



Economic and Social Council

Distr.
GENERAL

E/CN.3/1983/11
26 April 1982

ORIGINAL: ENGLISH

STATISTICAL COMMISSION
Twenty-second session
7-16 March 1983
Item 5 (b) of the provisional agenda*

INDUSTRIAL, TRANSPORT, ENERGY AND INTERNATIONAL TRADE STATISTICS:
ENERGY STATISTICS

Progress report on energy statistics

Report of the Secretary-General

SUMMARY

On 4 May 1981, the Economic and Social Council adopted resolution 1981/2, entitled "International energy statistics" (see para. 9 for details). The present document, submitted to the Statistical Commission for information, outlines the work done since the twenty-first session of the Commission and in response to that Council resolution.

* E/CN.3/1983/1.

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INTRODUCTION

1. At the twenty-first session, the Statistical Commission welcomed the progress report on energy statistics (E/CN.3/538) and endorsed and commended the work done by the Statistical Office. It noted that "Special emphasis was placed on the need to expand the development and collection of statistics on traditional, or 'non-commercial', fuels, since such fuels were of special importance to developing countries". 1/

2. The present report focuses on the steps taken recently by the Statistical Office to enhance energy data in its publications. It also centres on the aftermath of the adoption by the Economic and Social Council of resolution 1981/2 of 4 May 1981 entitled "International energy statistics" as well as on the follow-up to the Nairobi Programme of Action for the Development and Utilization of New and Renewable Sources of Energy. 2/ The report describes several energy statistics workshops and the co-ordination and co-operation between the Statistical Office and other agencies in the exchange of energy statistics.

I. DEVELOPMENT OF CURRENT ENERGY PUBLICATIONS

A. Yearbook of World Energy Statistics

3. Since 1952, the Statistical Office has published annually the only global statistical study on energy, covering the major aspects of production, international trade and gross consumption (Statistical Papers, Series J). This was the first publication of the Statistical Office to be supplemented by a computerized data file (from 1950 onward). At present, the data file contains statistics on 73 different energy commodities or subcommodities for the 31-year period (1950-1980), for approximately 195 countries or areas. There are approximately 187,770 data records, standardized to a common record format and coding structure.

4. During the last 10 years, selected energy information presented annually in this publication has been gradually augmented to include most countries and nearly all energy commodities. The 1980 bilingual (English/French) edition (Series J, No. 24) 3/, included physical volume data on the production, trade, stockage, bunkering and apparent consumption of solid fuels, crude petroleum, petroleum products, gaseous fuels, electrical energy, nuclear fuels, fuelwood, charcoal and bagasse, covering the period 1976-1980.

1/ Official Records of the Economic and Social Council, 1981, Supplement No. 2 (E/1981/12), para. 22.

2/ Report of the United Nations Conference on New and Renewable Sources of Energy (United Nations publication, Sales No. E.81.I.24).

3/ United Nations publication, Sales No. E/F.81.XVII.10.

5. The last two issues of the Yearbook of World Energy Statistics had the following extensive changes in both content and format: (a) country tables expressed in coal, oil and joule equivalency, (b) the addition of tables showing index numbers and percentage distribution and (c) the disaggregation of solid, liquid and gas tables to show more details of individual commodity transactions. The 1980 Yearbook had a net increase of five new tables covering prices of coal, petroleum products, natural gas, electricity and fuelwood, as well as data on bagasse for the first time.

B. Other publications containing energy statistics

6. Energy-related data were collected, revised and updated on a continuing basis for use in several other publications of the Statistical Office. Data were transferred by tape from the energy data file for publication in 27 tables in volume II of the 1979 Yearbook of Industrial Statistics. 4/ In addition, data for 1 global and 6 regional tables, as well as for selected energy commodities for about 155 countries, were supplied for the sixth edition of World Statistics in Brief (United Nations Statistical Pocketbook). 5/ Data on energy production and reserves were provided for 14 tables in the 1979/80 Statistical Yearbook. 6/ The data on reserves and resources were added to the energy data bank and are now readily available for retrieval and publication. Selected series on the production of the main primary and secondary energy fuels, supplemented by a limited amount of price information for coal, crude petroleum, natural gas and petroleum products, were published on a monthly and quarterly basis in the Monthly Bulletin of Statistics.

