

ANNUAL REPORT
OF THE ADMINISTRATOR
FOR 1984

4 **PROJECT
RESULTS:**

GLOBAL/INTERREGIONAL
PROGRAMME

SPECIAL FUNDS



United Nations Development Programme



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SUPPORT

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PROJECT RESULTS: GLOBAL/INTERREGIONAL
PROGRAMME AND SPECIAL FUNDS

I. GLOBAL/INTERREGIONAL PROGRAMME

1. Demand for support from UNDP's Global and Interregional Programme expanded through 1984 and was met from limited resources through concentrated efforts in areas of acknowledged developmental significance. Agriculture, water supply and sanitation, special public works, housing and health, as well as energy assessment and management all continued to receive sustained attention. Basic research, technology development and transfer, and management support constituted major programme thrusts while human resources development activities at the country level were intensified.

2. Agriculture and its related subsectors remained the dominant priorities of global programming, and are expected to account for about 65 per cent of anticipated resources for global programmes in the third cycle. Training components now represent on average between 60 and 80 per cent of recently approved project budgets in this sector. The year 1984 registered steady progress in the promotion of five principal areas of applied research and training carried out by affiliated centres of the Consultative Group on International Agricultural Research (CGIAR) and other international research institutions. Notable work was sustained over the year, as described below.

Improvement of food crop varieties (rice, maize, sorghum and millet)

3. By 1984, following three phases of UNDP assistance totalling over \$12 million, genetic breeding work at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) could draw on a germ-plasm bank of nearly 23,000 strains of sorghum and 13,000 strains of millet, the staple foods of an estimated 780 million people living at subsistence level. Significant research and field trial outputs to date include:

(a) Ten high-yield sorghum cultivars developed for distribution and evaluation in Ethiopia, Kenya and Venezuela;

(b) Nine sorghum hybrids provided for co-ordinated trials throughout India;

(c) Various mold-resistant millet and sorghum strains released for cultivation in China and countries in Africa and Latin America.

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4. Human resources development in ICRISAT's work programme, which emphasizes African requirements, is conducted through specialized courses, symposia and workshops. Over 200 scientists from 36 countries have so far received intensive training in cereal improvement and production. The ongoing phase of UNDP assistance to ICRISAT earmarks over \$800,000 for the further training of national personnel in germ plasm exchange and use, and in techniques for the cultivation of high-yield crop varieties.

Enhancement of biological nitrogen fixation (BNF) in rice paddy soils

5. The method of supplying life-sustaining nitrogen to plants through assimilable compounds created from the atmosphere by micro-organisms introduced into the soil offers developing country farmers clear economic advantages compared with the use of artificial fertilizers produced by costly oil-fueled industrial processes. According to rough estimates, approximately 192 million tons of nitrogen are currently fixed biologically in agricultural soils of the world each year compared with approximately 50 million tons provided through chemical fertilizers. Early BNF research initiatives financed by UNDP at the International Rice Research Institute (IRRI) and subsequently extended to other international centres were stimulated by prospects for more than doubling nitrogen yields through this process.

6. By 1986, UNDP will have allocated some \$15 million to finance the expansion of four large global BNF programmes on:

(a) The genetic manipulation of rice varieties aimed at maximizing their nitrogen-fixing characteristics. Conducted at IRRI in the Philippines, this research holds particular promise for utilizing BNF in the cultivation of flooded rice;

(b) Similar research on sorghum and millet at ICRISAT;

(c) The improvement of biochemical interactions between cowpeas and soybeans respectively and bacteria (rhizobia) native to poor soils. Varieties of cowpeas and soybeans have shown themselves capable of fixing nitrogen efficiently under adverse conditions through free nodulation with indigenous bacteria. This programme, now being conducted at the International Institute of Tropical Agriculture (IITA), Nigeria and the International Centre for Agricultural Research in the Dry Areas (ICARDA), holds vital promise for the development and transfer of sturdier crop varieties, particularly to African countries;

(d) Enhancements in the nutritive value of basic food commodities (cassava, beans and legumes) through improved technological processes developed by the International Centre for Tropical Agriculture (ICTA) in Colombia. A new phase of activities, approved by the Governing Council in

1984, stresses national know-how transfer programmes in the Latin American and Caribbean region. These aim to disseminate to national agricultural institutes results achieved by way of improved yields from bean and pasture legumes utilizing BNF processes. Collaborative ties with IITA in Nigeria are also being strengthened to promote further interregional technology transfers.

Research and training in fertilizer technology applications

7. Along with its support for global BNF research, UNDP also continued to sponsor equally important efforts at the International Fertilizer Development Centre (IFDC) to raise the efficiency of nitrogen and phosphorous fertilizers and promote their more effective use. Activities now under way include the development of a urea supergranule known to be capable of boosting rice production by as much as 30 to 50 per cent over levels attainable through the use of conventional fertilizers. In this field, too, the training of developing country personnel in all aspects of fertilizer production, use, marketing, storage and distribution constitutes a further project emphasis. More than 42 group training programmes in these subjects involving over 1,400 developing country participants have so far been financed through IFDC with UNDP inputs.

