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Industrial Development Board

Second Session

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Agenda item 6

THE INDUSTRIAL DEVELOPMENT ACTIVITIES OF THE UNITED NATIONS SYSTEM OF ORGANIZATIONS FOR THE YEAR 1967

Third Consolidated Report

ADDENDUM I WORK PROGRAMME OF THE UNITED NATIONS IN THE ECONOMIC, SOCIAL AND HUMAN RIGHTS FIELDS AND ITS BUDGETARY REQUIREMENTS

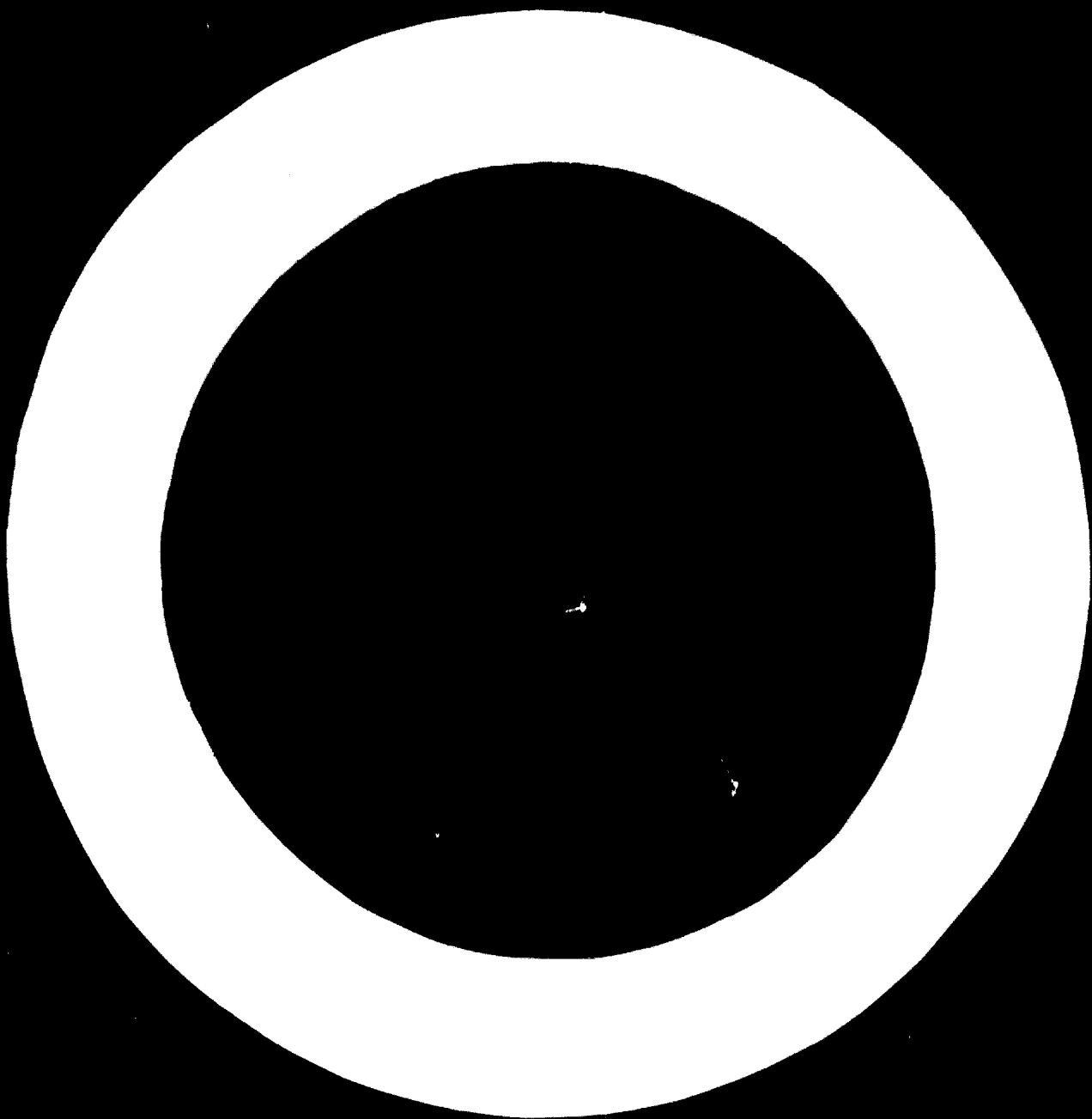
NATURAL RESOURCES

Report of the Secretary General
(E/4331/Add.6)

Note by the Executive Director

The attached report related to the activities programmed by the United Nations for 1967-1968 in the field of natural resources, is brought to the attention of the Board as a supplement to the information contained in the Third Consolidated Report of the Industrial Development Activities of the United Nations System of Organizations for the year 1967.