C. The energy questionnaire

7. The energy questionnaire was designed to be pre-filled from the computerized energy data file prior to circulation, thus facilitating both revision and the entry of new data. The questionnaire was also designed to provide information for establishing guidelines for the development of international energy statistics, as well as a format for the use of countries in developing their own energy statistics.

8. The questionnaire was sent to 190 countries in 1981 (for the collection of data for the period 1975-1980). Response to the questionnaire was about 55 per cent, including questionnaires returned with little or no additional information. The response to the questionnaire in the last year has shown a slight improvement; however, it is still rather disappointing, both in quantity and in quality.

4/ United Nations publication, Sales No. E.81.XVII.9.

5/ United Nations publication, Sales No. E.81.XVII.14.

6/ United Nations publication, Sales No. E/F.81.XVII.1.

II. RESOLUTION ON ENERGY STATISTICS

9. On 4 May 1981, the Economic and Social Council adopted resolution 1981/2, entitled "International energy statistics" on the recommendation of the Statistical Commission at its twenty-first session. The salient points of the resolution are:

"The Economic and Social Council, ...

"Aware of important gaps in energy statistics, such as the lack of comprehensive data on non-commercial fuels, information on prices, costs, value added and investment data of energy commodities,

"1. Strongly urges the Governments of developing countries to participate in a programme of development of national statistics according to international guidelines and to request technical assistance if and when necessary to carry out that important undertaking;

"2. Requests the Secretary-General to accord priority to the development of new statistical series in fields where insufficient information is now available and to improve the timeliness, level of detail and accuracy of the statistics currently collected and disseminated."

10. There have been no requests from developing countries for technical assistance since the adoption of resolution 1981/2. The representative of the Statistical Office discussed the resolution with the participants at the Pacific Subregional Workshop at Suva, Fiji (see paras. 16-27 below). Some of the countries will try to develop their energy statistics further and may request technical assistance in this field in the near future. Energy statistics was assigned highest priority in the 1982-1983 work programme; new series and more detailed data were included in the last two issues of the Yearbook of World Energy Statistics.

III. WORKSHOPS ON ENERGY STATISTICS

A. Pakistan

11. The representative of the Statistical Office attended the ESCAP/IEA/EEC Workshop on Energy Statistics (Karachi, 6-11 October 1980). Eleven countries from the Asian part of the ESCAP region participated. The Secretary of the Statistical Division of the Government of Pakistan indicated the need for proper identification of energy sources and for the compilation of relevant statistical series on a regular basis. It was stated that the vital role of energy statistics in the assessment of the current energy situation and as an indispensable tool for planning and decision-making could hardly be over-emphasized. The Workshop focused on non-conventional sources of energy, on which data were extremely scarce.

12. The Minister for Water and Power of the Government of Pakistan stressed the need for comprehensive, reliable and timely statistical information as a vital input to the successful implementation of energy development plans. Definition of statistical needs, high standards of accuracy and guidance to users in data interpretation were other objectives of the energy statistics programme. The

Minister noted that useful work in that direction had been embodied in a draft manual, "Concepts, methods and recommendations on energy statistics with special reference to energy accounts and balance", prepared by the United Nations Statistical Office (see paras. 40-48 below for details).

13. Participants in the Workshop made brief statements on the energy situation in their respective countries. There appeared to be very significant difficulties of quantification, which accounted for the growing interest in both methodological and data acquisition aspects of non-conventional energy sources.

14. The Workshop also considered viable definitions for non-conventional energy sources. Such terms as traditional, non-commercial, renewable, non-conventional and so on tended to be used interchangeably and sometimes inappropriately.

