget</u> <u>\$, ---,</u>	<u>Prof.staff</u> <u>in Post</u> <u>m.m.</u>	<u>Extra-budgetary</u> <u>Expenditures</u> <u>for HQ Activity</u> <u>(\$000)</u>
1984-85	2160	192	1027
1986-87	2116	231*	219
1988-89	2231	226	0

- * In the 1986-87 biennium an officer, additional to this total (18 m/m), was posted in East Africa against R.P. funds to assist project development.

- 9.9 The orientation of the Sub-programme is evidenced by the establishment in 1986 of a senior officer responsible for investment work and the decision in 1989 to reduce the emphasis on monitoring, control and surveillance as a separate function. In 1988, a programme element was added for training in planning, investment and policy analysis while other programme elements under which training had been carried out were correspondingly reduced. Less attention was also given to general studies work on the world fish situation and prospects. The breakdown of budgeted resources by programme element for 1988-89 was Training in Fisheries Development and Management Planning (17%); Fisheries Development Planning (16%); Fisheries Investment Planning and Appraisal (13%); Management and Development of Small-scale Fisheries (7%); Fisheries Management Issues and Options (16%); Studies on World Fisheries Situation and Prospects (10%); Technical Support to FAO Regional Fishery Bodies (13%) and General Support to Policy and Planning (8%).

Activities and Outputs

a. Statistical Summary

- 9.10 Tables 9.2 and 9.3 summarize the outputs of the Headquarters' Sub-programme by activities since 1984. This effort is supplemented by the work of the Regional Fisheries Officers who on average have devoted about 25% of their time to planning activities (mostly advisory missions). Much of the work has been carried out in cooperation with field projects and with the FAO supported regional fisheries bodies. Up to 1985, the Sub-programme's activities were supported by the Norwegian financed umbrella trust fund for EEZ development. The cessation of this funding had a very evident impact on delivery in 1986-89, particularly as regards multi-disciplinary advisory missions.

Table 9.2: Summary of Activities and Outputs
Sub-Programme 2.2.3.1 Fisheries Policy and Planning

	<u>1984-85</u>	<u>1986-87</u>	<u>1988-89</u> <u>Estimate</u>
Training - number of courses	6	2	10
number of participants	115	56	223
Multi-disciplinary advisory missions			
- number	20	12	15
- no. of countries assisted	65	67	59
- work months of staff and consultants	35	14	14
Number of meetings	3	8	8
Number of publications (excluding reports of meetings)	5	1	16

Table 9.3: Regional Distribution of Activities and Outputs
% by number
(1984-88)

	<u>International</u>	<u>Africa</u>	<u>Asia and</u> <u>Pacific</u>	<u>Latin America</u> <u>and Caribbean</u>	<u>N. East</u> <u>and N. Africa</u>
Training	-	33	25	33	9
Multi-disciplinary advisory missions	-	45	10	28	17
Meetings	23	38	23	8	0
Publications	54	23	15	0	8

- 9.11 The regional distribution of effort (Table 9.3) reflects the emphasis on Africa, especially in multi-disciplinary advisory missions in view of that continent's requirements for planning assistance. There has been some need for a greater input into Asia and the Pacific, which has a higher absorptive capacity for training in planning.
- 9.12 The Sub-programme has organised on average two training courses each year (Table 9.2), except in 1986-87 when greater need arose to develop training materials and a steep rise in the number of meetings, many of which had some training content. The number of multi-disciplinary advisory missions has averaged about 6 missions per year in the two recent biennia. At the same time, the average input for each mission fell from nearly two work months to about one work month and several countries were often visited by a single mission. Much of the substantive input in the last two biennia has been financed by FAO-TCP and other field projects. Six of the meetings were national planning workshops. A further three were conducted in cooperation with regional fisheries bodies. A report was published on each meeting and training course. Papers were also prepared for the COFI (11 in the period 1984-89) and for other meetings, particularly the regional fishery bodies for which over 30 papers were produced. In addition, the Sub-programme has updated the fisheries profiles covering 147 countries (see below). The publications given in Table 9.2 can be divided as follows: studies and case material (54%); guidelines (30%); training material (8%); and statistical summaries (8%).

b. Follow-up to the 1984 World Fisheries Conference, Consultation between Countries, Analytical Studies, Data and Information

- 9.13 The Sub-programme has a major responsibility for follow-up to Programme of Action No. 1 (Fisheries Planning, Development and Management) of the 1984 World Fisheries Conference. A continuing dialogue on issues identified during the Conference has been initiated through COFI and the regional fishery bodies and information is also being systematically collected on development assistance. The Sub-programme has coordinated inputs for the Major Programme Fisheries on sector development and has contributed to such organization-wide studies as Agriculture: Toward 2000, SOFA, The World Food Report and regional studies, for example that on Potentials for Agricultural and Rural Development in Latin America and the Caribbean, where a specific chapter was devoted to fisheries.
- 9.14 Consultation between Countries: Contribution has been made to papers presented at the three sessions of COFI since the World Fisheries Conference. ~~Four papers have addressed~~ the implementation of the Strategy and Programmes of Action agreed at the Conference, including the evolution of FAO's role. Proposals for the marking and identification of fishing vessels have been developed under the auspices of COFI. Based on papers prepared by the Sub-programme in 1987, COFI considered the World Fisheries Situation and Outlook and in 1989, examined trends and prospects for capture fisheries and aquaculture over the next 25 years and the role of FAO. A review was also prepared of the FAO regional fishery bodies.
- 9.15 The 1987 COFI paper on the World Fisheries Situation and Outlook discussed long-term trends in fisheries and highlighted better fisheries management, in particular the problems of over-investment and

the need for increased emphasis on training. This theme was re-examined in the 1989 COFI paper on fisheries trends and prospects, which noted that prospects for growth were highest in aquaculture and that in capture fisheries, the emphasis should be placed on improved management to maximise the incomes of developing countries, particularly of artisanal fisheries over the medium term. The paper on progress with the Programmes of Action, submitted to COFI in 1989, discussed the need for improved and coordinated design of investment programmes and the need for more resources for control measures, institutional strengthening and improved data on all aspects of fisheries.

- 9.16 A major theme at COFI has been the proposal for a standard system for the marking of fishing vessels operating in the EEZs of other coastal states as a means of facilitating control. The proposed standard uses accepted international identification letters, assigned to nations by the International Telecommunications Union. The need for a standard was first discussed at COFI in 1983, endorsed by the FAO World Conference on Fisheries Management and Development in 1984, and developed at an expert consultation organized in Canada in 1985. Further elaboration of the standard was requested by COFI in 1985 and technical specifications for the standard were prepared at an expert consultation in Rome in 1986. These specifications were reviewed by COFI in 1987 and endorsed in 1989.
- 9.17 The approaches of development agencies have not always addressed the tendency to fragmentation of fisheries development efforts and over-investment. Efforts to strengthen national planning capability are designed to counteract this. In 1986, FAO cooperated in a consultation of donors on fisheries development and following that meeting, the Sub-programme has developed a computerised listing* of development projects to better inform the development agencies of each other's activities. A version was released recently covering approximately 2,500 projects and 32 agencies. The Sub-programme also organised a consultation with non-governmental organizations in 1986 and published a directory of NGOs involved in fisheries.
- 9.18 Support to regional fisheries bodies has been extensive. The papers prepared by the Sub-programme have addressed fisheries trends and outlook in the regions and have covered such aspects as the existing institutional structures in member countries and their respective advantages. In some cases, the papers addressed problems common to fisheries in many parts of the world; in other cases, the papers were specific to the region, e.g. those on adjustment of fishing effort and management actions taken in the South China Sea, summaries of the state of fisheries in the Bay of Bengal, assessment of aid to small-scale fisheries in the Eastern Central Atlantic and external assistance to fisheries in the Bay of Bengal.
- 9.19 The Review of the FAO Regional Fishery Bodies and their role in TCDC and ECDC was presented to the 1987 and 1989 sessions of COFI. It drew attention to the insufficient attendance at sessions of the regional fisheries bodies, due both to the increasing number of meetings and

* Fishery Project Information System (FIPIS)

financial constraints. It also identified management as an issue for the regional bodies and examined the role of socio-economic factors in fisheries management. COFI had expressed unanimous appreciation for the work of these bodies and urged donors to give greater support. It was noted that, in some cases, attendance at meetings of the bodies had been facilitated through the organization of a symposium or seminar in conjunction with the session.

- 9.20 Meetings organized outside the framework of the inter-governmental bodies have also been found useful in defining fisheries issues. Thus, the 1985 Symposium on the Planning and Implementation of Fisheries Management and Development Programmes in Africa examined, among other problems, the importance of people's participation in regulating fishing effort. A paper for the consultation on fisheries in Africa noted that many countries could not immediately displace industrial fishing by foreign fleets but would have to build on the basis of existing artisanal skills and there would need to be greater inter-country cooperation in managing shared stocks. It was also observed that administration of fisheries projects could, in some cases, overload fisheries departments and prevent them from carrying out their wider development tasks.
- 9.21 A number of analytical studies have been carried out and published. One dealing with the evolution of Nile perch fisheries in Lake Victoria was in direct support of a special planning effort. Usually, however, studies have been of wider interest in providing insights into major aspects of fisheries planning and management. A synopsis of 26 case studies examined changes in fisheries law and economic conditions; eight of the case studies were published. It was noted that developing coastal states with surplus fish resources had benefitted from the introduction of EEZs; however, there was a tendency towards state investment which had often been inefficient. In general, neither the countries with distant water fleets nor the developing coastal states found that the initial joint venture and licensing arrangements provided a stable basis for long-term development. The effects on countries with distant water fleets, including several developing countries, had been to exacerbate overfishing in their home waters as well as efforts to locate new fishing grounds and gradual disinvestment. The over-capitalization of the industry had increased as countries built up their indigenous capacity.
- 9.22 A study on the development of coastal aquaculture in Asia identified major problems, including the lack of attention to the tenure of coastal water and the potential danger for other types of fisheries in converting mangrove swamps to aquaculture ponds. The analysis of traditional management in the Gulf of Guinea noted that although such systems have their value, the management of fish as a migratory resource cannot be handled through indigenous customs, though it is possible to draw on their in-built discipline. Further studies scheduled for publication during 1989 include an analysis of costs and earnings in small-scale fisheries, financing fisheries development in West Africa, and fisheries development in Uruguay.
- 9.23 The collection and dissemination of fisheries statistical data is the responsibility of Programme 2.2.1 Fisheries Information. In the past, such data have emphasized size of catches. The Sub-programme has worked with Programme 2.2.1 with a view to developing broader fisheries data. An expert consultation on the improvement of socio-economic

information for planning, convened in 1986, dealt with improved data on fishermen societies, vessels, institutions, marketing and economics. A manual on the acquisition of socio-economic information in fisheries is to be published in late 1989. In 1988, a summary of socio-economic information on Africa was distributed, including data on vessels, employment, import and export values and per capita protein supply. A similar publication for Asia and the Pacific is in preparation. The 1987 Symposium of the Indo-Pacific Fishery Commission discussed the provision of data on fisheries production not just by weight, but also by value, and as a result, Indonesia, Malaysia, Philippines and Thailand provided price-weighted indexes for their fisheries.

- 9.24 The Fishery Country Profile Series produced by the Sub-programme provides a unique summary source of information. For each country, the profile covers, in 4 to 6 pages, brief statistical information followed by short texts on marine and inland fisheries, the utilization of the catch, the economic role of the industry, its development prospects and the status of research. The assistance offered by or required by the country may also be included. The profiles now cover 147 countries, 31 of which are in Europe and North America. In the period 1984-85, 114 of the profiles were updated, including 34 for Africa, 24 for Asia and the Pacific and 24 in Latin America and the Caribbean, giving an almost total update for the major fisheries of the latter two regions. The one region where problems in updating have arisen is the Near East and North Africa with only five countries covered. The profiles are distributed in English for all countries and, as relevant, in Arabic, French and Spanish. They reach the Directors of Fisheries in all Member Nations and 120 addressees in development agencies, research and academic institutions as well as other institutions and commercial organizations, on request.

Training

- 9.25 Training is designed to strengthen national institutions and, as with other work of the Sub-programme, has sought to reinforce a number of areas. These have included, in addition to planning and investment appraisal, the:
- importance of basic data not only on fish stocks, but also on boats, fishing patterns and practices, marketing and the profile and organization of fishing communities;
 - dangers of over-capitalized fishing fleets leading to declining production and, in some cases, reduced employment for small-scale fishermen;
 - relative benefits of different approaches for maximizing benefits from foreign fishing;
 - advantages of different approaches to controlled fishing and zoning areas for different classes of fishermen as well as the importance of registering and marking boats.
- 9.26 The great majority of courses have been run in cooperation with other FAO units and regional fishery bodies or their supporting projects. One course was organised with SADCC during 1988 and a national course in fisheries management was organised for China followed by one in

investment planning. RAFR cooperated with IDRC (Canada) in organising a national course in Ghana. While for the most part, these courses have dealt with planning linked to fisheries management, one course addressed the control of foreign fishing in the Africa Region and another for Latin America and the Caribbean was concerned with joint ventures. Investment has received special attention. There has not always been a clear dividing line between meetings and training sessions. While some training workshops came up with recommendations for the future, some meetings considered papers with a strong training component; for example, the consultation on the socio-economic and planning aspects of fisheries in Latin America and a similar consultation for the CECAF.

- 9.27 Objectives and target audiences are now more clearly defined between meeting and training sessions. Target audiences for training are generally senior officials concerned with planning in Fisheries Departments. Investment courses have also included officials concerned with planning in parent ministries and the central planning offices. This distinction is desirable as the two target audiences are different. The fisheries staff require an introduction to planning while professional planners need an overview of the special problems of the fisheries sector.
- 9.28 One course dealt with bio-economic modelling backed by a study on shrimp fisheries in Mexico. In general, however, the courses provide an overall introduction to fisheries planning and are of about two weeks' duration with 20-30 participants. The approach has been to present a series of papers followed by discussion, but with limited use of exercises. A course held in Poland in 1985 for 23 participants from the CECAF region lasted ten days and included 2.5 days of field visits. It laid the groundwork for follow-up national courses in Cape Verde, Guinea, Guinea Bissau and Morocco. The most comprehensive set of papers were prepared for the 1988 SADCC and China workshops. These included: strategic planning; major policy instruments for fisheries development and management; information requirements for planning, aquaculture planning; the relationship between projects and plans; project identification; analysis of small-scale projects; problems in fishery investment projects; and monitoring and evaluation.
- 9.29 The most concerted effort to date has gone into developing a standard course in fisheries investment project formulation. An expert consultation was organized in 1986 on the fisheries project cycle. In cooperation with Humberside Fisheries College, U.K., course materials have been developed, including exercises and case studies. A pilot course was organized for 18 participants in April 1988 and the materials have now being further refined and were used at a follow-up course in 1989 for 21 participants.

c. Development of Guidelines

- 9.30 Several meetings have dealt with recommendations and guidelines for fisheries planning and management. An FAO/CECAF/IDAF workshop for West Africa, held in 1986, emphasized the need to integrate fisheries project formulation with overall sectoral and macroplanning. The FAO/SEAFDEC/INFOFISH seminar for South East Asia in 1988 noted that investment in fish hatcheries, handling and marketing facilities should be as much as possible by the private sector. Public investment should

concentrate on institutional support to all aspects of fisheries development including fisheries management. It was also observed that formal credit systems should seek to complement and not replace traditional sources.

9.31 During the period under review, three sets of guidelines have been produced:

- "Methodology and Guidelines for Fisheries Development Planning with Special Reference to the Developing Countries in the African Region". This provides a comprehensive introduction to standard planning concepts with application also to other regions;
- "Management Systems for Riverine Fisheries". This paper is the most discursive of the three and introduces the problems to be solved with over-exploitation and environmental changes; changes in fishing communities and their stage of commercialisation, including 4 case studies, traditional management strategies and the range of options for government including local participatory approaches, licensing and limiting access;
- "Approaches to the Regulation of Fishing Effort". This is an important problem in countries with newly gained responsibility for management of their EEZs. The guidelines cover the calculation of catch limits and their allocation, indirect methods of controlling catch through closed seasons, closed areas and net mesh regulations, restrictive licensing (its administration and costs), royalties, effects of financial support programmes on fisheries and the allocation of fishing rights to individuals and groups. Finally, the control of fishing effort for different types of fish is discussed. It is now necessary to expand the guidelines to cover different types of fishermen (small-scale, large-scale, etc.).

9.32 A draft guide on fisheries management for field staff has been prepared. This guide provides a valuable example of an effort to prepare simple non-discursive guidelines which can be used by middle-level staff. While it is evident that such simplified guidelines cannot deal with all aspects of a problem, there is a clear demand for them. Further publications scheduled for release during 1989 include guidelines for: fisheries investment identification and preparation; and aquaculture planning.

d. Advice to Countries

9.33 Beginning in 1980, the Norway/FAO EEZ Programme funded missions to 33 countries and to the South Pacific Forum Fisheries Agency and ASEAN. Thirty-seven missions dealt with policy advice and 10 with surveillance and control. Policy missions provided broad-based advice. The mission reports pulled together and analysed available data on fisheries resources, future data collection requirements and the current status of the industry and policies. Recommendations covered policy, institutional and legal aspects. With the termination of funding in 1986, missions have tended to become less broadly based and often carried out by one person in 2-4 weeks, except where TCP or project funding was available. Many countries now require advice on individual aspects of policy, although there often continues to be a need for independent external strategy review.

- 9.34 Missions in general had a clear focus. Of the 24 missions in 1984-88 not funded by the Norway/FAO programme, six were regional in scope and seven were specifically concerned with the preparation of national development plans. A further seven drew up surveys and guidelines for fisheries sector reviews. In one case, Malta, advice on a fisheries development plan was provided together with that for agriculture under Programme 2.1.8 Agricultural Policy Analysis. Missions did not, for the most part, relate to the establishment of planning and management capability. The Maldives was assisted in establishing baseline data and a monitoring system on the effects of fisheries development on people. Regional Offices also undertook missions but these tended to be shorter than those organized from Headquarters. RAPA, however, made an intensive contribution to the development of a fisheries master plan and legislation for Sri Lanka.
- 9.35 Policy advice has increasingly been provided through an evolving package. In Madagascar, a national seminar was held on fisheries management during 1983. The Norway/FAO programme supported an examination of arrangements for foreign fishing in 1984 and specific proposals were then finalised during 1986 for legislation. FAO-TCP funding was also employed to define proposals for administrative organization, including aquaculture and manpower and budget needs. The administrative organization suggested has now been set up and two UNDP/FAO projects are strengthening staff training, statistical information systems and planning.
- 9.36 In Malaysia, several FAO missions have contributed to the adoption of a comprehensive fishing licensing policy and revised fisheries legislation. FAO-TCP funding was used to complete studies for improving fisheries management in two pilot areas. An innovative scheme has been envisaged whereby fishermen and boats of certain types would be bought out by the government and the resulting improvement in financial returns to the remaining fishermen would enable higher licence fees to be charged, replenishing, at least in part, the fund used to buy out the boats.
- 9.37 Tanzania provides an example of the role that national workshops could play in the planning assistance process. A framework document was drawn up in 1984 (Norway/FAO). In addition to work undertaken on management of the inland lakes through the Committee for Inland Fisheries of Africa, the South West Indian Ocean project provided advice on information systems, stock assessment and institutional strengthening. An FAO-TCP project followed up by preparing proposals, finalized in 1988, for a five-year fisheries sector development plan to form part of the Second Union Five-Year Development Plan (1988-92). The recommendations were discussed at a series of workshops in different regions of the country, culminating in a national workshop which finalized proposals for the industry's future. The recommendations were then presented to a donors conference.
- 9.38 Tanzanian programmes emphasized optimal production from artisanal fisheries, including: the need for the government to cover the minimum foreign exchange requirement of an artisanal industry, but not to encourage motorization; promoting private sector services and involvement with, among other measures, the privatisation of uneconomic parastatal assets; streamlining government services and inputs, expansion of some training facilities and the closure of others and concentration on research which could yield short-term benefits.

e. Technical Support to the Field Programme

- 9.39 Fisheries planning must draw together specialists in fisheries resources, fisheries technology, marketing, institutions and legislation as well as economics. Much planning activity has taken place through sub-regional projects which bring together a coordinated package of inputs and are backstopped by all fisheries Sub-programmes. The projects have been closely associated with regional fishery bodies and have included:
- Programme for the Development and Management of Fisheries in the Region of the Committee for the Eastern Central Atlantic Fisheries (CECAF) - now terminated;
 - Regional Fisheries Development and Management Project for the South West Indian Ocean;
 - Small-scale Fisher Folk Communities in the Bay of Bengal;
 - OLDEPESCA Central America Project for the Planning and Management of Fisheries;
 - Support to the Regional Aquaculture Activities for Latin America and the Caribbean.
- 9.40 In addition, there is a network of regional aquaculture projects with which the Sub-programme is less directly associated. The projects listed above have been traditionally concerned with resource assessment, but they have usually included an economic component and the CECAF and South West India Oceans projects fielded full-time economists. In general, however, economic aspects have been covered through consultancies. For example, the Bay of Bengal Programme has recently included work on income, indebtedness and savings among fishing families in Orissa and a consultation on the social feasibility of coastal aquaculture. Much of the Sub-programme's work has been directed in support of these activities and in 1986-87, a Regular Programme staff member was deployed full time in East and Central Africa, primarily on project development. In total, some 40 percent of staff time is estimated to be devoted to the technical backstopping of projects, with some 40 experts and consultants each year. This includes the growing number of FAO-TCP projects.
- 9.41 In 1989, for the first time two medium-term projects are commencing, concerned directly with the work of the Sub-programme, i.e.:
- Inland Fisheries Planning, Development and Management in Central and Southern Africa;
 - ASEAN Monitoring, Control and Surveillance of Fisheries in the EEZs of ASEAN Countries.
- A third project "Planning and Policy Formulation for Fisheries in West Africa" is now being formulated.
- 9.42 The number of national projects with a strong planning component has been expanding rapidly. During the 1984-89 period, there were 21 national projects with full time staff and backstopped by the Sub-programme; 18 are still operational.

- 9.43 A UNDP/FAO project in Morocco has assisted the government in preparing specific management plans for fisheries which has been divided into four categories: artisanal small-scale, pelagic, trawl and high sea. The plans address the desirable offtake of fish, ways of encouraging and regulating fishing effort and the institutional, legislative and economic framework this requires. In the Seychelles, another UNDP/FAO project has supported the setting up of a planning cell in the Fisheries Department. The Seychelles is currently a major centre for tuna fishing in the Western Indian Ocean and the project has assisted in drawing up investment and implementation plans for harbour facilities, a canning plant, etc. In Madagascar, a project completed the first survey of fisheries which established that there were twice the number of fishermen and twice the catch that was thought to exist.

Effects and Impact

- 9.44 Some aspects of the Sub-programme's impact have been touched on in the previous section, particularly with regard to the formulation of national development plans and follow-up by non-FAO donors, for example in Lake Victoria by the EEC. Possibly the greatest effect has been on FAO fishery bodies and other development agencies with regard to the importance of economic and social parameters in fisheries. This is gradually being reflected in the work of these bodies. For example, the FAO Regional Conference for Asia and the Pacific in 1986 called on FAO to increase attention to fisheries management. The Committee for the Central Eastern Atlantic (CECAF) has set up a Sub-committee on fisheries management which has undertaken some management training. WECAF has replaced its statistics working party by one on fishery economics and planning. Following the recommendations of the Gulfs Committee of the Indian Ocean Fisheries Commission, closed fishing seasons were introduced in the shrimp fisheries of the Gulfs. Furthermore, many countries placed increasing emphasis on socio-economic considerations in fisheries management. During its last session in 1989, GFCM decided to change the terms of reference of one of its working parties to address more adequately economic and socio-economic aspects of fisheries management. Similarly, FAO regional fisheries projects are including a strong planning component and national planning projects are increasing as discussed above.
- 9.45 However, this process is not without setbacks. The paper for the 1987 session of COFI on the World Fisheries Situation and Outlook addressed issues such as over-investment in fisheries and the conflicts which can arise from free access to a limited resource. This was not reflected in the eventual conclusions of the meeting. Similarly, discussion in COFI in 1987 of standard markings for fishing vessels met with resistance from some countries while other countries needed more time to consider the implications of the working system. However, countries entering into licensing agreements with foreign fishing nations increasingly insist on the standard markings along the lines developed by FAO. A number of countries have embodied the standard markings in their fisheries legislation and the system was finally endorsed by COFI in 1989.
- 9.46 Policy advice has had considerable impact. The Norway/FAO EEZ-Programme was independently evaluated in 1987. It was concluded that the advisory missions on policy and planning, monitoring, control and surveillance undertaken by the Sub-programme had been relevant to

countries' needs, expeditiously organized, and had provided sound advice. The recommendations of the missions had been heeded by the countries concerned. The advice had contributed to a number of positive developments, including those in Malaysia and Tanzania discussed above.

- 9.47 Mauritania had little fisheries experience. A mission in 1980 calculated the respective benefits of joint ventures and licensing foreign vessels. It concluded that the latter could yield the greatest immediate benefits, but as Mauritania was committed to joint venture development, a series of proposals were made to improve the returns to Mauritania from the agreements and to reduce over-fishing. Following the mission, Mauritania limited itself to the existing joint ventures and improved their operations. The report of the mission is still considered as a basic document for the evolution of its fishing policy.
- 9.48 In Morocco, a mission noted over-fishing in the north and the converse in the south and recommended a negotiated change in the balance of foreign fishing effort. This recommendation has been implemented. In the Maldives, in line with mission suggestions, a cautious approach has been adopted and the Government has refrained from cost-ineffective surveillance. For St. Vincent and the Grenadines, a ten-year fisheries development plan was prepared and extensive funding has been mobilized.
- 9.49 A mission to the state of Rio de Janeiro in Brazil examined the feasibility of three projects: supply of low priced fish to low-income groups; development of small-scale fisheries; and fish production by low-income farmers in the northwest of Rio de Janeiro. The state government subsequently funded these in a somewhat reduced form. An executive committee was also created, chaired by the Secretary of Planning to coordinate the delivery of programmes.
- 9.50 A regional workshop for the South Pacific Forum countries focussed on access conditions for foreign fishing vessels. Following the workshop, a regional fisheries vessel register was established and flag states were held responsible for the conduct of their boats. In particular, a regional agreement was negotiated with the USA. The register means that a foreign vessel which breaks the regulations in the waters of one country loses its good standing and may be excluded from all zones if the offence is serious. This has demonstrated the advantage of a regional approach.
- 9.51 The above examples indicate the scope of the results. The formation of EEZs required strategic policy advice in response to a new situation. While the demand for such policy advice is declining, there is still need for FAO's advisory inputs on more detailed aspects of planning. It is also clear that the slow process of building indigenous capability in fisheries planning and management cannot yield the quick effects expected from the implementation of new policies. The best results in planning have been achieved as in Tanzania, where national dialogue was initiated. The effectiveness of meetings, training workshops and publications has been maximized where they are clearly targetted and do not try to combine guidelines and analytical coverage or training and policy discussion.

Outlook and Issues

- 9.52 With the establishment of national jurisdiction over the great bulk of world's fisheries, planning and management are now faced with a situation where production from capture fisheries has, in most parts of the world and for most demersal species, reached its maximum. If production is to be sustained at present levels, fishing must be regulated. Possibilities for growth do, however, lie in aquaculture and in reduced loss and wastage. Better management of already exploited resources could give higher yields; there are also some under-utilized resources. Considering the need to improve the living standard of artisanal fishing communities, it is now appreciated that economic and social factors play a critical role in determining the sustainable use of fisheries resource and its efficient utilisation. It is also increasingly recognized that the transfer of the system of exploitation used in developed countries for single species in temperate waters is extremely difficult and often inappropriate for tropical multiple species fisheries. Against this background, thinking in fisheries planning has evolved rapidly, encompassing recognition of the vital need for rational management, a changing attitude to investment and the role of joint venture and licensing agreements as well as priorities for information and statistics and the balance between enhanced artisanal activity and industrial fishing.
- 9.53 As countries have extended jurisdiction over their fisheries to 200 miles, the challenge now is to formulate appropriate programmes and institutions against a longer term development horizon. Without sufficient government infrastructures to undertake fisheries management, the fisheries sector will fail to reach its potential. Moreover, specific features of fisheries development, planning and management need to be tackled in more detail. The World Fisheries Conference provided an overall perspective on fisheries and afforded a widened concept of the factors which interact in fisheries development. The task now is to define the priorities on that agenda for the developing countries and for development assistance in fisheries, including the socio-economic aspects of small-scale fisheries and environmental considerations.
- 9.54 Through an inter-active process with the field programme, important questions deserving attention include:
- balanced offtake from fisheries resource: Important progress has been made in defining the types of measures which can cost-effectively control fishing effort. The burden of such controls can only realistically fall on the coastal rather than the flag States. In this connection, most coastal States have assigned the task for fisheries control to the military, resulting in expensive and sometimes harsh policing. Practical approaches are needed for low-income countries which cannot engage in large-scale monitoring, control and surveillance programme or subsidised redeployment of fishing families;
 - aquaculture: Although a major potential for growth lies in aquaculture, approaches have often proved too intensive in terms of capital, recurrent inputs and government staff requirements for widespread replication. There is a need to examine possibilities for more intensive use of inland and coastal waters which can benefit low-income families normally engaged in fishing without large technology leaps;

- joint venture and licensing agreements: A growing body of experience is now available on licensing and joint venture arrangements. This needs to be examined with the aim of maximizing medium-term benefits to the developing countries and their fishing communities.
- 9.55 Both national statistics and those collated by FAO provide very little information on the economic, marketing and social aspects of fisheries. Efforts to improve the planning information base must continue. To some extent, this requires fisheries to be better integrated into the normal national data collection processes and, in FAO's case, the data base needs to be widened, possibly including coverage of fisheries in the World Census of Agriculture. At the same time, in view of the high costs of data collection, planning must minimize data needs through use of such techniques as rapid rural appraisal, remote sensing and, where appropriate, sensitivity analysis to determine which data are important to be measured accurately.
- 9.56 Another important aspect is the assessment of the prescriptions of technical disciplines and of new technologies from an economic and financial perspective. This can include examination of the sustainability of proposals for institutional build-up and development. The Sub-programme will thus need to continue its close relationship with other Sub-programmes of fisheries.
- 9.57 Since fish resources are a common property, government intervention to allocate resources among users and limit total offtake is essential. Such measures generally go beyond the authority of national fishery authorities and can only be accomplished if Departments responsible for policy and planning at the highest levels of Government have an understanding of the problems and issues involved in fisheries. In many countries, the fisheries sector, although significant, is relatively small and cannot justify a heavy government apparatus. There is thus a need for procedures which integrate fishing into national planning and policy-making without necessarily creating new structures. Fisheries staff require to grasp planning concepts, while planners become better aware of the special features of fisheries. Unfortunately, national fisheries departments sometimes lack entrée to the planning departments of the government and fisheries planning can all too often become the creation of a project shopping list. The planning workshops sponsored by the Sub-programme have played an important role in creating policy dialogue and ensuring that the prescriptions for change are internalized at the national level. The training programme deserves special emphasis and training in policy analysis and planning is equally important as that for investment. The development of structured training materials to gain the maximum multiplier effect from training programmes is important.
- 9.58 A network of regional fisheries bodies has been established which is probably unparalleled in any other area of development. These bodies were originally concerned principally with stock assessment. As data have gradually been built up and EEZs were created, fisheries bodies have transformed their role to address common problems and weaknesses, particularly in fisheries management. Perhaps as much as 35 percent of the Sub-programme's effort continues to be devoted to support these regional bodies. Ninety-five percent of fish are now extracted in national waters. This development has emphasized the importance of strong national planning and management capability. At the same time,

fish stocks are frequently found in the waters of more than one state and common management approaches are required as similar problems are encountered. Additionally, in many cases, joint surveillance arrangements would be more cost-effective than operations by individual states. States which share fish stocks need to harmonise their approaches. Agreements between neighbouring states to husband their joint fish stocks can be both studied and fostered, through regional fishery bodies, resulting in a network of bilateral agreements. Cooperation will thus often combine two or three continental countries or a group of island states rather than all members of a regional fishery body. In line with this development, the emphasis of the Sub-programme's support is gradually shifting in providing inputs to sub-regional committees such as those for the Sahelian countries or particular inland lakes where common problems can be better tackled. It is clear that the trend towards more policy-oriented discussion in fisheries bodies needs to be encouraged, even at the risk of reduced consensus.