8. Other major agricultural initiatives sustained with UNDP's support in 1984 included:

(a) The development of pest management techniques through biological control methods as alternatives to toxic chemical pesticides, at the International Centre for Insect Control and Ecology (ICICE). UNDP commitments for promoting this work amount to nearly \$8 million for the period 1982-1987;

(b) The pursuit of an effective vaccine against African animal trypanosomiasis through basic research at the International Laboratory for Research on Animal Diseases (ILRAD). The development in cattle of immunological mechanisms capable of resisting various trypanosomes could liberate affected livestock production in over 50 countries. UNDP's 1983-1986 phase of assistance to ILRAD for this major work provides \$3.8 million for laboratory studies on host/parasite/vector relationships and for extensive animal studies in field situations.

9. Since 1971 when UNDP, the World Bank and Food and Agriculture Organization of the United Nations (FAO) commenced their sponsorship of CGIAR programmes, the network has expanded from 4 centres to 13. Donor members have increased from 15 to 38, including 5 developing countries, and their total contributions now amount to \$180 million compared with the CGIAR's 1971 budget of \$17 million.

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10. The year 1984 saw continuing gains in such additionality. UNDP's inputs alone, which amounted last year to nearly \$10 million, attracted complementary contributions from other donors and financial institutions worth an estimated \$100 million. In a significant agreement, the United States Government and the World Bank recently pledged combined annual support to these centres equal in value to 40 per cent of UNDP's yearly contribution, thereby consolidating a sustained effort to put the CGIAR network's resource prospects on a footing commensurate with the research needs of developing countries.

11. Six implacable diseases, harbingers of death and disability for millions in the developing world are meeting determined resistance from the efforts of some 3,000 scientists in 125 countries now working to prevent, control and treat these afflictions through a special global programme for Tropical Disease Research and Training (TDRT).

12. Since 1976, UNDP, the World Bank and the World Health Organization (WHO) have joined forces to support concentrated multi-disciplinary research on:

(a) **Malaria**, which affects 800 million people and threatens twice as many more;

(b) **Schistosomiasis** (bilharzia or snail fever), of which there are an estimated 200 million sufferers in 70 countries;

(c) **Filariasis**, which robs the sight of some 30 million West Africans in the form of onchocerciasis (river blindness) and affects about 90 million more people in its lymphatic forms;

(d) **Trypanosomiasis** (sleeping sickness), a permanent hazard for at least 50 million people in Africa, where there are 20,000 new cases yearly, and for Latin America, where at least 10 million people are infected with Chagas' disease;

(e) **Leishmaniasis**, a group of diseases having many forms ranging from self-healing skin ulcers to fatal generalized infections, of which at least 400,000 cases occur each year;

(f) **Leprosy**, with which an estimated 11 million people are afflicted.

13. Specialists working in developed and developing countries have benefited from close collaboration with the pharmaceutical industry. Over 78 scientists from 41 companies have been associated with programme projects and

in planning and developing new drugs and vaccines. Funding (over 55 per cent of current annual resources) has been provided to scientists and institutions in developing countries to boost training programmes and extend local research capacities. By the end of 1984, the programme had also succeeded in mobilizing close to \$157 million from multilateral and bilateral donors for more than 1,300 tropical disease research and research-related projects in over 81 countries.

14. Significant achievements apparent by 1984 included:

(a) Progress in the development of vaccines against malaria and leprosy;

(b) Development of anti-malarial drugs to replace those against which the mosquito vector has developed resistance (e.g., mefloquine in co-operation with a private sector company and quinghaosu in co-operation with Chinese scientists);

(c) Important developments in biological vector control including the use of *bacillus thuringiensis*, harmless to human beings yet highly toxic to blackflies and mosquitoes; and the cultivation of a mosquito larvae-eating fish in northern Somalia;

(d) Drug screening for more effective compounds to treat onchocerciasis;

(e) Improved drug therapy for schistosomiasis;

(f) The discovery that domestic and wild animals are "reservoirs" of trypanosome parasites and an important link in the transmission cycle of sleeping sickness;

(g) A more accurate diagnostic test for trypanosomiasis.

UNDP inputs totalling \$8.8 million have been allocated to this remarkable programme.

15. Since the launch of the International Drinking Water Supply and Sanitation Decade (IDWSSD) in 1980, UNDP has partnered a large number of United Nations agencies, bilateral donors and the World Bank in supporting the efforts of over 70 developing countries to overcome acute water-related problems. Central to UNDP's response has been its major global programme, in co-operation with the World Bank and numerous bilateral institutions, for promoting the objectives of the Decade through research, technology development, training, information distribution and investment analysis.

16. A mid-point review of this programme, published jointly by UNDP and the World Bank in December 1984, revealed notable results being achieved in the five subprogramme areas described below.