15. Since the field of energy statistics was relatively new to the region, the participants stressed the need for training statisticians working in that field. Training could be for various levels of competence and could be conducted at the regional, subregional or country level. The provision of regional advisory services in energy statistics was endorsed by the Workshop. A regional adviser for the ESCAP region was suggested. The Workshop also urged the ESCAP secretariat to promote the designation of energy statistics liaison officers in national Governments.

B. Fiji

16. The representative of the Statistical Office attended the Pacific Subregional Workshop on Energy Statistics (Suva, Fiji, 2-8 February 1982). Nine countries from the Pacific part of the ESCAP region participated, as well as a representative of the United Nations Development Advisory Team for the Pacific (UNDAT). The Minister of Energy of the Government of Fiji indicated that the comprehensive and timely data required for the development of a consistent energy policy was constrained by his Government's limited human resources and expertise. He stated that his and other Pacific island economies were in a precarious position because of dependence on petroleum for power generation and transportation. He indicated that a recent ESCAP report on the feasibility of producing power ethanol from agro-products such as sugarcane or molasses was being studied with great interest. ^{7/}

17. The Australian High Commissioner to Fiji welcomed ESCAP initiative in organizing the Workshop, which would promote active co-operation and co-ordination in the implementation of a coherent energy development and research programme for the Pacific. He stated that, although work had to date focused on exploratory, innovative research, greater attention now had to be paid to strengthening energy data as a basis for policy decisions.

^{7/} Economic and Social Commission for Asia and the Pacific. Short-Term Economic Policy Aspects of Energy Situation in ESCAP Region, Bangkok, September 1981, p. 74 (e).

18. Special emphasis was placed on the non-conventional sources of energy, where data were scarce. It was agreed that some countries were hampered by the lack of an effective household survey capability. Where such survey capabilities existed, participants reported varying degrees of success in obtaining useful energy data. Australia, where work on energy statistics had increased dramatically, expressed interest in assisting countries in the compilation and evaluation of energy data.
19. In many countries, energy statistics were being handled primarily by ministries of energy, natural resources or electricity rather than by the national statistical offices. The availability of financial and human resources were important factors in that regard, as was the low priority often accorded to statistics.
20. The national and international participants outlined their interests and work programmes in energy and energy statistics. These centred on: (a) data acquisition and dissemination through publications; (b) financial and technical assistance; (c) standardization of concepts and definitions; (d) research and survey activities; and (e) training in energy statistics.
21. The Workshop recognized that energy statistics could be compiled and presented in various different but equally logical ways. However, given the significant interdependence of most countries on international trade in energy, it was highly desirable to seek agreement on internationally accepted statistical conventions. A presentation using illustrative tables was made of the essential features of the energy balance format recommended by the Statistical Office in its draft manual, "Concepts, methods and recommendations on energy statistics with special reference to energy accounts and balances". The manual provides guidance by describing the practical use of energy accounts and balances in energy planning and development and indicates the degree of detail required in energy balances for particular types of energy planning. The Workshop strongly recommended that the Office should try to ensure that the manual (amended slightly to incorporate the improvements proposed by the Workshop) was published within a realistic time frame.
22. In its discussions on non-conventional forms of energy, the Workshop concentrated on fuelwood because it was the primary energy resource used in rural households but, in most countries, data had been assessed only in a cursory manner. The Workshop recognized that assessment of other resources, namely hydro, geothermal, biomass etc. might well be of higher priority in individual countries depending upon their relative need for liquid fuels, electricity, large-scale urban energy, small-scale rural systems etc.
23. The Workshop recalled that wood was in wide use in the Pacific countries, since it was a dominant source of energy in rural areas where the majority of the population lived and were engaged in quasi-subsistence activities. Much of that wood was burnt inefficiently for cooking over open fires, thereby necessitating the development of efficient and effective wood stoves. Research in stove development was under way. One country reported that domestic use of charcoal on a limited but growing scale. Experimentation with other sources of energy was also reported. It included the production of coconut oil as a possible substitute for diesel, sugarcane and feedstock for ethanol and wood waste products as a petroleum

replacement. Some useful information relevant to these sources could be derived from climatological data, agricultural censuses, forestry resource statistics and external trade information.