- 9.59 In terms of coordination within FAO, links outside the Fisheries Department have been strong with the Legal Office, partly as a result of the important joint work under the Norway/FAO EEZ-Programme. More recently, consultation with the Investment Centre has been strengthened with meetings at the level of directors twice a year and fisheries staff are involved in fisheries sector studies and project review sessions. Contacts are now being strengthened with Programme 2.1.8 - Food and Agricultural Policy - in the development of investment training, which is the major activity of the Development Policy Studies and Training Service of ESP.
- 9.60 Fisheries planning and management require integrated inputs from many disciplines and the Fisheries Development Planning Service works closely with other sections of the Fisheries Department. Apart from existing departmental coordinating mechanism and ad hoc groups, it would be useful to further explore the task force mechanism and joint programme and budgeting more extensively, not only for projects, but also in drawing up training courses and publications; greater use could also be made of inter-disciplinary task forces in such matters as overall coastal area development and rural development policies.
- 9.61 The importance of support to regional fishery bodies, national projects and direct advice to member countries fully justifies the present regional specialisation in the Fisheries Development Planning Service. Functions such as investment, training and inputs to COFI cut across this division. There is a need for further well defined studies and publications programmes which are similarly inter-regional in scope.

CHAPTER TEN

FORESTRY TRAINING AND INSTITUTIONS

Sub-programme 2.3.3.1

Rationale

- 10.1 Forests are a major renewable natural resource, occupying one-third of the world's land area, and providing benefits through the supply of wood products, fuelwood, food and materials derived from plants and animals of the forest. They also play an essential role in the conservation of other basic natural resources, such as land and water, and they thus underpin the capacity of the land for food and agricultural production, for meeting a variety of essential needs of the rural people, and for maintaining the environmental stability on which human life itself depends.
- 10.2 However, combined effects of economic development and population increases throughout the world have resulted in ever-increasing demand on the forest resources. The world annual production of wood is projected to rise substantially from about 3 000 million m³ in the mid-1980s to about 4 000 million m³ by 2000. In particular, the demand for fuelwood in developing countries is estimated to increase at a much more rapid rate than that for industrial wood and far beyond the supply potential. Similar imbalances threaten other valuable forest products, such as fruits, fodder and wild animals, which are of particular importance to rural communities in many developing countries.
- 10.3 Problems are particularly acute in the tropical areas. Forest cover in the tropics has been decreasing rapidly because of the pressure on land for agricultural production and also as a result, at times, of indiscriminate exploitation practices. In drier tropical areas this has been aggravated by water shortages, unsuitable and fragile soils and erratic climatic conditions. Thus, in the tropics, over 11.5 million ha. of forest are lost every year against only 1 million ha. being planted. To conserve the forest, to offset current depletion and to build up forest resources to meet the need for fuel and wood for industrial products, future investment needs to increase substantially. Above all, there has been an increasing recognition that a radical reorientation is required for the forestry sector to ensure sustainable use of the forest resources and to contribute more significantly to development needs of all the major segments of the population, especially those of the rural communities. It is these concerns that have led in recent years to major shifts in FAO's Forestry Programme with emphasis on community forestry and the Tropical Forestry Action Plan (TFAP).
- 10.4 The changing and increasingly complex demands that are being placed on the forestry sector, coupled with the need to harmonize with other sectors of national economies, require that policies and institutional mechanisms be continuously adapted and strengthened. The effectiveness with which the sector can contribute to rural and national development depends, in large measure, on strengthening national capacity to analyze and formulate appropriate plans, to

improve the ability of national and local institutions to implement forestry policies, and to generate investment in forestry activities. In particular, in order to alleviate pressures leading to the destruction of forests, the sector would need to ensure increased benefits for rural people through their closer involvement in the management and use of forest resources.

- 10.5 An increasing number of developing countries have started to review their organizational structures for forestry, to update their forest policies and legislation, to reorganize forestry and forestry products research, and in particular, to strengthen forestry education, training and extension systems. However, many countries are severely handicapped by basic limitations and weaknesses in the institutional and technical capacity of their national forestry administration as well as in the orientation of their forest policies and programmes. Furthermore, most countries face significant shortages of trained manpower at all levels, as well as deficiencies in the facilities for education and training for manpower. The problem is especially acute at the technical and vocational levels, particularly for extension work.

Objectives

- 10.6 Following the endorsement of the TFAP at the Twenty-third Session of the FAO Conference and the recommendations of the Committee on Forestry, FAO's programmes in forestry have been re-aligned in the light of the priorities of the Plan, and the need for more effective assistance to member countries in its implementation. The programmes are geared to: (i) integrating trees and forests with other land uses, particularly in arid lands and mountainous watersheds; (ii) raising the productivity and broadening the range of goods and services derived from the forests on a sustainable basis; (iii) improving the contribution of forestry to food security; (iv) developing suitable approaches and arrangements to enlarge the share of socio-economic benefits from forestry activities and to achieve their equitable distribution in rural areas; (v) promoting increased participation of large numbers of rural people particularly in self-help, self-sustaining forestry programmes; (vi) promoting a broader and more efficient use of the resource through appropriate forest based industries, including small-scale enterprises; (vii) adapting and strengthening the institutional framework of forestry to meet the new orientation of forestry for development. Within this, the Programme 2.3.3 (Forest Investment and Institutions), is aimed at assisting the developing member countries in strengthening their policy and planning capacity, institutional mechanisms and technical manpower in the reorientation and implementation of their national forestry programmes.
- 10.7 The Sub-programme 2.3.3.1 (Training and Institutions) contributes directly to the realization of the objective of the Programme 2.3.3 and indirectly to the overall objectives of the Major Programme 2.3 (Forestry) through strengthening the national capacity for developing the trained manpower and improving the institutional mechanisms for policies, administration, research and extension. During the three biennia covered under the Review, the thrust has been on assistance in adjusting and reorienting the institutional and manpower basis in line with the priority needs for participatory community forestry development and TFAP. The Regular Programme based activities under the Sub-programme have been focussed on the preparation of guidelines

and reference materials on critical issues for dissemination of appropriate, practical approaches and methods as well as on developing insights and knowledge on newly-emerging aspects through factual surveys and case studies. Assistance to individual countries has been provided mainly through the field programme component.

10.8 The major activities under the Sub-programme over the last three biennia (1984-89) have covered:

- a) promotion of forestry education development - the aim has been to promote and develop a balanced and cost-effective approach to manpower development for the forestry sector at all levels, but with special attention to training at technical level. This has included the survey and assessment of forestry education and training needs in developing countries, the development of methodologies for manpower and training needs assessment, and curricula development, including the updating of teaching/training contents and introduction of new subjects. The technical substance of this component has been continuously guided by the FAO Advisory Committee on Forestry Education;
- b) strengthening of forestry institutions - like (a) above, this has also been a traditional subject, geared to analysis of various facets of public forestry administration. The recent efforts have been focussed on developing and promoting means for enabling the rural organizations to participate more effectively in forestry development activities, especially in the context of community forest development;
- c) forestry extension and public education - this has been aimed at promoting sound structures and methods for forestry extension systems as well as curricula for forestry extension training;
- d) support to national forestry research - particular attention has been given to the promotion of cooperative research on forestry and forest industry at the regional and sub-regional levels, the establishment of a comprehensive data base and information regarding the national institutions engaged in forestry and forest products research as well as strengthening research planning and management; and
- e) forestry policies and legislation - with the aim of assisting in the establishment and/or adaptation of the forestry policies and legislation in accordance with national and rural development objectives, the focus has been on identifying and suggesting appropriate measures to improve the policy formulation and planning mechanisms as well as the nature and scope of forestry legislation consistent with the objectives of development policies and programmes.

10.9 The Sub-programme is linked closely to the other Programmes and Sub-programmes of the Major Programme 2.3 (Forestry), especially on issues related to manpower development and institutional improvement. In particular, much of its work is directly linked with the Sub-programmes under Programme 2.3.3 (Forest Investment and Institutions): the Sub-programme 2.3.2.2 (Investment Planning and Statistics) for forestry development planning work, including support to the implementation of the TFAP; Sub-programme 2.3.3.3 (Forest Policies and Information) for analytical studies relating to forest policy aspects; Sub-programme 2.3.3.4 (Community Forestry

Development) for promotion of participatory forestry activities, small-scale forest-based industries, and for wood energy programme development. Close cooperation has also been maintained with the Major Programme 1.3 (Legal) for work in forestry legislation, and Programme 2.1.5 (Rural Development) on aspects relating to agricultural education, extension and training as well as rural institutions. In the implementation of the TFAP, the Sub-programme has provided considerable inputs, including participation in eleven country missions to formulate projects under the TFAP Programme (Argentina, Belize, Chile, Cuba, Dominican Republic, Ecuador, Honduras, Mexico, Nicaragua, Panama and Peru).

Resources

- 10.10 During the three biennia between 1984 and 1989, some US\$2.3 million of Regular Programme resources have been allocated to the Sub-programme, which is implemented by the Forestry Education, Employment and Institutions Branch (FORE) within the Forest Resources Division (see Table 10.1). The share of the Sub-programme in the total Regular Programme allocations to the Major Programme 2.3 has been relatively minor, with a decline for the current biennium. The reduction is accounted for primarily by the transfer of one professional post to Sub-programme 2.3.1.4 to reinforce the work on land-use and agro-forestry: the size of the professional staff of FORE has been reduced from four to three, comprising the Branch Chief and one professional each for education/training/research and for institutions and policies/legislation. This, together with a sharp reduction (by 50%) in non-staff resources due to the resource constraints, has adversely affected implementation during the biennium, especially in the fields of forestry institutions and research. The resource allocation patterns over the main activities have not changed radically but there has been a trend of minor shifts of resources from education-related activities to forestry institutions and research.
- 10.11 The Sub-programme has had a substantial field component, and between 1984 and 1989, technical backstopping has been provided to some 160 field projects under implementation during the period with a total value of US\$ 198 million (see Table 10.2). A large majority of these projects (some 70%) have been for forestry education and training as well as for forestry extension. There has been a concentration of the projects in Africa and Asia, accounting for 38% and 32%, respectively, of the total number of projects. There have also been patterns of geographical concentration for various types of projects, with education and training projects concentrated in Asia (46%) and Africa (33%), extension projects in Africa (63%), research projects in Asia (75%), and policies/legislation projects in Africa (55%); however, institution support projects have been concentrated in Latin America (61%). In terms of the source of funding, UNDP accounted for 54% of the total value, FAO/Government Cooperative Programmes 45% and TCP 1 percent. With the rapid rise in the number of projects in support of forestry for community development and TFAP, the workload in backstopping the field projects has increased under the Sub-programme in recent years, accounting for about one-third of staff time in 1988-89. In particular, the Sub-programme has had the principal responsibility for backstopping projects in the fields of forestry education and training curricula, forestry extension, forestry institutions and policies and legislation.

Table 10.1: Sub-programme 2.3.3.1
Allocation of Regular Programme Resources
(estimated percentages for 1984-89)

Key Activities	1984-85	1986-87	1988-89
1. Promotion of forestry education development*	40%	31%	32%
2. Strengthening forest institutions	15%	19%	19%
3. Forestry extension and public education	15%	21%	16%
4. Support to national forestry research	10%	12%	14%
5. forestry policies and legislation	20%	17%	19%
Total	100%	100%	100%
Sub-programme Allocations (in US\$000)	755	810	753
(as share of Major Programme 2.3)	(5%)	(5%)	(4%)

* including secretariat support provided to the FAO Advisory Committee on Forestry Education

Table 10.2: Sub-programme 2.3.3.1
No. and Value of Field Projects Backstopped
(1984-89)

Category of fields	No.	Value (in US\$000)*
1. Forestry education development	68	84 419
2. Strengthening of forest institutions	28	22 887
3. Forestry extension and public education	41	65 908
4. National forestry research	9	10 250
5. Forestry policies and legislation	11	9 422
Total	157	197 886

* The value refers to the total donor allocation for the individual projects backstopped

Output

a. Promotion of forestry education development

- 10.12 The promotion of institutional capacity for forestry education and training in developing countries has been the central thrust of this Sub-programme, involving surveys, analyses, and advice regarding manpower requirements, assessment of the adequacy of educational and training institutions and their teaching staff as well as the quality of training curricula and programmes. The basic work of the quantitative analysis of educational/training needs was substantially completed for most countries by 1980, and the recent focus has been on (i) updating such need estimates to provide a realistic framework for manpower development in line with the on-going re-orientation in national forestry development approaches; and (ii) introducing qualitative improvements in training methods and curricula, especially at technical level: not only gaps and requirements are greatest at this level, but also timely corrective measures for improvement, both in quantity and quality, are considered crucial to successful re-orientation and implementation of forestry programmes aimed at effective participation of local communities.
- 10.13 As noted earlier, the main technical work of the Sub-programme, especially in this field, has been guided by the FAO Advisory Committee on Forestry Education (ACFE) since its establishment as an FAO statutory body in 1964. The Committee, comprising up to 30 prominent specialists in the field (nominated by Governments of developed and developing Member Countries), has served as an expert technical forum for reviewing the key development issues and for guiding FAO's work. During the three biennia, the Committee met three times (Thirteenth Session in 1985 in Mexico City, Mexico; Fourteenth Session in 1986 in Ljubliana, Yugoslavia; and Fifteenth Session in November 1989 in Antalya, Turkey) to review the status of forestry education and training in countries of Latin America, Europe and the Near East, education and training for forest industries, wildlife and protected areas management, forest products marketing, forestry teachers' training, ergonomics in technical/vocational training and forestry extension. The Committee's endorsement led to the publication of a manual on "forestry extension curricula" (FAO Forestry Paper 85). The Committee also supported two FAO proposals related to the TFAP; an approach to public education (proposal on "heightening public and political awareness of the importance of forests for the quality of life") and a proposal for "special action programme on forestry education for developing countries". The technical papers presented to ACFE sessions are incorporated in the official report of each session, published in English, French and Spanish. It is noteworthy that these reports serve as important references on various technical subjects for forestry education and training personnel in developing countries: some 1 500 copies in English and 500 copies each in French and Spanish are distributed to Government agencies and educational/training institutions at professional, technical and vocational levels.
- 10.14 In terms of updating basic surveys, several works were completed. The World List of Forestry Schools was updated and published in 1986 (Forestry Publication 3/Rev. 2), its coverage increased to 1 241 forestry schools (both university and non-university levels) in 115 countries, including 559 in 80 developing countries. The review on the status of forestry education in the Latin America and the Caribbean region was updated with focus on teacher training and

technical training, was considered by the ACFE, and published in 1985. Under the series of studies entitled "trends and prospects of forestry training at professional level", surveys of forestry education at the university level in three regions (Asia and the Pacific, Latin America and the Caribbean and Europe) have been conducted with emphasis on academic programmes and curricula (a similar survey for Africa was published before 1984).

- 10.15 An important work has been the assessment of forestry education and training needs for the countries of the Near East region. Like similar studies carried out earlier for other regions, this is a comprehensive analysis of training needs for all the 23 countries of the region, covering the quantitative and qualitative requirements at all levels (professional, technical, vocational and labourer) for the period between 1987/88 and 1995. Particular emphasis has been given to assessing the subject fields and the level of training for each country. The findings are to be reviewed by the Fifteenth Session of ACFE in November 1989.
- 10.16 Summaries of these surveys, studies and assessments are presented to the relevant regional forestry commissions as a basis for planning national training programmes and especially for promoting cooperative measures at the regional or sub-regional levels. For example, on the basis of the survey of the Africa region, a proposal for a sub-regional training programme for forestry teachers in SADCC countries was pursued during 1984 and 1985 but without success in finding donor support; however, similar assistance has been subsequently provided by FINNIDA and SIDA bilaterally. More recently, as a follow-up to the recommendation of the Seventh Session of the African Forestry Commission (1986), a proposal for a regional project on the development of training materials on participatory forestry in English-speaking countries of Africa has been formulated, for possible funding by UNDP, in order to strengthen training of extension workers. In Asia, the beginnings of an Asian Network on Forestry Education (ANFE) were laid at an FAO Consultation on the subject held in Bangkok in 1988, with the aim of stimulating cooperation among the forestry education institutions, especially in improving their curricula for teaching on participatory forestry programmes. In a follow-up workshop, later in 1988, participants from eight countries (Bangladesh, India, Indonesia, Malaysia, Nepal, the Philippines, Sri Lanka and Thailand) examined the ways of introducing social science subjects into university forestry programmes.
- 10.17 It should be noted that apart from generating technical assistance projects directly, these studies and assessments are a valuable source of information in maintaining up-to-date information on the status of forestry education and training in developing countries. The information has been particularly useful in developing an overall approach at the national, regional/sub-regional and global levels in the programming and implementation of the TFAP. For example, the FAO proposal for the special action programme on forestry education mentioned above is intended to serve as an umbrella project to improve forestry education/training in the context of TFAP, and particular emphasis is given to TCDC in a wide range of areas, such as manpower assessment at national/regional levels, updating of training curricula, promotion of teacher training, development and expansion of the training institutions and promotion of formal and non-formal training at various levels. While funding has not yet been secured for the umbrella project proposal, the basic approach is applied in the TFAP projects formulated at national and regional levels.

- 10.18 Several methodological papers have been completed during the three biennia. A technical note entitled "A Methodological Approach to Estimate Requirements of Manpower in Mechanical Forest Industries" was issued in 1985. The note is a synthesis and adaptation of various studies conducted for countries in Africa and elsewhere on the subject during previous years. The revised approach pays particular attention to systematic assessment of the institutional and operational context of the specific industries in question, rather than quantitative aspects stressed previously. The methodology is now being tested in two countries in Asia under the Regular Programme.
- 10.19 As the first of a series of guidelines on training curricula for technical personnel, "Technical Forestry Education - design and implementation" was published in 1984 (FAO Forestry Paper 47). The document defines the pedagogic requirements and procedures for forestry training at the technical level and provides for the aims and methods of training, with suggested curricula under alternative training systems. As discussed below (see para. 10.23), the approach has been more specifically elaborated for forestry extension training in subsequent guidelines. Another document under preparation is a handbook on ergonomics, which is intended to help introduce job safety and health considerations for forestry personnel into the education/training curricula. Apart from its use for training, it could be also used as a practical checklist for industrial managers to enhance ergonomic considerations in work environment. The subject is a much-neglected area in most developing countries and FAO has been promoting the enhanced awareness of its importance in cooperation with the International Labour Organization (ILO), the International Union of Forest Research Organizations (IUFRO) and the FAO/ECE/ILO Joint Committee on Forest Working Techniques and Training of Forest Workers.

b. Support to forestry institutions

- 10.20 During the last three biennia, the focus shifted from development issues related to public forest administration to those of rural institutions which play a critical part in facilitating active participation of the rural communities in forestry development. Until 1985, the priority was on analysis of constraints and needs of national public forest administration with a view to enhancing their roles in planning, implementing and managing development programmes and projects. With the support of SIDA-funded projects, a number of regional and sub-regional surveys and national case studies (covering English-speaking countries of Africa, Asia and the Pacific and Latin America and the Caribbean) were conducted as a basis for identifying specific measures needed at the country and regional levels. As the last of the series, a regional survey covering 26 French and Portuguese-speaking countries of Africa was completed during 1984 and 1985, and findings were summarized in "the Public Forest Administration in French-speaking Countries in Africa" in 1985. The findings were also reviewed at a regional seminar on the subject in 1985 with participants from 25 countries. The seminar highlighted the need to strengthen the rural development orientation, the institutional capacity for policy and planning and monitoring; to realign laws and administration rules to the new orientation; to rationalize the administrative structure; and to enhance its functional capacity through staff training and better logistic means.

- 10.21 In the field of rural forestry institutions, the aim has been to analyze those factors which are critical to successful functioning of grassroot organizations in facilitating effective participation of farmers and rural communities in forest development. Three initial case studies on rural organizations (one each in Argentina, India and Pakistan) were completed during 1986/87, and the case studies on India and Pakistan were reviewed by the FAO Regional Commission for Asia and the Pacific in 1987, in the context of evolving a strategy for promoting participatory community forestry development. These and other studies highlighted the importance of financial incentives for active participation of farmers and their organizations, and to follow up this issue, an approach paper has been prepared regarding key problems in social forestry financing. The paper reviews the feasibility and problems in using the established rural credit schemes in meeting the long-term investment needs of individual farmers, their organizations and rural enterprises, and concludes with a set of recommendations for introducing special schemes for this purpose. It is intended to elaborate more operational and practical guidelines on the subject for field testing through selected field projects.

c. Forestry extension and public education

- 10.22 Support to forestry extension is provided under several other Sub-programmes in their respective technical fields, especially for watershed development, wild-life conservation and development, and increasingly for participatory forestry development. The primary thrust under this Sub-programme has been to strengthen the training programmes for extension staff, especially through improving curricula of forestry training institutions. The progress of work in this field has been adversely affected by the resource constraints.
- 10.23 The major accomplishment in this area has been the preparation and publication of a set of three guidelines, "Forestry Extension Organization" (FAO Forestry Paper 66, in English and Spanish), "Forestry Extension Methods" (FAO Forestry Paper 80, only in English so far) and "Forestry Extension Curricula" (FAO Forestry Paper 85, in English, French and Spanish). The overall framework is the reorientation and strengthening of forestry extension towards a people-oriented approach and all three volumes are based on practical experience at the field level. The volume on extension organization provides an institutional and management perspective for overall organization and functioning of national forestry extension systems, while the second and third volumes address, respectively, operational issues in conducting extension activities at the field level and alternative pedagogic packages of training programmes and curricula. The three volumes have been widely disseminated to relevant field projects and national institutions; the first two volumes were reviewed, and generally well received, in 1988 at a workshop organized under a regional project for wood energy development in Asia and the Pacific.
- 10.24 An increasing number of countries in Africa has been emphasizing forestry activities for community development and for fuelwood, in which field extension has a critical role. In view of this trend, especially among French-speaking countries, a review has been initiated to examine the national forestry extension systems of these countries as a first step in identifying their specific needs. Case studies of six countries (Benin, Congo, Madagascar, Mali, Niger and Tunisia) have been prepared by national authors, but due to the uneven

qualities of several of these, the completion of the overall study has been delayed. Its completion is now planned for 1990. Similarly, a regional workshop on forestry extension training for the francophone countries of Africa, originally scheduled for 1986/87, had to be postponed to 1990/91 due to the resource constraint.

- 10.25 During the present biennium, increasing emphasis has been given to the promotion of forestry considerations in public education in line with the shift of priorities under the Major Programme 2.3. The need for wider appreciation of the role of forestry in agricultural/rural development and in natural resource conservation has been highlighted in the TFAP and was also stressed by the Committee on Forestry in 1986. A guideline is being prepared on "increasing public and political awareness of the importance of forests and forestry", to be published in English, French and Spanish.

d. Promotion of national forestry research

- 10.26 The focus of the Sub-programme on this subject is primarily on the institutional and manpower development aspects, with specific technical support provided under the respective Sub-programmes dealing with the particular subject matters. The role and status of forestry research institutions had been covered under numerous reviews of forestry institutions and manpower development previously carried out at the national and regional level, and this has provided a broad synthesis of the status and activities of research organizations, on the basis of which review papers on forestry research have been prepared for the various FAO Governing Bodies and regional forestry commissions.
- 10.27 A major effort has been devoted during the biennia, through questionnaire surveys to update and systematize the basic information on forestry research institutions around the world. The information has been published in two complementary documents, "World List of Institutions Engaged in Forestry and Forest Products Research" (FAO Forestry Paper 62) and "World Compendium of Forestry and Forest Products Research Institutions" (FAO Forestry Paper 71). The "World List" identifies a total of 1 111 main institutions and some 600 field stations engaged in various types of forestry research, including 552 main forestry research institutions in developing countries. The "World Compendium" covers 581 main institutions in 104 countries, including 246 in 76 developing countries, with more details than the World List (the staff, subsidiary stations, research activities, facilities, publications/services and international cooperation). The two documents are intended to promote cooperation among these institutions. The computerization of the data-base, which will facilitate its updating, has been completed.
- 10.28 The Sub-programme also provided a major input into the FAO technical consultation on wood energy research and development in Africa, held at Addis Ababa in 1984 with 31 participants from 28 countries and observers from 15 international organizations. This comprised an analysis of the institutional capacity for wood energy research in 23 countries and a review of national priorities on wood energy research in 25 countries: both were based on questionnaire surveys and visits to the countries concerned. The consultation endorsed a proposal for regional cooperation on research and development of wood energy, and this is being promoted inter alia, under two regional projects supported by trust funds from Italy and the Netherlands, both designed to strengthen regional cooperation.

- 10.29 One of the priority issues highlighted in various fora is the management and organizational aspects of forestry research. During the current biennium, preparatory work has been initiated to analyze the issues involved, and a technical document on planning and management of forestry and forest product research is planned to be published in the next biennium to serve as a practical guide on this subject.

e. Forestry policies and legislation

- 10.30 A number of studies on these subjects have been carried out, often in conjunction with reviews of public forestry administration, in order to keep abreast of the status and trends in the member countries and to provide a basis for assessing their needs for assistance from FAO. During the three biennia, forestry policy reviews were undertaken for Algeria, Sudan and four countries in the Western Pacific (Fiji, Papua and New Guinea, Solomon Islands and Vanuatu) under the Regular Programme and for six countries in the Eastern Caribbean (Antigua and Barbuda, Montserrat, Dominica, Grenada, St. Lucia, St. Vincent and the Grenadines) under a TCP project with Regular Programme support. These studies reviewed the existing forestry policies as well as related administrative and legislative aspects in order to identify issues and to recommend specific measures for updating and aligning the policy instruments to meet the requirements for re-orientation in their national forestry development approaches.
- 10.31 The review on four Western Pacific countries, which has been issued as a comparative study, highlighted, inter alia, the need to upgrade the national policy and planning capacity, to make periodic reviews of the relevance and effectiveness of the development policies and programmes, including monitoring of the sector performance against concrete targets, and to promote greater cooperation among these countries to learn from the experiences of one another. The recommendations of the study have been accepted in principle by the Governments, and are being incorporated into the respective country proposals for review with potential donors under the TFAP. The study on six Eastern Caribbean countries was conducted to assist in the review and preparation of policy and legislation relating to forestry, wildlife and national parks. The recommendations of the review, including draft proposals on policy and legislation were reviewed and endorsed by the senior forestry officials of the countries at a sub-regional seminar, and subsequently by separate national committees established in each country. The proposals are now being reviewed at the CARICOM level.
- 10.32 A comprehensive study of forestry policies among the European countries has also been undertaken at the request of the FAO European Forestry Commission (Twenty-second Session in 1985) and the EEC Forestry Commission, and in collaboration with the European Forestry Commission, the Timber Committee of the Economic Commission for Europe and Forestry Division of the Commission of the European Communities. The first volume was published in 1989 (FAO Forestry Paper 86), comprising summaries for 28 countries and a second volume with a comparative analysis of the nature and scope of different approaches among the countries on important aspects of forest policies is planned to be published later in 1989. Apart from meeting the request for such a comprehensive study by the European countries, the review offers specific examples of alternative means of addressing the key

issues in forestry policies and administration, which are of interest to many developing countries. A similar comprehensive forestry policy study is planned for the next biennia for the countries in the Near East region as recommended by the Ninth Session of the Near East Regional Forestry Commission.

- 10.33 In order to respond to the growing felt needs in many developing countries, a "Guidelines for Forest Policy Formulation" was prepared (FAO Forestry Paper 81, published in 1987). The Guidelines are intended to help in adjusting and strengthening the policy formulation and planning process as a key instrument in re-orienting the forestry development policies and programmes, and especially to reflect the need for the forestry sector to serve broader development objectives. It provides a framework for policy and planning development in terms of the substantive considerations as well as the process and mechanism involved, including its link with legislative, administrative and institutional aspects. The document is the first major publication on the subject and has been in much demand from various national forestry agencies and field projects - some 2 000 copies have been distributed. The Guidelines are being used as a basic input of FAO support to the review and upgrading of forestry policies in Ghana and Pakistan in 1989. However, given the complexity of the subject, practical application of the Guidelines will probably require further discussion and elaboration, through workshops/seminars, on the principles outlined in the document.
- 10.34 One of the priority issues in the field of forestry policies has been that of how to ensure proper recovery of value and revenue for the community and the nation as a whole from the sales and utilization of forest products in developing countries. This is a basic economic issue in promoting sound utilization of the existing forest resources as well as their conservation and renewal. A broad and comprehensive guide was published in 1983 as "Forest Revenue Systems in Developing Countries" (FAO Forestry Paper 43) addressing the principles and alternative methods of establishing appropriate levels of forest revenues from public forests and forest lands. In order to provide more operational guidance on the application of measures reviewed in that document, work is in hand to develop a practical guide during the next few years.
- 10.35 As part of an on-going review of the national forestry policies and programmes, especially in the context of community forestry development, there has been an increasing request for assistance in revising forestry legislation. During 1984 and 1986, two such reviews were carried out for selected African countries, in collaboration with the Legal Office. One was in relation to community forestry development, covering nine countries (Burkina Faso, Cape Verde, Central African Republic, Chad, Gambia, Mali, Mauritania, Niger and Rwanda). The other was carried out for the 11 member countries of the African Timber Organization (ATO) covering Cameroon, Central African Republic, Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Ghana, Liberia, Nigeria, Tanzania and Zaire. The findings were published in "Forest Legislation in Selected African Countries (FAO Forestry Paper 65, 1986). The document was originally prepared to support the members of ATO in harmonizing and modernizing their forestry legislation and was also used for a seminar for officials of ATO member countries. The study comprises a comparative analysis of forestry legislation on several key aspects and a summary synthesis of national legislation among the 11 countries. It indicates that despite many adaptive measures having been taken, forestry legislation in many member

countries has suffered from various shortcomings, primarily due to the gaps in the original objectives and concepts for forestry laws and the subsequent changes in forestry development objectives, especially in regulations regarding land-tenure and customary rights, land-use planning on forest areas and soils, and timber allocation procedures to small enterprises and rural communities.

Effects and Impact

- 10.36 The function of the Sub-programme is primarily service-oriented, providing institutional and manpower development inputs to underpin substantive technical activities, both within FAO's work and at the country level. It also deals with subject-matters, which represent more intractable and intangible aspects of the development process, perhaps least amenable to clear-cut scientific solutions. This explains, to a large degree, the emphasis on studies and surveys under the Sub-programme activities, and at the same time, it makes gauging the effects and result of these outputs rather difficult. Here, a brief analysis is made on the contribution of the work under the Sub-programme: (i) to other elements of FAO's forestry programmes; (ii) to the member countries and international communities through the information and knowledge analyzed and disseminated, especially in the form of guidelines and reference materials, and (iii) to national development activities primarily through field projects in institutional and manpower development in the forestry sector.
- 10.37 The Sub-programme is the focal point for manpower development (forestry education and training) and institutional aspects (especially, public forestry administration, general forestry policies and legislation), providing the necessary inputs on these aspects to the Major Programme (Forestry). In particular, the vast amount of information accumulated under the Sub-programme at national, regional and global levels regarding forestry manpower, education as well as institutional aspects is an invaluable source of intelligence for FAO forestry activities, both under the Regular and Field Programmes. A number of useful studies and guidelines have been produced in support of community forestry development, highlighting the critical issues in reorienting the institutional structure and function of public forestry administration, education and training of extension staff and related policies and legislative measures. In the planning and implementation of the TFAP, the information has been a valuable basis for background analysis at the national and global levels, including preparation of policy-oriented papers for the Committee on Forestry Development in the Tropics and the Committee on Forestry. Ten TFAP preparatory missions have been supported through direct participation. In some technical areas, the Sub-programme has also provided key inputs in support of other programmes. For example, in the field of mechanical forest industries, it has cooperated in developing a methodology for estimating manpower training needs, training curricula, legislative requirements and a guidelines on ergonomics. One result of this support is the FAO/Italy regional project on forest industries training covering the nine member countries of SADCC. In terms of field projects, the Sub-programme has had one of the largest components within the Major Programme (Forestry).
- 10.38 The Regular Programme activities under the Sub-programme provide benefits to member countries primarily through publications which have been widely distributed to national institutions and field projects.