Rural water supply handpumps

17. Given the prohibitive costs of establishing central utilities in many developing countries, affordable water supplies for an estimated 1,500 million people in rural areas without piped service will continue to be based on the improved design, manufacture and maintenance of efficient handpumps for use at the community level. In 1984, UNDP decided to add a further \$4 million in core funding to its global handpump development project with the World Bank, bringing its total commitments to over \$8 million. To date, laboratory tests on 23 different types of handpump have been completed, a further 6 models are undergoing examination and field trials involving over 2,800 pumps have been carried out in 17 developing countries funded partly by host Governments and 10 donor agencies. Local manufacturing activities in nine developing countries have also received support. Guidelines synthesizing findings from all these efforts will be published for global distribution in 1985.

Low-cost sanitation

18. Clean water supply constitutes one safeguard for health. Adequate sanitation represents another. In many developing country settings, low-cost sanitation approaches are increasingly being adopted as necessary alternatives to expensive conventional sewerage systems. Together with the World Bank, UNDP has for several years supported the work of a multi-disciplinary team, the Technical Advisory Group, which has provided advice on low-cost sanitation programmes and technologies to over 14 developing countries. These services have helped to widen government and donor acceptance of the viability of low-cost options and promote investment in the development and use of technologies associated with on-site sanitation.

19. By 1984, in East Africa, seven sanitation advisers had been assigned to an active advisory network serving Botswana, Kenya, Lesotho and Zimbabwe. A similar network for West African countries had also been initiated. Operations in Asia are now focused on assisting Governments and multi-donor groups to prepare rural sanitation schemes in Bangladesh, India, Indonesia, and Nepal, while in Brazil sanitation activities are being linked to large-scale investment projects. In all, 19 regional advisers are currently engaged in country-level programmes. UNDP core funding for the period 1983-1987 amounts to \$6 million.

Information and training

20. Teaching developing country personnel the benefits and uses of alternative water and sanitation technologies remains a major priority of this subprogramme. Three major information and training packages developed to address respectively decision-makers, technicians and community workers have been prepared, comprising 3 films, 48 slide presentations, written guidelines, case studies and other training materials. Five thousand copies of a three-volume Handbook containing guidelines for sectoral project preparation have been distributed to planners in developing countries. By the end of 1984, these training packages had been largely assembled and were being readied for distribution in 1985.

21. Arrangements for an active training and dissemination phase moved firmly ahead in 1984. At a meeting organized by the Federal Republic of Germany, the United Kingdom, Denmark, France, Switzerland, as well as the host Government, pledged support for a Water and Waste Management Training Network based on existing developing country facilities. Canada, the Netherlands and the United States Agency for International Development (USAID) also expressed strong interest in supporting the network which is expected to involve 15 apex country institutions.

22. With the approval in 1984 of a new phase of demonstration activities to be conducted initially in Colombo, Dakar, Jakarta, Khartoum, and Mexico City, UNDP inputs to this subprogramme now exceed \$2 million.

Resource recovery

23. In many developing countries, the recycling of household and commercial wastes flourishes in the informal sector. Efforts to determine the potential economic benefits of larger-scale resource recovery have been stepped up through this project for research on contemporary global technologies and for studies of waste management and recycling practices in nine developing countries.

24. Eight technical studies were prepared for dissemination in 1984, and a further 19 are in progress. Their coverage includes a review and bibliography of solid waste recycling processes, an up-to-date account of biogas plants, the remanufacturing of durable products from discarded machine, engine and vehicle components, health aspects of effluent irrigation, and techniques for the combined composting of domestic and human wastes. Case studies have been completed in China, Cyprus, India, Israel, the Ivory Coast, Nepal, Peru, the Philippines and Thailand.

Project preparation units

25. Three regional project preparation units (PPUs) set up respectively in Abidjan, Colombo and Nairobi are helping African and Asian Governments to identify, formulate and secure financing for well designed water supply and sanitation projects as part of a major capacity-building effort which includes the training of national planning staff. Financial inputs from UNDP, amounting to \$6 million at the end of 1984, have produced clear ripple effects. The East African PPU is currently assisting 5 countries to prepare 13 investment projects valued at about \$500 million including programmes financed by Finland, Norway and Sweden. The recently launched West African PPU has put together an investment package for six countries worth over \$200 million, while the Asian PPU has developed some \$189 million worth of projects. As the focus of effort in the IWSSD programme shifts perceptibly from engineering to institution-building, these units are expected to play an even greater role in building up government planning and implementation capabilities.

26. Five years of IWSSD have seen its research and development phase successfully completed and numerous country-level activities initiated. Future years are expected to stress the development of effective delivery systems encompassing the manufacture and marketing of low-cost water and sanitation technologies as well as the mobilization of requisite investment. Low-income countries will continue to receive particular attention markedly in the training of planning and technical staff. Financial management, improved sectoral strategies and the wider distribution of information on practical results achieved through demonstration projects are all foreseeable emphases in the late 1980s.