24. The Workshop considered various methods of collecting the required data on production and use of various forms of renewable energy sources. The required degree of accuracy of such data and of the assessment of the associated economic and social factors depended on the type of decisions made. It was noted that accurate measurement of renewable energy resources required specialized technical skill and adequately trained human resources as well as, in some cases, sophisticated equipment. Inexpensive initial assessments could be undertaken with less sophisticated instrumentation and limited human resources, but use of such information should not be undertaken without a full realization of its limitations.

25. The Workshop was informed of the National Household Survey Capability Programme (NHSCP) of the United Nations, the principal objective of which was to build or improve national household survey capabilities. The Workshop agreed that NHSCP could be used to undertake household surveys on energy use.

26. Quantitative data on end-use were an important aspect of the surveys. It appears that important results have been obtained after a detailed audit of energy usage patterns by individual households and businesses. A local survey in Fiji had revealed that there was widespread potential for energy conservation in all sectors, for example, in domestic and commercial lighting, hotel airconditioning and marine transport. However, realization of this potential was constrained by a lack of information on the part of users, as well as by inconsistent policies within branches of government. The Workshop noted that some electricity authorities had resisted energy conservation measures, since they had resulted in reduced loads on generating systems, thereby increasing tariffs.

27. There was some discussion of solar and wind energy, but some participants felt that the measurement of such energy would be more urgent in the smaller countries of the region, which had fewer alternative energy sources. The need was stressed for full co-operation with both local meteorological offices and with the World Meteorological Organization, which had many data on wind and solar energy and had the capacity to generate more.

IV. NEW AND RENEWABLE SOURCES OF ENERGY

28. On 20 December 1978, the General Assembly adopted resolution 33/148 in which it decided to convene an international conference on new and renewable sources of energy. The sources were identified in operative paragraph 3 of the resolution as the following: solar, geothermal and wind power, tidal power, wave power and thermal gradient of the sea, biomass conversion, fuelwood, charcoal, peat, energy from draught animals, oil shale, tar sands and hydropower.

29. The United Nations Conference on New and Renewable Sources of Energy (Nairobi, Kenya, 10-21 August 1981) adopted the Nairobi Programme of Action for the Development and Utilization of New and Renewable Sources of Energy. The Programme

contains an over-all view of the problems regarding new and renewable sources of energy within the context of global energy requirements and in relation to over-all development objectives, with particular reference to developing countries. The Programme identified rural energy as one of the major areas for priority measures for immediate action.

30. The Nairobi Programme of Action emphasizes the need to assess the progress and problems of achieving an orderly and peaceful energy transition from non-renewable energy sources to a more renewable and more diversified global energy mixture, with particular attention to the needs of the developing countries. The Conference helped to raise the general level of understanding and concern about the potential for renewable energy sources as well as to demonstrate an acute concern about the world energy situation and prospects. It was a response to a complex of energy problems that are global in scope, and the analysis and discussions were oriented towards the global perspectives on these problems and focused on the next few decades.

31. The following excerpts from the Nairobi Programme are particularly pertinent to the activities of the Statistical Office. 8/ They refer to policy measures requiring the following action:

"Determine in a dynamic way energy supply and demand and energy balances ..."; (para. 27 (b))

"Strengthen and/or establish institutional infrastructure to collect, maintain, analyse, classify and disseminate information ..."; (para. 27 (d))

"Develop and make use of standardized methodologies, terminologies, procedures and, where feasible, equipment (software and hardware) for the collection, and dissemination of information to facilitate the linkage of data centres and systems"; (para. 31 (c))