The findings of surveys, reviews and case studies on current issues are published as reference materials, and for this reason, some are released in the language of the countries concerned, while efforts are made to publish major documents of wide interest in three languages (English, French and Spanish). Many of these studies, especially those involving FAO consultants' visits to the countries, have also proven to be of benefit by providing national forestry officials with opportunities to analyze the particular issues with the FAO consultants. For example, as mentioned above, the review findings on forestry policies of the four Western-Pacific countries are now being incorporated in the project proposals under the TFAP.

- 10.39 The several guidelines prepared during the three biennia have been widely distributed, and while it is difficult to assess systematically the reception and use of these guidelines by the officials of developing countries, a positive indication is the continuing demand for them. The publications on forest revenue systems, policy formulation, technical training and the three volumes on extension training are cases in point. The methodology for forestry manpower assessment has been applied through FAO-assisted field projects in a number of countries during recent years, including Bhutan, Papua New Guinea and Sudan. These studies and guidelines also form a basis for discussion in various FAO fora, especially the Regional Forestry Commissions, and the Asia and the Pacific Forestry Commission has established a working party on forestry education. With FAO's encouragement a TCDC approach is being pursued by countries in Asia and the Pacific on forestry education and training, including the establishment of a regional community forestry training centre in Thailand and a proposal for the establishment of an Asian Network of Forestry Education.
- 10.40 The direct contributions of the Sub-programme to Member Nations have been primarily through the Field Programme aimed at institution-building for self-reliant forestry development. In forestry education and training, some 30 countries have been assisted during the three biennia in strengthening educational and training institutions, including curricula development and teacher's training at all levels as a major element of the projects. In Lesotho, an FAO/SIDA project has been assisting, through two phases since 1981, in the establishment and development of a two-year diploma course at Lesotho Agricultural College (at Maseru) which is the only institution engaged in forestry training in the country. The course, which was upgraded from the original one-year certificate course, has become well-established and has trained some 35 graduates and built up the national teaching staff, including two former graduates of the course receiving M.Sc. degrees through fellowships. Since 1985, the course has been training students from Botswana, 9 so far. The project also helped introduce and integrate forestry subjects as part of the agricultural certificate training at another agricultural college, and some 65 completed the training by 1989, with many employed as extension staff for agriculture and forestry. The project was considered by the joint FAO/SIDA evaluation mission in 1987 to be making a major contribution to manpower development in Lesotho, enabling the Government to evolve a fully-fledged forestry office.
- 10.41 In Bangladesh, an UNDP/FAO project has been assisting, since 1986, in the rehabilitation and development of the Institute of Forestry at Chittagong University as the principal training institution at professional level. The focus has been on improving the curriculum for a four-year B.Sc.(Hons) degree, providing teaching materials and aids and on upgrading the teaching staff through fellowship training.

By mid-1988, 55 students had graduated and 5 of 13 teaching staff had been trained. The curricula had been re-oriented to the emerging needs of the forestry sector, especially by broadening the scope of general education, and highlighting components for community forestry, agro-forestry and practical training. The mid-term evaluation mission in 1988 found that good progress was being made towards providing high quality B.Sc. (Hons) degree holders and recommended a three-year extension to ensure further overall institutional development.

- 10.42 Another noteworthy example in the related area concerns support to teacher training, including curricula development, which has been encouraged by the Sub-programme. An FAO/SIDA project assisted during 1980-84 in the establishment of a Regional Centre for Forestry Education Development for Asia and the South-west Pacific regions (now known as the Institute of Forestry Conservation) in the University of the Philippines, Los Baños. The courses were attended by 86 forestry teachers from 16 countries, and this helped to meet trained teacher needs for community forestry in many countries in the region. More recently, following assistance from an FAO/SIDA project in curricula development for community forestry during 1984 and 1986, a regional training centre for community forestry has been established at Kasetsart University in Thailand, beginning with a six-month diploma course in 1988, with 13 participants from China, Indonesia, Malaysia, Nepal, Pakistan, the Philippines and Thailand as well as from Lesotho, Malawi and Uganda.
- 10.43 In the field of forestry extension and institutions, some 25 and 20 countries respectively, have been supported, and an example of an FAO/Netherlands project in Peru illustrates contributions of FAO field activities on these subjects. With the objective of strengthening the Peruvian Forest Service to promote self-sustaining forestry development among the Andean communities, the project has helped since 1982 in formulating a participatory development programme, decentralization of the planning and implementation functions from the national forestry service to the regional forestry offices, and in the establishment of an extension programme. Training has been especially highlighted at the regional offices for the national staff on a variety of support activities (such as community nursery operations and marketing of forest products) as well as farmers (some 4 000 trained in such matters as community nurseries, community forest industries). By 1986, the number of participating communities increased from 24 to over 80, with the establishment of 100 forestry committees, 150 community nurseries, 250 school nurseries, 3 500 ha. of community plantations, 25 communal forest industries and the introduction of 1 000 improved wood-burning stoves. Beyond these achievements, the project had a catalytic effect in creating a new approach to forestry development in the country, including the strengthening of social reforestation, forestry extension and training as well as the launching of a major programme of forestry education by the Department of Education.
- 10.44 In some countries, especially in Latin America, FAO has been involved in forest development in very comprehensive ways. For example, both in Costa Rica and Honduras, FAO has assisted in the overall institutional development in the forestry sector over the last 20 years. This has covered the formulation of forestry plans and legislation, support to forestry education and training institutions, (especially on the development of curricula for reorientation in training), and institution-building of the primary national agency responsible for the forestry sector. In Costa Rica, the Forestry Directorate was

assisted in decentralizing the management and administrative functions from the national to regional offices, including the introduction of improved planning and programming mechanisms. In Honduras, the Forestry Corporation (COHDEFOR) was assisted in the formulation of national policies, strategies and priority actions for the period 1986-90 as well as in adjusting the operational and organizational structure of the Corporation in line with the new forestry objective, strategies and programmes. In both cases, FAO support included identifying the ways and means for better coordination and collaboration among the public and private organizations involved in the forestry development sector.

Outlook and Issues

- 10.45 The Sub-programme has been an active one, covering several related but different fields of topics, its outputs characterized by a large number of studies, reviews and guidelines. The emphasis on forestry education and training and on broader institutional issues, including policies and legislation, has enabled the Sub-programme to make relevant and useful inputs within the Major Programme 2.3 (Forestry), and the experience and information accumulated is a highly valuable asset. The importance of the subjects covered by the Sub-programme is likely to grow in view of increasing attention being given to broader policy and institutional issues under the TFAP and more generally the "structural adjustment" approach. In recent years, however, the resources available to the Sub-programme, both Regular Programme and especially under extra-budgetary resources, have diminished with adverse affects on programme implementation, especially because of the relatively small size of the unit. In this context, there are some important issues to be considered for the future of this Sub-programme.
- 10.46 Some of the salient issues include:
- a) the location of FORE - the Forestry Education, Employment and Institutions Branch (FORE), which is responsible for the Sub-programme, is located within the Forestry Resources Division, although much of its work is substantively more related to the functions under the Policy and Planning Service (FODP) within the Office of the ADG/Forestry. This is particularly true for activities in the field of forestry policies, legislation and institutions, and to a certain extent, also for extension work (for community forestry). In fact, the work of these units are integrated into one Programme 2.3.3 (Forest Investment and Institutions). Because of the compact size of the Department as a whole, this organizational separation does not appear to have seriously hampered the necessary coordination in work planning and implementation. However, a more rational organizational link between the two units would facilitate their functioning as a critical mass of related expertise as well as more systematic integration and feedback to their mutual advantage. A possible improvement in this respect could be considered;
 - b) priority for the Sub-programme - the subject matters covered represent many important and indispensable areas of "non-technical" work in the forestry sector, although some of these are also carried out by other units in a complementary way, like training and extension. The relative importance of these topics is also indicated by a relatively large volume of work under the related field component. In this context, the size of the Regular

Programme resources available to the Sub-programme appears rather modest, especially given the complex and wide-ranging nature of subject-matters like policies and legislation, public administration, education and research. This issue needs to be considered in relation to the point raised above;

- c) the focus and scope of work under the Sub-programme - the nature of the key subjects covered is individually complex and their scope is broad. With substantial extra-budgetary support for umbrella projects, the Sub-programme was able, until 1982, to play an active role in all the five key areas with relatively modest Regular Programme resources. Without such extra-budgetary support, the scope of activities now appears too wide, resulting in stretching resources thinly over too many activities. For example, while some useful guidelines have been produced, it has not been possible to follow up with seminars and workshops to promote their application. Because resources are likely to remain scarce in the near future, with a continuing heavy workload on the small number of staff, especially for technical backstopping of field projects, it would be advisable to narrow the range of activities to carefully-selected core activities, which are both related and mutually reinforcing, and which are complementary to other priority work of Major Programme 2.3 (Forestry). In this respect, the Sub-programme's role in the policy field should be further clarified;
- d) functioning of the FAO Advisory Committee on Forestry Education - this Committee has played a useful role, providing an international forum for exchange of professional ideas and experiences on selected development issues of interest to FAO as well as for reviewing and advising on FAO proposals. However, in recent years, many members, especially from, but not exclusively, developing countries could not attend the sessions due to lack of funding. Attendance at the last two sessions has been about 50 percent. This trend, unless reversed, would jeopardize the spirit and purpose of the concept of an international advisory committee. It is important to seek ways and means to help find a solution to this problem;
- e) problems relating to publications - publications are the major form of outputs of most of the Regular Programme work under the Sub-programme, and there have been many. In this respect, the rising cost of publications at a time of resource limitations and reductions results in delays in publishing key documents in all the official languages.

PART THREE

This part of the review discusses two topics which cut across all FAO's programmes or sub-programmes. The topics covered include:

- Chapter Eleven : Review of FAO's Policy and Planning Support to Member Countries
- Chapter Twelve : FAO Support to Member Countries in Conservation and Amelioration of the Natural Environment and Introduction of Environmental Considerations into FAO Projects and Programmes

Because of the diversity of the subjects covered, it has not been possible to maintain a uniform format for the two chapters.

CHAPTER ELEVEN

REVIEW OF FAO'S POLICY AND PLANNING SUPPORT TO MEMBER COUNTRIES

I. Introduction

- 11.1 In all nations, the success of agriculture in terms of increased production and sustained rural income depends to a very large extent on the development of appropriate governmental policies. The right policies at the right time are as important as the availability of appropriate technology, adequate capital, effective institutions and people's participation.
- 11.2 The term "policies" covers a vast range of subject-matters. In the national context, some agricultural policies are of fundamental importance for the economy as a whole, such as whether agricultural prices should favour producers or consumers. Some policies are highly technical in character, such as the use of mechanical tractors versus animal traction. Some policies have international dimensions, such as the fixing of quotas and prices for certain internationally traded crops, such as coffee or natural rubber. Some agricultural policies have regional dimensions, such as food security or inter-country trade in agricultural commodities among a group of countries, e.g. SADCC or ASEAN.
- 11.3 FAO's credentials in the policy field derive mainly from the Organization's work at global and regional level. In the country context, decisions on policy are of the very essence of national sovereignty. In the fifties and sixties, technical organizations like FAO were not generally regarded as having a direct role in the shaping of national policies and most of FAO's effort went to global and regional policy studies which made an indirect contribution to national policies.
- 11.4 While it remains true today that national policies are the exclusive prerogative of the governments concerned, nevertheless there has been a growing recognition - especially since the food crisis of the mid-seventies - that FAO (and other technical bodies) can contribute usefully towards the analysis which precedes policy decisions and be involved in the implementation process which follows them. This evolution can be illustrated, in the case of FAO, by the expression of support from the 1987 Conference for "FAO's key role in providing policy advice to Member Nations within its sphere of competence and to the desirability of strengthening such a role". The Conference "urged FAO to step up its policy advice and training at the national level to help developing countries to formulate and implement the appropriate food and agricultural policies in line with national priorities and situations".*
- 11.5 FAO's policy and planning role can be viewed as a continuum. Global studies and plans provide the basis for advice at national level. In

* C 87/REP, paras. 184-5

turn, national projects with a component of policy advice enable the global and regional work to achieve a practical impact in countries. Moreover, the analysis of the results achieved through the implementation of on-going policies and plans provides valuable lessons for the future.

- 11.6 While FAO's role as a policy adviser in the national context is now less controversial than it was ten or twenty years ago, nevertheless policy advice remains a highly sensitive area. It may, therefore, be recalled that for this, as for all other types of assistance, FAO can only intervene in response to a request from the government concerned.
- 11.7 This chapter reviews the experience and achievements of FAO in providing policy advice and planning support, including institution-building assistance, to member countries since the late 1970s. In line with the idea enunciated in the preceding paragraphs of a continuum at global, regional and national levels, the analysis is also structured at these three levels. As far as possible, the chapter provides both a quantitative and qualitative assessment. Although the accent of the chapter is on Regular Programme activities, the experience at the country level through field projects is also highlighted.
- 11.8 For this chapter, the term "policy advice and planning support" has been defined rather narrowly to include only those activities, including FAO's own choice of intervention, which have a direct bearing on the decision-making process of member countries in arriving at alternative development options and strategies. Such policy and planning may cover one of the three following categories: (i) comprehensive global policy studies and strategies; (ii) regional and sub-regional policy studies and strategies; and (iii) policy advice and planning assistance at country level. The emphasis is on the design of development policies and their translation into plans and programmes at all levels, global, regional and national. This definition excludes all activities which are narrowly focussed on resource assessment and data collection as well as analysis of specific technical issues relating to various aspects of food and agriculture (including fisheries, forestry and rural development). Such activities are considered as inputs into the process of policy formulation and planning. Similarly, resource management, feasibility studies and the preparation of specific projects, per se, are excluded as these represent the means for implementing a policy strategy or plan. The monitoring and evaluation activities are also excluded from this definition. These exclusions are dictated by the need to limit the scope of the chapter on the main thrust of policy advice and planning support, though it is well recognized that supporting activities are building blocks to FAO's policy analysis and planning work and that the narrow definition excludes the contribution of some Sub-programmes which may be involved partially or on ad hoc basis in policy and planning work.

II. Role and Nature of FAO's Policy and Planning Activities

A. FAO's Role

- 11.9 In view of its global mandate, FAO's role in policy analysis and planning involves four major aspects:
- (i) establishing the codes of conduct, norms and decision-making criteria which provide a normative framework to assist Member Nations in the formulation of sound policies and plans in

agriculture, fisheries, forestry and rural development as a whole, or for sub-sectors and commodities, as well as assisting in their implementation. Such policies and plans may be formulated at the global, regional, sub-regional or national level;

- (ii) development of new approaches and techniques that facilitate policy analysis and planning;
- (iii) organizing and servicing inter-governmental fora where policy issues are discussed and decisions reached, for possible action by Member Nations, the FAO Secretariat and other UN agencies and funding organizations;
- (iv) providing direct assistance to member countries, individually or collectively, in reviewing policies and performance, redesigning development policies and translating them into plans and programmes, and strengthening their capacity for policy analysis and planning work.

11.10 While each of the above aspects represents an important role individually, they are closely linked, especially in cases of major policy and planning frameworks initiated by FAO. For example, WCARRD, the Fishery Resources Management and Development Programme and the Tropical Forestry Action Plan have all involved: (i) the technical formulation of the normative policy and planning framework, reflecting a synthesis of accumulated experience of FAO and of international professional communities; (ii) development of a set of technical methods and approaches for the implementation of these frameworks; (iii) international consultations and reviews at global and regional level, during the preparation and implementation stages, including major FAO organized international meetings; and (iv) a wide-ranging assistance to individual countries in the preparatory and implementation phases, through specific field projects, both at the regional and national levels. In fact, it is this ability of FAO to play such diverse roles in an integrated way that distinguishes the Organization's work in the policy and planning field.

11.11 Thus, the basic work of FAO, as a technically-oriented UN specialized agency, lies in the formulation and promotion of technically sound policy and planning frameworks, building consensus among member countries and developing new approaches and techniques in the related areas. Such policy and planning related work is implicit in all aspects of FAO's technical activities, and is a logical growth of its technical assessments on major problems at the global and regional level. Some roles played by FAO in policy analysis and planning are briefly highlighted below.

a. Normative Framework - Codes of Conduct, Norms and Decision-Making Criteria

11.12 Policy-makers and planners need to develop a set of coherent social and economic parameters and targets for formulating development objectives and strategies as well as for assessing alternative objectives and strategies. In this respect, FAO has developed and promoted a number of sound policy frameworks for use by the member countries. Most important among these were the Guidelines for International Agricultural Adjustment (IAA), guiding principles and decision-making criteria for food security and nutrition, rural development and agrarian reform, and the conservation and rational exploitation of

natural resources, including legal principles which govern the use of natural resources. The examples of two areas are given below to illustrate the nature of such policy and planning frameworks.

(i) WCARRD

- 11.13 WCARRD established a comprehensive set of guiding principles for policy-makers and planners on key ingredients for the success of rural development: access to productive resources and services; people's organization; integration of women in rural development; development of non-farm rural activities; and education, training and extension. It also made proposals on such matters as external financial assistance, food aid, etc. Under each programme, specific policy measures were suggested. These are essentially normative and set long-term goals. To make the objectives operational, particularly at a national level, further elaboration is required with respect to immediate objectives and specification of targets and expected outputs. This is precisely the purpose of WCARRD follow-up assistance.

(ii) Management of Natural Resources

- 11.14 In the field of conservation and rational utilization of natural resources, FAO has developed sets of decision-making criteria to guide planners. Each of the recently concluded agreements on environmental matters contains a set of principles. The agreements, on which more details are provided in Chapter Twelve, include FAO's World Soil Charter (1982), the International Undertaking on Plant Genetic Resources (1983), the International Code of Conduct on the Distribution and Use of Pesticides (1985) and the Tropical Forestry Action Plan (1985). For example, the World Soil Charter provides guidelines for sustainable land use; its principles are essential components of evaluation work which identify options for alternative land uses. This information, in turn, forms the basis on which land use planning is carried out. FAO has subsequently prepared "Guidelines for Land Use Planning" to provide planners with a clear methodology to guide their work. Similarly, the World Conference on Fisheries Management and Development, held in 1984, approved a strategy which has been extensively used by Member Nations as a model to redefine their fisheries policies, strategies and plans.

b. Planning Approaches and Techniques

- 11.15 Planning is fundamentally a multi-disciplinary exercise. This is particularly evident in sector planning which calls for interventions in all sub-sectors. Even at the sub-sector level, effective planning requires combining strictly technical aspects within a macro-economic framework. As a minimum, the technical specialists require the inputs of an economist. FAO has elaborated and promoted several planning approaches such as regional and area development planning, decentralized planning and some analytical tools for global policy and planning work.

(i) Regional and Area Planning

- 11.16 FAO has promoted a multi-disciplinary approach covering a wide range of interventions in the development of the agricultural sector, within a specific geographical area, in a number of countries. The approach covers a number of disciplines, from land evaluation and land use planning to the elaboration of an appropriate inputs policy (seeds, fertilizers, pesticides, credit), and further to the marketing of the

expected incremental outputs to justify the investment be it in dams, canals, feeder roads and storage structures. Examples include the northern region of Sudan, the Arable Lands Development Programme of Botswana, the Rural Development Programme of the eastern-central region of Burkina Faso, the development of highlands in Ethiopia, the transmigration programme of Indonesia, and the development of the northern region of Thailand. In planning for river basins development, a similar approach has been followed, often involving the preparation of a "master plan" for the integrated development of a basin, cutting across the national boundaries of the countries concerned, as applied to the Senegal River basin in the 1970s.

(ii) Decentralized Planning

- 11.17 A decentralized planning approach (sometimes called multi-level planning) has been formulated in order to close the possible gaps between planned targets and achievements and to facilitate, through the involvement of several levels of decision-makers, a more equitable distribution of resources for balanced growth. Since its inception in 1983, multi-level planning has been applied in several planning assistance projects in all developing regions. In 1987, the approach applied to the Near East and North Africa region has been elaborated in a document on "Regional Decentralization for Agricultural Development Planning in the Near East and North Africa", prepared in consultation with the Near East Regional Economic and Social Policy Commission. The first step in adopting a decentralized multi-level planning framework is to assess the additional trained manpower necessary for agricultural planning and project analysis at all levels. A practical approach was presented in a 1987 report based on the experience of Gujarat State in India, which has made excellent progress in multi-level planning. Other studies of the same type, produced in 1988 and 1989, cover Egypt, Jordan and Sudan.

B. Nature of Policy and Planning Activities

- 11.18 As mentioned in paragraph 11.5, FAO's major activities in policy analysis and planning can be grouped into three main categories: Global Policy Studies and Strategies; Regional Policy Studies and Strategies; and Policy Advice and Planning Assistance at Country Level. The nature of work under these three categories is listed below with a few examples. Further details are covered in Section IV of the Chapter, which deals with outputs and achievements.

a. Global Policy Studies and Strategies

This category includes three sub-sets:

- (i) Comprehensive policy studies such as Agriculture: Toward 2000; the Agricultural Price Policies Study and the International Agricultural Adjustment (IAA). These studies have established long-term policy perspectives and guidelines which are used by member countries as a frame of reference.
- (ii) Global sector and sub-sector strategies such as WCARRD's Declaration of Principles and Programme of Action, International Undertaking on World Food Security, Tropical Forestry Action Plan (TFAP), Strategy for the Management and Development of Fisheries, Commodity Trade Policies and Strategies, the International Code of Conduct on the Distribution and Use of

Pesticides, Legislative Principles of Soil Conservation, Guidelines for Land Use Planning and Agricultural Mechanization Strategies.

- (iii) Development of methodologies for policy analysis and planning such as multi-level planning, Agricultural and Population Planning Assistance and Training (CAPPA).
- b. Regional and Sub-regional Policy Studies and Strategies such as African Agriculture: the Next 25 Years, Potentials for Agricultural and Rural Development in Latin America and the Caribbean, European Agriculture, Policy Issues and Options, SADC Agriculture Toward 2000, the Soil Conservation Strategy for Africa.
- c. Policy Advice and Planning Assistance at Country Level, such as:
 - (i) sectoral policy advice and planning assistance to individual countries, e.g. Tanzania, Malta;
 - (ii) assistance in relation to structural/sectoral adjustment programmes, e.g. Indonesia, Senegal;
 - (iii) sub-sector studies and plans, including assistance in: agricultural research planning to Guyana, Pakistan and Viet Nam; dairy development to Ecuador and Tanzania; fisheries policy to Indonesia, forestry sector reviews in Fiji, Honduras and Papua New Guinea, fertilizer strategies and policies in Pakistan, Ethiopia and Tanzania;
 - (iv) commodity policy advice such as the evaluation of the rice industry in Fiji and Gambia and the vegetable sector in Morocco;
 - (v) training in policy analysis and planning for strengthening national capacity, such as the training programme in Latin America and the Caribbean and building national capacity for commodity analysis in Fiji and Indonesia.

III. Organization and Resources for Policy Analysis and Planning

A. Organizational Aspects

- 11.19 There is an element of policy and planning in virtually every technical field covered by FAO. Consequently, it is not practical to entrust a single unit with formal responsibility for policy and planning activities in the Organization as a whole. Responsibility is borne by the line units according to the programme and administrative structure, and activities are carried out on a decentralized basis. Inter-departmental or inter-divisional working groups are established to handle complex areas cutting across several units. There are important differences both in the nature and scope of policy and planning activities and in the degree of specialization among the substantive units of FAO. The work of most units is focussed on technical rather than policy issues. However, some units are heavily engaged in policy analysis and planning work at more aggregate levels, covering a number of related sub-sectors or commodities, depending on the central themes. The latter units are largely staffed by economists and policy and

planning specialists, and are located at strategic places in the four technical departments.*

- 11.20 The spread of policy and planning activities among several units of the Organization has the advantage of facilitating quick response to any request that may be received, and it also ensures that the technical aspects of any particular sector or sub-sector are fully considered in any policy study. The need to ensure attention to inter-sectoral and inter-disciplinary linkages is met by coordination arrangements.
- 11.21 There is also a varying, but often significant, policy component in the Organization's Special Action Programmes (SAPs) and other major programmes. The SAPs and similar major programmes fall under two broad categories: (i) those distinctly related to a narrowly technical sub-sector, e.g. Seed Improvement and Development (SIDP) and (ii) those which back up broad FAO policies and strategies, e.g. Food Security Assistance Scheme (FSAS), the Tropical Forestry Action Plan (TFAP), WCARRD Programme of Action and the follow-up to the World Conference on Fisheries Management and Development. Clearly, this second group of major programmes is much more closely involved in policy and planning activities. They generally include strategies for action at national and global levels, including action by FAO. Their progress is regularly reported to the Governing Bodies.**
- 11.22 Once a decision is taken to initiate a global or regional study, or to launch a Special Action Programme, normally a lead division or unit is designated, and a committee or working group is established to bring together all the technical units concerned. Depending on the importance of the subject, a Steering Committee may be set up comprising senior managers, such as the Food Security Assistance Steering Committee, which is composed of four Assistant Directors-General (ES, AG, DD and PBE).
- 11.23 Many of FAO's Special Action Programmes require coordination of national policies at regional level, such as the Comprehensive Programme of Assistance in the Development and Management of Fisheries in the Exclusive Economic Zones (EEZ); the Programme for the Control of Locusts and Other Plant Pests; the Control of African Animal Trypanosomiasis and Related Development, launched in 1975 in close cooperation with OAU, WHO and a number of donors; the Food Security Assistance Scheme (FSAS) which has, inter alia, provided assistance to food policy coordination within CILSS countries.
- 11.24 Much of FAO's work in the policy field is of direct interest to other organizations, and involves close cooperation with a number of agencies, particularly but not exclusively within the United Nations system. Examples are Food Security (World Bank), WCARRD (most UN

* These are the Policy Analysis Division; Commodities and Trade Division, including its Food Security Service; Nutrition Planning, Assessment and Evaluation Service; the Global Perspective Studies Unit in ESD; the focal point for Policy Planning and Coordination in AGD; the Fishery Policy and Planning Division in FID; and the Forestry Policy and Planning Service in FOD.

** FSAS to CFS, WCARRD to the FAO Conference, TFAP to COFO and the Special Action Programmes of Fisheries to COFI.

agencies through the ACC Task Force on Rural Development), TFAP (World Bank and UNDP), Commodity Policies (UNCTAD, GATT, international commodity organizations) and Nutrition Policies (WHO, World Bank and UNICEF and other organizations, through the ACC Sub-Committee on Nutrition).

- 11.25 In some areas, there is very close cooperation with non-UN organizations, often through the Regional Offices. Examples include the support given to the Joint Anti-Locust and Anti-Avarian Organization (OCLALAV) in the context of the Special Action Programme for the Control of Locusts and Other Plant Pests; to JUNAC for animal health policy, in particular swine fever. Similarly, inter-governmental commodity organizations such as the Asian Coconut Community, the Asian Pepper Community and the Union of Banana Exporting Countries received advisory support in the pursuit of programmes relating to economic cooperation in the production and trade of these commodities.
- 11.26 Particular mention may be made of regional and sub-regional cooperation schemes,* which provide natural channels for Regional Offices and Joint Divisions to contribute to ECDC in food and agriculture. Generally, collaboration involves the formulation of agricultural development strategies and agricultural planning within the framework of regional cooperation, identification of mechanisms and procedures for the expansion of intra-regional agricultural trade and assistance in the design and implementation of regional, sub-regional and concerted national food security schemes. For example, collaboration with CILSS has involved, amongst other activities, technical assistance in the formulation of sub-regional agricultural and food grain policies.
- 11.27 Under the Regular Programme, the Regional Offices and Joint Divisions assist a number of FAO's regional committees or commissions on policy formulation. Examples of these include the Regional Fisheries Commissions, which establish and pursue collaborative programmes in fisheries development; the Regional Animal Production and Health Commissions which, inter alia, seek to harmonize related policies of member countries, and among them, the Committee on African Animal Trypanosomiasis, which gives policy advice and controls the execution of the FAO trypanosomiasis control programme; the Regional Commissions on Food Security and the regional committees on food standards which aim at harmonizing national policies for facilitating food trade.

* Close collaboration is maintained, inter alia, in the African region, with the Permanent Interstate Committee for Drought Control in the Sahelian Zone (CILSS), the Economic Community of West African States (ECOWAS), the Central African Customs and Economic Union (UDEAC) and the Southern African Development Coordination Conference (SADCC); in Asia, the Association of Southeast Asian Nations (ASEAN); in Latin America and the Caribbean, the Latin American Integration Association (ALADI), the Cartagena Agreement Board (JUNAC), the Latin American Economic System (SELA) and the Caribbean Community (CARICOM); and in the Near East Region, the League of Arab States (LAS), the Arab Organization for Agricultural Development (AOAD), the Gulf Cooperation Council (GCC) and the Council of Arab Economic Unity (CAEU).

B. Resources for Policy and Planning

a. Regular Programme

- 11.28 On the basis of the definition given in para. 11.8, between 1984 and 1989, an estimated sum of US\$ 81.8 million of Regular Programme resources has been allocated to policy and planning activities, or approximately 13 percent of Regular Programme resources devoted to technical programmes. Table 11.1 shows the breakdown by Major Programmes and Programmes (including the number of Sub-programmes involved in policy and planning work) and illustrates the central role played by Programme 2.1.8 - Food and Agricultural Policy, which accounted for nearly one half of the resources in the period under review. Some 41 Sub-programmes were engaged in policy and planning assistance to member countries. For 8 Sub-programmes, the estimated share of the 1988-89 budget devoted to policy and planning was more than 50 percent.* For the remaining Sub-programmes, such a share ranged from 1% to 43%.
- 11.29 Information on FAO's Regular Programme support to policy and planning can be described under five strategic actions:
- (i) advisory missions to member countries to provide support in policy fields;
 - (ii) the organization of meetings and consultations to provide policy information or to sensitize participants on particular policy issues;
 - (iii) the strengthening of national capabilities in policy analysis/ formulation and planning through training courses, workshops and seminars;
 - (iv) dissemination of policy criteria and planning techniques through publications, which include policy studies, guidelines and manuals;
 - (v) direct support to field programme activities through technical backstopping.
- 11.30 Table 11.2, which summarizes activities (i) to (iv), has been prepared by Major Programme and Programmes. No tabular information has been presented for technical backstopping to field projects as the latter follows the general pattern of all technical backstopping and support provided by Headquarters to field staff, i.e. averaging 0.3-0.4 work-months per field expert per year.

* 2.1.3.3 (Genetic Resources), 2.1.6.4 (Nutrition Policy at Country Level), 2.1.8.2 (Agricultural Policy Analysis), 2.1.8.4 (World Food Security), 2.1.8.5 (Agricultural Planning Assistance), 2.2.3.1 (Fisheries Policy and Planning), 2.3.1.5 (TFAP) and 2.3.3.2 (Investment Planning and Statistics).