27. Household surveys, systematically conducted, offer a source of timely and accurate data on a wide range of social factors of significance to developing country planners and donor agencies alike. With this in mind, UNDP's Division for Global and Interregional Programmes has for five years co-sponsored with the World Bank, the United Nations Fund for Population Activities (UNFPA) and the United Nations Children's Fund (UNICEF) a **National Household Survey Capability Programme (NHSCP)** which has also won active support from the Inter-American Development Bank (IDB), FAO, the International Labour Organisation (ILO) and 13 other multilateral and bilateral sources. The programme assists recipient countries to build up and maintain the permanent statistical apparatus needed to compile and integrate required data on variations in nationwide living conditions, occupations, income and expenditure patterns, and demographic and cultural factors influencing social and economic change.

28. At the core of NHSCP is a Central Co-ordinating Unit (CCU), maintained with UNDP, UNFPA and UNICEF support, which has to date helped 45 countries to draw up such national programmes. A further six countries are expected to initiate programmes in 1985. Individual national survey programmes typically run for four to five years and require about \$1.2 million in external resources annually to match an average of three times that amount from the recipient country. Resource mobilization efforts by UNDP and CCU have to date secured over \$16 million from NHSCP's multilateral and bilateral sponsors.

29. The NHSCP country-level impact is assured by its operational focus and alacrity. A case in point is the programme for Zimbabwe which was approved in 1982. By August of that year, a household survey adviser had been assigned and external funding obtained from UNDP, UNICEF, the Swedish International Development Authority (SIDA) and USAID. During 1984, the Zimbabwe Permanent Sample Survey Unit carried out over six surveys in rural communal areas and published two up-to-date reports. NHSCP technical missions comprising representatives of potential donors were undertaken to carry out an overall review of capacities and needs, and to provide assistance in the design of an income/expenditure survey and a monitoring system for the evaluation of child survival and development. Prompt and adequately endowed assistance measures such as these are being offered to other countries requesting NHSCP help in an effort to create abiding and cost-effective statistical mechanisms for the reinforcement of national planning capacities.

30. A distinguishing feature of the Special Public Works Programme (SPWP) sponsored by UNDP and ILO is that its labour-intensive schemes provide immediate employment while creating vital irrigation systems, water supplies, roads and other works which in turn generate long-term employment. Since the programme's inception in 1975, combined UNDP inputs of \$22.1 million drawn from interregional, regional and national IPFs and from the Special Measures Fund for the Least Developed Countries, have focused additional resources from 13 donors, including \$7.7 million from recipient countries, in a total package of over \$87 million for direct support and technical co-operation.

31. Under the programme, at the request of participating countries, an efficient advisory support service initiates consultations with technicians and grass-roots organizations in areas of high unemployment in order to identify feasible schemes of agreed national benefit. Governments are then assisted to identify and formulate the labour, cost, training and organizational components of special public works schemes for which the UNDP/ILO service subsequently attempts to locate funding. In addition to

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helping Governments to establish appropriate local mechanisms for managing such multi-sectoral schemes, the service provides guidance on training and technical back-up during implementation. By 1984, the success of this compact approach could be seen in some of its concrete results. Special public works programmes were responsible for:

- (a) Irrigating over 8,500 hectares of land world-wide;
- (b) Conserving and reforesting another 16,000 hectares in areas at risk;
- (c) Constructing and/or repairing over 1,800 kilometres of rural roads and tracks;
- (d) Building 107 community and health centres and 102 housing units.

32. In response to the energy problems faced by the developing countries, UNDP and the World Bank have worked closely together over the past five years in order to provide developing country Governments, donors and investors with assessments of the most pressing energy issues faced by individual developing countries and the options for dealing with them. These are spelled out in the reports prepared under the **UNDP/World Bank Energy Sector Assessments Programme** which will be formally concluded during the first half of 1986. By that time the Assessments Programme is expected to have produced reports for some 70 developing countries or well over one-half of the developing world. Total costs are expected to reach approximately \$15 million of which about 50 per cent has been provided from UNDP and the international donor community and the balance from the World Bank itself.

33. The great majority of the assessments which will have been completed by 1986 will have focused upon the special problems being faced by the sub-Saharan African countries. Moreover, the utility of the assessments has been widely acknowledged by Governments and their development partners in Asia and the Pacific, Africa and Latin America. They have helped to stimulate government policy initiatives in the area of energy pricing, institutional arrangements for the management of the energy sector and the development of new and renewable energy resources while also providing a framework for donor-recipient consultations on technical co-operation and investment in the energy field. The following are examples of the latter:

- (a) In Mauritius, a pre-feasibility study supported by France is being undertaken to expand the use of bagasse for electricity generation;

(b) In Sri Lanka, preparatory work on the design of an industrial energy conservation programme is being carried out with the assistance of a number of donor agencies;

(c) In Malawi, the World Bank/International Development Association (IDA) is assisting the Government in carrying out a programme designed to lead to the more efficient use of fuelwood in the tobacco industry;

(d) In the Sudan, pre-investment work being carried out by the World Bank is focusing on petroleum development prospects and a proposed internal power project in the Blue Nile grid.