32. The following excerpts deal with priority action, support and assistance and call for action in the following areas:

"Strengthening of national capacity for data gathering, energy assessment and planning ... the training of required personnel ..."; (para. 52 (a))

"Comprehensive national energy planning efforts, including sectoral studies of energy supply and demand and preparation of national energy balances."; (para. 52 (b))

"Establishment of effective systems of information on new and renewable sources of energy at the national level which should be closely linked with information systems and networks at the subregional, regional and international levels utilizing existing information systems at all these levels to the maximum extent possible". (para. 56 (c))

8/ Report of the United Nations Conference on New and Renewable Sources of Energy (United Nations publication, Sales No. E.81.I.24).

33. The Conference focused on a set of constraints, among them, information flows. The Programme of Action indicated that an adequate information base has special significance in the development of new and renewable sources of energy. An adequate information flow, including a statistical base, is an essential component of planning and policy formulation at the national, regional, international and sectoral levels. In order to stimulate interest in the development and application of new and renewable sources of energy throughout the world, the highest priority should be assigned to the development and enhancement of energy data bases.
34. Although the 1980 Yearbook of World Energy Statistics is primarily devoted to statistics of conventional and non-renewable energy sources, it also contains some data on "renewable" sources (see para. 5 above). For example, statistics are published on installed capacity and electric power generation from geothermal and hydropower sources (for 8 and 119 countries respectively), as well as bagasse (for 83 countries). Also shown are estimated production data for fuelwood and charcoal, as well as information on resources and reserves for oil shale, tar sands and peat resources. Obviously, additional important information has to be collected and compiled in order to give a better energy profile.
35. The Statistical Commission at its twenty-first session recognized the problem (see para. 1 above).
36. There are three principal priorities in energy statistics as regards the developing countries: (a) the urgent need for more of them to prepare national energy balances; (b) closing the gaps in data on renewable energy, particularly in the area of organic residues such as wood, wood by-products, food-processing refuse (bagasses, rice hulls, coconut husks etc.) and crop residues (that is, the straws of wheat, paddy rice, maize) as well as animal excreta and urban refuse and sewage; and (c) finally the crucial role of training.
37. Household sample surveys will be a central feature in providing a mechanism for collecting data about the energy consumption in households. It should be noted that data from household surveys will complement energy data from other sources, particularly with reference to commercial energy consumption. The role of NHSCP (see para. 25 above) as regards the energy survey components is important and, therefore, should receive strong support.
38. It is estimated that the following minimum resources will be required: (a) the services of a consultant to evaluate and compare the various methods used for the compilation of renewable energy statistics and recommend methodologies (including those for household sample surveys), which will permit the creation of suitable statistics in this field; (b) an expert group, consisting of representatives from the various regions, to examine the proposals and adjust them to the capabilities of the countries; (c) additional staff expertise in energy, needed to collect basic information for the consultant, help in the preparation of the meeting of the expert group and later develop, maintain and improve the data. Requests for resources are being made through the channels established for following up the Nairobi Programme of Action.
39. The Statistical Office is ready, in close co-operation with the other organizations concerned, to respond to the requirements of the Nairobi Programme of

Action and is ready to implement the proposed programme as soon as resources are provided.

V. DEVELOPMENT OF TASKS RECOMMENDED BY THE
STATISTICAL COMMISSION FOR IMPLEMENTATION

A. Report on concepts, methods and recommendations
for energy statistics

40. The Statistical Commission at its nineteenth session recognized the importance of further research in the development of international standards, methodologies and guidelines for energy statistics and recommended the convening of an expert group in this field. ^{9/} A consultant to the Statistical Office prepared a report originally entitled, "Energy statistics; current practices and future needs", for discussion by the expert group (United Nations Headquarters, 6-14 March 1978). The report was warmly received and the Statistical Commission at its twentieth session recommended that "The report of the consultant, suitably amended in the light of the discussions of the Expert Group, should be made available for circulation to national and international statistical offices and other appropriate agencies". ^{10/} The report has been revised to take account of the recommendations of the Expert Group and to incorporate recent information and developments on renewable sources of energy, animate and human energy and energy balances for developing countries, which had been recommended at the workshops on energy statistics (see paras. 11-27 above). The title of the report has been changed to Concepts, Methods and Recommendations on Energy Statistics with Special Reference to Energy Accounts and Balances. ^{11/}