Table 11.1: Regular Programme Resources
Allocated to Policy and Planning Activities
(1984-1989)

<u>Major Programme</u>	<u>No. of Sub- programmes involved in policy and planning activities</u>	<u>1984-85</u>	<u>1986-87</u> (US\$ million)	<u>1988-89</u>	<u>Total</u>
2.1 <u>Agriculture</u> of which:	33	20.1	24.3	22.1	66.5
2.1.2 Crops	(6)	(2.1)	(2.4)	2.3	(6.8)
2.1.3 Livestock	(6)	(3.2)	(3.7)	3.7	(10.6)
2.1.4 Research and Tech- nology Development	(3)	-	(1.4)	(0.6)	(2.0)
2.1.5 Rural Development	(7)	(0.4)	(0.5)	(1.0)	(1.9)
2.1.6 Nutrition	(1)	(1.0)	(1.5)	1.6	(4.1)
2.1.8 Food and Agricultural Policy	(6)	(13.0)	(13.6)	(12.6)	(39.2)
2.2 <u>Fisheries</u> of which:	3	3.8	2.5	2.9	9.2
2.2.2 Fisheries Exploitation and Utilization	(2)	(0.5)	(0.6)	(0.8)	(1.9)
2.2.3 Fisheries Policy	(1)	(3.3)	(1.9)	(2.0)	(7.2)
2.3 <u>Forestry</u> of which:	5	1.6	2.0	2.5	6.1
2.3.1 Forest Resources and Environment	(1)	-	(0.3)	(0.7)	(1.0)
2.3.3 Forest Investment and Institution	(4)	(1.6)	(1.7)	(1.8)	(5.1)
TOTAL	41	25.5	28.8	27.5	81.8

Table 11.2: Regular Programme Activities in Policy and Planning
(1984-1988)

Major Programme	Number of Activities			
	Advisory Missions	Meetings/ Consultations	Training	Publications
2.1 <u>Agriculture</u> of which:	796	275	171	548
2.1.2 Crops	(248)	(43)	(21)	(104)
2.1.3 Livestock	(166)	(27)	(19)	(57)
2.1.4 Research and Technology Development	(167)	(18)	(3)	(38)
2.1.5 Rural Development	(50)	(42)	(58)	(92)
2.1.6 Nutrition	(21)	(16)	(8)	(18)
2.1.8 Food and Agricultural Policy	(124)	(109)	(56)	(220)
2.2 <u>Fisheries</u> of which:	182	18	19	22
2.2.2 Fisheries Exploitation and Utilization	(7)	(-)	(3)	(2)
2.2.3 Fisheries Policy	(175)	(18)	(15)	(19)
2.3 <u>Forestry</u> of which:	107	16	10	41
2.3.1 Forest Resources and Environment	(104)	(7)	(5)	(11)
2.3.3 Forest Investment and Institutions	(3)	(9)	(4)	(29)
TOTAL (of which Regional Offices)	1085 (217)	309 (144)	200 (134)	611 (201)

11.31 Advisory missions: Taking all sectors and sub-sectors combined, FAO has fielded 1085 policy and planning advisory missions in the period 1984-88, or an average of close to 217 missions a year. Africa has been the largest recipient of this type of assistance, about one-third of the total. The duration of missions has varied from one to four weeks, with longer missions in Africa (24 days in the field on average) and Latin

America (18 days). The composition of missions has also varied, ranging from a single expert to multi-disciplinary teams. The outputs of these missions have been used by the recipient countries in clarifying policy options, setting development objectives, priorities and targets for agriculture, fisheries and forestry, designing strategies and policies to achieve selected objectives; and identifying operational means to implement the preferred development options.

11.32 Meetings and Consultations on Policy and Planning: These have amounted to 309 sessions over the period 1984-1988, roughly 62 sessions per year. The share of Europe and North America is in this case the highest, with some 30 meetings per year. This is explained by the fact that many inter-governmental meetings related to commodity trade policy (Programme 2.1.8) and expert consultations on plant protection policy issues, e.g. pesticides, quarantine (Programme 2.1.2), take place in Rome or elsewhere in Europe and North America, although participation and the policy orientation are mainly global.

11.33 Training in Policy Analysis, Formulation and Planning: Such training has been provided through 200 sessions in the period under review, amounting to some 40 sessions per year, with an average attendance of 20-30 national participants, mostly from developing countries. There were, however, wide variations, with some sessions for as few as 5-10 participants, while others, such as food security preparedness training activities in Zambia in 1987, had as many as 340 officials participating from all government strata. About a quarter of the sessions were entirely targetted to policy-makers, such as training to integrate nutrition considerations into policy formulation, while the rest were aimed at medium-level staff. Overall, about 40 percent of the participants were officials engaged in policy-related work. Africa and Asia attracted the greater share, with 29 percent each of the total number of training sessions, followed by Latin America (25 percent), the Near East and North Africa (17 percent) and Europe (one percent).

11.34 Publications Related to Policy and Planning: These have amounted to 611 publications over the period 1984-88, of which over one-third was produced by ESP and ESC, under Programme 2.1.8 - Food and Agricultural Policy. This figure covers only publications related exclusively with policy and planning, following the restrictive definition adopted for this chapter. These publications could be classified into three categories: guidelines (12% of the total), training materials (7%) and technical reference documents and case studies (81%) by far the largest category. Guidelines have provided policy-makers with a framework for reference and decision-making criteria in specific sectors and sub-sectors (e.g. Guidelines for Forest Policy Formulation, 1987). The guidelines were also intended for use by planners (e.g. Toward Improved Multi-level Planning for Agricultural and Rural Development in Asia and the Pacific, 1985). Training materials concerned primarily policy analysis and planning techniques (e.g. Policy Impact Analysis for the Agricultural Sector, 1988; Training for Decentralized Planning, 1987). Technical and reference material, including case studies, covered a broad range of subjects in all sectors and sub-sectors and at all levels, global, regional and national (e.g. FAO Agricultural Commodity Projections to 1990; Agricultural Research Policy and Development, 1987; Root and Tuber Crops, Plantains and Bananas in Developing Countries, 1988).

b. Support through Field Projects

- 11.35 Table 11.3 summarizes, by source of funds, the regional distribution and value of policy and planning projects over the period 1984-88. All policy and planning assistance projects in all sectors (agriculture, fisheries, forestry) have been included, as well as those projects with a major planning component. Over the period 1984-88, the total budget allocation of these projects came close to US\$ 270 million. Of the 405 projects concerned, 125 or 31 percent were development projects with a planning component. Almost 90% of field projects (both in numbers and in value) fell under the umbrella of Major Programme Agriculture, which covers the work of the two largest technical departments of FAO, the Agriculture and the Economic and Social Policy Departments. These figures, in fact, understate the extent of policy and planning support provided through the field programme, since projects with a minor planning component are excluded.

Table 11.3: Policy and Planning Projects by
Region and Source of Funds (1984-1988)
(US\$ million)

<u>Region</u>	<u>UNDP</u>		<u>TF</u>		<u>TCP</u>		<u>Total</u>	
	No.	Value	No.	Value	No.	Value	No.	Value
Africa	67	54.4	30	84.1	75	6.4	172	144.9
Asia and Pacific	31	17.5	10	6.9	24	2.3	65	26.7
Latin America and the Caribbean	44	20.6	15	21.1	44	3.3	103	45.0
Near East, North Africa and Europe	24	17.4	10	30.4	24	1.4	58	49.2
Inter-Regionals	1	1.6	6	1.8	-	-	7	3.4
Total	167	111.5	71	144.3	167	13.4	405	269.2

- 11.36 It will be noted that policy and planning projects are heavily concentrated on Africa, which received the largest share in the period under review, US\$ 145 million or 54 percent of the total. It was followed by Near East, North Africa and Europe (18 percent), Latin America and the Caribbean (17 percent), and Asia and the Pacific (10 percent). Trust Fund projects were the largest in value terms, amounting to 54 percent of the total allocations over the period, compared with 41 percent for UNDP. Particular attention is drawn to the role of TCP. Although the Programme represented only 5 percent of the total in money terms, it accounted for no less than 41 percent in terms of project numbers. This is explained by the fact that TCP is often used as a source of funding for policy advisory missions and other short-term activities such as sub-sector reviews. The importance of TCP for the Organization's role as policy adviser seems well worth underlining.

IV. Major Policy and Planning Outputs and Achievements

- 11.37 This section assesses some of the major results of FAO's policy and planning support to member countries from the Regular Programme and, to some extent, from extra-budgetary field projects in the 1980s. The assessment is made at global, regional, sub-regional and national levels.

A. Global Policy Studies and Strategies

- 11.38 At the global level, several comprehensive policy studies have been completed. It would not be feasible to provide a comprehensive analysis of all FAO policy activities at the global level, but a series of policy studies and strategies are outlined by way of examples.
- 11.39 The IAA Guidelines: The Guidelines for International Agricultural Adjustment, adopted by the 1975 Conference and revised in 1983 to take account of WCARRD and food security, constitute a set of objectives and targets for world agricultural development. The periodic monitoring reports (initially biennial, now every four years) permit member countries to review in a systematic manner every major facet of agriculture, including aid, trade and nutrition.
- 11.40 Agriculture: Toward 2000 (AT 2000): First presented to the 1979 FAO Conference, this study assessed world prospects in food and agriculture up to turn of the century. Based on data from 90 developing countries, the study concluded that with careful planning of national resources and increased external assistance, agricultural output in the developing countries could double by the year 2000. The study did not attempt to examine in detail the agricultural prospects of different regions. The study's findings were used by the United Nations in the formulation of the International Development Strategy for the Third UN Development Decade (the 1980s). A revised version was prepared in 1987, and is more policy-oriented. The 1987 FAO Conference considered the study a valuable contribution to the analysis of trends and prospects of world food and agriculture and a useful tool to both developed and developing countries in the design of their agricultural policies. The Conference also requested that the study be updated every 5-6 years.
- 11.41 Over the ten years since the first report was issued, the country-level data and projections underlying the AT 2000 analysis have been available to many organizations as well as to numerous researchers. In addition, AT 2000 material has been provided to many Ministries and Planning Bureaux in both developed and developing countries, as well as to many universities.
- 11.42 The Agricultural Price Policies Study: This was a major policy study based on a representative sample of 37 countries from all developing regions. It gathered extensive information on existing price policies, estimated the extent of price bias against agriculture, and identified key issues, options and trade-offs in the determination of price policies.
- 11.43 Although agricultural price policy is essentially country-specific, general recommendations to both developing and developed countries were attempted. The study was submitted to the 1985 FAO Conference, which called for follow-up action by both countries and FAO. It requested

FAO to concentrate more on country-level analysis. The study has led to many follow-up activities and the data bank used for the study is constantly updated.

- 11.44 WCARRD: The Declaration of Principles and Programme of Action adopted by WCARRD in 1979 provided guidelines that are still valid for the formulation and implementation of policies designed to improve growth and equity in rural areas, and to implement development programmes in accord with WCARRD's objectives and priority areas.
- 11.45 While acceptance of the principles by Member Nations was almost unanimous, difficulties have arisen at national level in carrying them out. These problems were highlighted in the second progress report on the Programme of Action submitted to the 1987 FAO Conference. The factors contributing to slow progress have been the adverse resource position caused by global recession and the adoption of austerity measures in many developing countries.
- 11.46 In each country, specific policy goals and targets were to be elaborated and priority areas for action were to be identified. While in each area of WCARRD, FAO has provided assistance through regional consultations, national workshops and sub-sector reviews,* the 21 comprehensive High-Level Inter-Agency missions fielded since 1980 have been the centerpiece of the follow-up strategy. An evaluation of the reports of thirteen missions by a consultant has shown that the missions were useful to the concerned governments in identifying immediate policy choices for the alleviation of rural poverty and assessing international assistance for key national programmes of rural development.
- 11.47 WCARRD measures concerning women were further elaborated recently, resulting in the FAO Action Plan for the Integration of Women in Development. The Ninety-fourth Session of the Council approved the Action Plan and directed FAO to make it operational by setting priorities and elaborating the strategy for implementation.
- 11.48 Food Security: The Organization's major involvement in this area goes back to the adoption of the International Undertaking on World Food Security by the FAO Council in 1974, at the height of the world food crisis. This was followed by a series of developments in response to rapid changes in the global situation. It called for national and international measures to accelerate food production; to hold stocks according to certain guidelines, including appropriate food aid programmes; to initiate special assistance to developing countries; to establish a world food information system; and to allow for regular inter-governmental consultations to achieve long-term trade agreements that will ensure adequate world food supplies and maintain price stability. The Undertaking, while not legally binding, is subscribed to by 82 governments and the European Economic Community.

* FAO/ESCWA Regional Inter-Governmental Consultation on Rural Development in the Near East, 1983; Report of the Round Table on the Dynamics of Land Tenure and Agrarian Systems in Africa, 1985; Agrarian Reform and Rural Development, Report of the Fifth Government Consultation for Asia and the Pacific Region on WCARRD follow-up, 1987; the Dynamics of Rural Poverty, 1987; etc.

- 11.49 A Plan of Action on world food security was developed in 1979 following the failure of negotiations on a new International Grains Agreement. It also proposed a financing facility to compensate countries in the event of excess costs of cereal imports caused by shortfalls in domestic production or high international prices, which was implemented by IMF. In line with the Plan of Action, 115 countries (including 86 developing countries) have adopted stock policies or pursue stock practices.
- 11.50 In 1983, the Organization adopted a broader concept of food security which included not only the objectives of expanded food production and stability of food supply, but also access to food by the poor and promotion, *inter alia*, of regional cooperation as a means of increasing food security. The policy framework was further amplified in the World Food Security Compact of 1985. The Food Security Assistance Scheme (FSAS) provides an instrument for practical action.
- 11.51 FSAS has fielded 89 policy and programming missions since its inception in 1976. There had been a general tendency for these missions to concentrate on project identification and less so on the elaboration of comprehensive national food security policies. Following the recommendations of the 1987 external evaluation of the FSAS, the emphasis now is firmly placed on policy elaboration as a first step. Comprehensive national food security policies and programmes, based on the enlarged concept of food security, are to be prepared, identifying gaps and requirements for improved food security. Moreover, this type of assistance will involve close cooperation with donors, other agencies and concerned NGOs. Such policy activities are currently being initiated in four African countries (Chad, Niger, Tanzania, Zambia).
- 11.52 The Tropical Forestry Action Plan (TFAP): The Plan, drawn up in cooperation with UNDP, the World Bank and the World Resources Institute, is being used by virtually all donors and most developing countries as a framework for intensifying both the conservation and the rational use of forests.
- 11.53 TFAP is the product of experience in policy work accumulated not only in the Forestry Department but in all other technical divisions of the Organization. It is an example of the synergetic result of organization-wide policy work. Now, all major forestry objectives promoted by FAO are combined in the TFAP strategy: people's participation, community-level activities, integration of women, food security, nutrition, rural (forest-based) industrial development, as well as natural resources-oriented activities, including concern for the restoration of fuelwood supplies, energy conservation and protection of tropical forest eco-systems.
- 11.54 The success of TFAP actions critically depends on upgrading the priority attached to forestry in national policies, on strengthening the linkages with other sectors of the economy, both public and private, and on stimulating the participation of the rural people and institutions concerned. Furthermore, to be fully effective, TFAP initiatives at country level must receive a clear and decisive support not only from national forestry institutions, but also from higher government authorities concerned in policy decisions and development planning.
- 11.55 To date, 59 countries have engaged in translating the TFAP into national initiatives, most of which consist of forestry sector reviews.

Interest for action on a regional or sub-regional basis has also been growing. One regional exercise has already been completed for Latin America and another has started for a group of selected countries of the Eastern Caribbean.

- 11.56 Fisheries: Action in marine fisheries since the 1970s has been dominated, in large part, by the extension of national jurisdiction over off-shore waters to 200 miles. In this way, some 95 percent of the marine fish harvested came under national jurisdiction. Since many fish stocks lie within the jurisdiction of two or more States and species such as tuna are migratory, cooperation in their utilization is important.
- 11.57 The far-reaching measures taken by FAO to help developing countries cope with this new situation culminated in the organization of the 1984 FAO World Conference on Fisheries Management and Development.
- 11.58 The Conference adopted a strategy addressing both issues which are primarily the responsibility of individual countries, i.e. principles and practices for rational management and optimum use of fish resources and the special needs of small-scale fisheries and aquaculture, and questions of concern to the international community at large, such as trade, investment and the role of economic and technical cooperation between developing and developed countries. The Conference has provided governments, FAO and other organizations with a set of agreed objectives which should serve to guide action at national and international level for many years to come.
- 11.59 Commodity Trade Policies and Strategies: FAO's activities in this area are geared to providing a framework for consultation on global commodity policy issues between producing and consuming countries and advice to individual countries on their commodity policies. They are supported by continuous monitoring of market developments in some 80 agricultural commodities, analytical reviews of the commodity situation and prospects and special reports on commodity and trade issues. Close collaboration is maintained with UNCTAD and GATT, and other organizations concerned with commodity trade. There are eleven permanent Inter-Governmental Groups (IGGs) covering: rice; cocoa; grains; citrus fruit; jute, kenaf and allied fibres; oilseeds, oils and fats; bananas; hard fibres; wine and vine products; tea; and meat. Various guidelines in harmonizing national commodity policies of producing and consuming countries have been produced, such as the Guidelines for National and International Action on Rice.
- 11.60 The documentation provided for specialized commodity bodies has, in recent years, included studies of many important policy issues, such as protectionism and liberalization in agricultural trade; tariff and non-tariff measures affecting trade; possibilities for expanding agricultural trade among developing countries; the impact of national commodity policies on the world market; and stabilization issues for selected commodities.
- 11.61 Currently, the Organization is providing support for some of the key discussions on agricultural subjects in the Uruguay Round of multi-lateral trade negotiations. In 1987, it participated in the Negotiating Groups on Agriculture (and its technical Working Groups), on Tropical Products and on Natural Resource-Based Products.
- 11.62 Agricultural Mechanization Strategies: In 1979, the FAO Committee on Agriculture identified the lack of clearly-defined strategies for

agricultural mechanization as a critical constraint on agricultural development. In response, FAO prepared Guidelines for strategy formulation in this area entitled "Agricultural Mechanization in Development", advocating a comprehensive planning approach which includes consideration of financial, technical and social consequences. At this stage, only a start has been made on the formulation of national strategies for mechanization, but governments are being sensitized to the issue of mechanization strategy through advisory missions to individual countries, training courses and the work of the FAO Panel of Experts on Agricultural Mechanization.

B. Regional and Sub-regional Policy Studies and Strategies

- 11.63 Major studies and strategies at the regional level in recent years have included policy studies covering Africa (1986), Latin America and the Caribbean (1988) and Europe (1988), and a sub-regional study for the Southern Africa Development Coordinating Conference (SADCC, completed in 1984). Part of the work carried out by the Joint Agriculture Divisions and the Regional Offices also has a policy content. Over 200 documents have been produced at regional level, often in close collaboration with regional and sub-regional institutions or groupings. Of these, 7 percent were guidelines, 2 percent were training materials, and 91 percent were technical documents and case studies. The share of Latin America and the Caribbean region was the largest, about 56 percent of the total, followed by Near East and North Africa (22 percent), Africa (12 percent) and Asia and the Pacific (10 percent).
- 11.64 Regional studies cover mainly food security and rural development issues, including the role of women, producer incentives and price policies (e.g. "Report on Pricing Policy of Livestock Products in Asia and the Pacific", 1986; "A Comparative Study and Analysis of On-going Food Security Programmes in Africa", 1987). They often provide support to integration groupings and regional/sub-regional cooperation schemes through the formulation of agricultural development strategies and plans, proposals for common or harmonized agricultural policies, identification of common food and agricultural programmes and projects, and proposals for mechanisms and procedures for the expansion of intra-regional agricultural trade. Their impact tends to depend directly on the political strength of the integration groupings and their budgetary capabilities, and so far progress has fallen short of expectation.
- 11.65 Particular reference should be made to regional price policy studies, which have been extensively discussed in each regional conference and in workshops. The most recent one was the "Agricultural Price Policies in the Near East: Lessons and Experience" (published in 1989), which analysed major fiscal and monetary issues currently facing decision-makers in the region.
- 11.66 Pride of place must, however, be given to the major studies of Africa and of Latin America and the Caribbean. The study entitled "African Agriculture: the Next 25 Years" investigated the causes of the long-standing crisis in the region's agriculture, assessed Africa's potential for recovery and recommended practical measures that would make the recovery feasible. The diagnosis of Africa's problems included technical, economic, environmental and political factors and the study presented a number of technical options open to African Governments. The policy measures proposed included the provision of effective incentives, improving input supply, building up the

institutions and upgrading the infrastructure (the four i's of agricultural development). The study was viewed as a major contribution to the African Priority Programme for Economic Recovery 1986-1990 (AAPER) of the OAU, and the UN Programme of Action for African Economic Recovery and Development (UN/PAAERD). The more recent study submitted to the Regional Conference for Latin America and the Caribbean (Potential for Agricultural and Rural Development in Latin America and the Caribbean) paid particular attention to the plight of the poorest strata of the rural population, and formulated a wide range of Action Plans for governments and organizations, including FAO. In both cases, the conclusions of the studies provide material for use over a number of years not only at regional, but also at national level.

- 11.67 A major follow-up to the Africa study is the Soil Conservation Strategy for Africa, currently in the process of finalization with the close cooperation of African soils conservationists. This strategy was elaborated in direct response to the Africa Study's recommendation to protect and develop natural resources. As recommended by the Study, it places major reliance on people's participation and multi-level planning.

C. Policy Advice and Planning Assistance at Country Level

- 11.68 The extent to which governments call on FAO for policy advice and planning assistance depends, in large part, on the Organization's comparative advantage vis-à-vis other sources of advice. In practice, FAO's comparative advantage tends to be the strongest in sector, and especially in sub-sector work, such as narrowly defined technical studies focussing on specific aspects of agricultural and rural development.
- 11.69 As a general rule, policy advice is given by FAO in the expectation that it will lead to specific development action on the part of the national government. Such action very often needs to be supported by the allocation of external as well as domestic resources. Hence, close collaboration with sources of external finance such as World Bank, UNDP and bilateral programmes is highly desirable to ensure that the necessary follow-up is feasible.
- 11.70 Policy studies are costly, require highly experienced people and are time-consuming. Hence, any expansion in FAO's assistance in this field would be dependent on the availability of additional resources, either through extra-budgetary projects or from the Regular Programme.
- 11.71 FAO's policy advisory and planning activities at country level are wide-ranging and are shared by many of the Organization's programmes. Strong links exist between Regular Programme activities and policy/planning projects in the field. Global and regional policy studies often provide the analytical framework for field projects. Some results of FAO's policy advisory and planning activities are examined in the following pages, first at sectoral and then at sub-sectoral level.

a. Sector Studies and Plans

- 11.72 In recent years, FAO assistance for sector planning has been stepped up in response to increasing requests from governments which, in turn, reflected the growing complexity and urgency of development problems. An increasing number of developing countries are engaged in a

comprehensive review and re-orientation of macro-economic and sectoral policies and strategies. In addition to the usual requests for missions and long-term field projects to help prepare the policy and strategy framework for the next multi-year development plan, or to conduct such reviews following an election, there have been requests for assistance in preparing for a policy and performance review meeting with donors or for negotiating stabilization or structural/sector adjustment programmes. Given the scope and complexity of such an exercise, many countries, especially those in Africa, have faced uncertainties as to what measures are needed and appropriate. Agriculture is generally the key sector in the economies of the countries concerned. The Organization has been encouraged by its governing bodies to expand this aspect of its policy advisory role, which involves close cooperation with UNDP and the World Bank. The two FAO units particularly involved have been the Investment Centre and the Policy Analysis Division.

- 11.73 As of 1 May 1989, some 9 sector-wide policy advisory missions have been completed, another 10 were under way and 11 were on request. Three sub-regional groups and 25 member countries would be assisted through these activities. The recently completed activities included assistance to Indonesia, Malta, Mali, Viet Nam and the CARICOM in formulating their agricultural development policies and programmes. Selected policy issues were being assessed in the Near East, and projects with a predominant policy analysis and advice purpose were under way in seven other countries. Two of the recently completed and three of the on-going activities, in Jamaica, Comoros and Ghana, were linked to structural adjustment programmes, and those on request from seven other countries were connected either to such programmes or to a policy review meeting.
- 11.74 At country level, some 30 country price policy studies have been or are being carried out, often financed through TCP. The recommendations have been discussed in workshops with national authorities, as was the case in Egypt, Morocco and Pakistan. There has been renewed interest by governments for FAO's advice originating from the special demands for price reform placed on them by structural adjustment loans.
- 11.75 To illustrate the nature of FAO's contributions, five examples are given of agricultural policy review exercises carried out for Tanzania, Indonesia, Senegal, Malta and Morocco.
- 11.76 Since the 1967 Arusha Declaration, the Government of Tanzania has pursued policies aimed at egalitarian, self-reliant socialist development. With agriculture accounting for half of its GDP, more than 80% of export earnings and 90% of employment, priority has been given to agricultural development, and especially to food self-sufficiency. However, the series of measures initiated since early 1970s at the macro-level resulted in the loss of efficiency in the agricultural sector, partly due to the external factors and partly because of inappropriate internal policy measures. This has necessitated considerable policy readjustments over the last two decades.
- 11.77 The major policy issues have been concerned with the following aspects:
- (i) The balance between self-sufficiency and exports. The emphasis in the early 1970s was on increasing food and agricultural production to achieve self-sufficiency. However, the resulting negative effects on export crop production, coupled with adverse

terms of international trade, forced many countries in the late 1970s to give more attention to export crops. By 1983, agricultural policy had been redefined to include foreign exchange earnings as an objective alongside domestic self-sufficiency;

- (ii) Regional self-sufficiency versus regional specialisation based on comparative advantage. In the late 1970s, regions were encouraged to achieve self-sufficiency in basic foodstuffs through, inter alia, uniform producer prices (pan-territorial pricing policy), irrespective of agro-ecological diversity and transport costs. However, this led to distortions in production as well as to problems of marketing and distribution of crops, characterized by the massive increases in transport costs and operating losses for marketing parastatals. The new (1983) Agricultural Policy shifted the emphasis to the promotion of regional specialisation in food crop production within agro-economically suitable zones and in 1985, pan-territorial prices were abandoned;
- (iii) Prices and subsidies. Agricultural prices were neglected and the producer prices for both staple and export crops were held below rising input costs. Furthermore, consumer food price subsidies, in addition to being a drain on the Government budget, had biased consumption towards staples for which Tanzania had no comparative advantage in production (wheat). The 1983 agricultural policy document recognized the danger in consumer price subsidies and the importance of remunerative prices for producers;
- (iv) Institutional aspects. Since the mid-1970s, there have been many institutional reforms, chief among them was the reorganization of agricultural marketing boards into semi-autonomous crop parastatals with a wider range of functions including, inter alia, direct purchases of food and export crops from villages and the abolition of the agricultural cooperatives in 1976. As a combined effect of this and other measures, normal supply channels were disrupted, marketed supplies declined and the parastatals, overextended with respect to managerial capacity, and burdened by large overhead costs, faced serious financial difficulties. By 1983, the new turn in agricultural policy had led to re-activation of the cooperative movement at local level (returning to it the marketing and input supply functions) and the re-establishment of a single Ministry of Agriculture and Livestock Development with sole responsibility for agricultural extension.

11.78 Thus, important policy changes have taken place since the late 1970s, in recognition of past shortcomings in policies and related measures. The latest policy changes, as embodied in the 1986 Economic Recovery Programme, have included adequate incentives for producers, increased allocation of foreign exchange for essential agricultural inputs and the rehabilitation of the country's transport system.

11.79 Along with other development aid agencies (World Bank, UNDP, SIDA, NORAD), FAO has contributed to this process of adapting agricultural policy to changing circumstances and needs. FAO's support to Tanzania in agricultural policy formulation and planning has focussed on two key areas: price policies and strategy for food security. Since the early 1970s, a series of four projects, all aimed at strengthening the

Marketing Development Bureau of the Ministry of Agriculture, have assisted in the setting and monitoring of prices and subsidies, surveying the efficiency of parastatals, and in formulating marketing strategy. The Bureau has been producing, on a regular basis, a large number of pricing and commodity studies and providing high quality advice to decision-makers. In particular, it has contributed to pricing policy through annual price reviews for both food crops and export crops; it has undertaken foreign exchange analyses of export crops as background to negotiations with IMF and has contributed to food strategy preparation. Since the abandonment of pan-territorial pricing, it has also worked on regional price differentials for food crops.

- 11.80 Since 1982, a number of major policy changes have been endorsed and implemented by the Government. These have included: the move away from the policy of regional self-sufficiency to greater regional specialization, changes in pricing and subsidy policy, increased resources for investment in the development of export crops, renewal of commitment to the use of hand tools and animal power.
- 11.81 In addition, FAO's assistance has included support to institution-building and training in project preparation and monitoring through several projects as well as in sector planning through two projects. The Project Preparation and Monitoring Bureau (PPMB) has benefited in recent years from the assistance of 8 to 10 expatriate advisers, while support to sector planning has been less substantial. The PPMB is now well established with regard to routine monitoring (some 170 projects are covered) and its staff have been trained to adequate levels (including computer use). It has also expanded sub-sectoral analysis (coffee, sisal, livestock) and has produced guidelines for project formulation in Tanzania as well as basic input-output coefficients. However, work in project formulation continues to rely heavily on external assistance.
- 11.82 An analysis of Indonesia's agricultural policy options was prepared by a team consisting of three external and five national consultants, working for periods of 2-6 months each. The policy review document, presented to the Government in draft in December 1988 and discussed in a meeting with senior policy officials in January 1989, was received as a valuable input into the on-going process of policy analysis and plan reformulation in the context of the macro-agricultural sector policy for REPELITA-V (the country's fifth five-year plan 1989/90-1993/94) by the National Development Planning Agency (BAPPENAS). The draft report analyses the major directional changes in agricultural policy that are likely to emerge during REPELITA-V; reviews options for implementation of these policies and provides an assessment of the changing role of the Ministry of Agriculture in REPELITA-V and beyond.
- 11.83 Following discussions with Government and representatives of major donor agencies, the review exercise provided guidance in the identification of major "areas of concentration" in the agricultural sector for donor agency investment and technical assistance during REPELITA-V. It also served as a basis for reviewing the UNDP/FAO project portfolio as well as identifying appropriate "areas of concentration" for UNDP/FAO assistance.
- 11.84 Additionally, the review assisted the Bureau of Planning of the Ministry of Agriculture to strengthen its links with agricultural planners in BAPPENAS and in other ministries with important responsibilities for agricultural and rural development (Home Affairs,

Public Works, Trade, Industry, Forestry, Cooperatives and Transmigration). Also as a result of this review, Indonesia requested FAO's assistance for a similar review of the forestry sector. Another policy review in Indonesia related to fisheries which concluded that proclamation of a 200-mile fishing zone would probably more than double the area of waters presently under Indonesian jurisdiction. This would require, however, delimitation arrangements with eight neighbouring States. Nevertheless, the review pointed out that the biological sustainable yield was of the order of three times the present catch levels and that as much as one-third of this might occur in the new EEZ. Recommendations were made on policy issues such as access of foreign vessels, joint ventures, reciprocal fishing rights, licencing and entry control systems.