* As the attachment to this document is available in a limited number of copies, it is being distributed only to members of the Industrial Development Board.



UNITED NATIONS
ECONOMIC
AND
SOCIAL COUNCIL



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COMMITTEE FOR PROGRAMME AND CO-ORDINATION
Fifth session

WORK PROGRAMME OF THE UNITED NATIONS IN
THE ECONOMIC, SOCIAL AND HUMAN RIGHTS
FIELDS AND ITS BUDGETARY REQUIREMENTS

Report of the Secretary-General

Addendum

The work programme of the United Nations in the economic, social and human rights fields is issued in fascicles as addenda to the report of the Secretary-General. This addendum deals with natural resources.

A list of the other addenda may be found in the table of contents of the main document (E/4331 - E/AC.51/8).

CONTENTS

	<u>Page</u>
TABLE VI - DEVELOPMENT OF NATURAL RESOURCES	1
PROGRAMME 2.061 - NATURAL RESOURCES ACTIVITIES OF THE DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS (HEAD DEPARTMENT)	2 - 4
Organizational unit responsible	2
Costs	2
Definition of programme and description of activities	2 - 3
Classification of expenditure according to object	3
Staffing provisions	4
<u>Sub-Programme: 2.0611 GENERAL MANAGEMENT/CO-ORDINATION</u>	5 - 9
Organizational unit responsible	5
Costs	5
Major responsibilities	5
Description of activities	6 - 7
Staffing provisions	7
List of projects	7 - 9

67-09083

CONTENTS (continued)

	<u>Page</u>
<u>Sub-Programme: 2.0612 - ENERGY</u>	10 - 15
Organizational unit responsible	10
Costs	10
Major responsibilities	10
Description of activities	10 - 12
Staffing provisions	12
List of projects	12 - 15
<u>Sub-Programme: 2.0613 - ATMOSPHERIC RESOURCES DEVELOPMENT</u>	16 - 21
Organizational unit responsible	16
Costs	16
Major responsibilities	16
Description of activities	17 - 18
Staffing provisions	18
List of projects	18 - 21
<u>Sub-Programme: 2.0614 - GEOLOGY, HYDROGEOLOGY AND MINING</u>	22 - 26
Organizational unit responsible	22
Costs	22
Major responsibilities	22
Description of activities	23 - 24
Staffing provisions	24
List of projects	24 - 26
<u>Sub-Programme: 2.0615 - CARTOGRAPHY</u>	27 - 32
Organizational unit responsible	27
Costs	27
Major responsibilities	27
Description of activities	28 - 29
Staffing provisions	29
List of projects	29 - 32

CONTENTS (Continued)

	<u>Page</u>
PROGRAMME 2.062 - NATURAL RESOURCES ACTIVITIES OF THE ECONOMIC COMMISSION FOR AFRICA	33 - 51
Organizational unit responsible	33
Costs	33
Definition of programme	33 - 34
Description of activities	34 - 35
Classification of expenditure according to object	36
Staffing provisions	36
List of projects - Energy Unit	37 - 40
" " " - Water Resources Unit	41 - 44
" " " - Mineral Resources Unit	45 - 48
" " " - Cartographic Unit	49 - 51
 PROGRAMME 2.063 - NATURAL RESOURCES ACTIVITIES OF THE ECONOMIC COMMISSION FOR ASIA AND THE FAR EAST	 52 - 66
Organizational unit responsible	52
Costs	52
Definition of programme and description of activities	52 - 54
Classification of expenditure according to object	54
Staffing provisions	55
List of projects - Mineral Resources Development Section	56 - 59
" " " - Electric Power Section	60 - 62
" " " - Division of Water Resources Development	63 - 66
 PROGRAMME 2.064 - NATURAL RESOURCES ACTIVITIES OF THE ECONOMIC COMMISSION FOR EUROPE	 67 - 88
Organizational unit responsible	67
Costs	67
Definition of programme	67
Description of activities	68 - 70
Classification of expenditure according to object	70
Staffing provisions	71
List of projects - Electric power Section	72 - 77
" " " - Gas Section	78 - 82
" " " - Coal Section	83 - 88
	} Energy Division
 PROGRAMME 2.065 - NATURAL RESOURCES ACTIVITIES OF THE ECONOMIC COMMISSION FOR LATIN AMERICA	 89 - 96
Organizational unit responsible	89
Costs	89
Definition of programme and description of activities	89
Classification of expenditure according to object	90
Staffing provisions	90
List of projects	91 - 96

