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PREPARATIONS AT THE REGIONAL LEVEL

Comprehensive reports on the activities of the regional commissions

Addendum

Report submitted by the Economic Commission for Europe\*

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\* Report has been reproduced as received.

I. COMPREHENSIVE REPORT COVERING THE ACTIVITIES OF THE  
ECONOMIC COMMISSION FOR EUROPE IN THE FIELD OF NEW  
AND RENEWABLE SOURCES OF ENERGY

Report by the Executive Secretary

1. The present Report has been prepared pursuant to operative paragraph (e) of decision 7(II) of the Preparatory Committee for the United Nations Conference on New and Renewable Sources of Energy in which it recommended "that all the relevant organs, organizations and bodies of the United Nations system should submit comprehensive reports on their activities in the field of new and renewable sources of energy, including on the provision of technical assistance to developing countries, in accordance with Assembly resolution 33/148, in time for the third session of the Preparatory Committee ...".
2. The work of the Commission in the field of new and renewable sources of energy is carried out - either on an individual or a joint basis - by one or other of the following Principal Subsidiary Bodies: the Committee on Agricultural Problems, the Conference of European Statisticians, the Committee on Electric Power, the Committee on Housing, Building and Planning, the Senior Advisers to ECE Governments on Science and Technology, the Senior Advisers to ECE Governments on Environmental Problems, the Senior Economic Advisers to ECE Governments, the Timber Committee, and the Senior Advisers to ECE Governments on Energy.
3. Although the detailed nature of the individual mandates and roles of the various Principal Subsidiary Bodies which have programmes in the field of new and renewable sources of energy vary, all have as their common element the furthering of scientific and technological co-operation in the ECE region.

General energy issues

4. Of the 400 projects included in the current work programme of the Commission, some 42 relate either directly or indirectly to new and renewable sources of energy. Brief details concerning these projects, as well as an indication of the Principal Subsidiary Bodies under whose auspices the work is being carried out, are provided in the annex to the present Report. More complete information concerning these projects can be obtained by reference to the Annual Report of the Commission (Volume II) which includes complete details on the work programme of the Commission and its Principal Subsidiary Bodies. 1/
5. As a result of the energy situation of the early 1970s, ECE member countries have devoted more attention to general energy issues - in particular, with regard to energy strategies and policies, energy economy and efficiency, innovation in energy technologies, environmental aspects of energy production and use, and new energy sources. This increased interest in energy sources has also resulted, in recent years, in an expansion of the activities of the Commission in the energy field and the involvement of a larger number of the other Principal Subsidiary Bodies of the Commission in studies and seminars in the energy field.
6. Although in this Report it is not proposed to go into the details of the considerable number of energy-related projects of interest to the Conference, nonetheless, there are some activities which are particularly relevant and on which details are provided below.
7. With regard to energy economy and efficiency, the secretariat has carried out three major energy studies: the first, which related to energy economy and efficiency in the ECE region, was published in 1976 (E/ECE/883/Rev.1); the second - issued in 1978 - was entitled "New issues affecting the energy economy of the ECE region" (E/ECE/961); and the third was entitled "The Economic Commission for Europe and energy conservation" (E/ECE/985).
8. During the mid-1970s, three ad hoc meetings on the subject of innovation in energy technologies were convened under the auspices of the Senior Advisers to ECE Governments on Science and Technology. These meetings, and the documentation prepared for them, contributed in part to the first of the studies referred to above, although their principal connexion was with R and D and how innovation takes place in energy technologies.

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1/ Document E/1980/28/Add.1: E/ECE/1008/Add.1.

9. At a more general level, was the publication in 1979 of the results of a study, undertaken within the ECE secretariat's general energy programme, on "Energy reserves and supplies in the ECE region: present situation and perspectives" (E/ECE/984) including, inter alia, sections on hydropower and unconventional forms of energy.

10. Within the framework of the follow-up to the Final Act of the Conference on Security and Co-operation in Europe (CSCE), a meeting was held in Malta in early 1979. As a contribution to this meeting, the ECE secretariat submitted a Note containing many suggestions, one of which related to a symposium or seminar on the comparative merits of alternative energy supply systems which would be open to participation by all Mediterranean countries. It is planned that this seminar will take place in Yugoslavia in 1982. Among the small-scale decentralized supply systems which might be included in the discussions at this seminar would be small hydro dams; solar houses; combined electricity/heat plants using solar or wind power; and municipal refuse and biomas digesters.