- 11.85 The assistance provided to Senegal in 1986 illustrates another type of FAO support to national policy analysis and sectoral planning. At Government request, FAO, through TCP assistance, arranged a round-table meeting with potential donors and with the help of national experts, produced a set of policy documents as a basis for discussion. These included: a general statement on Senegal's new agricultural policy, including structural adjustment policies agreed upon with the World Bank, and a cereal plan. One outcome of the exercise was the creation of a policy studies and programming unit which was subsequently assisted by a TCP project. FAO later participated in the aid negotiations with the Senegal Consultative Group of the World Bank. Most recently, a request has been made for assistance in monitoring and analyzing the impact of structural adjustment policy measures.
- 11.86 Assistance to sector planning in Malta resulted in a comprehensive study, entitled "Towards Agricultural Development in Malta: Opportunities and Options". It was based on the findings of two needs-assessment missions fielded with TCP funding. One reviewed the fisheries sector and the other assessed the overall state of food and agriculture, with particular emphasis on institutional aspects (research, extension and training), and formulated appropriate measures for their sustained development. The findings of an earlier (July 1987) horticultural development mission were also used.
- 11.87 The Government of Malta subsequently contacted FAO to obtain further information and assistance to implement two of the recommendations relating to the establishment of an agricultural credit institution and of a documentation/information centre. It is also reported that the study is used as one of the inputs into the preparation of the next 5-year Development Plan.
- 11.88 A high level mission fielded in 1982 and 1983 analysed the perspectives and options facing Morocco in the development of its fisheries. One of the fundamental questions facing Morocco was the determination of an equilibrium point between the development of a national fishing industry able to catch and process their EEZ potential and the earning of immediate revenues through the selling of fishing rights to foreign States. The final report of the mission presented four policy options to Moroccan authorities ranging from "status quo" meaning no reduction of foreign fleet and continued uncontrolled expansion of the national fishing effort to a reduction of ~~foreign~~ fishing fleet up to optimal levels. The options corresponded to an increasing order of complexities but also of increasing benefits to the country.
- 11.89 An evaluation of the situation three years after the publication of the final report revealed that the authorities had accepted the major

conclusions and recommendations of the mission, which were timely and responsive to their objectives.

b. Sub-sector Studies and Plans

- 11.90 There are many examples of country level sub-sector studies and plans which cut across many programmes and sub-programmes. These either (i) address the development of a lead sub-sector with a "pull effect" on the whole sector; or (ii) seek to correct some structural imbalance within the sector which will strengthen the weakest sub-sector.
- 11.91 In the elaboration of macro-economic and social development policies and programmes, as they relate to one or more sub-sectors, FAO's assistance is provided mainly in five distinct areas, some of which are the subject of Special Action Programmes: (i) food security (FSAS); (ii) nutrition policy; (iii) agrarian reform and rural development, including the integration of women (WCARRD follow-up); (iv) ECDC support; and (v) advice on Commodity Policy at the Country Level (CPCL). While the nature of the first four has been reviewed earlier, CPCL requires a word of explanation.
- 11.92 CPCL assistance has been provided through multi-disciplinary missions which result in comprehensive commodity studies and policy evaluations and recommendations (25 such missions have been undertaken to date). Examples include the evaluation of rice industry in Fiji and Gambia, the vegetable oil sector in Morocco and the citrus industry in Uruguay. Policy advice is also provided on specific problems shared by more than one commodity, e.g. a review in Turkey to study the price structure of agricultural commodities in relation to EEC pricing under the Common Agricultural Policy. CPCL's assistance has also been extended to support the implementation of commodity policies, through improvements in the management of national grain agencies, preparation of annual price reviews, training in commodity price analysis (e.g. in China, Cuba, Indonesia) and advice on the establishment and strengthening of national capacity for commodity analysis (Fiji and Indonesia).
- 11.93 Some assistance in sub-sector planning is provided mainly, but not exclusively, by the concerned technical units as well as the FAO Investment Centre. Major areas of assistance have included land use planning, agricultural research policy and planning, soil conservation strategies, seed development policy and planning, fertilizer pricing policies (including subsidies), plant protection policies, natural resource base legislation, credit and marketing policies. Only agricultural processing, food and forest industries have received limited assistance in planning. A few examples will suffice to illustrate the type of assistance provided.
- 11.94 Agricultural Research Planning: Assistance in this area has been provided mainly to strengthen research institutions and to help ensure that research activities are consistent with overall agricultural priorities and that critical areas are not neglected. The rational planning of institutional development for research has been a major area of concern. By establishing collaborative research networks among national research institutions, FAO helps ensure rationalized use of research resources, e.g. the Association of Agricultural Research Institutions in the Near East and North Africa (AARINENA) and the Asia-Pacific Association of Agricultural Research Institutions (APAARI) were established in 1983 and 1985 with FAO support. They have focussed on planning and institutional issues in agricultural research.

- 11.95 The FAO Research Development Centre contributed to the working group on Guidelines for Strengthening National Agricultural Research Systems in Sub-saharan Africa of the Special Programme for African Agricultural Research (SPAAR), a consortium of development funding agencies. FAO assisted Member Nations in developing research plans at the country and sub-regional levels (Iraq, Pakistan, CILSS Institute of Sahel).
- 11.96 Strategies and policy cover an important issue in the 1984 UNDP/FAO thematic evaluation of national agricultural research which covered budgeting, institutional and managerial aspects. It concluded that research should receive 10-20% of the total funds committed to agricultural development and that there should be a balance between expenditure on research and extension. Research priorities needed to be appropriate to country's size and stage of development, with small countries emphasizing the adaptation of imported technology. A major weakness was identified in the adequacy of research planning.
- 11.97 Advice is given at country level through missions and field projects. Field projects have not had research policy per se as their main function, but there are exceptions such as the research adviser in Viet Nam and Guyana. A number of projects have been concerned with the establishment of national institutional research capacity* and advice on research and institutional planning has formed an essential element of their function. Projects designed to support research in particular sub-sectors, for example dryland farming in Kenya, also had a strong policy influence. Investment Centre missions designed to develop large-scale agricultural research projects, for example in Pakistan, have discussed overall research and reached consensus with the Government on approaches to be followed. Advisory missions by the Research Development Centre have visited thirty countries. FAO's advice has contributed to decisions in restructuring the research organization in many countries with IDA support. Policy advice for strengthening the agricultural research and research-extension linkage was given to the Yemen A.R. and Yemen P.D.R.
- 11.98 The Seed Improvement and Development Programme, established in 1977, has aimed at strengthening national seed programmes through: (i) the formulation of comprehensive national programmes; and (ii) projects of up to five years' duration aimed at identifying and easing immediate constraints on seed production. While the thrust of programme activities has been at national level, efforts at regional level were also pursued. In early years, the SIDP gave priority to the preparation of country programmes for seed development. Subsequently, there was a shift towards the elaboration of projects to meet the increasing number of requests and to overcome the difficulties experienced in mobilizing external support for integrated packages.
- 11.99 As a result, a relatively small number of SIDP projects were specifically designed with planning as the overriding objective (Argentina, Cuba, Cameroon and Madagascar are the exceptions). Yet, in countries where the Programme has been substantially involved, planning assistance has remained a major component of projects and has succeeded in laying the basis for overall seed development, e.g. Nigeria, Swaziland, Sudan and Yemen P.D.R. In many countries,

* e.g. Burma, Ethiopia, Libya, Somalia, Yemen Arab Republic, P.D.R. Yemen.

especially those at an early stage of organized seed development, support to the establishment and/or strengthening of a central organization for the seed sub-sector including draft seed legislation was provided, e.g. Cuba, Nigeria, Sudan, Yemen P.D.R. In 1987, an external evaluation of the SIDP urged that more attention should once again be given to overall programming and planning for seed development, including the role of the private sector.

- 11.100 Fertilizer Programme: The Programme has assisted a new generation of projects which establish national fertilizer/inputs units to serve as focal points for the formulation and implementation of integrated fertilizer strategies and policies. For example, the National Fertilizer Development Centre in Pakistan prepared a 15 years fertilizer perspective study as information base for the Government. Comparable units are assisted in Ethiopia and in Tanzania. In Tanzania, the activities have led to an effective coordination of fertilizer aid-in-kind between the government and donors. The result has been increased fertilizer aid and planned well ahead to ensure the timely arrival and distribution of fertilizers. As a result, the quantity of fertilizers available to Tanzanian farmers increased from 82,400 tons of fertilizer material in 1982 to 167,000 tons in 1988. The Fertilizer Advisory, Development and Information Network for Asia and the Pacific (FADINAP), which is a joint undertaking between FAO, ESCAP and UNIDO, disseminates fertilizer information to its member countries which is then used for the formulation and adjustment of national policies.
- 11.101 Dairy Development: FAO has promoted and supported, since 1972 under the framework of the International Scheme for the Coordination of Dairy Development (ISCDD), an integrated approach to planning and implementation of dairy development, primarily through multi-disciplinary policy and planning advisory missions, covering some 70 developing countries over the years. The nature and thrust of this support has been further refined during the recent years under the International Dairy Development Programme (IDDP) which, after several internal reviews, was initiated in 1986 by integrating all the key FAO activities in support of dairy development.
- 11.102 The major aim of the IDDP is to promote more effective application of an integrated planning and implementation approach to dairy development programmes with focus on small-scale producers. The emphasis is on a flexible but systematic planning approach to small-holder dairy development through a modular concept (covering milk production, farmers and their organizations, milk processing and marketing) as well as on the key features of sectoral policies to foster a balanced development. The modular concept allows for concentration on strategic priority problems and institutional/manpower development as well as for systematic integration of all key aspects. The selection of countries for model projects is guided by a set of criteria. These relate to the appropriateness of the national dairy development programme, its integration with the overall development programmes of the country and the soundness of the sectoral policy support. So far, two projects are under way (Ecuador and Tanzania) and two are under preparation (Indonesia and Syria). Similar assistance has been given to the Governments of China and Nigeria.
- 11.103 Ecuador was selected for locating the model project for the Latin America and the Caribbean region. Apart from its policy commitment to integrated rural development, the country has a considerable potential

for dairy development, especially for small producers in the Andean region, and also faces many typical development constraints shared by other countries in the region. FAO has cooperated closely with the Government of Ecuador in dairy development (with two visits of ISCDD missions before 1985). The model project, located in Cañar (southern Andean area), is aimed at benefiting 4,000 farmer families over a ten-year period by trebling milk production primarily through improved dairy husbandry practices. The project comprises 27 modules to be sequentially implemented, covering the organization and training of the target farmers, improving the nutrition and health of the existing cattle, and enhancing the efficiency of the processing and marketing of the dairy industries. The project implementation under the regional authority for development (CREA - Centro de Reconversión Económica de Azuay) was initiated in 1987 on a limited scale with national resources, but WFP has also been providing support since the middle of 1988. More recently, the Dutch Government has agreed to provide financial support to the implementation of selected modules through FAO. This external support has given the project an impetus for full implementation.

- 11.104 In the forestry sector, planning assistance at country level emphasizes an increased focus on the needs of local people and the role of forestry for food security of the poor, the community forestry development approach with people participation, a closer integration of forestry with crop and livestock activities, promotion of sustainable supply and efficient use of fuelwood, the elaboration of forest management plans with acceptable logging intensities and silvicultural prescriptions which combine conservation and sustainable use. TFAP pulls together all these approaches and is in the process of providing a major framework of reference for national tropical forestry development projects. So far, fourteen country forestry sector reviews have been completed.
- 11.105 Through a Trust Fund project operating in Peru since 1982, FAO has provided assistance in developing strategies for community forestry in the Andes to the National Forestry Institute and the General Directorate for Forestry and Wildlife. As a result of a recommendation by FAO, the structure of forestry organization has been rationalized and the two institutes have now been merged into one. In Honduras, FAO provided advice on developing the country's policy on stumpage prices and organizing harvesting operations at the Olancho Industrial Complex. An on-going UTF project is assisting the Government of Indonesia in elaborating strategies for long-term sustainable management of tropical forests, including an important element on shifting cultivation. Meanwhile, a review of the country's forestry policy has also been requested. Given that Indonesia has some 160 million hectares under forest, the potential impact of these FAO activities is considerable. In the case of Fiji, Papua New Guinea, Solomon Islands and Vanuatu, a comparative study of policy issues was carried out following a study of forestry, wildlife and national park policy and legislation in the Eastern Caribbean.

c. Training

- 11.106 FAO has promoted improved planning approaches and techniques through workshops, seminars and training courses. Training activities have slowly shifted from building national expertise in agricultural project analysis to strengthen agricultural planning capacity with emphasis on training the trainers. For example, the regional

PROCAPLAN (formerly PROCADES) training programme in Latin America and the Caribbean has shifted emphasis from training in project preparation to policy analysis, including nutrition policy.

- 11.107 Similar changes in orientation are found in the training activities in other regions, particularly in the Near East and in Africa. For example, the Association of Agricultural Development Planners in Africa (AADPA) provided a structure for coordinating FAO and USAID-sponsored training to strengthen the planning capability of AADPA members. This training involved the preparation of country studies on the analysis of market intervention policies and their impact. These studies were discussed in 1987 at two expert consultations on Agriculture Market Intervention and Pricing Policies in Africa, one for six French-speaking and the other for six English-speaking countries. The consultations also provided an opportunity for training and demonstrating the use of the latest tools and techniques used in policy analysis, in particular the FAO Computerized System of Agricultural and Population Planning Assistance (CAPPA) which is essentially a micro-computer application of AT 2000 methodology. A manual and software on nutrition policy analysis and planning have also been developed and tested in Asia, and will be available shortly.
- 11.108 In the course of 1988-89, FAO has become more heavily involved than in the past in training in agricultural policy and sector analysis. Outlines of in-service training programmes in policy analysis for Sub-Saharan African countries have been developed and a pilot course has been held in Tanzania. It would be followed by two additional courses in Africa in 1989. Proposals for regional training-cum-technical assistance in agricultural policy analysis and planning for Africa and the Near East have been submitted to UNDP for financing. Training materials (case studies, exercises, lecture notes) in policy analysis have been developed and contacts have been established with outside research and training institutions for the utilization of policy analysis course materials produced by them. An in-service training seminar on structural adjustment and agriculture was held at FAO Headquarters in October 1988. It is expected that FAO may play a coordinating and catalytic role in agricultural policy analysis training with special reference to African countries. Guidelines to help developing countries - especially low-income countries - to face the challenge of negotiations with international lending institutions in the introduction of agricultural policy reforms are being developed.
- 11.109 Closely linked with policy analysis, CAPPA is being applied more and more at the country level. So far, data base has been constructed for 31 countries* and the system has been installed in 9 countries.** For the near future, provisions have been made to transfer CAPPA to another eight countries. In the course of 1988 and the beginning of 1989, five national*** and eight international/regional training workshops on CAPPA have been held. The latter two included training of trainers workshops held in Rome, a workshop for trainers and

* 9 in Africa, 7 in Asia and the Pacific, 8 in the Near East and North Africa, and 7 in Latin America and the Caribbean

** Cyprus, Dominican Republic, Egypt, Iraq, Jordan, Mexico, Morocco, Mozambique, Turkey

*** Ghana, Iraq, Jordan, Mozambique, Nepal

consultants of PROCAPLAN regional training project for Latin America and the Caribbean, a trainers' workshop at the Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRTCIC), and two workshops held at the Arab Planning Institute (API), which regularly includes CAPPa in its agricultural planning courses. The ESCWA/FAO Joint Division is also using CAPPa in its technical assistance and training for agricultural planning. Demand for this computer software is coming from international organizations such as the World Bank as well as from several universities. Negotiations are under way with UNFPA to create regional CAPPa facilities. Training material for the application of CAPPa has been produced and a full trainers' kit is at present under preparation.

- 11.110 For the future, it is planned to develop an integrated agricultural sector and policy training package for widespread dissemination in developing countries.

V. Conclusions and Issues

A. Conclusions

- 11.111 The ultimate test of success in FAO's policy and planning advisory activities is whether the advice rendered does indeed contribute to a more efficient agriculture (in economic, technical and environmental terms), towards better nutrition for consumers and towards greater rural equity. However, many factors intervene between the formulation and execution of a policy or plan and the realization of benefits at grassroots level. Most factors, if not all, are beyond FAO's influence. They depend on the determination of national governments to take the necessary complementary actions and, ultimately, on the decisions taken at the village and community level, especially the extent of people's participation in the development process. Any attempt to assess the achievements of FAO attributable to its policy and planning advisory activities must be undertaken with this caveat in mind.
- 11.112 FAO's policy and strategy work at global level has provided the international community with a global framework within which to evaluate many of the major policy issues in the field of food and agriculture. It has also contributed toward stimulating international interest in key areas of development, formulating new approaches and actions and generating technical assistance and investment to remove the constraints. Such policy and strategy work has resulted in decision-making criteria for planners through codes of conduct or guiding principles which were approved by Member Nations in FAO's Governing Bodies. Some examples of such global policies and strategies include the IAA Guidelines, WCARRD principles, International Undertaking on World Food Security and TFAF.
- 11.113 Moreover, decisions on global policies and strategies have given rise to follow-up activities at regional and national level, including Special Action Programmes supporting numerous field projects. The experience gained through field projects, in turn, has led to the updating and/or revision of the initial concepts prior to a second generation of field activities. One example is the FSAS and the broadened concept of food security in 1983. Another is the agricultural prices policy study, which has generated numerous analytical activities at national level. The pioneering work accomplished through projects in Bangladesh, India and Pakistan

addressed a number of specific price policy issues, e.g. estimating supply response and choosing cropping pattern options for different foreign trade objectives in Pakistan. Awareness about the importance of appropriate price policies is also spread through seminars and workshops, e.g. in Egypt and Morocco.

- 11.114 Another feature which has contributed to the acceptance and spread of global policy advice has been FAO's coordination mechanisms with international organizations and the donor community. This applies to all the global policy work of FAO, food security and WCARRD in particular. The work on commodities and trade has always been conducted in close collaboration with UNCTAD, GATT and the international commodity organizations; agro-industries with UNIDO; and fisheries policy and planning with the regional fishery bodies. ECDC activities in particular take place most prominently with regional and sub-regional economic cooperation schemes.
- 11.115 TFAP illustrates this process of collaboration with the donor community. The FAO Committee on Forest Development in the Tropics is the inter-governmental body which promotes cooperation in tropical forestry and the TFAP was formulated at its request. While it meets every two years, an informal group of TFAP forestry advisers to bilateral and multi-lateral development assistance agencies has met every six months since 1985. The purpose of these meetings is to discuss progress in implementation and to harmonize and increase support to TFAP from the international community. The sixth meeting in May 1988 brought together representatives from 15 donor countries, three development banks (the World Bank, the African Development Bank and the Asian Development Bank), 13 international organizations* and six tropical countries. The seventh meeting in November 1988 brought together representatives from 33 bilateral and multilateral as well as non-governmental organizations. This approach ensures faster and greater impact at field level, as it taps resources from donors and financing institutions.
- 11.116 However, while FAO's collaboration with other organizations is an important factor in ensuring complementarity and follow-up, ultimate impact at regional and national level depends not only on FAO but on the effectiveness of these organizations in fulfilling their own mandate.
- 11.117 Achievements at national level are difficult to assess because they are inextricably linked to complementary actions by sovereign governments. WCARRD is a case in point. After ten years of follow-up, implementation at national level has encountered obstacles caused by a number of adverse economic factors beyond FAO's control and often also beyond the control of national governments. Moreover, all too often, the volume of available financial resources is rarely commensurate with the magnitude of the problems to be solved. For example, in recent years FSAS has never achieved its modest annual target of US\$ 10 million as approved by the FAO Conference and there has been a constant excess of prepared projects in relation to what the donors were willing to finance.

* Participants were CEC, FAO, IIED, ILO, ITTO, IUCN, IUFRO, UNDP, UNEP, Unesco, WFP, WRI and WWF.

- 11.118 Consequently, in view of modest resources, FAO's policy advice has focussed on catalytic activities. Policy advisory missions have been a preferred strategy to initiate field activities both under FSAS and WCARRD. With regard to FSAS missions, the 1987 external evaluation concluded that "on the whole, food security missions did perform a useful function and kept FAO abreast of developments in key developing countries affecting national food security". It noted that, in spite of some weaknesses, the missions were able to put forward numerous proposals, but that "full information is not available as to how many of the project proposals have been picked up, who prepared them in greater detail and which donors have agreed to fund them". Likewise, an appraisal of WCARRD Policy Review Mission Reports, made for the 12th meeting of the ACC Task Force on Rural Development in 1984, covering missions undertaken up to 1983, noted some unevenness in their success, but was positive on the concept of the missions to facilitate or stimulate government action in WCARRD priority areas. However, as explained earlier, adverse economic conditions, particularly budgetary restrictions, have generally prevented the translation of WCARRD principles into actual programmes and projects, except in the Asia region.
- 11.119 It bears repeating that the country project experience accumulated with respect to FSAS, WCARRD, Commodity Policy at Country Level, etc., has enabled FAO to draw lessons for policy-makers and planners. In this process of feedback, the Regular Programme activities play a central role and are well suited for the task. The feedback process is borne out by internal and external evaluations. The three external evaluations of FSAS, SIDP and the African Trypanosomiasis Control Programme submitted to the 1987 FAO Conference have all resulted in recommendations which make them more responsive to national needs.
- 11.120 FAO has also been instrumental in the transfer of the planning process from one region to another. Multi-level planning provides a good illustration. While in the early 1980s, it had reached a fairly advanced stage in several Asian countries, by the middle of the decade the concept had become of interest to countries in the Near East and North Africa through the combined efforts of the Regional Office and the concerned technical units at FAO Headquarters. Moreover, in this transfer, the concept was further refined by paying greater attention to the training and budgetary implications of the multi-level planning approach. Similar improvements were made when the concept was introduced into Latin America.
- 11.121 Planning assistance has resulted in two visible achievements: (i) strengthening of national capacity in project analysis and (ii) investment promotion. In the 1970s and early 1980s, FAO's training assistance emphasized project analysis which was then characterized as a major weakness in the planning capability of developing countries. By 1983, about 50 percent of the resources of planning assistance projects were devoted to building up capacity in project analysis. The same pattern prevailed with respect to the Regular Programme. Now, the demand for training in project analysis has been largely satisfied in Asia, Latin America and the Near East, as national institutions are quite capable of meeting this need without external assistance (this is not true in Africa). As a result, the demand has shifted to assistance in policy analysis.
- 11.122 Under the Regular Programme, high priority has been given to investment promotion, particularly in helping countries to prepare

sector reviews and technical documents for UNDP Round-Tables and similar exercises.*

B. Issues

11.123 The lessons which have emerged from FAO experience in policy and planning include:

- (a) comprehensive global studies and strategies have provided a broad frame of reference to regional and national planners, thereby promoting a greater degree of policy harmonization, including in the case of ECDC groupings. Such frameworks have also served to provide a coherent basis for concerted international action, including support from multilateral and bilateral aid sources. Global policies and strategies have fulfilled a normative function in policy work;
- (b) plans and programmes based on global policies and strategies have not proved to be universally applicable and have required modifications to meet local conditions; in particular, adverse economic factors have often conflicted with the goals of poverty alleviation, thus imposing difficult choices and requiring special measures;
- (c) as the process of policy formulation and planning is evolutionary, it should remain receptive to changing needs and emerging new problems such as the concern for environment and sustainable development. Therefore, constant revision and updating is required, calling also for continuity of dialogue between all concerned parties;
- (d) to remain relevant and responsive to the needs of beneficiaries, the planning process should: (i) have a comprehensive data base to enable the preparation of sound programmes and projects; (ii) adopt a decentralized/multi-level approach to ensure responsiveness to regional/sub-regional/community needs; and (iii) allow for a realistic assessment of available resources, both physical and human, to ensure the achievement of expected outputs and objectives;
- (e) the institutional framework for policy and planning needs to be further harmonized to ensure strong linkages among planning units in different services, institutions or ministries. This will ensure a multi-disciplinary approach to planning and policy formulation;
- (f) the need for coordinated and complementary support at various levels, i.e. global strategies require follow-up support at regional and national levels for greater elaboration, often through extra-budgetary funded field projects. Careful planning to facilitate such timely and adequate support must be taken into account in initiating such policy and planning work.

* Burkina Faso, Cape Verde, Chad, Equatorial Guinea, Gambia, Guinea Bissau, Laos, Maldives, Mauritania, Niger, Senegal, Sierra Leone, Sudan, Zaire

- 11.124 The implications of the above conclusions and issues for FAO are clear. Global and regional studies and strategies do contribute to policy harmonization between countries, serve a normative role and, on that basis, need to be pursued. They have also contributed to a better understanding of the development process in agriculture. The Africa study has proposed the four "i"s of development (incentives, inputs, institutions, infrastructure); TFAP has integrated forestry with rural development. The same applies to policy and strategy work covering fisheries. The process which transforms such studies into codes of conduct or norms through global and regional fora has proved effective, even though it is time-consuming.
- 11.125 However, difficulties arise when global policies and strategies are applied at national level. The passage from guiding principles to implementable programmes has proved difficult as it requires a strong information base, adequate financial commitment and sufficient technical expertise to revise and update plans and programmes in the face of changing needs and circumstances.
- 11.126 In view of the emphasis on basic needs and social equity, FAO has concentrated its assistance on rural development and poverty alleviation. WCARRD principles have guided nearly all FAO policy and planning activities since 1979, leaving few resources free to address other issues. Chief among them are agro-industrial planning as explained in Chapter Seven of this Review, work related to structural adjustment which has just started, peri-urban agriculture and the backward and forward linkages of agriculture with other sectors (especially industry).
- 11.127 Experience has shown that the effectiveness of policy and planning assistance at country level may be adversely affected by abrupt political changes, insufficient attention by national authorities to the planning process and inadequate budgetary support. Problems are often compounded by lack of clear division of responsibility for sector planning among various services of the ministry or ministries responsible for agriculture and between that ministry/ministries and the central planning authority. Moreover, planning rarely goes beyond the central government level, and often little information is available at the provincial and sub-provincial levels. Under such circumstances, national programmes, apart from being based on inadequate information, are subject to different interpretation by authorities at various levels. One outcome of this is that few countries have succeeded in formulating a coherent set of development objectives and related programmes for coordinating external assistance.
- 11.128 The lack of a proper policy framework at national level has often generated requests to FAO for assistance on a mono-disciplinary basis (livestock, forestry, fisheries, etc.). Yet, a multi-disciplinary approach is required, covering not only most technical fields but also such critical services as marketing, credit and farm management.
- 11.129 The policy and planning function in FAO is spread across several programmes and sub-programmes. This is an advantage as technical units are better equipped to inject "realism" and add appropriate technical dimension to policy advice, thus ensuring greater relevance and effectiveness at national level. However, for greater effectiveness, FAO's planning assistance to Member Nations should be multi-disciplinary and well placed within a sector framework. This will facilitate priority-setting among sub-sectors and will clarify

the linkages between them. In the absence of such a sector framework, the first step is to elaborate one. Hence, more sector reviews are needed. Quality, of course, remains the essence of any sector review.

11.130 With respect to negotiation for a stabilization programme, a structural adjustment loan (SAL) or a sector structural adjustment loan (SECAL), FAO's assistance to member countries in the agricultural and food sectors could involve one or more of the following:

- providing advice and assistance on the policy analysis to prepare for such negotiation;
- advice and assistance on the policies and programmes that should be included in SAL or SECAL;
- training national policy analysts in the techniques of policy formulation and policy impact analysis;
- executing technical assistance projects to strengthen national capacity to monitor and assess the impact of such programmes.

11.131 The effectiveness of FAO's assistance in the stabilization programme, SAL or SECAL, would be enhanced if the Organization is brought into the process from its inception with the consensus of the government and the funding agency. The task expected from FAO would be to assist the government to prepare itself for the negotiation process. If it is a stabilization programme, the focus would be on proposals to reduce public expenditures (subsidies, credit, etc.) and increase revenues (taxes on agricultural land or products). If SAL is to be negotiated, the stress would be on the potential impact of the proposed measures on the relative prices of agricultural products. If a SECAL is to be negotiated, the effort would concentrate on the likely impact of the proposed policy measures to overcome structural imbalances within the sector.

11.132 On the assumption of increased demand for FAO's services, the Organization's capacity to deliver policy and planning advice to Member Nations needs to be strengthened. One way of building this capacity is through the creation of country task forces for coordinating policy and planning activities at country level, as was done with FSAS. This ensures a multi-disciplinary approach. Any sub-sector review will no longer be an isolated exercise but will remain an integral part of the plan for the sector.

11.133 An enhanced capacity for policy analysis and planning should enable FAO to focus on: (i) identifying the agents of transformation capable of accelerating the development process for sustainable agriculture; (ii) more meaningful elaboration of the linkages between agriculture and the other sectors, such as agro-industry and transport; and (iii) harmonization of policies and plans covering agriculture, forestry and fisheries in the context of intra-regional planning and area development.

11.134 Effectively integrated assistance from FAO could help national policy and planning staff in their efforts to formulate more relevant development objectives and more effective strategies. This, in turn, could contribute towards the achievement of sustainable development and the improvement of coordination in the flow of funds to agriculture. FAO's contribution in this respect is all the more important in view of the slow-down of external assistance to the

developing countries in real terms. Moreover, FAO is in a position to provide impartial advice without preconceptions or financial strings. This impartial role may be of particular value to a country which is obliged to make delicate policy choices in carrying out structural and sectoral adjustments in response to outside pressures.

CHAPTER TWELVE

FAO SUPPORT TO MEMBER COUNTRIES IN CONSERVATION AND AMELIORATION OF THE NATURAL ENVIRONMENT AND INTRODUCTION OF ENVIRONMENTAL CONSIDERATIONS INTO FAO PROJECTS AND PROGRAMMES

I. INTRODUCTION

- 12.1 Consideration for environmental issues is an integral part of the agricultural production and rural development process and has direct consequences on the natural resource base and future economic prospects. Although industrial development is today considered as a major cause of environmental damage in industrialized countries, it is only one of several factors which contribute to environmental degradation. In the developing world, the large-scale depletion of the natural resource base has a direct bearing on the local and global environment and production capacity, particularly food for the rural populations.
- 12.2 The natural environment has to be seen as a finite resource and its production capacity preserved through careful management of its biophysical resources. Land's productive capacity as well as fisheries potential change over time, either through global or local climatic influences, or through man's daily utilisation. Biological growth rates and natural recovery of the environment have been altered by the rapid economic expansion of both industrial and developing countries. Even those countries with low or negative growth suffer from resource degradation. Depletion of natural resources has overtaken enhancement and conservation efforts. Man's utilisation of marginal lands and coastal water bodies for food production has expanded in parallel with the intensified use of good agricultural lands and traditional fisheries areas.
- 12.3 Conservation practices need to be economically viable and made readily available to the rural poor who often depend on marginal lands, natural forests and coastal and inland waters for most of their food and fuel requirements. There is increasing awareness of the inter-dependence between rural development and the need for sound ecological practices in agriculture.
- 12.4 Article I of FAO's Constitution identifies "the conservation of natural resources and the adoption of improved methods of agricultural production" as one of the Organization's main functions. Most of FAO's technical support activities center around the rational and optimal use of natural resources. The main objectives of its major programmes in agriculture, fisheries and forestry highlight the need for assistance to member countries in the management and protection of the natural environment. Activities aimed at combating soil degradation, desertification, loss of genetic resources, deforestation and over-fishing have formed part of FAO's work programmes since its inception.
- 12.5 The United Nations Conference on the Human Environment, held in June 1972, reflected the concern of Governments for intensified action at the national and international level to limit and, where possible, eliminate the degradation of the human environment. The Conference approved a Declaration and an Action Plan that included 109

recommendations for action at the international level, 51 of which pertained to environmental aspects of natural resources management. The majority of these recommendations, along with others under different headings, were specifically addressed to FAO, in such diverse areas as rural development planning, soil management and fertility, pest control, recycling of agricultural wastes, forest monitoring, genetic resources and fisheries management. Some of these recommendations were related to areas where FAO was already active, while others called for new initiatives or required strengthening of existing mechanisms to respond to specific environmental problems identified by the Conference. FAO's response is detailed in various parts of this chapter.

- 12.6 The Conference agreed to the establishment of a secretariat within the United Nations system to coordinate and catalyze environmental programmes. The United Nations Environment Programme (UNEP) was established in Nairobi in 1973. UNEP's Environment Fund has been used to support a FAO/UNEP Cooperative Programme. This Cooperative Programme has financed 93 projects thus far and published more than 120 reports. Besides its cooperation with UNEP, FAO works jointly on environmental matters with Unesco (on the MAB Programme and with the Intergovernmental Oceanographic Commission), WMO (on climatic change), IUCN and other agencies.
- 12.7 International environmental consciousness was boosted most recently by the report of the World Commission on Environment and Development, prepared under the chairmanship of Gro Harlem Brundtland, the Prime Minister of Norway, which was presented to the UN General Assembly in 1987. The Commission's mandate was to propose long-term environmental strategies for achieving sustainable development by the year 2000 and beyond and to recommend ways how concern for the environment could be translated into greater cooperation among countries and lead to the achievement of mutually supportive objectives. Recommendations of the Commission were formulated for six major areas: population, food security, species and ecosystems, energy, industry and human settlements. While not addressed to FAO in particular, many recommendations of the report are relevant to FAO's programme of work and the objectives promoted in the Commission's report correspond broadly to those of FAO in its areas of competence.
- 12.8 As a follow-up to the so-called Brundtland Report, the FAO Conference at its Twenty-Fourth Session adopted Resolution 9/87, requesting the Director-General to report on the progress made in achieving the objectives of environmentally sound and sustainable development. Document 94/6 presented to the Ninety-Fourth Session of the FAO Council contained a summary of FAO's main activities which are contributing to these fields and a special chapter in the State of Food and Agriculture 1988-89 provides an in-depth analysis on sustainable development.
- 12.9 While the concepts of sustainable development and environment are closely linked, this chapter of the Review addresses only those FAO activities aimed at improving and maintaining the natural resource base of member countries. Thus a large number of FAO's activities, which could be considered "environmental" in a broader context, are excluded (e.g. food contamination, integrated rural development).