34. The primary vehicle for ensuring that appropriate actions are taken to implement the recommendations of the Assessments Programme has been the Energy Sector Management Assistance Programme (ESMAP). Since being initiated in April 1983, ESMAP has been in operation in some 35 countries mainly in the area of pre-feasibility and feasibility studies. This work is now concentrating on the preparation of projects designed to rehabilitate power generation and transmission systems, promote energy conservation and efficiency of energy use in the industry and transport sectors, create peri-urban fuelwood plantations while helping to develop and disseminate improved woodstoves. African countries' energy needs are receiving priority attention.

35. Actual and estimated costs of this programme are expected to reach approximately \$10 million by the end of 1986 of which \$9.3 million is presently available from UNDP, the international donor community and the World Bank. These are core resources; in addition, ESMAP is already collaborating with a number of individual donors in the carrying out of pre-feasibility studies under various co-financing arrangements. Resources are being channelled through UNDP in the form of contributions to the UNDP Energy Account, under third-party cost-sharing arrangements with the UNDP interregional programme and, in one case, through the establishment of a trust fund facility. Increasing support is also being made available under various UNDP country programmes. The work of both programmes is, wherever possible, being co-ordinated with preparations for UNDP-sponsored LDC round-tables and World Bank-sponsored aid consortia and consultative groups.

II. UNDP ENERGY OFFICE

36. The Energy Office pursued a variety of substantive and catalytic activities in 1984 aimed at ensuring the optimal use of resources from the Energy Account and further promoting technical co-operation in the energy sector. As described in the preceding subsection, the Office joined actively

with UNDP's Division for Global and Interregional Programmes (DGIP) and the World Bank in supporting country-level energy assessment and management assistance programmes, supplementing both efforts with a total of \$9.4 million.

37. Globally, the Office also assisted the United Nations Institute for Training and Research (UNITAR) to organize and hold the **Third International Conference on Heavy Crude and Tar Sands** as well as a recent conference on the development of shallow oil and gas resources. Close collaborative ties with USAID and the World Bank were maintained through a co-operative project for strengthening energy network systems, which provides developing countries with state-of-the-art information on new and renewable energy sources. Again with the World Bank and the European Economic Community (EEC), it participated in supporting the improvement of biomass gasifiers through demonstration activities in numerous developing countries.

38. Training continued to receive heightened emphasis in 1984. Together with the Office of the Director-General for Development and International Economic Co-operation, the Energy Office organized a seminar on energy assessment and planning attended by 19 senior developing country officials. With the Economic Development Institute of the World Bank, it conducted a **Sub-Saharan Energy Seminar**, the first in a planned series of four, which will assist East and West African countries to define policies for the more efficient use and production of energy. Multi-donor funding from Japan and Norway has enabled the Office, in collaboration with the United Nations Department of Technical Co-operation for Development (UNDTCD) and the United Nations Industrial Development Organization (UNIDO), to undertake extensive preparations for a workshop on small-scale hydro-power schemes which will be held in 1985.

39. The Office stepped up its financial and substantive support for a number of important country-level operations in 1984. One million dollars were contributed to efforts in Djibouti to identify geothermal resources capable of supplementing the country's electrical generating capacity and eventually phasing out expensive diesel-powered generation. This input catalysed a total financial package from multiple sources valued at \$16.6 million, including an IDA credit of \$6 million. Drilling tests have already commenced. In **Morocco**, a feasibility study on utilizing and transporting natural gas from the Essaouira field for industrial applications has elicited donor interest while in the **Dominican Republic** joint preparations with the Government and the OPEC Fund for rehabilitating a mini-hydro station were also finalized. A mini-hydro proposal for **Fiji** is also being developed for early action.

III. UNITED NATIONS VOLUNTEERS

40. Recipient in orientation, keenly motivated in action and increasingly universal in recruitment, the United Nations Volunteers (UNV) programme consolidated and expanded its cost-effective services in 1984. Results from the work of volunteers in the field are, to a large extent, inseparable from the impact of the programmes and projects to which they are assigned. Nevertheless, steadily growing demand for volunteers indicates the value attached by Governments in all regions to their services, several examples of which are described below.

Africa

41. The region absorbed close to 50 per cent of fielded volunteers in 1984. Three countries - Madagascar, Nigeria and Zaire - were host to United Nations volunteers for the first time. Requests for personnel from Portuguese-speaking African countries registered a 37 per cent increase over 1983. Co-operative programming with WFP and UNICEF and with bilateral donors through projects financed by the United Nations Emergency Operation Trust Fund (UNEOTF) was maintained in several countries.

42. The use of developing country expertise, continued emphasis on training and education, and support to regional institutions were among other notable features of UNV work in Africa. In Gabon, phase I of a low-cost school construction project was completed with the help of a team of 10 architects and civil engineers from China. With UNEOTF funding, UNV specialists, also from China, were assigned to Rwanda to assist in increasing cereal production and to demonstrate new food technologies. At the request of the Pan-African Congress, UNV has undertaken the execution of a project in the United Republic of Tanzania for establishing a multi-purpose training centre at Masuguri-Kitonga. With UNESCO, UNV is helping to build up the Faculty of Applied Sciences at the University of Burundi, while in Botswana, the Central African Republic, Guinea, Guinea-Bissau and Lesotho, volunteers were assigned to a wide range of skills-training projects in the educational and other sectors. Volunteers were also attached to intergovernmental institutions in efforts to promote more effective regional infrastructure through a programme sponsored by the Economic Commission for Africa (ECA) in Ethiopia and Zambia.