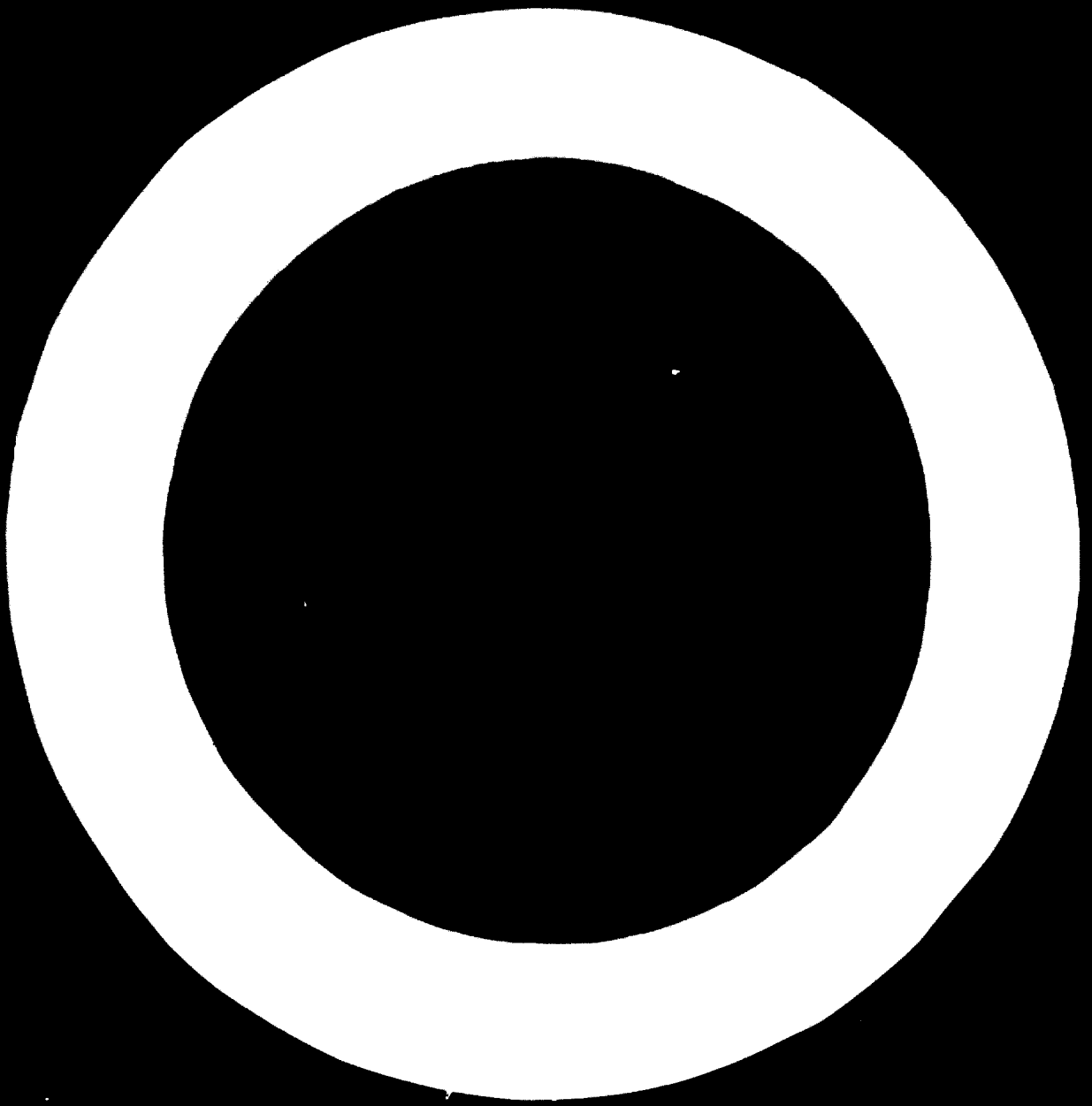


TABLE VI
 2.06 DEVELOPMENT OF NATURAL RESOURCES
 Distribution of expenditure (net)^{1/} according to location
 in thousand dollars