- 12.10 The chapter includes a statistical analysis of FAO's activities relating to the protection of the natural environment and reviews the major components of FAO programmes which have significant environmental content. Finally, conclusions are drawn and issues discussed for the future.

II. Global Agreements and Institutional Arrangements

Global Agreements

- 12.11 In recent years FAO has actively promoted international agreements which relate to environment. The major agreements concluded since 1982 include:
- (a) FAO's World Soil Charter (1982) which has provided the framework for improved land use. The Inter-Departmental Working Group on Land Use Planning is currently preparing a planning package based on land use guidelines for assistance to member countries.
 - (b) The International Undertaking on Plant Genetic Resources (1983) which through the Commission on Plant Genetic Resources and the fund established in 1987 provides support to the preservation and use of germplasm collected worldwide.
 - (c) Following the UN Convention on the Law of the Sea which recognized the rights of coastal states over their marine resources, the FAO World Conference on Fisheries Management and Development adopted in 1984 a Strategy for Fisheries Management and Development which provides a set of policy guidelines and priorities for the rational utilization of fishery resources; development of small-scale fisheries and aquaculture and promotion of fish in national nutrition plans.
 - (d) The International Code of Conduct on the Distribution and Use of Pesticides was adopted by the FAO Conference in 1985 by consensus. Its objectives are to identify potential hazards in the distribution and use of pesticides, to establish standards of conduct and to define responsibilities for those engaged in the regulation, distribution and use of pesticides.
 - (e) The Tropical Forestry Action Plan (1985) adopted by the Committee on Forest Development in the Tropics provides an overall framework for investment planning in the forestry sector and support to national development plans.

The above agreements are covered in greater depth later in this chapter.

Institutional Arrangements

- 12.12 Because environmental issues cut across the work of a number of divisions in different departments, an Inter-Departmental Working Group on Natural Resources and the Human Environment was established in 1969. Responsibilities for energy were added in 1982 at which time the name was changed to Environment and Energy. The current Chairman is the Director of the Research and Technology Division (AGR) and the Vice-Chairman is the Assistant Director-General of the Fisheries

Department. The Environment and Energy Programmes Coordinating Centre (AGRE) serves as the secretariat to the IDWG and as the focal point in FAO for environment and energy activities. The functions of the IDWG and its secretariat include:

- coordination of FAO's activities of a multi-disciplinary nature related to environment and energy in the fields of agriculture, forestry and fisheries;
- identification of emerging trends and priorities related to environment and energy;
- cooperation with UN organizations, other international organizations, governmental and non-governmental organizations on environment and energy matters;
- conducting studies, providing technical assistance and disseminating information related to environmental protection and management.

- 12.13 The full IDWG usually meets once a year, less often than in the past. This can be attributed to the institutionalization of arrangements for environmental activities which were less well defined at the early stages when the IDWG was created. Instead, there are now various smaller sub-groups of the IDWG which meet on more restricted topics, such as Environmental Impact Assessment (EIA), biological diversity, desertification control and sustainable development. An IDWG Task Force is also involved in the preparation of the basic papers for World Food Day this year, the topic for which is Food and Environment.
- 12.14 The work carried out on environmental impact assessment is a particularly good example of interdepartmental coordination. Until recently, no procedures existed within FAO for carrying out systematic environmental impact assessment of its field operations. FAO was not unique in this respect within the UN System; the procedures issued in early 1989 make FAO the first UN agency to have initiated a systematic review of its projects having potential negative environmental consequences.
- 12.15 The procedures are on a one-year trial period. They distinguish project categories depending on the potential for a negative impact. After an initial screening, an examination is made of the need for further analysis and of the technical steps to be taken to mitigate negative impacts, satisfy requirements, provide field analysis and, if necessary, an on-going review and monitoring during implementation is envisaged. The primary considerations of this new management tool are that the assessments should be thorough, cost-effective and that environmental considerations and impacts of projects should be monitored and evaluated. The major responsibility for EIA lies with the lead technical division, thus ensuring that environmental considerations are an integral part of project planning. As this activity has only begun, it is too early to report on progress but it is envisaged that the detailed attention given to EIA at the project formulation stage will avert potential environmental problems, and also provide more information on the scope and nature of FAO's interventions.
- 12.16 FAO has a formal memorandum of understanding with UNEP which covers three main areas of mutual interest: environmental monitoring and assessment of food and agriculture (including forestry and fisheries);

ecological management of natural resources for food and agriculture, and conservation and management of ecosystems. The formulation of FAO/UNEP projects is coordinated by AGRE. So far, 78 projects have been completed and another 15 projects are under implementation. These joint activities play a catalytic role in the development of certain FAO programmes which are discussed later in this chapter.

- 12.17 FAO regularly attends meetings of the Designated Officials for Environmental Matters (DOEM), coordinated by UNEP, which is under the ACC mechanism for coordination on environmental matters within the UN System. The DOEM is the focal point for the UN System-wide Medium-Term Environmental Programme (SWMTEP) and the Cross-Organizational Programme Analysis (COPA) on environment. FAO also regularly attends the annual meetings of the UNEP Governing Council.
- 12.18 FAO, along with UNEP, Unesco and IUCN, form the Ecosystem Conservation Group (ECG) which meets annually for joint programming in the field of ecosystem conservation and to review the conservation situation in selected countries/regions, particularly with respect to national parks and other protected areas, endangered species and natural resources management. The Group exchanges information on current and planned activities of members in order to promote joint activities and meetings on specific problems. During the past three years, an ad hoc group on in situ conservation of genetic resources, chaired by FAO, has met simultaneously with the ECG.
- 12.19 FAO cooperates with Unesco through the Man and Biosphere (MAB) Programme in the areas of arid and semi-arid lands, soils, grasslands, forestry and especially in the Plan of Action on Biosphere Reserves. It also cooperates with the Intergovernmental Oceanographic Commission (IOC) on activities related to fisheries. It has had extensive collaboration with IUCN in the development of the World Conservation Strategy, the Environmental Status Report on the Sahel and in the development of national conservation strategies for Madagascar, Pakistan and the Philippines. FAO also cooperates in IUCN's Mangroves and Wetlands Programme and in situ conservation of genetic resources of wildlife and wildlands and in UNEP's Regional Seas Programmes.
- 12.20 Other UN agencies with which FAO cooperates on environmental matters include WMO (on climatic change), WHO (vector control, chemicals, food contamination) and with UNSO (desertification). In this latter connection, FAO actively participates in the Consultative Group on Desertification (DESCON) and the Interagency Working Group on Desertification. FAO also cooperates with a large number of regional institutions.

III. Statistical Summary of FAO'S Activities in Conservation and Amelioration of the Natural Environment

- 12.21 Tables 12.1 and 12.2 present a quantification of FAO's activities on conservation and amelioration of the natural environment. Table 12.1 deals with Regular Programme support while Table 12.2 is concerned with the Field Programme.
- 12.22 Table 12.1 is based on information provided by FAO technical divisions. The total Regular Programme budget for environmental activities (including elements of the Tropical Forestry Action Plan) represents 3% of the total approved Regular Programme budget for the

Major Programmes of Agriculture, Fisheries and Forestry. Of the total, some 57% was for technical backstopping and direct support to member countries, 25% for training and meetings, 14% for publications and 4% for Research Networks in collaboration with European institutes.

12.23 The information in Table 12.2 is based on the total budgets of all environmental projects operational during 1988. Some 141 projects out of 2 923 active projects (5%) in 1988 were classified as primarily environmental, with total budgets of US\$143 026 000, equivalent to 6% of the total FAO 1988 project portfolio of US\$2 353 028 000. By source of funds, the budgets of environmental projects represented 10% of the UNDP total (US\$963 million), 3% of Trust Funds (US\$1 330 million) and 3% of TCP projects (US\$60 million). In terms of absolute number of environmental projects, UNDP again took the leading share with 7% of the UNDP/FAO projects (out of a total of 1 244) being primarily environmental, 2% of Trust Fund projects (total 1 101) and 4% of TCP projects (total 578).

12.24 Field projects on environment were in most of the Sub-programmes in Forestry and Natural Resources. The Sub-programmes with the largest share of environmental projects were Conservation and Wildlife (2.3.1.3), Development and Management of Forests (2.3.1.1) and Forestry Training and Institutions (2.3.3.1) in the Major Programme Forestry; Conservation and Reclamation (2.1.1.5), Assessment and Planning (2.1.1.1) and Crop Improvement and Management (2.1.2.2) in the Major Programme Agriculture; and Marine Resources and Environment (2.2.2.1) and Inland Fisheries and Aquaculture (2.2.2.2) and Fisheries Information (2.2.1.1) in the Major Programme Fisheries.

IV. FAO Activities of Particular Environmental Significance

Soil Conservation and Reclamation

12.25 The extent of loss of cultivable land due to various forms of erosion is well documented. Current estimates are that some 5 to 7 million ha. of good land are lost yearly. Assuming that this rate does not increase, the amount of soil loss over the next 20 years will be roughly equal to the area of all new land which is estimated to be brought into production during that same period. While the direct causes of soil erosion are lack of plant cover, heavy rainfall, prolonged drought or high winds, the underlying cause is basically related to overexploitation and inappropriate technologies, unsuitable cropping patterns and overstocking.

12.26 FAO's activities in soil conservation and reclamation date back to the very beginning of the Organization and provide evidence of FAO's long-standing concern to conserve the natural environment and provide the basis for continuing productivity of agricultural land.

12.27 At the Twenty-first Session of the FAO Conference (1982), the World Soil Charter was adopted. It established a set of principles for the optimum use of the world's land resources, the improvement of their productivity and their conservation for future generations. The principles emphasize the importance of involving farmers in land use planning; proper incentives; a sound technical, institutional and legal framework for land use; proper education and training in land use; assessment of land suitability for different types of uses at the various levels of inputs; and the desirability of including land

Table 12.1 Regular Programme Support to Member Countries in Conservation and Amelioration of Natural Environment (1984-89)

Headquarters Programme	Total Cost (\$000)	Technical Back-stopping and Direct Support to Member Countries		Training and Meetings		Publications	
		No. of Activi- ties	Cost (\$000)	No.	Cost (\$000)	No.	Cost (\$000)
2.1.1 Natural Resources	1 734	26	1 423	3	78	11	233
2.1.2 Crops	1 415	14	1 166	4	226	2	23
2.1.3 Livestock	815	8	436	9	357	2	22
2.1.4 Research and Technology Development ^{1/}	628	26	322	14 ^{1/}	125	18	181
2.2.2 Fisheries Exploitation and Utilization	3 038	8	2 813	4	170	4	55
2.3.1 Forest Resources and Environment	3 970	31	1 798	22	1 230	30	942
1.3 Legal	85	-	-	-	-	3	85
HEADQUARTERS TOTAL							
	11 685	113	7 958	56	2 186	70	1 541
REGIONAL OFFICES							
RAFR	821	9	130	17	508	2	183
RAPA	1 798	74	913	16	434	31	451
RLAC ^{2/}	1 177	3	255	39	771	15	151
REUR	674	-	-	-	-	-	-
RNEA	515	8	289	10	206	3	20
REGIONAL OFFICES TOTAL							
	4 985	94	1 587	82	1 919	51	805
GRAND TOTAL ^{3/}							
	16 670	207	9 545	138	4 105	121	2 346

Footnotes:

- ^{1/} Thirteen of the activities reported are at partial cost to FAO due to cost sharing with TF and other Organizations
- ^{2/} Activities for REUR consist of Research Networks on Trace Elements, Animal Waste, Pesticides and Rural Energy. Total cost not broken down by type of output.
- ^{3/} To Headquarters total a cost of \$2,099 million should be added to cover Tropical Forestry Action Plan activities for the period 1986-88 which are not broken down by activity type.

Table 12.2 Field Programme Support to Member Countries in Conservation and Amelioration of Natural Environment
(Projects Operational in 1988)

REGION	UNDP		TF		TCP		UNEP		TOTAL	
	No.	Total Budget Allocation (\$000)	No.	Total Budget Allocation (\$000)	No.	Total Budget Allocation (\$000)	No.	Total Budget Allocation (\$000)	No.	Total Budget Allocation (\$000)
Africa	28	32 782	12	24 407	8	495	4	1 444	52	59 128
Asia and the Pacific	34	49 258	3	2 414	9	747	1	11	47	52 430
Latin America and the Caribbean	8	4 154	1	1 880	5	763	1	543	15	7 340
Near East, North Africa and Europe	11	6 327	4	12 926	-	-	-	-	15	19 253
Inter-Regional	-	-	-	-	-	-	12	4 875	12	4 875
TOTAL	81	92 521	20	41 627	22	2 005	18	6 873	141	143 026 *

*/ To this figure \$662 482 should be added for field activities of the Tropical Forestry Action Plan

conservation measures in development planning budgets. The Charter also includes guidelines for action, addressed to Governments and international organizations and identifies specific activities for their follow-up.

- 12.28 FAO's work on soil conservation and reclamation consists of measures to increase productivity and profits and reduce the risks of failure, while at the same time improving soil fertility by reducing erosion. This is the key focus of FAO's current work under the Regular Programme in developing a scheme for the conservation and rehabilitation of African lands, in response to one of the recommendations of the study African agriculture: the next 25 years. Field projects have been notably successful when operated from this perspective. For example, a UNDP-funded project in the Loess Plateau of northwest China has developed a technological package which has increased winter wheat production in valleys to the level formerly produced in both the valleys and erodable slopes. The sloping lands are now planted with fruit crops, grasses and trees, which apart from being environmentally sound, also result in additional income for farmers on the plateau.
- 12.29 Another important aspect of successful soil conservation is the involvement of farmers in the building and maintenance of soil conservation structures. This is the case in Lesotho, where a TCP project is developing a three-tiered soil conservation strategy consisting of a national policy document, annual rolling district-level plans and short-term village-level plans which involve interaction of villagers and Government advisers. A Netherlands-funded project, also in Lesotho, involves people's participation and includes a component of inputs-for-work, along the lines of food-for-work programmes implemented elsewhere. However, in this project, farmers who build protective cut-off drains, plant trees in gullies, etc., are compensated with fertilizers, seeds, hand tools and spare parts. It is expected that more projects of this type, as recommended by FAO's Aid-in-Kind Study, may be implemented in the future.
- 12.30 FAO encourages, wherever possible, the use of traditional soil conservation measures which are well known to and accepted by farmers. In Togo, a UNDP-funded project has been implemented to strengthen the national Soil Conservation Service. Its activities emphasize traditional practices, such as mulching of crop residues along the contours and building of stone walls, with the idea of introducing technical improvements in existing practices.
- 12.31 One of the difficulties in introducing soil conservation measures is the lack of data on the loss in soil productivity due to erosion. To overcome this, FAO developed in 1985 under the Regular Programme, a research design that can measure erosion-induced soil productivity loss. Some 12 institutions in developing countries have taken up trials with consultancy assistance and small research contracts from FAO. The trials are intended to develop erosion-yield-time relationships under specified conditions of soil, climate and land use; investigate the controlling variables which cause yields to change with erosion, eliminate as much as possible uncontrolled internal variation; monitor all variables that may be potentially related to or explicable of erosion-yield variations and provide the maximum useful information in the minimum time without overly elaborate experimental procedures. It is expected that, after a four to five year cycle of experimentation, results will be available on how yields vary with soil loss over time, the causative factors in yield decline and the relationship between erosion occurring from natural rainfall and artificial desurfacing.

Another important study under the Regular Programme, concluded in 1989, showed the reasons for success or failure of soil conservation programmes. Some 50 projects, funded and implemented through various sources, were studied. The results of the study are to be published. FAO also published (1987) a practical guideline on soil and water conservation in semi-arid areas (FAO Soils Bulletin 57), in response to the drought that has affected these areas of Africa during the 1970s and 1980s.

Land Evaluation and Land Use Planning

- 12.32 Land use planning offers a tool to overcome the degradation of land resources by systematically evaluating the land's ability to supply present and future needs, resolving conflicts between competing uses, identifying sustainable alternatives, choosing those that best meet the needs, and learning from mistakes. The process of land use planning does not directly involve environmental intervention. Major objectives of land use planning are conservation of natural resources and improvement of the environment. Not only must land use plans be made but also measures must be proposed to ensure that they are adopted by the land users. These measures are often directly concerned with promoting conservation farming.
- 12.33 FAO's original publication on "A Framework for Land Evaluation" (1976), laid down the principles by which sound evaluation of land could be developed. Subsequently, it developed specific methods of land evaluation for rainfed agriculture (1983), forestry (1984), irrigated agriculture (1985) and extensive grazing areas (1989). A popular publication entitled "Land Evaluation for Development" is planned for 1989. It is designed to increase awareness of the need for reliable land evaluation and to disseminate the methods contained in the "Framework". A key component in the process is the identification of environmental issues, as their awareness is the first defence against a threat before it develops beyond control.
- 12.34 After all the alternative uses for land in an area have been identified, land use planning takes over from land evaluation. The approach adopted emphasizes the need to involve and gain the commitment of a number of actors in the process, including technical, legal and administrative personnel at national, district and village levels, including the farmers themselves.
- 12.35 Under the direction of the Inter-Departmental Working Group on Land Use Planning, FAO has prepared a publication entitled "Guidelines for Land Use Planning", which illustrates the steps involved and includes a reference section on the analytical tools by which raw data are converted into useful information for planning. The Guidelines emphasize the technical role of the planner on the one hand and the executive role of the decision-maker on the other, both of which are necessary in the implementation of land use plans. The focus is on how to plan, rather than how to collect information which is often over-emphasized in many land use planning guidelines. FAO has also given specific treatment to legal aspects in its Legislative Study No. 31 "The Role of Legislation in Land Use Planning for Developing Countries."
- 12.36 A number of countries have been assisted by FAO in developing land use plans. Through a UNDP-funded project, a draft Master Land Use Plan was prepared for Ethiopia, which provided an articulation and quantification

of current land use, land potential, constraints and possible solutions. The project also trained national staff to prepare land use plans for particular localities.

- 12.37 FAO has assisted Bangladesh in land use planning for many years. Its most recent intervention has been through a UNDP project for land resources appraisal, which has compiled a series of reports on agro-ecological regions, land resources, hydro-climatic resources, land suitability assessment and system documentation and processing. These are intended for use by national and regional development planners, researchers, extensionists and teachers. Like all such appraisals, it forms part of the dynamic process of land use planning, based on past knowledge and experience and provides a basis for future refinements of the data, models and appraisal.
- 12.38 A joint study carried out by FAO, UNFPA and the International Institute for Applied System Analysis (IIASA) entitled "Potential Population Supporting Capacities of Lands in the Developing World", had indicated that, based on the low-input level assumptions, by the end of the century 64 developing countries would be unable to feed their projected population from their own land resources. Some 2 000 million ha with 1 000 million people would be carrying more people than could be supported. The report alerted the world to a serious threat to human welfare and the environment, while at the same time pointing out that many countries could feed themselves by raising the level of farming inputs or slowing population growth rates. The methodology used in the study has been used in population carrying capacity studies of individual countries.

Grazing Land Ecosystems

- 12.39 Many developing countries are facing food shortages and possibilities for increasing food production through clearing of new lands are limited. Some 20% of the world's grain production is now used as animal feed. Alternative solutions are thus needed to increase fodder production in areas unsuited to food crops, while at the same time assuring that the animal and plant biomass are balanced to prevent environmental degradation. Increased feed can also be provided from sown pastures and fodders as part of the farming system, where grassland and livestock production may maintain and improve soil fertility. Efforts to increase feed production are thus profoundly influenced by the need to maintain the fragile ecological balance in grazing areas.
- 12.40 An important focus of FAO's work in recent years has been promotion of the genus Prosopis, a fodder tree which grows very well in saline soils and under arid and semi-arid conditions and is thus of considerable environmental value in degraded areas. FAO, with assistance from Unesco/MAB, organized a first international conference (on Prosopis tamarugo) in Arica, Chile in 1984 and a second conference (on Prosopis juliflora) in Recife, Brazil in 1986. A third international conference, (on Prosopis cineraria) is scheduled for 1990 in Oman. Through the Regular Programme, FAO has also assisted in the establishment of the International Prosopis Association, which promotes information exchange and provides seeds for research and trials. Further research on Prosopis has been supported by FAO, through a sub-contract to manage new plantations in Chile. Prosopis juliflora is also being introduced through a large Italian Trust Fund project in Niger, involving rehabilitation of both crop and grazing lands (see also Plant Nutrition).

- 12.41 In view of the importance of leguminous species (fodder trees, forage and herbaceous legumes) a programme dealing with biological nitrogen fixation is underway in Africa, Latin America, the Near East and Far East. The programme has had continuous support from UNEP and is focussed on improving productivity of leguminous species through increased efficiency of the symbiotic nitrogen fixation process.
- 12.42 FAO has established a series of Working Groups on Grassland and Feed Resources, comprising researchers, extensionists and university staff in specific geographical areas (e.g. the Chaco Region of Argentina, Bolivia and Paraguay; the Campos region of southern Brazil, northern Uruguay, north-eastern Argentina and southern Paraguay). The Groups are intended to stimulate government support to local research and extension programmes and to facilitate the planning and implementation of projects of national and regional value. Work is most advanced in the Chaco and Campos regions with the assistance of Unesco/MAB.
- 12.43 Networks have now been established in the Caribbean as well as in the Chaco and Campos. Others are planned for the Himalayas (within the framework of a UNDP project), Southeast Asia (under a TCP project) and East Africa (following on the results of a UNDP project in Kenya). Improvement of pastures in all these regions is also important to watershed management and erosion control. Activities have been carried out in plant collection and evaluation, regional studies and pilot demonstrations on rangeland management. Some results of field experimentation and demonstration can be extrapolated within similar ecological zones (e.g. seed production, BNF, use of fodder trees) which may lend themselves to joint activities among various regional working groups.
- 12.44 The phenomenon of overgrazing is often the result of food crop cultivation, extended into the grazing areas. FAO is presently developing strategies based on long-term observations of vegetation, combined with socio-economic studies, which will lead to a better understanding of resource use by pastoral societies. In cooperation with the Institut Sénégalais de Recherche Agronomique, FAO is following over a period of four years the movements of some 2 000 pastoralists in the Ferlo region of Senegal. The approach is to take into account all the factors that impinge on the management of grazing resources by pastoralists, rather than focussing on single elements such as botanical surveys or dry matter production. The results of this study are expected to be available in final form by 1990.

Water Resources Development

- 12.45 Poor planning and management of water resources are major causes of irrigated land being lost to production. Irrigation systems which supply water without adequate provision for drainage cause the water table to rise to near the ground surface, with salts consequently inhibiting plant growth. Water laden with salts that is returned to streams and rivers can impair downstream irrigation. This process can be accelerated in cases where irrigation is more intensive and where use is made of motor-powered water lifting devices. Other environmental problems may be caused by altering river regimes downstream from dams, altered annual flood cycle, increased water temperature, erosion of river banks and interrupted migration of fish for spawning. Water development projects can also give rise to hazards due to large populations of vectors which cause disease problems such as malaria, lymphatic filariasis and schistosomiasis.

- 12.46 FAO's activities in water resources development are very much directed towards solving such environmental problems, within the context of increasing agricultural production through efficient and appropriate irrigation schemes and water management procedures.
- 12.47 FAO's first guideline on water quality for agriculture was published in 1976 and revised in 1985 to take greater account of environmental considerations, with an expanded discussion of salinity, infiltration and toxicity problems. These general guidelines have been supplemented by an increasing focus on the use and management of marginal quality water. FAO has held three seminars (Cyprus - 1985, Jordan - 1986, Egypt - 1988) on treatment and reuse of waste water for agriculture and is cooperating with WHO and UNEP in this field. The papers given at the seminars have been published and work has begun on a guideline which should be published in 1989 or 1990.
- 12.48 FAO, along with WHO and UNEP, support the Panel of Experts on Environmental Management for Vector Control (PEEM), which is intended to strengthen collaboration among the sponsoring institutions and between them and other agencies on the use of environmental management techniques for the control of disease vectors and the protection of human health and the environment. The Panel meets annually to discuss a particular topic and a summarized report of the deliberations is widely distributed. A PEEM Newsletter is published three times a year and some of the topics have been of direct and particular interest to agricultural developments. The Seventh Session (in 1987) discussed the effects of agricultural development and changes in agricultural practices on the transmission of vector-borne diseases.
- 12.49 FAO's activities on waterlogging, salinity control and drainage improvement have been largely conducted in recent years within the context of field projects. In India, a UNDP-funded project was implemented in Haryana State, where the equilibrium between groundwater recharge and discharge had become distorted as a result of the introduction of an extensive canal system. Groundwater levels were rising at a rate of 0.3 - 1 m/year and an area of 4 000 km² had a critical water table depth of 0.3 m from the ground surface in the pre-monsoon season while an area of 400 km² had undergone waterlogging. The project involved data collection and analysis of land and water resources, analysis and appraisal of different technical means to solve the saline water problem, prediction of future trends in the groundwater table, and preparation and execution of two pilot schemes, including socio-economic studies. The project came up with detailed appraisals of technical solutions which could be applied in the State and the two pilot projects were successfully implemented relying largely on vertical drainage structures (tube-wells) for drainage. The pilot project at Narwana had a significant impact. By operating four wells for 8 h/day, the water table at a distance of about 200 m from the wells showed a decrease of 30 cm after 130 hours of operating the system. The project also made technical recommendations for the use of brackish water mixed with canal waters and on the absorptive capacity of canal waters for the drainable surplus of brackish groundwaters. The project has been followed up with a second phase, the results of which will provide inputs for the planning and implementation of large-scale projects.
- 12.50 Ethiopia has also benefited from FAO's assistance in water resource development. Through three UNDP-funded projects, the Institute for Agricultural Research has strengthened its programme in basic and applied research on irrigation, salinity control and drainage. The guidelines produced by the project on frequency and amounts of water to

be applied had a particular impact on state farms. The project's recommendations for cotton led to increases in production and slowed the rise in the water table. Of particular significance was the recommendation for cotton cultivation on furrows rather than bed irrigation as was formerly practised. The second phase of another UNDP-funded project in Ethiopia includes specific environmental parameters (salinity, waterlogging, disease control) and environmental impact assessment when examining the feasibility of new irrigation projects.

Integrated Pest Management (IPM)

- 12.51 FAO has been active in reducing the overuse of pesticides. Aside from the high cost to the farmer, pesticide application in excessive amounts has led to problems of resistance and high levels of accumulated undesirable elements in agricultural products.
- 12.52 IPM has been defined as "the farmers' best mix of control tactics in comparison with yields, profits and safety of alternatives". Pest control is developed and applied within the context of the total environment, so that pest populations are managed with existing limiting and regulatory factors exploited to the fullest extent (e.g. predators). Other factors (e.g. pesticides) are introduced into the environment at appropriate times to maintain pest populations below the level causing economic injury. This level is determined both in terms of foreseeable crop loss and the economics of crop production and marketing.
- 12.53 The FAO Panel of Experts on Integrated Pest Control was established in 1966 and met for the first time in September 1967. UNEP became a co-sponsor of the Panel in 1977. The Panel advises the Director-General on policy and programmes with regard to IPM, reviews principles, procedures and techniques of integrated pest control, promotes research programme and collects and distributes information on the subject.
- 12.54 Training is considered to be of vital importance for the adoption of IPM. Extension agents need appropriate and clear messages which may contrast with those of the promotional campaigns of agrochemical companies. Both Regular and Field Programme IPM activities have concentrated on training, including a UNEP-funded project operating in seven countries.*
- 12.55 During the reporting period, FAO efforts in IPM have largely concentrated on rice in Asia and on cotton in the Sudan. The inter-country field programme for pest control in rice in Asia, funded by Australia, the Netherlands and the Arab Gulf Fund has probably been the most successful effort thus far. While the first phase of the project was largely concentrated on research, the second phase has made a considerable effort in the implementation of IPM by farmers through an extensive extension programme. IPM has been adopted as government policy in four countries (Indonesia, India, Malaysia, Philippines) while others are considering a similar move. In Indonesia, 57 of 66 pesticides formerly used on rice have been banned and only one chemical (Buprofezin) is still used on a selective basis. This chemical affects only the brown planthopper, a major rice pest, and does not kill other predators. Results from Indonesia show that the use of organophosphate

* Dominican Republic, Ghana, Jordan, Sri Lanka, Sudan, Tanzania, Yemen Arab Republic

insecticides, restricted in November 1986, fell from 14 200 tonnes in 1986 to 5 800 tonnes in 1987, a decrease of 60% exposure of the environment. Rice yields actually increased by over 20% (6.1 tonnes in 1986 to 7.4 tonnes in 1987) for farmers who switched from previous application methods to IPM methods. The number of hectares infested by brown planthopper fell from 61 000 ha. in 1986 to 30 000 ha. in 1987 and by a further 1 700 ha. in the first four months of 1988. Government subsidies on pesticides were reduced from 85% to 40% and in late 1988 were entirely eliminated.

- 12.56 Another promising project, working on cotton and rotational food crops, is being implemented in the Sudan with funding from the Government of the Netherlands. Like the one in Asia, the first phase concentrated on evaluating the situation, identifying shortcomings in ongoing crop protection activities and research. As a result of this first phase, DDT and DDT mixtures were withdrawn from the market and the "package deal" which included a mandatory pesticide component was abolished. In the second phase, cooperation was secured with a 100 000 member tenants union and large-scale demonstration plots were established so that the effects of spraying on a realistic farming scale could be studied. Results measured during the 1986/87 season showed no significant yield difference between unsprayed fields and those treated normally (averaging seven applications) but the unsprayed fields produced a higher-grade, honeydew-free cotton and had a much higher population of natural enemies.
- 12.57 The success of these two projects underlines the need to move after research more IPM activities into the extension phase in order to have a more potent message for "selling" IPM. This has been the shortcoming of some of the earlier FAO activities, most notably the inter-country projects funded by UNEP on IPM in cotton. These projects had good research results, but had few follow-up activities. An exception was a UNDP-funded project on cotton rehabilitation in Pakistan, which has an IPM component.
- 12.58 For the future, IPM activities on vegetables are considered to have a high priority because of heavy pesticide use resulting in pest resurgence and resistance development, acute or chronic poisoning of handlers, health hazards to consumers and escalating production costs. Regular programme activities have begun in this area, including workshops and informal consultations in the Caribbean, Central America and Asia and the Pacific. A document is also under preparation on IPM in vegetables grown under protective cover in the Near East.

Trypanosomiasis Control

- 12.59 A major FAO Special Action Programme is directed towards the control of African animal trypanosomiasis.* An important thrust of this programme has been to minimize the environmental hazards of tsetse control. Spraying of chemicals, either from the air or the ground, has been the most commonly used control method, along with elimination of host wildlife and bush clearing. In order to reduce reliance on the widespread use of insecticides, emphasis has been placed on the development of more environmentally acceptable techniques, such as odour-baited, insecticide-treated tsetse-attractive devices. This

* This Programme was evaluated in depth and a report presented to the Twenty-fourth Session of the Conference (C 87/8 - Suppl. 1)

action has resulted in improved efficiency of control operations through the integration of methods to best advantage. Concurrently, the use of chemicals has been considerably decreased.