Asia and the Pacific

43. Progressively higher levels of operational expertise were sought from and supplied by UNV in this region. In Singapore, tertiary-level lecturers were provided to two national polytechnics in subjects ranging from mechanical

and electrical engineering to architecture and computer science. Bhutan, host to the largest UNV programme in the region, continued to deploy volunteers to fill critical gaps in its technical staff structure within a multi-sectoral project covering major national productive activities in agriculture and forestry. In the Trust Territory of the Pacific Islands, some 30 volunteers were assigned to assist with small-scale industry development and to expand medical services to isolated areas. A UNV-executed project in Samoa is helping to modernize rural medical services by recruiting recently qualified medical officers from Asian countries in an effort to build up operational links within the subregion through technical co-operation among developing countries.

Latin America and the Caribbean

44. With only a modest presence in some 11 countries, UNV maintained its contribution to several important development activities in this region. In Jamaica, the region's largest concentration of volunteers supported a number of projects in the health sector. In Haiti, seven volunteers were incorporated as the sole international recruits within an ILO-executed employment promotion project to be undertaken in the southern peninsula, while in Honduras a team of volunteers continued to assist in work conducted in border areas and related to resettlement programmes.

Arab States and the Middle East

45. UNV involvement in the region centred on disaster relief and refugee-related assistance. It included the assignment of 13 civil engineers and surveyors to Yemen to strengthen a self-help housing project which is rebuilding 15,000 homes destroyed in the December 1983 earthquake. In Somalia, a resettlement programme sponsored by the Office of the United Nations High Commissioner for Refugees (UNHCR) was expanded by the addition of volunteers to the staff of the National Refugee Commission; three additional countries - Qatar, Turkey and the United Arab Emirates - became associated with this effort to improve self-sufficiency levels among refugee communities through the establishment in these countries of UNV posts in education and the vocational rehabilitation of the disabled. (Additional details of UNV activities in 1984 are contained in DP/1985/44.)

IV. VOLUNTARY FUND FOR THE UNITED NATIONS DECADE FOR WOMEN

46. During 1984, the Voluntary Fund (VFDW) completed, under its Forward Looking Assessment, a substantial evaluation of its operational activities. Major lessons drawn point to the need for continued growth in resources and activities; accelerated professional attention to the UNDP-supported project

cycle and associated joint programming opportunities; and sustained involvement with issues affecting women and development in the provision of technical co-operation. The autonomous association of VFDW with UNDP, effected in 1984, is expected to further the attainment of such goals.

47. Implementation of the Voluntary Fund's African Investment Plan moved into its operational phase in 1984. The Plan focuses on projects in selected sectors (e.g. agriculture and energy), on the provision of credit support facilities and the participation and consideration of women in country programming exercises and round-table conferences. Three consultancy missions were fielded in this connexion to Togo, the Gambia and Guinea-Bissau. In the Gambia, VFDW participated for the first time, as an observer, in that country's November 1984 round-table conference while in Togo it joined in preparations for a donor conference scheduled to be held in May 1985.

48. Accompanying the Fund's thrust in Africa is its important Food Cycle Technologies Project with FAO, the ILO, UNDP and UNICEF. Its aim is to identify prototype food technologies of demonstrated value to women and promote their wider distribution and adaptation in the region. Improved ploughs, digging implements, grain mills, solar dryers, oil-presses, nut shellers, storage bins and transportation aids are among technologies currently being examined for development. Other fields of activity covered by more than 400 projects approved by the Voluntary Fund to date include employment, human resources development, planning, energy and information.

V. THE UNITED NATIONS SUDANO-SAHELIAN OFFICE

49. In the context of Africa's manifold drought-related crises in 1984, support to affected countries in two principal categories of assistance was energetically sustained by the United Nations Sudano-Sahelian Office (UNSO).

50. Medium-term measures for the recovery and development of infrastructure were widely promoted in the eight drought-stricken member countries of the Permanent Inter-State Committee on Drought Control in the Sahel (CILSS). Contributions totalling \$7.5 million in 1984 were mobilized by UNSO through its trust fund facility for drought-related assistance to Burkina Faso, Cape Verde, Chad, the Gambia, Mali, Mauritania, the Niger and Senegal.

51. Significant rehabilitation efforts are being mounted with this assistance. For example, the construction, improvement and maintenance of all-weather secondary roads in the Sahel has been taking place through an UNSO-sponsored regional programme, executed by the UNDP Office of Projects Execution. In 1984, additional donor contributions mobilized by UNSO went towards further construction and maintenance work in six country members of

CILSS. The opening of secondary roads in the region will facilitate access to remote areas, permit the transportation of food and emergency medical supplies to drought-afflicted zones, provide supply and outlet routes for farmers and their produce, and boost the development of common services between CILSS member countries.