11. A study on environmental aspects of energy production and use, with particular reference to new technologies was undertaken by the Senior Advisers to ECE Governments on Environmental Problems in co-operation with the Senior Advisers to ECE Governments on Science and Technology and was published in 1979.  
Sectoral energy activities

12. With regard to the Commission's activities in the various sectoral fields of interest to the Conference, these have been concentrated on the following areas: forest and forest industries; biogas; geothermal; hydropower; tar sands; and solar and wind power.

13. In the forest and forest industries sector, the ECE Timber Committee convened a Seminar on energy aspects of the forest industry in Italy in November 1978. This Seminar considered, inter alia, the present situation, at the national and regional levels, for use of energy derived from wood, in the form of fuelwood, industrial residues and pulping liquors, identified research priority areas and prepared recommendations for the Timber Committee and other bodies. On the basis of the recommendations of a team of specialists, the Timber Committee agreed that its work in the wood/energy field should concentrate on four main areas - namely:

- exchange of information on national policies and outlook;
- improvement of information base at the international level;
- exchange of information on energy conservation in the mechanical wood-processing industries and the use of their residues as a source of energy; and
- integration of energy aspects (including the rise in demand for energy from wood) into the next review of long-term European timber trends and prospects.

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Other relevant activities in the forest and forest industries sector include the forthcoming exchange of information on national policies and outlooks to take place in October 1981; the review by the Joint FAO/ECE Working Party on Forest Economics and Statistics in June 1981 of a study on the information base about wood-derived energy; and a Seminar on energy conservation and self-sufficiency in the sawmilling industry which is scheduled to take place in 1982. A closely-linked project is the Committee's work on improving the evaluation of the forest resource, notably its ability to supply greater quantities of biomass - for instance, as a source of energy.

14. Concerning biogas, the ECE/FAO Working Party on Mechanization of Agriculture has recently prepared a report on biogas production from organic agricultural wastes. The report deals, in particular, with the use of organic material under European conditions for the production of biogas, measures to increase the efficiency of biogas plants and equipment, and the training of personnel in the utilization of biogas.

15. Regarding geothermal energy, a project of the Committee on Electric Power is underway concerning the utilization of geothermal energy for the production of electric power. The subject of geothermal energy was also included among the topics considered at the UN/ECE Seminar on Technologies related to New Energy Sources, referred to in paragraph 18 below.

16. Also under the auspices of the Committee on Electric Power, a particularly relevant project concerning the evaluation of the hydro-electric potential in Europe is being undertaken, and in 1979 a Symposium was convened in Greece on the prospects of hydro-electric schemes under the new energy situation and on the related problems. 2/

17. In the field of tar sands, a Seminar on improved technologies for the extraction of primary forms of energy was held in Vienna in November 1980 under the auspices of the Senior Advisers to ECE Governments on Energy. The Seminar considered, inter alia, problems relating to the extraction and exploitation of tar sands. 3/

18. Under the auspices of the Senior Advisers to ECE Governments on Science and Technology, two initiatives have been taken which have particular relevance for the forthcoming United Nations Conference. The first, was the Seminar on co-operative technological forecasting as applied to the field of solar energy

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2/ See the Report of the Symposium, EP/SEM.6/2.

3/ See ECE/SEM.4/R.105 and R.106, and the Report of the Seminar contained in document ECE/SEM.4/2.

convened in Tenerife (Canary Islands) from 2 to 7 July 1979; the second, was the Seminar on technologies related to new energy sources - in particular, solar, wind, and geothermal, and the problems related to the integration of the energy derived from these sources into existing power systems, convened in the Federal Republic of Germany from 8 to 12 December 1980.

19. As a follow-up to the seventh session of the Senior Advisers to ECE Governments on Science and Technology, the secretariat was requested to start work on an international co-operative research and development project on solar energy utilization (cf. SC.TECH./AC.13/2/Add.1). This project relates to a "study of the scientific, technological and economic prerequisites for the creation of economically-viable solar electric power plants using photovoltaic conversion technology on the basis of utilization of new technologies for the manufacture of low cost solar cells, and new appropriate energy storage technologies ...", of which the first phase will consist of preparation of a compendium of relevant existing technologies, national testing facilities, and R and D activities.