- 12.60 FAO, in collaboration with IAEA, has been active in the development and application of the Sterile Insect Technique (SIT). Following on the results achieved in laboratory mass-rearing and experimental field application in Burkina Faso and Tanzania, a large-scale project was begun in Nigeria in 1979 with financial support from Belgium, the Federal Republic of Germany, Italy, Sweden and the United Kingdom and technical assistance from the FAO/IAEA Joint Division. The project was intended to eradicate the tsetse fly from a semi-savannah area of north-central Nigeria, using SIT in conjunction with other environmentally safe population reduction methods, to develop procedures to incorporate SIT into regular tsetse control operations and to demonstrate the cost-effectiveness of SIT with existing control measures. Results thus far have been most satisfactory; a colony of 170 000 breeding females of Glossina palpalis has been established and consolidated and a breeding colony of Glossina tachinoides started in 1985. The project was completed in 1987 and showed that a sterile to wild male tsetse ratio of 1:10 can result in eradication of the target species. Economic feasibility and cost-benefit studies are being undertaken in an analysis of the achievements.
- 12.61 Other important control measures pursued by FAO as alternatives to spraying include traps, targets and screens to attract flies. FAO has carried out research to determine the spectral wavelengths to which tsetse flies best respond and to discover which colours and materials can be used to design effective traps. The assistance provided to Côte d'Ivoire through two TCP projects and two UNDP projects (one of which was regional) was particularly effective. This included work to determine systematically tsetse distribution and ecology in the northern part of the country. Experiments on the use of traps and insecticide-impregnated screens showed that these methods could substantially reduce the population of G. palpalis and G. longipalpis. The projects' results and final recommendations formed the basis for a large control programme pursued by the Government with financial support from bilateral donors.
- 12.62 FAO's policy aimed at trypanosomiasis control also includes research into the trypanotolerance phenomenon, selection, conservation and multiplication of trypanotolerant livestock, as well as promoting inter-country trade of trypanotolerant livestock. FAO has organized expert consultations on the subject and an Italian-funded regional project has collected and disseminated relevant data on zootechnical parameters in relation to trypanotolerance. There is some controversy, however, regarding the value of trypanotolerant animals in African livestock systems and there is therefore a need to provide more information on the production potential of trypanotolerant cattle. While FAO's role in preserving trypanotolerant cattle as a genetic entity represents a valuable activity, it is open to doubt whether these animals could make much impact in areas other than those where they occur at present. Work in this area needs therefore to be carefully targeted.
- 12.63 Within FAO's Special Action Programme, tsetse control is not to be undertaken in the absence of appropriate land use plans designed to improve or maintain the natural resource base of an area and to yield long-term social and economic benefits. Experience indicates that it is not sufficient to relegate area development considerations to a follow-up activity subsequent to eradication, lest uncontrolled

settlement and environmental degradation occur. Alternatively, if the treated area is not settled, immediate re-infestation is the result. A UNDP/FAO project in Nigeria was designed to establish a methodology for land, livestock and community development within selected grazing reserves. It is expected that this methodology, with zone-specific modifications, can form the basis of an approach to intensify pastoralist production systems in Nigeria and other African countries trying to settle nomadic pastoralists in tsetse-free areas.

Plant Nutrition

- 12.64 In recent years, FAO has expanded the scope of its activities in this area, which have traditionally centred around mineral fertilizers, to encompass the concept of Integrated Plant Nutrition Systems (IPNS). IPNS involves the maintenance and possible increase of soil fertility for sustainable increased crop productivity by optimizing both organic and inorganic sources of plant nutrients in an integrated manner, appropriate to each cropping system and farming situation in an ecological, social and economic sense. While the approach itself is not new, IPNS is different in that recommendations take into account the cropping system as a whole, rather than individual crops. It also recognizes that nutrients supplied from other sources need to be accounted for in determining required levels of fertilizer application. Only components which are well-proven and within the financial means of small-scale farmers are to be included in the recommended package. For economic and environmental reasons, there is a need to substantially improve fertilizer use efficiency by maximizing benefits from mineral fertilizers as well as alternative plant nutrition sources such as organic materials and biologically fixed nitrogen.
- 12.65 Application of IPNS is at present constrained by the absence of data on the appropriate nutrient mix required for specific soils and various cropping systems in developing countries. Once the answers are available, through research and subsequent trials in farmers' fields, IPNS can move to the demonstration stage. Presently, FAO is in the research and testing phase of IPNS. To generate basic information for wider guidelines on integrated fertilizer recommendations, FAO has issued two research contracts: one in India on an irrigated cropping system, the other in Indonesia on a rainfed system. Reliable conclusions from these research contracts are expected during 1989. In the meantime, FAO has set up a Field Trial Network on IPNS, within the framework of field projects of the FAO Fertilizer Programme, to assist in formulating general guidelines on the integrated use of mineral fertilizers and organic nutrient sources. Approximately five field trials will be conducted in each of the 11 to 12 countries participating in the Network.
- 12.66 While the IPNS has been discussed in FAO for some time, progress has been slower than expected, largely due to resource constraints. Nonetheless, it is clearly an important area of future work, with consequences for environmental protection. There is a revival of awareness of the role of organic materials in the maintenance and improvement of soil fertility, such as increasing water-holding capacity, aeration and permeability and plant nutrient holding capability, while decreasing soil crusting, water/nutrient losses through surface run-off and protecting soil from erosion. Farmers are usually aware of some techniques of recycling organic waste generally limited to those practised in their own community. Methods for biological nitrogen fixation are generally less well known. From the

economic standpoint, the advancement of IPNS is also important particularly in situations where fertilizer costs increase without corresponding increases in crop prices, thus affecting the overall economics of mineral fertilizers. FAO, therefore, needs to give added impetus to its work on IPNS in future.

Genetic Resources

- 12.67 One of the principal chapters of the "Brundtland Report" is devoted to species and ecosystems and the conservation of living natural resources. The importance of preservation of biological diversity is now widely recognized for its contribution to on-going agricultural production, new and improved foods, drugs and industrial raw materials and for its role in the stabilization of climate, protection of watersheds and soil, preservation of nurseries and breeding grounds, etc.
- 12.68 Despite this recognition, species are disappearing at rates never before witnessed, particularly in remote habitats. This is largely due to uncontrolled development of agriculture, pollution from industries and construction of settlements. This disappearance is taking place at the same time that great advances in genetic engineering are being made and science is learning how to successfully exploit genetic variability. Not only are species disappearing, but also races and varieties within species, all of which constitute biological diversity. The loss of genetic variability leads to difficulties in adaptation to climatic change and other forms of environmental adversity.
- 12.69 Aside from preventing destruction of habitats, much work needs to be done in identifying and preserving the world's plant and animal genetic resources. The bulk of global food production depends on a handful of plant and animal species. It is estimated that scientists have intensively investigated only 1% of the Earth's plant species and a far smaller proportion of its animal species.

Crop Genetic Resources

- 12.70 FAO's activities in crop genetic resources began with the establishment in 1965 of the Panel of Experts on Plant Exploration and Introduction, which set international guidelines for the collection, conservation and exchange of germplasm, dealing principally with crops. In 1972, the CGIAR, acting on requests from FAO, recommendations of the UN Conference on the Human Environment and its own Technical Advisory Committee (TAC), decided to establish the International Board for Plant Genetic Resources (IBPGR). IBPGR is an independent organization with its own budget, but is located at FAO Headquarters because of the close collaboration that exists between the two bodies. IBPGR promotes and supports a world-wide network of gene banks for the safe storage of plant genetic resources. Priority is given to major crop genetic resources which are threatened by genetic loss or erosion or to fill diversity gaps in existing collections. It also establishes standards and procedures for collection, conservation and documentation of plant genetic resources, trains scientists and technicians, coordinates strategic research in plant sciences and produces publications. In 1987, IBPGR was involved with 43 institutions in collecting priority crops.

- 12.71 FAO's own activities in recent years have been focussed on the International Undertaking on Plant Genetic Resources, approved by the FAO Conference in 1983 and the work of the Commission on Plant Genetic Resources, established at the request of the same Conference. The Undertaking, which has been subscribed to by 84 Governments, is meant to ensure that plant genetic resources (including trees, shrubs and wild plants), especially species of present or future economic and social importance, will be explored, preserved, evaluated and made available without restriction. It covers both in situ and ex situ conservation.
- 12.72 The Commission, which presently has 93 members,* is an international global forum where countries can discuss matters related to plant genetic resources on an equal footing and monitor implementation of the principles contained in the International Undertaking. The Commission's debates are intended to reach consensus in areas of global interest and compromises in areas of disagreement. Besides Governments, a number of technical assistance agencies, development banks and NGOs attend Commission meetings as observers. FAO has also established, pursuant to Article 6 of the Undertaking, an International Fund for Plant Genetic Resources. Through the Fund, users of germplasm can make a contribution to benefit from conservation of plant genetic resources.
- 12.73 By April 1989, the Commission had held three meetings. Its most important achievements thus far include initiation of an International Network on Base Collections in gene banks under the auspices of FAO, and a Global Information System on Plant Genetic Resources to promote the free availability of germplasm and data about it.
- 12.74 A number of organizations have begun establishing international networks of ex situ collections (e.g. IBPGR, crop-based IARCs, IUCN). However, there is no inter-governmental body able to receive a legal commitment by a national government to put germplasm under international auspices. Countries which become part of the International Network of Base Collections will be able to take advantage of FAO's legal and political umbrella, while institutions such as IBPGR, the IARCs and IUCN provide expertise and propose standards for gene banks which the Commission might endorse.
- 12.75 The Global Information System is important as it links the many existing sectorial plant genetic resources databases (e.g. IBPGR and IARCs for crops and country profiles; IUCN, WWF and UNEP for wild species and ecosystems, FAO's AGRIS, CARIS and Seed Information Systems). The Global Information System is also intended to include non-crop species, for which collaboration is required with UNEP, IUCN and WWF, which have begun a World Conservation Monitoring Centre, on the state of threatened species, habitats and living resources.
- 12.76 At field level, FAO is supporting an increasing number of projects in support of national plant genetic resource programmes. In cooperation with UNDP, crop gene bank facilities have been established in Nigeria, Republic of Korea and Turkey and a microbial/cell bank in the Republic

* As of March, 1989 a total of 116 countries are members of the Commission, have adhered to the International Undertaking, or both.

of Korea. Through Italian Funds-in-Trust, a genetic resources programme is being established in Yemen Arab Republic, while TCP projects support coconut germplasm development in Indonesia and field surveys in Vietnam. The first project of the International Fund for Plant Genetic Resources is currently evaluating and enhancing teff germplasm in Ethiopia.

- 12.77 The main issue facing the crop genetic resources programme is an institutional one: the proliferating number of institutions involved and the insufficient coordination among them. The establishment of the Commission on Plant Genetic Resources was an important step towards achieving improved coordination. However, there are possible overlaps and duplication with several activities planned by other agencies. For example, the UNEP Governing Council has passed a resolution requesting that the desirability and possible form of an umbrella convention on biological diversity be studied. This convention could overlap with the Undertaking, as could some of the articles in a proposed international treaty on biological diversity being discussed by IUCN. Both UNEP and IUCN include in their proposals the possible establishment of some sort of governing body and an international fund that would also overlap with the FAO Commission and Fund. The International Union for Conservation of Nature and Natural Resources (IUCN), the World Wide Fund for Nature (WWF), the World Resources Institute (WRI) and the World Bank are formulating a Biological Diversity Action Plan which includes plant genetic resources. WRI, in cooperation with UNDP, has embarked on a feasibility study for an International Conservation Financing Project that includes plant genetic resources and overlaps with the FAO International Fund. While it is encouraging that biological diversity is receiving higher priority, great effort is needed to ensure proper coordination and complementarity.

Animal Genetic Resources

- 12.78 FAO's activities on preservation of indigenous breeds are focussed on ex-situ conservation through cryogenic storage of germplasm. This is the generally preferred method over that of keeping live animals (in-situ conservation) for several reasons, a principal one of which is cost. Live animals need to be maintained and interaction with humans kept to a minimum. In the case of parks, the cost of maintaining live animals can be offset by admission payments by individuals, but this possibility is generally limited, particularly in developing countries. The high costs mean that only small populations can be kept and even in well designed breeding programmes, genetic variability declines. There is also the danger of losing a herd due to disease.
- 12.79 Because of scientific advances, cryogenic preservation (especially freezing of sperms and embryos) has become routine for most domestic species (cows, sheep, goats, horses). Frozen embryos are subsequently used to produce a normal animal. In future it may be possible to preserve sequences of catalogued DNA. Once the infrastructure is established for cryopreservation, the only cost is the regular replacement of liquid nitrogen.
- 12.80 In cooperation with UNEP, FAO since 1973 has developed methodologies, conducted training courses, issued publications and held expert meetings to assist developing countries in the improved conservation and management of animal genetic resources. A Joint FAO/UNEP Expert Panel was established in 1983. In 1987, FAO established a series of Regional Animal Gene Banks in Africa (Ethiopia and Senegal), Asia and

the Pacific (China and India) and Latin America (Argentina, Brazil and Mexico). A regional Animal Gene Bank for the Near East is also planned. In each region, two centres were identified where national facilities were expanded to serve the needs of the region. Two centres per region were needed to hold split samples to provide security against accidental loss; a separate centre was needed in Mexico to serve the needs of Central America and the Caribbean, which is an animal disease-free zone separate from South America. Each participating country contributes equipment and staff for identification of endangered breeds and collection and shipment of semen and embryos to the regional centres, while host countries of the centres contribute laboratories for handling the samples, physical facilities for housing the storage containers and provision of necessary staff and office facilities. Special equipment for operating the gene banks (e.g. liquid nitrogen plant, storage and shipping containers) are provided under TCP projects. The TCP programme has also conducted training in methods for identifying endangered breeds, sampling techniques, documentation and collection, processing and shipping of samples and giving expert advice.

- 12.81 The activities which led to the establishment of the Regional Animal Gene Banks were the result of an FAO/UNEP project which helped to establish the feasibility, techniques and cost of cryogenic and live storage, surveyed areas where breeds were endangered and, perhaps most importantly, developed a new system of animal descriptors which had never been available before. These descriptors consists of an orderly genetic characterization of breeds and the environments to which they are adapted. They are suitable for use in the computerized Global Animal Genetic Resources Data Bank, where they are used for identifying endangered breeds and documenting standard genetic characterizations for preserved breeds. In 1989, again with UNEP assistance, FAO published the Animal Genetic Resources of the U.S.S.R. (in English and Russian) covering all breeds in 17 important domestic species.

Remote Sensing

- 12.82 The use of satellite remote sensing enables simultaneous assessment of environmental conditions over large areas and increases the efficiency of monitoring their effects on the biosphere. There are two basic types of remote sensing satellites used for assessment and monitoring of the earth surface. While the environmental satellites are used for broad monitoring at global and regional levels, the earth resources satellites are used for more detailed surveys at national and sub-national levels.
- 12.83 Only observations from space platforms permit monitoring of the earth at global and regional levels. Examples of such large area remote sensing applications include monitoring of the ozone layer, atmospheric carbon dioxide concentrations, snow and sea-ice coverage, sea surface temperatures and vegetation cover. Results of systematic global observations enabled detection of potentially dangerous anomalies in environmental conditions, such as depletion of the ozone layer over polar regions, increase of atmospheric carbon dioxide concentrations, changes of sea surface temperature patterns affecting ocean currents (El Niño/Southern Oscillation), diminishing tropical forest cover (e.g. Amazon area, Thailand), agricultural drought and resulting land degradation (e.g. Sahel).

- 12.84 Assistance in the application of remote sensing is being provided by FAO through the development of methodologies, the execution and backstopping of projects and by organizing international, regional and national training courses. Methodologies for land use mapping based on high resolution Spot and Landsat TM imagery has been developed through TCP projects in Kenya and the Maldive Islands. Assistance to strengthen remote sensing capabilities for agricultural applications has been provided to Argentina, Bangladesh, China, Côte d'Ivoire, Egypt, Ethiopia, India, Nepal, Sudan and Vietnam, mainly through UNDP funding. Other examples of applications in field projects are land use mapping (Lebanon); land use potential assessments (Namibia); agricultural statistics (Argentina, Libya, Turkey, Zimbabwe); soil mapping (Botswana); irrigation monitoring and management (Indonesia); vegetation mapping (Tunisia); land degradation, sand dune mapping and stabilization (Arab countries); forest inventory (Burma, Zaire).
- 12.85 Backstopping and advisory services for remote sensing components were provided for 84 projects in 1988. These included forest inventories, forest and watershed management and fuelwood assessment in Bangladesh, Brazil, Burma, Guinea, India, Indonesia, Kenya, Nepal, Sudan and Thailand, mainly through UNDP funding. Remote sensing was a key component of the UNDP/FAO tropical forest cover monitoring project for the Amazon Basin, one of the largest remote sensing projects worldwide. A new follow-up project is being formulated. Under a unilateral trust fund project, a National Forest Inventory of Indonesia has been initiated in which remote sensing will be a large component.
- 12.86 During 1988, with financial assistance from the Government of the Netherlands, FAO installed at its Remote Sensing Centre a major computer hardware/software facility for acquisition and processing of data from high frequency geostationary and polar orbiting environmental satellites. This system, ARTEMIS (Africa Real Time Environmental Monitoring using Imaging Satellites), was designed for large area precipitation and vegetation condition assessment in Africa and allows the Organization to assess the dynamics of the natural environment. Operational monitoring of precipitation and vegetation in Africa by ARTEMIS started in August 1988.
- 12.87 All ARTEMIS databases, derived from Meteosat and NOAA satellite observations, are available in a common geographic format with a 7.6 km resolution. At present, the system contains NOAA vegetation index data for Africa, the Near East and southwest Asia, covering the period 1981 to present on a ten-day and monthly basis. This database is presently being expanded to global coverage in cooperation with NASA. Meteosat-derived data on cold cloud (or rain) duration, estimated rainfall and number of rainfall days is available for Africa since August 1988. These data series are continuously increasing over time.
- 12.88 Plans for significant upgrading during 1989-1991 of the ARTEMIS system capabilities include the regular acquisition, processing and archiving of NOAA satellite data at a spatial resolution of 1.1 km. in support of FAO Programmes on resource assessment and monitoring of global changes of the natural resource base (e.g. through forest cover and forest fire monitoring and assessment).
- 12.89 Recently, an activity has been initiated to assess the potential and to develop the methodology to use the ARTEMIS NOAA 1982-88 archive for the update of the Africa Agro-Ecological zones map in collaboration with the Soil Resources, Management and Conservation Service (AGLS). The use of ARTEMIS data by AGLS is envisaged through the Central GIS

facility. Linkages between soil and vegetation indicators previously in use for the establishment of agro-ecological zones will be enhanced through the use of climatological and vegetation greenness indicators. Real time data and the time series archive will in the future provide a more accurate and timely forecasting of climatological impact on the natural resource base. As higher resolution data becomes available from the U.S., French and U.S.S.R. earth resources satellites, remote sensing will be increasingly used for mapping of land use and vegetation at management-level scales of up to 1:50 000. This new mapping capacity will significantly improve updating of existing maps and establishment of reliable data bases needed for rational planning and development of the earth's resources.

Fisheries

- 12.90 World fish production reached a record 90 million tons in 1986. Prospectives for the year 2000 indicate that fish demand will rise by an additional 20 million tons. Careful management and planning of present resources is thus required as the pressure on traditionally accepted fish species for food has already reached or exceeded the level corresponding to maximum sustainable yields.
- 12.91 Most of the recent increase in production has been in the Southeast and West Pacific from catches of shoaling small pelagic species used essentially for conversion into fishmeal. World catches for feed have again reached the previous peak of 25 million tons in 1970 and represent 40% of total catches. Production in other areas has remained about the same despite year to year fluctuations. Marginal increases in some areas have often been offset by a decline in others.
- 12.92 Small-scale fishing and fish farming communities are often among the poorest sections of the population. Their traditionally accessible coastal resources are usually gravely over-fished and the lack of the basic elements often limits their access to those resources available offshore. The fisheries development strategy followed by FAO is aimed at improving the socio-economic and nutritional conditions of these communities through integrated development that makes full use of the present and potential resources of marine and inland fisheries and deals with constraints at the production, processing or marketing levels. However, modern management of small scale fisheries is difficult (and usually lacking) and FAO is promoting appropriate tools, including reinforcement of traditional community management.
- 12.93 The core of the Programme of Action recommended by the FAO World Conference on Fisheries Management and Development in 1984 consists of the conservation and rational utilization of fishery resources in marine and inland waters, the development of small-scale fisheries and aquaculture, and the improvement of fisheries planning.
- 12.94 More effective use of existing catches, the reduction of wastage in post-harvest operations, the utilization of unconventional marine species and the intensification of aquaculture provide the basis for the promotion of sustained development of fisheries and the protection of over-exploited fish species.
- 12.95 In the field of fish capture technology, environmental and conservation issues have been highlighted in such activities as the technical consultation on the selectivity of shrimp trawls aimed at reducing the considerable wasteful capture of unwanted species.

- 12.96 FAO also maintains close association with IMO on the subject of removal or disposal of offshore structures (decommissioned oil rigs).

Fisheries Information Programme

- 12.97 Access to reliable and up-to-date information is recognized as essential to fisheries planning and management. The information systems of the Fisheries Information Programme are aimed at providing data to support global cooperative action leading to the rational utilization and conservation of fishery resources in marine and inland waters.
- 12.98 In particular, the Aquatic Sciences and Fisheries Information System (ASFIS) provides an array of information services covering marine and freshwater environments and resources. ASFIS is organized and managed by FAO in collaboration with other UN agencies that are concerned with the marine environment and with numerous national governments. The products of ASFIS, which include abstracts, journals, computer databases, directories and bibliographies are widely used throughout the world and recognized as the leading services of their kind.
- 12.99 ASFIS products cover fisheries and aquaculture; oceanography and limnology; aquatic ecology, eco-systems and pollution; marine biology; law of the sea and other matters of law, policy, economics and social sciences in relation to fisheries and the marine environment; marine technology; and mineral resources of the sea. This broad scope of coverage lends itself to supplying information for the analysis of global changes in resource abundance and assessment of the environmental and human causes resulting in the changes.

Marine Resources and Environment

- 12.100 FAO's activities in this field concentrate on raising awareness of the need for rational management of the marine resource potential and developing national and regional capacity for fishery resources management through the FAO regional fisheries bodies which cover all tropical seas. These activities are supported by intensive work on methodology development and transfer (including computer software) for resource assessment and monitoring, by a substantial programme of training at national and regional level on such methodologies and by providing Governments and fishery bodies with reviews on the state of resources and information on management tools. In Cyprus and the Philippines, for example, the resource biomass has increased by about 100 percent in less than two years, as a result of concerted efforts in this area and the application of fishing control measures.
- 12.101 Studies of large-scale oscillations of natural stocks due to climatic changes are promoted through network projects undertaken in collaboration with Unesco/IOC such as the Ocean Science in relation to Living Resources (OSLR) Programme of FAO/IOC, already operational, or the Penaeid Recruitment Programme (PREP) which is being developed in Southeast Asia through collaboration between IOC (WESTPAC) and FAO (IPFC/SCORRAD).
- 12.102 FAO has participated in the establishment of various regional networks of research laboratories through the UNEP Regional Seas Action Plans for the Protection of the Marine Environment, in collaboration with IOC/WHO/IAEA/UNEP. This activity has led to Regional Conventions on the Protection and Development of the Marine Environment which are in force in the Mediterranean (1978), Kuwait Regional Action Plan (1979),

West and Central Africa (1984), Red Sea and Gulf of Aden (1985), South-East Pacific (1986) and Wider Caribbean (1986). Regional Conventions have been signed in Eastern Africa (1985) and South Pacific (1986) but are not yet in force. These conventions have provided the basis for environmental legislation in the various regions. Within the same framework, FAO is actively involved in the execution of three regional projects on marine pollution monitoring and research in the Mediterranean, the West and Central African Region and in Eastern Africa. These projects have generated data on contaminants in fish and risk assessment studies on major pollutants.

- 12.103 The Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP), sponsored by eight UN agencies,* provides up-to-date information and know-how concerning marine pollution. Fifteen scientific reports on the different aspect of marine pollution have been produced since 1982. Subjects include the review of the effects of thermal discharges, the health of the oceans, potential effects of harmful substances in the marine environment and waste management options for marine pollution prevention. Many of GESAMP's reports include specific advice pertinent to developing countries.

Inland Fisheries and Aquaculture

- 12.104 Pollutants in inland waters pose a high risk to fisheries and also threaten the development of aquaculture. FAO activities in this field are aimed at protecting the aquatic environment and, given their multi-sectoral nature, are mostly carried out in cooperation with other UN agencies. Within FAO, the activities are developed through inter-departmental task forces coordinated by FAO's Environment and Energy Coordination Centre.
- 12.105 Hazards to inland fisheries are not confined to toxic wastes but arise also from improper practices in river and lake basins. Degradation of water quality through increased silt loads and drastic alterations in water quantity through modification of timing and intensity of flooding have proved particularly detrimental in the large rivers of the world. Working Parties of the various regional fishery bodies concerned with inland waters have focussed on the problems and provide advice on strategies for the conservation and management of fisheries when confronted by such changes.
- 12.106 The IPFC Pollution Review undertaken in Southeast Asia during 1985-86 highlighted the major causes of water pollution affecting inland fisheries in the region. Assistance has been provided for planning and development of multi-purpose river basins in tropical Asian countries and guidelines for rational planning and management of tropical and sub-tropical inland fisheries has been developed. The CIFA Working Party on Pollution and Fisheries has produced two reports on the state of pollution in African inland waters which have provided the scientific basis for pollution control in the region and are expected to generate research projects in various African countries.
- 12.107 A database on fish species introduced in fresh waters is also maintained for use in regular FAO publications. International protocols to reduce the risks of introduction of new species have been prepared by FAO since 1984. To date, a Protocol and Code of Practice

* IMO, FAO, Unesco, WMO, WHO, IAEA, UN, UNEP

has been elaborated by the European Inland Fisheries Advisory Commission (EIFAC) and accepted by many member governments. A draft code of practice for Latin America is under consideration and two additional codes for Africa and Southeast Asia are under preparation.

- 12.108 A major programme is being developed in Papua New Guinea with the assistance of UNDP. One project is directed to the enhancement of river fish stocks through the identification of the biological "niche" for additional species in the Sepik River System and of the species that can be safely introduced.
- 12.109 Coastal fisheries rehabilitation through seagrass replantation has been supported in Asia through a TCP project in the Philippines which established test sites for five major species of local seagrass in polluted locations. A full scale regional project for coastal rehabilitation has been elaborated through FAO/UNEP collaboration and is presently under consideration for funding by UNDP.
- 12.110 An assessment of hazards of toxic substances from a shipwreck in Mogadishu harbour has been undertaken through a joint FAO/IMO/IOC/UNEP mission to advise the Government on follow-up measures for the protection of the site.

Forestry

- 12.111 Much of the world's agricultural land was formerly under forest vegetation. In 1980, it was estimated that 11.5 million hectares of tropical forest are cleared every year. Deforestation in mountainous and hilly lands presents a serious threat to agriculture in both upland and downstream areas through its effects on water resources. To protect agriculture from severe environmental degradation, action has to be taken in an integrated way to: (i) manage watersheds, (ii) conserve, reforest and introduce conservation planning systems in upland areas, and (iii) construct physical works to control erosion, sedimentation and flooding.
- 12.112 In arid and semi-arid lands, wind rather than water is the main agent of degradation. In these areas, forests can check the effects of soil erosion, provide perennial animal feed and rehabilitate salt-affected land and sand dunes by tapping moisture and nutrients in deeper soil layers. Forest cover is essential both to protect soils and to provide sustainable systems of cultivation.
- 12.113 Agro-forestry can be an alternative to both shifting cultivation and intensive, permanent production systems. Trees play an economic, as well as an environmental role. Forestry and the activities based on it, are significant sources of food, rural employment and income. Forest management operations are labour intensive and artisan (small-scale forest industries, handicrafts, charcoal production, wildlife products, fruits, nuts and other non-timber forest products). The export of timber and forest products is also an important source of foreign exchange for many countries.

Development and Management of Forests

- 12.114 Continuing assessment and monitoring of forest resources and their progressive integration to other related land uses permit the refining

of FAO's analyses on land use and of the utilization of natural resources. Selection and conservation of forest genetic resources are also a priority, given the increased planting efforts in most developing countries of multi-purpose trees and shrubs.

- 12.115 The baseline data on the forest resources of 76 tropical countries has been completed and checked with the countries concerned for aggregation at the regional and global levels. The FAO/UNEP Tropical Forest Cover Assessment was published in 1982. This study accumulated data on the present state of tropical forests and woodlands and the rate and pattern of their depletion, thus providing, for the first time, a factual basis for assessment of the likely environmental impact of forest degradation. Its significance lies in the fact that while there has been world-wide concern about the situation of tropical forests, reliable information was not available. The data base created subsequently by FAO should facilitate not only systematic monitoring, but also corrective action where it has been shown to be necessary.
- 12.116 The FAO/UNEP study has indicated that indiscriminate clearing of land for agriculture is the major cause of deforestation. Extensive clearing of forests for grazing is one of the major causes of deforestation in Latin America while shifting cultivation and settlements along logging tracks are the major causes in Africa and Asia. Depletion of tropical forests was estimated at 11.5 million hectares per year, equivalent to 0.6% of total cover while forest plantations increased at an annual rate of 1.1 million hectares. A second tropical forest resources assessment is being prepared by FAO for the year 1990 to provide information on the evolution of tropical forests during the present decade.
- 12.117 FAO provides assistance to tropical countries in the inventory and monitoring of their forest resources using (i) the computerized Forest Inventory Data Processing System (FIDAPS), which has been adapted for use by microcomputer, (ii) The Forest Resources Information System (FORIS) updated to include assessment data on non-tropical developing countries, (iii) a generalized software package for forest management (FORMIS) to store and analyze forest inventory and management data and generate management prescriptions and (iv) the Guidelines for Forestry Information Processing.
- 12.118 A review of forest management systems in tropical high forests of Asia and Africa has also been published. It analyzes the various systems developed and their reasons for success or failure and makes recommendations for future work and development in this field. A study on improvements in forest fallows under shifting cultivation systems was completed during the 1986-87 biennium in cooperation with the International Council for Research on Agroforestry (ICRAF). Field studies and evaluation of the existing management systems for mixed broad-leaved forests in Asia and Africa have also been carried out by FAO.

Management and Rehabilitation of Mountain Watersheds

- 12.119 The populations living in watersheds are doubling roughly every 20 years. Cattle population in these areas is also increasing and forest areas rapidly decreasing. Moreover, experiences in various countries (Dominican Republic, India, and Pakistan among others) have shown that dam and reservoir capacity loss because of siltation is always greater than initially anticipated. At present, the technical relationships between forests and trees under various types of management and the

effects of floods, droughts, sedimentation are only partly understood and insufficiently documented. Careful consideration is thus required to weigh up the beneficial effects of forests in flood mitigation and in erosion control in relation with the amount and distribution of precipitation.

- 12.120 Development banks and agencies as well as national governments are increasingly aware of the need for large-scale programmes which address the magnitude of the problem of catchment degradation. This is reflected in the priority given to watershed management in FAO.
- 12.121 Assistance on upland conservation practices has been furnished by FAO particularly through field projects dealing with integrated watershed management and forest land development. The number of such projects has continuously increased, reflecting the growing awareness of the long-term effects of deforestation, unplanned land clearance and unsuitable land use in the uplands. These projects focus on the social and institutional requirements in order to modify land use practices, since constraints in these areas have often been found to be more crucial than technical know-how. Watershed management projects have also highlighted the downstream-upstream environmental and economic interlinkages, the need to decentralize responsibility at the district and local level, as well as the establishment of economic incentives and organization of the local community to promote people's participation and development of strategies for integrated rural development which may help to achieve environmental objectives.
- 12.122 An example of FAO's work in this field can be seen in Guinea in the Fouta Djallon Highlands, which are subject to severe erosion resulting from uncontrolled forest clearance. This influences the seasonal flow and water quality of the major rivers which originate in the Fouta Djallon plateau and affect eleven neighbouring countries. The rehabilitation of the area is therefore a matter of regional concern. A Regional Programme was designed under the coordination of the Organization of African Unity and FAO was designated as lead technical assistance agency, in collaboration with WMO and Unesco. In the first phase, studies were carried out in cooperation with water authorities in neighbouring countries. These included estimates of the amount of rehabilitation work required to reforest denuded catchment areas and terrace agricultural land. Investment projects have been prepared for external financing and several have been approved while others are presently under consideration by various donors.
- 12.123 Soil erosion in Nepal's hill region is severe and deforestation there has led to acute shortages of both fuelwood and fodder. FAO through a UNDP-funded project has designed a programme to conserve and bring under productive management the remaining areas of natural forest, to reforest denuded land, and to create fuelwood and fodder plantations for local communities. On completion in 1992, it should provide one-third of the fuelwood requirements for 570 000 people and sufficient leaf fodder for 130 000 cattle. In addition, improved wood stoves are being introduced and are expected to save fuelwood equivalent to the needs of 4 000 households (about 25 000 tons of fuelwood a year). Community response to the project has been excellent and the success of the investment programme has led Nepal to request further financing for a second phase to the World Bank.
- 12.124 A different type of approach to watershed management has been followed in El Salvador through a UNDP-funded project in the Tamulasco River Basin. The enthusiastic response from smallholders has helped to

quintuple the area initially planned for conservation and development of renewable natural resources. More than 6 000 smallholders and tenants are involved in community forestry and land conservation activities. The project has expanded rapidly also as a result of technical personnel having been trained.