41. The report reviews national and international practices in energy statistics in the light of the significant shifts in emphasis from production to consumption since 1973. The statistical problems raised by non-commercial sources of energy and the statistical requirements of the less developed countries are given particular attention. The report describes the nature of energy statistics and the sorts of policy problems for which they are required, the conceptual and methodological issues to which these problems give rise, the variety of possible conventions that might be adopted for dealing with some of the issues, the key role played by quantitative over-all energy balances, the desirable features of such balances (whether used for analysing the past or for reasoned speculation about the future), the classification problems in energy statistics and the relationship between energy and other economic statistics and accounting frameworks.

^{9/} Official Records of the Economic and Social Council, Sixty-second session, Supplement No. 2 (E/5910), para. 21 (b).

^{10/} Ibid., 1979, Supplement No. 3 (E/1979/23), para. 23 (b) (ii).

^{11/} To be issued as a United Nations publication.

42. Chapter I of the report deals with the similarities and differences between energy and other statistics and draws some parallels with agriculture. In both fields, a crisis in physical supplies promoted statistical innovation particularly in the development of physical accounting frameworks in which all the varied forms of nutritional or other energy could be expressed in terms of a common accounting unit. The change in emphasis from supplies as such to the uses made of available supplies, and the prospect of new sources of energy, posed new challenges to energy statisticians. Energy models, energy analysis and fuel-use surveys are cited as examples of the new analytical approaches to problems in energy economics.

43. Chapter II outlines the nature of energy and the variety of physical forms in which it may be stored before it is made available for use as a source of heat, light or motive power. It reviews the different levels of measurement, from the "primary energy" at the stage of production through "secondary energy" at the stage of transformation, to "energy supplied" at the stage of final use, and the essential features that need to be incorporated in an over-all energy balance. The need to weigh the costs and benefits of data collection, and the question of data quality, are also discussed.

44. Chapter III explores the two types of boundary problems. The first concerns the "energy system" about which statistics are to be collected and analysed and covers the boundaries between energy and non-energy "commodities", between commercial and non-commercial flows of energy and between energy and non-energy industries. The second type of problem concerns the boundaries between certain flows and stocks and, in particular, between production and waste (with possible developments in solid fuel combustion technology and with gas flaring in mind), between production and stocks (with gas reinjection in mind) and between consumption, waste and stocks (with the partial fission of nuclear fuels in mind).

45. Chapter IV examines in greater detail some problems of accounting levels and accounting units and, in particular, the application of the concepts of "primary energy equivalent" to the entities "final use", nuclear and hydro-electricity, renewable sources of energy (wind, geothermal and biomass energy) and external trade in both visible and invisible forms of energy. The chapter also examines whether different energy sources should be expressed in a common accounting unit on the basis of gross or net calorific values, discusses the nature and limitations of "converting" different types of energy sources (coal, oil, gas, electricity) into a single unit of account (for example, the tonne of oil equivalent or the joule) and reviews briefly the variety of accounting units and presentation units in current use.

46. Chapter V reviews 30 different energy balances currently produced by national Governments and research institutions, international organizations and research bodies and major international oil companies. Most of the balances are used for analysing past years' data, but some are used as an accounting framework for making projections to future years or decades. Despite the great variety of structures displayed, all the accounts have common characteristics. Advantages and limitations of different structures are examined, and the relationship between frameworks suitable for "backward looks" and "forward looks" is analysed. A multi-purpose accounting framework is proposed for adoption internationally and, if

possible, nationally as well. The recommended framework may be highly disaggregated in the case of the more developed countries and may be "collapsed" to a more aggregated form without altering its basic structure in the case of the developing countries.