II. ACTIVITIES OF THE ECONOMIC COMMISSION FOR  
EUROPE IN PREPARATION FOR THE CONFERENCE

Report by the Executive Secretary

1. In response to General Assembly resolution 33/148 - in particular, operative paragraph 7 thereof - and operative paragraph 5 of General Assembly resolution 35/204, the Economic Commission for Europe has been actively involved, and, within the extent of its available resources, has co-operated fully in the preparations for the Conference.
2. The present Report has been prepared pursuant to operative paragraph (f) of decision 7(II) of the Preparatory Committee for the United Nations Conference on New and Renewable Sources of Energy in which it recommended "that the regional commissions should strengthen their participation in the preparatory process for the Conference, and, inter alia, assist and encourage in organizing national, regional and interregional seminars for detailed discussions, and that they should, under the over-all co-ordination of the Director-General for Development and International Economic Co-operation submit [inter alia] a comprehensive report on their preparations for the Conference in time for the third session of the Committee; ...".
3. The active involvement of the Commission in the preparations for the Conference has been at two levels: first, where resources have permitted, the Commission has ensured that a representative has participated actively in the meetings convened as part of the preparatory activities; and, second, it has arranged for the preparation and transmission of relevant studies and reports.
4. Regarding the representation of the Commission at the various meetings held, it has participated in the first and second sessions of the Preparatory Committee, in most of the first and second round meetings of the technical panels as well as

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the inter-agency meetings. The secretariat has also arranged for a representative to participate in the synthesis group meeting taking place in New York from 16 to 27 February, as well as the third and fourth sessions of the Preparatory Committee. Owing to difficulties in obtaining travel funds and the absence of subject-matter specialists, the secretariat was unable to be represented at the various ad hoc meetings.

5. With regard to the specific substantive activities undertaken by the Commission of relevance to the preparations for the Conference, these include:

(a) Seminars and meetings

Under the auspices of the Senior Advisers to ECE Governments on Science and Technology, two seminars relating to new energy sources have been convened. The first, on co-operative technological forecasting, was held at the invitation of the Government of Spain in Tenerife (Canary Islands) from 2 to 6 July 1979. It was attended by experts from 15 countries (including several developing countries in the Mediterranean region) and six international organizations. A representative of the Conference secretariat also participated and addressed the Seminar. The secretariat Notes, as well as the contributions from Governments and intergovernmental organizations (which included over thirty reports),<sup>1/</sup> and the Report of the Seminar (SC.TECH./SEM.6/2) were all made available to the Conference secretariat.

The second seminar on technologies related to new energy sources, was held at the invitation of the Government of the Federal Republic of Germany in the Jülich Nuclear Research Centre from 8 to 12 December 1980. The Seminar, which focussed on technologies related to solar, wind, and geothermal energy as well as on problems associated with the integration of energy derived from these sources into existing power systems, was held as a specific contribution of the European region to the preparations for the Conference. The Seminar, which was opened by the Executive Secretary of the Commission and addressed by the Deputy Secretary-General of the Conference, was attended by experts from 24 countries and seven international organizations. The extensive documentation prepared for this Seminar,<sup>2/</sup> which included some 40 contributions from Governments and international organizations comprising policy, technical and information notes, as well as the Report of the Seminar (SC.TECH./SEM.7/2)<sup>3/</sup> have all been made available to the Conference secretariat.

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<sup>1/</sup> Issued in the series SC.TECH./SEM.6/... .

<sup>2/</sup> Issued in the series SC.TECH./SEM.7/... .

<sup>3/</sup> A limited number of copies of this Report in English, French and Russian will be made available to participants in the third session of the Preparatory Committee.



6. Under the auspices of the Committee on Electric Power, a symposium on the prospects of hydroelectric schemes under the new energy situation and on related problems was held in Athens in November 1979 at the invitation of the Greek Government. The purpose of the symposium was to provide for an exchange of information concerning new prospects for the development of hydroelectric schemes in the light of the 1973 energy crisis and to examine the principles and techniques now applicable in the planning of hydroelectric facilities. The symposium was attended by experts from 21 countries, including several from the Mediterranean region, and three international organizations. A number of the relevant contributions transmitted by Governments, as well as the Notes prepared by the secretariat and the Report of the symposium,<sup>1/</sup> were made available to the Technical Panel on Hydropower and to the secretariat of the Conference. Extensive use was also made of the documentation for the symposium in the preparation of the report entitled "Trends and prospects of hydroelectric schemes in the new energy situation" to which reference is made in paragraph 11 below.

7. As part of the programme of public information for the Conference the Commission, in co-operation with the Department of Social and Economic Information (DESI) (European Division), is convening a European regional seminar on new and renewable sources of energy for top-level journalists. This Seminar which, it is hoped, will be co-financed by the Institute for International Encounters in Bonn (Federal Republic of Germany) and DESI (European Division), will take place at the Palais des Nations in Geneva from 24 to 26 June 1981. It is envisaged that, in addition to journalists from European countries, a number of experts with experience in the development and application of new energy sources will be invited to attend.