Reduction of Atmospheric Pollution and of its Impact on Forests

- 12.125 Damage to forests by air pollution has until recently been the focus of research for scientists mainly in North America and Europe and has stimulated the interest of research institutes from very different fields on this complex problem. Many European countries have already started nation-wide monitoring systems to elucidate the extent and the trends of forest decline, as well as to gain more detailed information on causal relationships. In addition, legislative measures have also been taken to reduce emissions. In 1985, FAO concluded a review of impact of air pollution in Europe over the past five years. The study identified information gaps and action to be taken and formulated programmes.
- 12.126 FAO's work in this field is being carried out in close cooperation with other relevant organizations and groups, such as the FAO/ECE Joint Agriculture and Timber Committee; the ad hoc Working Group on "Impact of Air Pollution on Forests" of the European Forestry Commission; the Working Group on Effects of Transboundary Air Pollution of the Economic Commission of Europe, UNEP, WMO, OECD and IUFRO.

Conservation of Plant Genetic Resources

- 12.127 Within the framework of the FAO/UNEP project on the Conservation of Forest Genetic Resources, FAO advises on the establishment of in situ and ex situ conservation stands in Africa, Asia and Latin America. Conservation in situ of woody perennials have been supported in Cameroon, Malaysia and Peru. Two networks on seed collection, distribution and evaluation, coordinated by FAO and involving national institutes of member countries operate for both arid/semi-arid and humid tropical species. Practical documents meant to be used by national institutions involved in forest genetic resource conservation as well as in the planning and establishment of forest plantations have been published such as: The Data Book on Endangered Tree Species and Provenances, the techniques and costs of nurseries and forest tree plantations, and cost estimation for afforestation and reforestation.

Establishment of Protected Areas and Conservation of Natural Heritage

- 12.128 The main thrust of FAO's effort in this field is focussed on support to national systems of protected areas and management of individual protected areas. Global coverage of major biogeographical regions is carried out in close collaboration with IUCN through its Protected Area Data Unit (PADU) and Unesco in the context of its MAB Reserve programme.
- 12.129 Two significant trends can be discerned. The first concerns the increased emphasis that has been given to the involvement of local people in the establishment, planning and management of a protected area. In fact, the development of national parks and protected areas can raise local incomes by providing goods and services for tourism, as well as preserving natural ecosystems. The second has been the

dialogue initiated between ecosystem conservationists and genetic resource conservationists. This has resulted in an increasing awareness of the active role that protected area managers should assume in relation to the in situ conservation of genetic resources.

- 12.130 At the country level, FAO has executed field projects designed to assist member countries to establish national networks of protected areas, as well as to plan and manage individual national parks or reserves. In Indonesia, survey and planning activities were initiated under a UNDP/FAO project which became operational during 1974. By the time of the Third World Congress on National Parks (Bali, 1982), a number of protected areas, covering representative samples of ecosystems had been established as elements of a national network.
- 12.131 Most of FAO's forestry field operations comprise different areas of work which may be included in a single project simultaneously, or over time in subsequent phases. A UNDP/FAO project in Brazil provides an interesting example of a large-scale, multipronged approach. FAO's major forestry activities in Brazil started in 1971 with a UNDP-funded project, which is currently in its fifth phase. Activities were initiated with the assessment of the country's huge forest resources and the promotion of forest management for industrial development. The project represents the first large-scale attempt to manage a natural humid tropical forest on a rational scientific basis in a pilot Amazonian area. This area has been declared a National Forest and is now being managed as a demonstration model for forest-based investment. The project also assisted in developing viable approaches to watershed management and reforestation; the development of a network of national parks and reserves; the institution of a forestry planning and information system; the introduction of nation-wide continuous inventory and monitoring of both man-made and natural forests using remote sensing satellite imagery and computerized data-processing systems; and trials for one of the largest plantation programmes in the South, South-East, North-West and West-Central regions of Brazil.

Conservation of Wildlife and Wildlife Habitat

- 12.132 International trade in wildlife products is now regulated under the Convention on International Trade in Endangered Species of Fauna and Flora (CITES). Some 95 countries have ratified the convention, including almost all the important producers and consumers. Mechanisms for quotas and management programmes have evolved to cover African elephant ivory and the skins of such species as crocodiles and African leopard. Their translation into practical action at the country level is being pursued by FAO through regional fora such as the AFC Working Party on Wildlife Management and National Parks.
- 12.133 Where wildlife populations have built up, schemes for sustainable utilization, with the emphasis on meat production are being supported by FAO. As with protected areas, a key concept in FAO's assistance in these programmes is the need for local people to benefit and be involved. Wildlife resources can be used to improve the income and nutritional standards of many rural communities, particularly in semi-arid areas where wild animals are better adapted to the environment than domestic stock.
- 12.134 An example of FAO's strategy in this area can be seen in Uganda where, after a decade of civil strife, the wildlife in Uganda's National Parks had been severely reduced and park facilities had deteriorated. In 1981, specialized assistance was channelled through a UNDP/FAO project

which enabled successful anti-poaching measures to be undertaken. By 1983, the situation had improved and additional funds from UNDP were received for rehabilitation work. Thus, by 1985, the combined resources of FAO, UNDP and NGOs such as the World Wildlife Fund and the Frankfurt Zoological Society had helped to begin the re-establishment of Uganda's tourist industry, which had formerly been the third biggest earner of foreign exchange after coffee and cotton.

- 12.135 FAO has provided assistance to Botswana, Kenya and Tanzania with detailed wildlife resource inventories and cooperated in the conception and implementation of forest wildlife programmes. In Botswana, a computerized hunting licensing control system was also established. In countries such as Cameroon, Central African Republic and Chad, where wildlife resources play an important role in providing animal protein in the diets of rural populations, wildlife development schemes are under way with FAO assistance. In the fragile eco-systems and marginal lands of the Sahelian zone, game ranching and game farming can offer a viable alternative to cattle and other livestock farming. In Burkina Faso, FAO provided assistance through a UNDP/FAO project in setting up an experimental game farm which developed appropriate technologies in game farming and trained staff in the application of game farming techniques.

Combating desertification

- 12.136 FAO is participating in most countries of the Sahel and northern Africa preparing national plans to combat desertification. Measures identified to curb the rate of desertification emphasise the need to intensify research and training activities; improve the supply of fuelwood for the population; and to strengthen afforestation activities, soil conservation, agroforestry, fighting bush fires, management of woody vegetation, wildlife protection and management. Regional networks on arid zone forestry and desertification have been initiated by FAO and an important transnational project on sand dune mapping, stabilization and afforestation for the Maghreb countries and four countries in the south of the Arabian Peninsula has now been finalized.
- 12.137 In March 1985 the ad hoc Meeting of the Inter-Agency Working Group on Desertification agreed to allocate the responsibility for coordinating activities in the establishment of a sand dune stabilization network for Africa to FAO and a number of programme's are being promoted in this field.
- 12.138 South of the Sahara, FAO is assisting Niger with a project funded by Italy which aims at controlling desertification in the Keita Valley through integrated rural development activities. The project, one of the largest implemented by FAO, is concerned with the development of three watersheds, with a total area of 80 500 ha, suffering from severe erosion. The project includes components for the construction of anti-erosion terraces, planting windbreaks, fixing sand dunes and developing village fuelwood plantations.
- 12.139 An on-going project, started in 1984 and funded by Belgium in Cape Verde has provided valuable assistance in helping the islanders overcome the effects of nearly ten years of drought through the reforestation of upland areas and lower arid pastures, the establishment of soil and water conservation programmes and the

strengthening of the national forestry service. The targets of the first and second phase have been successfully achieved covering approximately 10 000 ha. and providing employment for some 1 200 persons.

The Tropical Forestry Action Plan

- 12.140 FAO was closely associated with the preparatory, operational and follow-up activities of the Ninth World Forestry Congress held in Mexico City (July 1985) with the theme "Forestry Resources in the Integral Development of Society". The Congress devoted particular attention to forestry and conservation issues. Nine of the 23 principles and guidelines for implementation of new forestry policies and strategies dealt with this subject. The Congress also supported the creation of a world fund for the development and environmental protection of forests to aid developing countries and stressed the urgency and importance of implementing the Tropical Forestry Action Plan.
- 12.141 In 1985, the Committee on Forest Development in the Tropics at its Seventh Session endorsed the five action programmes which constitute the Tropical Forestry Action Plan (TFAP). The Action Plan is an overall conceptual framework elaborated through UNDP, World Bank, WRI and FAO collaboration. It calls for increased levels of public and private investment of US\$8 billion over the five year period 1987-91 or US\$5.32 billion for 56 selected countries. Through the TFAP increased recognition at the highest political level is sought for forests and trees as an important part of the resource base on which agricultural production depends, particularly in mountainous areas and arid lands.
- 12.142 As of 30 December 1988, the TFAP secretariat in FAO was backstopping activities in 55 countries; 13 forestry sector review missions had been completed under TFAP and an additional 34 were under preparation. Country level studies and forestry plans have been undertaken by national experts in six countries. Regular Programme allocations since the beginning of the Programme have totalled US\$2 099 000. Trust fund allocations through 1988 totalled US\$662 482.
- 12.143 Out of a total of 244 projects identified to date under the TFAP in the six country studies completed to date, 30% (for a total of US\$ 120.7 million) have a direct effect on the environment. An additional 22% (for a total of US\$ 107.3 million) is estimated to have an indirect effect on present forest lands through the establishment of man-made forests, the provision of alternative sources of income and the reduction of risks associated with infrastructure development. These classifications cover activities which aim at the protection and conservation of environmentally sensitive lands as well as those which can release the pressure on forest lands and thus ensure sustainable management of the resource base. Some 29% of these projects (for a total of US\$163.2 million) are aimed at both conservation and sustainable production through support to policy, legislation, institution-building and resource assessment.
- 12.144 The first regional conference on the TFAP was held in Jamaica in April 1988. A regional TFAP was presented by FAO to provide a framework for regional and national action plans in Latin America and the Caribbean. A declaration was adopted by the Latin American Regional Commission which recommended among other things that the TFAP be adopted as "a valid mechanism for the conservation and efficient use of forests in the region."

V. Conclusions and Issues

- 12.145 Careful sustainable utilization of natural resources, in-depth knowledge and monitoring of ecosystems and maintenance of a balance between the natural and the human environment are some of the major tasks facing agriculture, fisheries, forestry and rural development today.
- 12.146 Respecting the interdependence between food production and environmental protection is fundamental to sustainable development, especially in the tropical and sub-tropical areas where ecological balance is the most fragile. Since its inception FAO, through its various programmes, has sought to maintain this balance. Some of its sub-programmes are directly aimed at influencing the natural environment and have a long experience in doing so (e.g. soil conservation, forestry, irrigation).
- 12.147 Although FAO has always been concerned with the protection and amelioration of the natural environment, its activities over the past 20 years have been influenced by the "environmental movement". Many new environmental programmes have sprung up or been enhanced since the 1972 UN Conference on the Human Environment. Some programmes have become important components of the Regular Programme, (e.g. work on plant, animal, forest genetic resources, integrated pest management and protection of the aquatic environment). In a number of cases, collaboration with UNEP has played a catalytic role.
- 12.148 International cooperation in solving environmental problems was given a considerable boost by the 1972 Environment Conference. Inter-agency cooperation on common environmental problems is the basis on which to make the best use of scarce resources available to the UN System. FAO has played an active role in international fora, through its regular participation in international bodies like the Ecosystems Conservation Group, the Designated Officials on Environmental Matters, the Consultative Group on Desertification Control, and the Inter-agency Working Group on Desertification. FAO has extensive and satisfactory working relationships with Unesco (particularly the MAB programme), WHO, WMO and IUCN. However, in certain areas such as biological diversity there is a need to rationalize and harmonize the activities of various international bodies.
- 12.149 Within FAO itself, coordination is carried out through the Inter-Departmental Working Group on Environment and Energy. While in the beginning the IDWG met frequently, the frequency of its meetings has declined in recent years in favour of smaller sub-groups which address specific topics related to environment. These sub-groups have proved extremely successful in generating inter-departmental involvement.
- 12.150 While much of FAO's Field Programme work aimed at conservation and improvement of the natural environment continues to be in the "traditional" areas mentioned before, newer areas of work on environmental issues have been introduced under the Regular Programme. In recent years, findings have begun to be applied in field programmes. Progress has been gradual, partly due to the fact that FAO was still developing appropriate solutions, but also due to the limited interest shown by donors and recipient countries in projects which relate primarily to conservation.
- 12.151 However, there are indications that the situation is changing as environmental awareness seems to be on the increase. The Brundtland Report, and the follow-up activities to it, have provided impetus. The

World Bank has conducted a series of country-level environmental strategy reports and more are planned for the future. These reports, which will be considered at the national planning level, should eventually lead to requests to FAO for addressing the identified problems relating to agriculture, fisheries, forestry and rural development.

- 12.152 As these developments occur, FAO will need to respond effectively to further calls for assistance at the field level. The new procedures for environmental impact assessment of FAO projects are aimed precisely at this level.
- 12.153 The environmental degradation caused by inappropriate or uncontrolled land use practices, industrial development, irrigation schemes, the use of pesticides and farm machinery, and deleterious fishing practices can only be halted through long-term development and management plans which set the pace and the framework for their control. Monitoring and evaluation of their impact needs to be developed through adequate research capacity and country studies on the population supporting capacity of agricultural, forestry, range lands and coastal water bodies. Reference indexes on the potential and fragility of ecosystems are needed to monitor trends.
- 12.154 Declining natural forest and fish resources, pollution of rivers, lakes and coastal waters, contamination and degradation of the troposphere and stratosphere are often inter-related. Actions to reduce the pace of natural degradation need coordination at the global level. Agreements at the regional and sub-regional levels need to be encouraged. Public and private awareness of environmental problems linked to agriculture and food security needs to be further promoted. International support to safeguard the world's natural resource base needs to be channelled through concerted actions such as international and regional undertakings, national development plans and increased community participation. There is a need for further information about the long-term economic benefits of conservation measures and to create new ways to satisfy developmental needs while at the same time conserving natural resources for the benefit of future generations.
- 12.155 While FAO has carried out activities in all the above-mentioned areas, much remains to be done. For the future, it would appear that FAO's most effective contribution may come through the identification and/or monitoring of: (i) the causes of environmental degradation in rural areas; (ii) the pace and level of environmental losses; (iii) alternative technologies and proven management tools for the rational utilisation of the natural resource base; (iv) preventive measures for further land use and resource stress; (v) priority areas and sectors for intervention (i.e. most fragile ecosystems and critical habitats, limits of population supporting capacity in selected zones, increased productivity of agricultural lands); (vi) control of pollution from misuse of agro-chemicals and from agro-industries; and (vii) the high level of exploitation of fishery resources, with a view to promoting full but sustainable utilization.
- 12.156 Through its various specialized services, FAO can contribute to the establishment of criteria and strategies that can guide future agricultural policies and projects in regard to environmental concerns. FAO can play an effective role in the promotion of global undertakings and the channelling of additional donor funds to safeguard the natural resource base of the rural areas for the world's future generations.

- 12.157 To continue to discharge this responsibility, closely-knit inter-departmental activities should ensure that environmental degradation does not compromise food security needs, productivity potential, and conservation requirements. The IDWG, with its technical sub-groups, is an effective mechanism for overall inter-divisional coordination of environment and energy work.
- 12.158 In order to enhance its role as an effective mechanism for coordination, especially in terms of recommendations to allocate the resources of the various sub-programmes for environmental activities, and to coordination of FAO's activities with other UN agencies and the adoption of a consistent approach with donors, it is also intended to upgrade the membership of the IDWG to the director level. The upgraded IDWG will be responsible for developing further FAO's overall policy on environment, avoiding overlaps of responsibilities among divisions within FAO and with other UN agencies in environmental matters and ensuring support from the Regional Offices with respect to specific environmental problems common to different geographic zones.
- 12.159 Since environmental issues encompass the activities of the four Technical Departments of Agriculture, Economic and Social Policy, Fisheries and Forestry, arrangements are also being made for the ADGs of the four Departments to be collectively briefed periodically by the Chairman of the IDWG on progress achieved and problems encountered, particularly on the question of resource allocation for environmental activities.
- 12.160 Through these institutional measures, focused on the IDWG, it is intended to give a clearer focus, higher profile and better inter-departmental coordination to the environmental activities of FAO, building on existing strengths in the FAO programme to address environmental issues.

LIST OF ABBREVIATIONS

ACC	Administrative Committee for Coordination
ACFE	FAO Advisory Committee on Forestry Education
AfDB	African Development Bank
AGLINET	Worldwide Network of Agricultural Libraries (FAO)
AGRIS	International Information System for the Agricultural Sciences and Technology
AGROSTAT	Information System for Food and Agriculture
AGROTEL	Agrostat on Telecommunications
ALADI	Latin America Integration Association
ARPA	Rehabilitation of Agriculture in Africa
ARTEMIS	Africa Real Time Environmental Monitoring using Imaging Satellites
ASEAN	Association for South-East Asian Nations
ASFIS	Aquatic Sciences and Fisheries Information System
ATO	African Timber Organization
AVHRR	Advanced Very High Resolution Radiometer
BNF	Biological Nitrogen Fixation
CAPPA	Agricultural and Population Planning Assistance and Training
CARICOM	Caribbean Community and Common Market
CARIS	Current Agricultural Research Information System
CEC	Commission of the European Communities
CECAF	FAO Fishery Committee for the Eastern Central Atlantic
CFC	Community Fisheries Centres
CFS	Committee on World Food Security
CGIAR	Consultative Group on International Agricultural Research
CIFA	Committee for Inland Fisheries of Africa
CILSS	Interstate Permanent Committee for Drought Control in the Sahelian Zone
CIMMYT	Centro Internacional de Mejoramiento del Maíz y del Trigo
CIREO	Centre international de recherche sur l'environnement et le développement
COAG	FAO Committee on Agriculture
COFI	FAO Committee on Fisheries
COFO	FAO Committee on Forestry
COHDEFOR	Corporación Hondureña de Desarrollo Forestal
COPA	Cross-Organization Programme Analysis
COPESCAL	Commission for Inland Fisheries of Latin America
CP	FAO/World Bank Cooperative Programme
CPCL	Commodity Policy Formulation at Country Level
DANIDA	Danish International Development Agency
DESCON	Consultative Group on Desertification
DOEM	Designated Officials for Environmental Matters
ECA	United Nations Economic Commission for Africa
ECDC	Economic Cooperation in Developing Countries
ECE	Economic Commission for Europe

ECG	Ecosystem Conservation Group
ECLO	Emergency Centre for Locus Operations
ECOSOC	Economic and Social Council (United Nations)
ECOWAS	Economic Community of West African States
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIFAC	European Inland Fisheries Advisory Commission
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
ESCSA	United Nations Economic and Social Commission for West Asia
EUROSTAT	Statistical Office of the European Communities
FFHC/AD	FAO Freedom from Hunger Campaign/Action for Development
FIDAPS	Forestry Inventory Data Processing System
FINNIDA	Finnish International Development Agency
FINSYS	Integrated Financial Information System
FISHDAB	Fisheries Database
FORIS	Forest Resources Information System
FORMIS	Forest Resources Management Information System
FSAS	FAO Food Security Assistance Scheme
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Pollution
GFCM	General Fisheries Council for the Mediterranean
GIEWS	Global Information and Early Warning System for Food and Agriculture (FAO)
GIS	Geographic Information System
GLOBEFISH	Computerized System of Fish Marketing Information (FAO)
GTZ	German Agency for Technical Cooperation
IAEA	International Atomic Energy Agency
IARC	International Agricultural Research Centre
IBPGR	International Board of Plant Genetic Resources
IC	FAO/Investment Centre
ICARDA	International Centre for Agricultural Research in Dry Areas
ICID	International Commission on Irrigation and Drainage
ICOD	International Centre for Ocean Development
ICRAF	International Council for Research on Agroforestry
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDA	International Development Association
IDAF	Programme for Integrated Development of Artisanal Fisheries
IDDP	International Dairy Development Programme
IDRC	International Development Research Council
IDS	International Development Strategy (United Nations)
IDWG	FAO Inter-Departmental Working Group
IIASA	International Institute for Applied System Analysis
IFAD	International Fund for Agricultural Development
IFNS	Inter-agency Food and Nutrition Surveillance Programme
IGADD	Inter-Governmental Authority on Drought and Development
IGG	Inter-Governmental Group
IICA	Instituto Interamericano de Cooperacion para la Agricultura
IITA	International Institute for Tropical Agriculture

ILCA	International Livestock Centre for Africa
ILO	International Labour Organization
IMF	International Monetary Fund
IMO	International Maritime Organization
INFOFISH	Marketing Information and Technical Advisory Services for Fish Products in Asia and the Pacific
IOC	Intergovernmental Oceanographic Commission
IOFC	FAO Indian Ocean Fishery Commission
IPFC	FAO Indo-Pacific Fishery Commission
IPM	Integrated Pest Management
IPNS	Integrated Plant Nutrition Systems
IRRI	International Rice Research Institute
ISCDD	International Scheme for the Coordination of Dairy Development
ISNAR	International Service for National Agricultural Research
ISP	Investment Support Programme
ISRIC	International Soil Reference and Information Centre
ITC	International Tea Committee
ITTO	International Tropical Timber Organization
IUCN	International Union for the Conservation of Nature and Natural Resources
IUFRO	International Union of Forest Research Organization
JECFA	Joint FAO/WHO Expert Committee on Food Additives
JUNAC	Junta del Acuerdo de Cartagena
LAS	League of Arab States
LDC	Least Developed Country
MAB	Man and Biosphere
MEDRAP	Mediterranean Aquaculture Project
METEOSAT	Meteorological Satellite (European)
NASA	National Aeronautics and Space Administration
NGO	Non-Governmental Organization
NOAA	United States National Oceanic and Atmospheric Administration
NORAD	Norwegian Agency for International Development
OAU	Organization of African Unity
ODA	Overseas Development Administration of the United Kingdom
OECD	Organization for Economic Cooperation and Development
OIE	International Office of Epizootics
OLDEPESCA	Organización Latinoamericana de Desarrollo Pesquero (SELA)
PARC	Pan-African Rinderpest Campaign
PEEM	Panel of Experts on Environmental Management for Vector Control
PERSYS	Integrated Personnel Information System
PFL	FAO Prevention of Food Losses Programme
PROCADES	Proyecto de Capacitación en Desarrollo Social, Económico y Rural (FAO)
PROCAPLAN	Programa Italia/FAO Políticas y Proyectos de Desarrollo Agrícola y Rural

RAI	Radio Televisione Italiana (Italian Radio and Television)
R & D	Research and Development
SAARC	South Asian Association for Regional Cooperation
SADCC	Southern African Development Coordination Conference
SAREC	Southern Asian Rinderpest Eradication Campaign
SCORRAD	Standing Committee on Resources Research and Development (IPFC)
SDI	Selective Dissemination of Information
SEAFDEC	Southeast-Asian Fisheries Development Centre
SELA	Sistema Económico Latinamericano
SIDA	Swedish International Development Agency
SIDP	Seed Improvement and Development Programme
SIT	Sterile Insect Technique
SOFA	State of Food and Agriculture
SPAAR	Special Programme for African Agricultural Research
SWMTEP	United Nations System-wide Medium Term Environment Programme
TAC	Technical Advisory Committee
TCDC	Technical Cooperation among Developing Countries
TCP	FAO Technical Cooperation Programme
TF	Trust Fund
TFAP	Tropical Forestry Action Plan
TM	Thematic Mapper
TNC	Transnational Corporation
T & V	Training and Visit System
UNCDF	United Nations Capital Development Fund
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
Unesco	United Nations Education, Scientific and Cultural Organization
UNFPA	United Nations Fund for Population Activities
UNIDO	United Nations Industrial Development Organization
UNOALOS	United Nations Office of Ocean Affairs and Law of the Sea
UNPAAERD	United Nations Plan of Action for African Economic Recovery and Development
UNSO	United Nations Sahelian Office
UNU	United Nations University
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WAICENT	FAO World Agricultural Information Centre
WCARRD	World Conference on Agrarian Reform and Rural Development
WESTPAC	Working Group for the Western Pacific (IOC)
WFC	World Food Council
WFP	World Food Programme
WHO	World Health Organization
WMO	World Meteorological Organization
WRI	World Resources Institute
WWF	World Wide Fund for Nature

CONSTITUCIÓN DE LA FAO
OBJETIVO FINAL DE ASEGURAR A LA HUMANIDAD
ORGANIZACIÓN ES EL DE ASEGURAR A LA HUMANIDAD
DERECHO A ESTAR PROTEGIDA CONTRA EL HAMBRE.
LA DISPOSICIÓN MODIFICADA DICE:
CONTRIBUIR ASÍ A LA EXPANSIÓN DE LA
ECONOMÍA MUNDIAL Y A LIBERAR DEL HAMBRE
A LA HUMANIDAD.

联合国粮食及农业组织的章程序言

接受本章程的国家为了下述宗旨:

提高它们各自管辖下的人民的营养
水平和生活标准;

改进一切粮农产品的生产和分配的
效率;

改善农村人口的状况;

从而促进世界经济的发展;

决心加强它们分别的和集体的行动

以提高共同福利,为此建立联合国
粮食及农业组织。各成员将通过本

组织彼此报告在上述行动范围内所
采取的措施和取得的进展。

دستور

ان الأمم المتحدة
توطيد الرفاهية
من جانبها لأجل:

رفع مستويات التغذية
وتحسين الكفاءة في إنتاج
والنهوض بحالة أهل الريف
ومن ثم تساهم في خلق اقتصاد

تنشئ بهذا «منظمة الأغذية
والزراعة»
بعضهم بعضاً بما يتخذ من تآ
ميادين العمل الميعة فيما سبق.

وبمناسبة العيد العشرين لانشاء
رسمياً لتتص على أن الهدف النهائي
هو تحرير البشرية كلها من الجوع
كما يلي

«ومن ثم تساهم في خلق اقتصاد عالمي
الشرية من الجوع».

PRÉAMBULE
TUTIF DE LA FAO

LES PRO
D'AMÉLIORER LA
RURALES,
ET DE CONTRIBUER AINSI À L'EXPANSION
L'ÉCONOMIE MONDIALE,
CONSTITUENT PAR LES PRÉSENTES L'ORGANISATION
DES NATIONS UNIES POUR L'ALIMENTATION ET
L'AGRICULTURE, PAR L'INTERMÉDIAIRE DE LAQUELLE
LES MEMBRES SE TIENDRONT MUTUELLEMENT INFORMÉS
DES MESURES PRISES ET DES PROGRÈS ACCOMPLIS
DANS LES CHAMPS D'ACTIVITÉ ÉNONCÉS CI-DESSUS.

À L'OCCASION DU VINGTIÈME ANNIVERSAIRE,
LE PRÉAMBULE DE L'ACTE CONSTITUTIF A ÉTÉ
OFFICIELLEMENT MODIFIÉ POUR AFFIRMER
QUE L'OBJECTIF ULTIME DE TOUTES LES
DIVERSES ACTIVITÉS DE L'ORGANISATION EST
D'AFFRANCHIR L'HOMME DE LA FAIM.
LE TEXTE DIT DÉSORMAIS:
«ET AINSI DE CONTRIBUER À L'EXPANSION
DE L'ÉCONOMIE MONDIALE ET DE LIBÉRER
L'HUMANITÉ DE LA FAIM»

PREÁMBULO DE LA CONSTITUCIÓN DE LA FAO

LOS ESTADOS QUE ACEPTAN ESTA CONSTITUCIÓN,
DECIDIDOS A FOMENTAR EL BIENESTAR GENERAL
INTENSIFICANDO, POR SU PARTE, LA ACCIÓN
INDIVIDUAL Y COLECTIVA A LOS FINES DE:
ELEVARE LOS NIVELES DE NUTRICIÓN Y VIDA DE
LOS PUEBLOS BAJO SU RESPECTIVA JURISDICCIÓN,
MEJORAR EL RENDIMIENTO DE LA PRODUCCIÓN
Y LA EFICACIA DE LA DISTRIBUCIÓN DE TODOS
LOS ALIMENTOS Y PRODUCTOS ALIMENTICIOS Y
AGRICOLAS,
MEJORAR LAS CONDICIONES DE LA POBLACIÓN
RURAL,
Y CONTRIBUIR ASÍ A LA EXPANSIÓN DE LA
ECONOMÍA MUNDIAL,
CONSTITUYEN POR LA PRESENTE LA
ORGANIZACIÓN DE LAS NACIONES UNIDAS
PARA LA AGRICULTURA Y LA ALIMENTACIÓN,
POR CUYO CONDUCTO LOS MIEMBROS SE
INFORMARÁN RECÍPROCAMENTE SOBRE LAS
DISPOSICIONES QUE ADOPTEN Y EL PROGRESO
LOGRADO EN LOS CAMPOS DE ACTIVIDADES
ENUNCIADOS ANTERIORMENTE.

PREAMBLE TO THE CONSTITUTION OF FAO

THE NATIONS ACCEPTING THIS CONSTITUTION
BEING DETERMINED TO PROMOTE THE COMMON
WELFARE BY FURTHERING SEPARATE AND
COLLECTIVE ACTION ON THEIR PART FOR THE
PURPOSES OF:
RAISING LEVELS OF NUTRITION AND STANDARDS
OF LIVING OF THE PEOPLES UNDER THEIR
RESPECTIVE JURISDICTIONS,
SECURING IMPROVEMENTS IN THE EFFICIENCY
OF THE PRODUCTION AND DISTRIBUTION OF ALL
FOOD AND AGRICULTURAL PRODUCTS,
BETTERING THE CONDITION OF RURAL
POPULATIONS,
AND THUS CONTRIBUTING TOWARD AN EXPANDING
WORLD ECONOMY,
HEREBY ESTABLISH THE FOOD AND AGRICULTURE
ORGANIZATION OF THE UNITED NATIONS
THROUGH WHICH THE MEMBERS WILL REPORT TO
ON THE MEASURES TAKEN AND THE
THE FIELDS OF ACTION

CON OCASIÓN DEL 20º ANIVERSARIO,
FUE SOLEMNEMENTE MODIFICADO EL PREÁMBULO
DE LA CONSTITUCIÓN PARA RECONOCER QUE EL
OBJETIVO FINAL DE TODAS LAS ACTIVIDADES DE LA
ORGANIZACIÓN ES EL DE ASEGURAR A LA HUMANIDAD
EL DERECHO A ESTAR PROTEGIDA CONTRA EL HAMBRE.
LA DISPOSICIÓN MODIFICADA DICE:
«Y CONTRIBUIR ASÍ A LA EXPANSIÓN DE LA
ECONOMÍA MUNDIAL Y A LIBERAR DEL HAMBRE
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接受本章程的国家为了下述宗旨:

提高它们各自管辖下的人民的
营养和生活水平;

منظمة الأغذية والزراعة

هذا الدستور . وقد عقدت العزم على
مركبة بدعم العمل الفردي والجماعي

تتويات المعيشة للشعوب التابعة لكل منها,
مع المنتجات الغذائية والزراعية وتوزيعها.

الى موع
ية والزراعة للأمم المتحدة, المشار
والتي تخطر عن طريقها الأعضاء
ير, وما يتحقق من تقدم في

منظمة عقدت الدعاية
تلف نشاطات المنظمة
أصبح النص المعدل

أربع وضمان تحرير

TO
THE
BEIN
WEL
CO
PU