47. Chapter VI examines the treatment of energy in the standard international classifications of commodities, trade and industries as well as in the more aggregated classifications of economic categories. The need for grouping all energy industries and "commodities" and for a standardized nomenclature of petroleum products is underlined. The chapter considers the possibilities of developing a classification of final uses of energy not merely by user but also by purpose, as a step towards measuring a fourth level of energy flow, namely "useful heat". A framework in which heat recovery and temperature cascading could be accounted for is proposed.

48. Chapter VII considers the possibilities of producing energy balances for shorter periods than a year and for smaller areas than a country, and the desirability of publishing supplementary information such as percentage mixes, rates of change and flow charts. The relationship between the concepts and terminology of energy balances, input/output and national accounts is reviewed and the need for clarity emphasized. The chapter concludes with a plea for continuous consultation and active co-operation between producers and users of energy statistics.

B. International handbook of conversion factors
in energy statistics

49. The Statistical Office has drafted an international handbook of conversion factors and units of measurement for use in the energy statistics field. It provides essential facts about the nature, measurement, comparison and utilization of energy commodities as well as the factors for moving from one system of measurement to another. It will be circulated to interested organizations and agencies for comments and then published as soon as possible.

C. Energy balances

50. The development of energy balances has reached a stage when a special commodity balance (the electricity profile) for approximately 70 countries and over-all energy balances for approximately 20 countries will be published as soon as the national responses to the questionnaire include 1981 data.

51. The ongoing checking procedure includes the following tasks: (a) programming changes, where necessary; (b) creation of specific "energy balance" conversion factors for the solid fuels for each individual country; and (c) certain refinements of the data base. These requirements must be met to ensure a high level of consistency with the country data.

52. In order to avoid duplication, over-all energy balances for the countries of the Economic Commission for Europe (ECE) region will be exclusively collected by ECE. They will be published exactly as ECE receives them from the individual country.

53. On the other hand, the Statistical Office creates over-all energy balances for selected countries directly from its data base. ^{12/} The updating of the file is guaranteed by the practice of sending out annual questionnaires and by the various research activities performed by the staff. This method was selected to ensure the highest possible level of consistency and accuracy in all energy data published by the Statistical Office.

D. Technical co-operation in energy statistics

54. A major concern of the Statistical Commission has been with the development and co-ordination of technical co-operation activities aimed at improving the statistical capabilities of developing countries. In the field of energy statistics, the Commission "urged developing countries to take advantage of technical co-operation under the United Nations system by requesting the services of advisers on energy statistics" ^{13/} (see also para. 9 above).

55. It is to be hoped that Economic and Social Council resolution 1981/2 will be circulated to the statistical offices of the developing countries, as well as to ministries of energy and electricity and any other agency where information on energy is collected, analysed and disseminated.

56. Ultimately, a well-planned programme and meaningful collection of energy statistics will enable a Government to formulate an energy policy. The Statistical Office views the initiation of a programme of technical co-operation and promotion of basic guidelines as being vital to future work on energy statistics.

VI. CO-ORDINATION AND CO-OPERATION IN ENERGY STATISTICS

57. The Statistical Office maintains close collaboration with the statistical divisions of the regional commissions, the specialized agencies and other intergovernmental and non-governmental organizations.

58. The Statistical Office has lightened the reporting burden on the European countries by the following arrangement: ECE provides copies of the responses to its questionnaires on coal, gas and electric energy to the Statistical Office. The latter, therefore, sends only the liquid fuels section of its questionnaire to the European countries.

^{12/} For details, see E/CN.3/538, annex I.

^{13/} Official Records of the Economic and Social Council, 1981, Supplement No. 2 (E/1981/12), para. 24 (a).