8. Other meetings of relevance to the preparations for the Conference which were convened by the Commission and on which the secretariat has arranged to forward documentation and reports include: Informal meeting to evaluate the hydroelectric potential in ECE member countries (Geneva, 19 May 1980); and ad hoc Meeting to compare models used in the planning and operation of electric power systems (Geneva, 4-5 December 1980).

9. To the extent that it is relevant, the outcome of the ECE ad hoc Meeting on Scientific and Technological Research related to Low-Calorific-Value Fuels, to take place in Sofia, Bulgaria, from 27 to 30 April 1981, will also be transmitted to the Conference secretariat.

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<sup>1/</sup> Documents EP/SEM.6/R.6; R.12; R.14; R.101-R.105, and the Report of the symposium contained in document EP/SEM.6/2.

(b) Reports and studies

10. As part of their regular programme of work, several of the Commission's Principal Subsidiary Bodies have undertaken a number of studies and held several meetings on topics of relevance to the Conference. These have included, in particular, many of the activities undertaken within the framework of the Committee on Agricultural Problems, the Committee on Electric Power, the Senior Advisers to ECE Governments on Science and Technology, and the Timber Committee. To the extent that some of these reports and documents have appeared relevant, arrangements have been made to forward copies to the Conference secretariat.

11. In addition, and as specific contributions to some of the technical panels, the following reports have been prepared and transmitted to the Conference secretariat:

Biomass energy

- "New and renewable energy in agriculture: a note on forest biomass as a source of energy".
- A Note on "Biomass as derived from agricultural waste in the European member countries of the FAO".
- Evaluation préliminaire des biomasses agricoles à destination énergétique en Europe".
- A Note on "Municipal and agricultural solid and liquid wastes".

Geothermal energy

- A Note concerning heat extraction technologies, and the applications and economics of geothermal power utilization.
- A Note on "Low- and medium-temperature geothermal resources of the Panonian basin in Hungary and adjacent countries including quantitative information on the production of low-enthalpy geothermal fluids".

Hydropower

- "Trends and prospects of hydroelectric schemes in the new energy situation".
- "Long distance electric power transmission".

Solar energy

- A Note entitled "Comparative economic assessment of decentralized and centralized solar energy conversion technologies in the ECE region".
- A Note entitled "Prospects and possibilities for the utilization of new energy sources in ECE member countries: solar energy".
- A Note on "Chemical and biological methods for solar energy conversion".

ANNEX TO PART I

PROGRAMME ELEMENTS RELATING DIRECTLY OR INDIRECTLY TO NEW AND  
RENEWABLE SOURCES OF ENERGY INCLUDED IN THE CURRENT WORK PROGRAMME  
OF THE COMMISSION AND ITS PRINCIPAL SUBSIDIARY BODIES 1/

PART I: GENERAL ENERGY ISSUES 2/

Project number

Senior Advisers to ECE Governments on Energy

Energy demand and supply

|   |             |
|---|-------------|
| Consideration of significant new developments affecting energy demand and supply in the short, medium and long term | 01(b).2 (a) |
| Development of comprehensive ECE energy demand/supply balances for past and future years                            | 01(b).2 (b) |
| Analysis of the role of specific energy sources in over-all energy programmes                                       | 01(b).2 (c) |
| Evaluation of capital requirements  | 01(b).2 (d) |
| Appraisal of the potential for new and renewable sources of energy  | 01(b).2 (e) |
| Assessment of the comparative merits of centralized and decentralized energy supply strategies                      | 01(b).2 (f) |

Energy conservation

|  |                  |
|--|------------------|
| Analysis of national energy conservation policies and programmes   | 01(b).4 (a)      |
| Specific measures for energy conservation  | 01(b).4 (b)      |
| - improved extraction, processing and rational utilization of energy   | 01(b).4 (b)(i)   |
| - economic and rational utilization of energy resources in all energy-intensive sectors by development and application of new technologies | 01(b).4 (b)(ii)  |
| - future methods of substitution for oil by other primary or secondary forms of energy   | 01(b).4 (b)(iii) |
| Review of work done or planned in the ECE framework relating to energy economy and efficiency  | 01(b).4 (c)      |

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1/ Further information on the programme elements may be obtained by referring to the Annual Report of the Commission (E/1980/28: E/ECE/1008 and Add.1).

2/ The programme elements in Part I are listed under the various Principal Subsidiary Bodies of the Commission.