	HQ	ECA	ECAFE	ECE	ECLA	TOTAL
(a) <u>Substantive and conference services</u>						
1968 DE						
1967 VE	843.1	313.2	479.9	611.5	114.2	2,361.9
1966 CA	577.5	171.1	411.2	578.2	153.5	1,891.5
1965 CA	445.6	123.3	346.9	499.0	108.0	1,522.8
(b) <u>Field activities</u>						
	Inter-regional	Africa	Asia ^{2/}	Europe	Latin America	
1968 DE						
1967 VE	441.6	4,668.0	4,972.5	1,076.2	4,150.6	15,308.9
1966 CA	595.9	3,991.5	6,503.5	885.0	3,318.2	15,292.1
1965 CA	601.4	3,359.6	5,975.4	174.3	2,873.4	12,984.1
TOTAL (a + b)						
1968 DE						
1967 VE	1,284.7	4,981.2	5,452.4	1,687.7	4,264.8	17,670.8
1966 CA	1,173.4	4,162.6	6,914.7	1,461.2	3,471.7	17,183.6
1965 CA	1,047.0	3,482.9	6,322.3	673.3	2,981.4	14,506.9

1/ Excluding staff assessment.

2/ Including the Middle East.

CA = Closed accounts
 VE = Voted estimates
 DE = Draft estimates

PROGRAMME 2.061 - DEPARTMENT OF ECONOMIC
AND SOCIAL AFFAIRS (HEADQUARTERS)

DEVELOPMENT OF NATURAL RESOURCES

ORGANIZATIONAL UNIT RESPONSIBLE Resources and Transport Division: all sections
except Transport Section

		<u>Gross</u>	<u>Net</u>
<u>COSTS</u>	1968 DE		
	1967 VE	969.6	843.1
	1966 CA	677.2	577.5
	1965 CA	520.8	445.6

DEFINITION OF PROGRAMME AND DESCRIPTION OF ACTIVITIES

The major substantive responsibilities in regard to the development of natural resources are:

(a) To promote, with particular regard to development programmes of developing countries; (i) the evaluation and development - and, where appropriate, exploration - of natural resources in the fields of energy, geology and mining, and surface and underground water and desalination; and (ii) the development of surveying and mapping.

Full consideration is given to the economic, technical, administrative and legal aspects. Furthermore, when appropriate, the above fields are combined and an interdisciplinary approach is emphasized:

(b) To provide substantive guidance and servicing for technical co-operation and United Nations Development Programme activities in all of the fields listed in (a) above;

(c) To conduct and organize research in all of the fields listed in (a) above, and to disseminate the results through the publication of studies, guides and handbooks;

(d) To promote the training of officials and specialists of developing countries in all of the fields listed in (a) above, by means of fellowships, seminars, conferences and courses;

(g) To stimulate and facilitate the transfer of existing and new technology and scientific knowledge for the benefit of developing countries in each of the fields listed in (a) above.

CLASSIFICATION OF EXPENDITURE ACCORDING TO OBJECT

	<u>1965</u> CA	<u>1966</u> CA	<u>1967</u> VE	<u>1968</u> DE
Established posts, including common staff costs and home leave travel	490.2	613.4	786.3	
Temporary staff, including consultants and temporary assistance	4.3	36.5	91.6	
Travel of staff on official business	6.4	6.0	2.0	
Conference services	19.9	20.6	21.5	
Printing	-	0.7	6.2	
TOTAL	520.8	677.2	969.6	

STAFFING PROVISIONS

		Established posts							
		D-2	D-1	F-5	P-4	P-3	P-2/1	Total	G.S.
1.	Office of the Director							2	1
	1967 E	1	1	-	-	-	-	3	3
	1966 A	1	1	1	-	-	-	2	3
	1965 A	1	1	-	-	-	-		
2.	Special Studies and Documentation Unit							5	7
	1967 E		1	-	1	1	2	4	5
	1966 A	-	-	-	-	1	2	3	4
	1965 A	-	-	-	-	-	-		
3.	Energy Section							5	1
	1967 E			1	2	1	1	3	3
	1966 A			1	1	1	-	3	3
	1965 A	-	-	-	2	-	1	3	1
4.	Water Resources Section							7	1
	1967 E			1	1	3	2	6	3
	1966 A	-	-	-	3	3	-	5	3
	1965 A	-	-	1	1	2	1	5	1
5.	Geology and Mining Section							6	6
	1967 E			1	2	3	-	3	6
	1966 A	-	-	1	1	1	-	6	5
	1965 A	-	-	-	2	2	2		
6.	Cartography Section							4	2
	1967 E			1	2	1	-	3	2
	1966 A	-	-	1	1	1	-	3	2
	1965 A	-	-	-	2	1	-	3	
Total								29	18 a/
	1967 E	1	2	4	8	9	5	22	22 b/
	1966 A	1	1	4	7	7	2	22	16
	1965 A	1	1	1	7	6	6		

a/ Excludes extra-budgetary posts.