52. Similarly, over the year, UNSO devoted greater efforts to building up national and regional services in agro-meteorology and hydrology and to establishing food-related infrastructure. Post-harvest storage facilities, systems for the planting and multiplication of improved seeds, farm tool workshops and networks for the construction and equipping of wells received renewed attention.

53. Complementing UNDP-assisted programmes to deal with drought were further activities supported by UNSO in intermediate technology development (the design, adaptation and production of fuel-efficient cooking stoves); institutional support (provided to the Institute of the Sahel), and in the training of research workers and technicians from the region.

54. Together with UNDP and the United Nations Environment Programme (UNEP), UNSO has, since its inception and by mandate, vigorously supported wide-ranging desertification control programmes now under way in 21 affected countries in East and West Africa.

55. The search for renewable energy sources to relieve pressure on forests moved forward in Cape Verde where wind energy experiments have yielded promising results. Two wind turbines were installed for connection to the Praia electrical grid in 1984 and a combined wind and diesel energy system has been identified for piloting on the island of Santiago. Initial results have prompted the Danish International Development Agency (DANIDA), which funded these trials, to provide financing worth \$2.8 million for similar efforts in Somalia.

56. Measures to combat deforestation continued in the Kordofan region of the Sudan where farmers are being assisted to plant drought-resistant *Acacia Senegal*, the source of gum arabic which has extensive industrial, pharmaceutical and confectionary uses. A further 3,500 hectares were established in 1984, bringing the total area covered since the project's inception to 14,500 hectares. In 1984, the Netherlands Government agreed to finance a second phase of these successful activities through UNSO which will include an innovative component with the World Food Programme (WFP). WFP food rations will be sold to farmers and the proceeds placed in a common fund to provide loans for agricultural improvements. The restocking of the gum belt is expected to furnish farmers with supplementary incomes, add foreign exchange earnings to the Sudan, and produce fodder while accomplishing the principal objective of stabilizing soil in the area.

57. Techniques for stabilizing and fixing sand dunes to prevent the encroachment of sand on farms and small settlements have been tested and developed in Somalia and Mauritania. UNSO support has directed donor attention to these methods which have already produced notable results in southern Mauritania where the arterial west-east road has been protected from moving sand. Ten sites in different ecological zones in the country have been identified for further testing and application of these methods. (For further information on the work of UNSO in 1984, see DP/1985/50 and A/40/).

VI. THE UNITED NATIONS REVOLVING FUND FOR NATURAL RESOURCES EXPLORATION

58. In 1984, the Revolving Fund (UNRFNRE) and its government partners pursued new exploratory work in four countries while continuing to update economic analyses of its previous discoveries as part of joint efforts to promote investment in mineral production.

59. In Sierra Leone, interesting indications of gold mineralization were found, prompting detailed technical investigations which are now under way. In Haiti, the Revolving Fund found zinc, copper, gold and barite mineralization over a three-kilometre extension. The search for ore-shoots large enough to be of potential economic importance has commenced. In another area of Haiti, high-grade gold mineralization was detected, the extent of which is currently being determined. A base mineral exploration project in Kenya, which has yielded promising results in a reduced target area, called for follow-up support which the Fund provided by preparing plans for an extension. At the same time, field work at the Fund's largest mineral exploration site in Peru was initiated in 1984 with the introduction of new drilling technologies.

60. Over the year, further testing was undertaken in order to provide Governments and potential investors with more detailed analyses of the Fund's important discoveries in Benin, the Congo and Ecuador. An evaluation of laboratory-scale test results ensuing from work on the Benin kaolin deposit stimulated a decision to proceed to the applied industrial testing of a large bulk sample. With further processing, the material could be of appreciable value in the manufacture of cement, tiles, paint and paper. Similarly, following the successful completion of a second phase of explorations for offshore phosphates near Pointe Noire in the Congo, bulk sample tests are now being financed by the Fund. Some 25 million tons of mixed shell/phosphorite are believed to be recoverable using simple and cost-effective offshore mining methods. Phosphate products have considerable local relevance as quality fertilizers for the sugar-cane industry. (For further details of UNRFNRE work in 1984, see DP/1985/46.)

VII. THE UNITED NATIONS CAPITAL DEVELOPMENT FUND

61. The manufacture of low-cost handpumps in Mali, stimulated by UNCDF assistance dating back to 1981, reached established production targets in 1984. One hundred high-performance handpumps are being turned out monthly by the Malian Engineering Maintenance Workshop for domestic use and regional export. Spare parts production also increased in 1984. Marketing efforts have succeeded in registering 400 purchase orders for the first months of 1985. With the completion of technical training, the installation of requisite workshop equipment and the establishment of a revolving fund for the acquisition of raw materials, UNCDF inputs assisted this production facility to make its first profits in May 1984.