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Project number

Committee on Agricultural Problems

Selected economic and technological problems

- |   |             |
|---|-------------|
| Studies of energy problems relating to mechanization  | 02.3.2.2.   |
| - changes and trends in the quantity and balance of energy consumption in agriculture                                 | 02.3.2.2(c) |
| - existing technological processes in the mechanization of livestock production in order to reduce energy consumption | 02.3.2.5(a) |

Senior Advisers to ECE Governments on Environmental Problems

Resources and waste problems

- |  |           |
|--|-----------|
| Low- and non-waste technology and re-utilization and recycling of wastes                                   | 05.2.1.   |
| - preparation of a compendium on low- and non-waste technologies   | 05.2.1.1. |
| - incentives for the promotion of low- and non-waste technology and re-utilization and recycling of wastes | 05.2.1.3. |
| - international waste exchanges  | 05.2.1.4. |
| - recycling, re-use and recovery of municipal and industrial solid wastes                                  | 05.2.1.5. |
| International post-graduate training courses on low-waste technology                                       | 05.2.1.7  |

Committee on Electric Power

Problems of improving efficiency

- |  |           |
|--|-----------|
| The rational use of electricity on selected farms and in low-voltage rural distribution networks | 06.5.1.3. |
| Study of the applications of heat pumps in the industrial and tertiary sectors                   | 06.5.1.5. |

Environmental problems

- |  |           |
|--|-----------|
| The possibilities of using residual heat in the cooling water of electric power stations | 06.6.1.9. |
|--|-----------|

Committee on Housing, Building and Planning

Integrated settlements policies and strategies

- |   |         |
|---|---------|
| Impact of energy considerations on human settlements policies | 08.1.6. |
|---|---------|

Building

- |                                  |         |
|----------------------------------|---------|
| Energy conservation in buildings | 08.4.7. |
|----------------------------------|---------|

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|  | <u>Project number</u> |
|--|-----------------------|
| <u>Inland Transport Committee</u>  |                       |
| <u>Environmental and resource-saving aspects</u>   |                       |
| Increased economy and efficiency in energy consumption in transport  | 09.5.3.               |
| <u>Senior Advisers to ECE Governments on Science and Technology</u>  |                       |
| <u>International co-operation in scientific and technological research</u>                                     |                       |
| Co-operative technological forecasting and scientific and technological research related to new energy sources | 10.3.2.               |
| <u>Senior Economic Advisers to ECE Governments</u>   |                       |
| <u>Selected long-term economic policies and problems</u>   |                       |
| Long-term energy and basic products trends in relation to long-term economic prospects for the ECE region      | 11.2.1.               |
| <u>Conference of European Statisticians</u>  |                       |
| <u>Development and harmonization of economic statistics</u>  |                       |
| General energy statistics  | 12.3.7.2.             |

## PART II: SECTORAL STUDIES 1/

### Biomass

|  |             |
|--|-------------|
| Committee on Agricultural Problems:  |             |
| Studies of energy problems relating to mechanization                                     | 02.3.2.2    |
| - systems and equipment for efficient use of wood, straw and peat as fuel in agriculture | 02.3.2.2(d) |

### Geothermal

|  |         |
|--|---------|
| Committee on Electric Power:   |         |
| Utilization of geothermal energy for electric power production and space heating   | 06.5.4. |
| Senior Advisers to ECE Governments on Science and Technology:  |         |
| Co-operative technological forecasting and scientific and technological research related to new energy sources [ <u>inter alia</u> , geothermal] | 10.3.2. |

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1/ The programme elements in Part II are listed by the sectors of interest to the Conference.

Project number

Tar sands and oil shales

Senior Advisers to ECE Governments on Energy:

Specific measures for energy conservation - improved extraction, processing and rational utilization of energy [inter alia, tar sands and oil shales]

01(b).4 (i)

Solar and wind

Committee on Agricultural Problems:

Application of solar energy in agriculture

02.3.2.2(b)

Senior Advisers to ECE Governments on Science and Technology:

Co-operative technological forecasting and scientific and technological research related to new energy sources [inter alia, solar and wind]

10.3.2.

Energy derived from wood

Timber Committee:

Harvesting of wood for energy purposes

14.3.1.2.6.

Energy conservation and self-sufficiency in the mechanical wood processing industries

14.4.2.

Information based on the use of wood for energy

14.5.2.7.

Hydropower

Committee on Electric Power:

Selected problems of hydro-electric power stations

06.3.2.

Dynamic behaviour of pumped storage plants in electric power systems planning

06.3.2.1.

Symposium on prospects for the use of hydro-electric schemes under the new energy conditions and on the related problems

06.3.2.1(a)

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