59. Some examples of the exchange of data and/or assistance, which are indicative of the co-ordinated data collection and distribution activities developed within the international statistical community, are given below.

60. The Energy Statistics Unit of the Statistical Office supplies computer printouts and/or computer tapes containing energy statistics to the United Nations Industrial Development Organization (UNIDO), the World Bank, the International Atomic Energy Agency (IAEA), the United Nations Conference on Trade and Development (UNCTAD), the International Monetary Fund (IMF), the General Agreement on Tariffs and Trade (GATT), the Organisation for Economic Co-operation and Development (OECD), the Organization of Petroleum Exporting Countries (OPEC) and the Organization of American States (OAS).

61. The Food and Agriculture Organization of the United Nations (FAO) provides computer printouts containing data on fuelwood and charcoal to the Statistical Office for inclusion in the Yearbook of World Energy Statistics.

62. The Nuclear Energy Agency of OECD and IAEA both supply energy data relating to uranium to the Statistical Office for inclusion in the Yearbook of World Energy Statistics and the Statistical Yearbook.

63. The Statistical Office provided data and assistance to the recent workshops on energy statistics organized by ESCAP (see paras. 11-27 above). The main objective of the workshops was to improve understanding regarding the collection, reporting and interpretation of energy data of developing countries, as well as the statistical treatment of selected traditional and newer non-conventional forms of energy.

64. An arrangement exists with the World Energy Conference, a non-governmental organization, whereby the Statistical Office provides current energy data on the production, import, export and consumption of fuels for the countries that are not members of the Conference; the latter, in turn, makes available to the Statistical Office information on reserves and resources of the various fossil fuels.

65. In order to ensure that the need for energy statistics is adequately met, as well as to facilitate the harmonization of programmes, the Statistical Office sent special computer printouts from the 1980 Yearbook of World Energy Statistics for use by the ESCAP Committee on Natural Resources in a document entitled "Latest regional energy statistics", which was presented at its eighth session (Bangkok, 27 October-2 November 1981).

66. The Statistics Division of ESCAP received from the Statistical Office data for three regional and global tables as well as for 39 countries for inclusion in their 1979 Statistical Yearbook for Asia and the Pacific. 14/

14/ United Nations publication, Sales No. E/F.80.II.F.11.

67. The Statistical Office continued to hold consultations with the Statistical Division of ECE on questions concerning the harmonization of the definitions and conventions used in over-all energy balances.

68. The Statistical Office has maintained close co-operation with the United Nations Committee on Natural Resources. For example, the Office provided energy statistics for use in the document entitled "Trends and issues with regard to energy" (E/C.7/123), which was submitted to the Committee at its seventh session (United Nations Headquarters, 18-28 May 1981).

69. The Statistical Office also provided various analyses of and ad hoc printouts containing energy statistics to both the Office of Programme Planning and Co-ordination and the Office for Development Research and Policy Analysis of the Department of International Economic and Social Affairs.

70. The Statistical Office is a member of a joint energy task force, which was established in the Department of International Economic and Social Affairs in November 1979.

71. The Statistical Office provided special energy statistics to the Energy Branch of the Department of Technical Co-operation for Development.

72. Further co-operation is under way with the secretariat of the United Nations Conference on New and Renewable Sources of Energy for the possible development of new types of energy statistics.

VII. OTHER RELATED ACTIVITIES

73. The dissemination of information in the form of computer tapes and ad hoc computer printout tables has been accelerated in an effort to offset printing delays. For example, 34 organizations, including regional commissions, specialized agencies, national agencies, research institutes, corporations and universities, purchased or received complimentary copies of Series J tapes during the period from April 1980 to April 1982, an increase of 13 per cent over the preceding two-year period.

74. Responding to requests for energy and related data from within the United Nations, from various governmental agencies and international bodies and from the general public has become a voluminous task in the light of events in the global energy economy in the past eight years. In addition, the quantity and complexity of the responsibilities and activities of the Energy Statistics Unit have substantially increased.