62. Communication links between remote rural clinics and their respective district hospitals in Lesotho are being furthered by the installation of a two-way radio network supported by UNCDF. Some 70 radio stations are being equipped to relay information on the movement of drugs supplies, personnel and patients, and to provide notification of emergencies and epidemics. The network, which benefits about 600,000 rural dwellers, is a key component of Lesotho's efforts to cut rural isolation by bringing essential services to remote communities. A further 47 radio stations will be added to the network through an extension of this project which will be financed by UNCDF, UNDP, the African Development Bank and the International Committee of the Red Cross.

63. Similarly, internal links have been built up in Bhutan through the construction of feeder roads connecting villages to this land-locked country's arterial routes. When manpower shortages dictated the curtailment of earlier labour-intensive construction schemes in 1975, UNCDF inputs were sought to introduce mechanized road-building techniques. Following completion of project activities, a 1984 evaluation report showed that the average rate of Public Works Department road construction had increased from 38 to 60 kilometres a year while construction costs per kilometre had fallen from \$71,000 to \$52,000. Overall labour requirements had been reduced from 7,800 workers to 3,300 and a total of 376 kilometres of feeder roads had been laid down.

64. Other UNCDF-supported project results apparent in the year under review include:

(a) The completed construction of 85 rural primary schools in 6 provinces of Benin. Forty-eight of these are now admitting their first intake from the 18,000 primary school-aged children in these areas who will benefit from these new facilities;

(b) The establishment of poultry farm infrastructure at two locations in the Niger. Construction materials, initial breeding stock and feedstock have been provided by UNCDF to help government efforts to develop small-scale poultry farming in Niamey and Dosso. Extension services are also being revitalized through two mobile units serving 55 villages. Some 3,000 families in these areas are expected to be able to produce 4 million eggs and between 75 and 90 tons of chicken meat each year through this project. (Additional details on UNCDF programmes in 1984 are contained in DP/1985/45.)

VIII. THE UNITED NATIONS FINANCING SYSTEM FOR SCIENCE AND TECHNOLOGY FOR DEVELOPMENT

65. Amid continuing intergovernmental efforts to finalize plans for maintaining the impressive operational momentum attained by the Financing System (UNFSSTD) in the past five years, several new scientific and technological activities were launched in 1984 through innovative trust fund modalities originally initiated by that Office.

66. What could become a major global network for the exchange of current scientific and technological information among developing countries entered its preparatory phase under joint sponsorship by UNFSSTD and the Government of Italy in 1984. Initial efforts to establish this Technology Information Pilot System (TIPS) focus on connecting 10 developing countries in a user-oriented subscription service for the exchange of vital scientific and technological information through co-ordinated satellite links to national bureaux. The close identification of system software and hardware needs, as well as staff and training requirements, is under way. The network's relevance to subscribers is being ensured through surveys of user needs in seven countries. Current information on energy and industrial technologies will be first-phase priorities of the Pilot System which, based on user responses, is expected to widen its membership and sectoral coverage in subsequent stages.

67. Technologies appropriate for Indonesia's rural communities are being assessed, developed, and tested for local manufacture and distribution through another trust fund-financed project negotiated by UNFSSTD in 1984. The project, which builds on results from an earlier design phase, has identified 12 technologies suitable for development and distribution among Java's densely populated rural areas. Post-harvest technologies, low-cost water supply and sanitation devices and renewable energy processes are being developed as integrated packages for specific villages. A credit fund facility established under the project is assisting farmers and local entrepreneurs to defray some of the initial costs of adopting new technology products and processes.

68. In the Latin American and Caribbean region, industries in 13 countries will benefit from a non-destructive testing (NDT) network now being established with UNFSSTD support. Training programmes, upgraded laboratory facilities and the development of a common certification scheme for NDT operators are expected to help encourage the standardization of industrial testing techniques and procedures among countries participating in the network. In Costa Rica, the Financing System has moved to support the professional training of mineral surveyors as part of a reconnaissance project aimed at assessing uranium and other mineral prospects over a 6,000-kilometre area.

69. The identification and exploitation of natural resources in Ethiopia constitute long-term development efforts of no less importance than current relief programmes in that country. Training capacities in remote sensing for natural resource development at Addis Ababa University's department of geology are being established in the preparatory phase of a UNFSSTD-sponsored project which commenced last year. Courses in remote sensing techniques, including photo-interpretation, are being developed for national professionals and technicians in an effort to strengthen teaching capabilities at the University.

70. Further long-range efforts were jointly sponsored by UNFSSTD and the African Regional Centre for Technology through a second High-Level Meeting on International Co-operation for African Technological Development held in November 1984. The meeting, which took place at Rome, was co-hosted by the Italian Ente Nazionale Energie Alternative (ENEA) and the Italian Foreign Ministry. Food-related issues dominated the agenda. Technical personnel from 20 African countries joined with representatives from the corporate sector, from the academic community and from the United Nations system, to review detailed technology programmes for possible collaborative action. Programme areas covered included co-operative food research and development, the exchange of information on food technologies, the strengthening of consulting capacities in agro-industries, food and energy; and Africa's training needs in these fields. (For further details of UNFSSTD activities, see DP/1985/49.)

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