b/ Includes seven General Service posts of which six are charged to Special Fund overhead and one to the Interregional Project account.

As part of the United Nations Development Programme, five interregional advisers and seven technical advisers served in the field of development of natural resources in 1965.

There were four interregional advisers, twelve special technical advisers and one technical editor serving in 1966. In 1967, provision is made for four additional special technical advisers.

SUB-PROGRAMME - 2.0611

GENERAL MANAGEMENT AND CO-ORDINATION

ORGANIZATIONAL UNIT RESPONSIBLE Resources and Transport Division: Office
of the Director and the Special Studies
and Documentation Unit

Gross

Net

COSTS

(Included under 2.061)

MAJOR RESPONSIBILITIES

The major substantive responsibilities of the Office of the Director
are:

- (a) To provide administrative, economic and technical supervision and
direction for the activities of the Division;
- (b) To develop and organize interdisciplinary projects and studies;
- (c) To co-ordinate activities of the Division with other Divisions
of the Secretariat and other organizations in the United Nations family;
- (d) To submit reports to the Economic and Social Council and the
General Assembly, as appropriate;
- (e) To co-operate with and assist the Advisory Committee on the
Application of Science and Technology to Development.

DESCRIPTION OF ACTIVITIES

(a) Support of field operations

The Resources and Transport Division at present provides substantive support for seventy-seven continuing Special Fund projects in various fields. Forty-six of these projects are in the field of geology and mining, nine in the field of energy, fourteen in water and four each in transport and cartography. An average of fifteen additional projects are expected each in 1967 and 1968. These projects are being executed in about fifty different countries and, in the case of some, as energy and water projects, involve more than one country. During 1966, as of 30 September, the Division had been servicing over 280 posts directly (exclusive of local experts and counterparts and the personnel of firms and subcontractors for the execution of projects) in its various Special Fund projects, and this number is expected to rise in 1967 and 1968. The projects themselves are concerned with such varied problems as strengthening of basic cartographic services, aerogeophysical surveys and mineral exploration, groundwater surveys, assessment of energy needs, study of integrated river development and water resources and studies of transport problems and their solutions.

Under the EFTA and regular aid programmes, the Division as of 30 September 1966, was supporting over 190 experts actually in the field on that date. (The total number of experts for the whole year would be much larger.) It also provides support to the world food programmes in the field of transport, water and geology and mining.

As a contribution to the second half of the Development Decade, the Division has proposed a five-year programme of development of non-agricultural natural resources for developing countries (E/4132). It is proposed in this connexion to carry out various surveys and projects of non-agricultural natural resources involving intersectional disciplines within the Division, as well as the servicing of three expert groups meeting in January-February 1967. (For further details, see description of major projects).

(b) Substantive servicing of conferences and meetings

This is provided by the substantive sections.

(c) Research

Among the developments of non-agricultural resources, those of the sea have of late assumed importance and are likely to continue to do so. In Council resolution 1112 (XL), the Secretary-General has been requested to make a survey of the present state of knowledge of technology of the mineral and

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E/4331/Add.6
E/AC.51/8/Add.6
English
Page 7

food resources of the sea (excluding fish) beyond the continental shelf and of the techniques for exploiting these. Further, the Division, on the basis of General Assembly resolution 2172 (XXI), is now undertaking to survey the present activities in the field of marine science and resources and with the help of a committee of experts will formulate proposals for an expanded programme of co-operation for strengthening international activities in the field of marine resources development and marine science education.

Further, in pursuance of General Assembly resolution 2158 (XXI), the Secretary-General is charged to co-ordinate the work of the United Nations family in the field of Natural Resources.

STAFFING PROVISIONS

(See details under 2.061)

LIST OF PROJECTS

A. Projects completed in 1966

None.

B. Projects discontinued, dropped or postponed in 1966

None.

C. Continuing projects and new projects carried out or started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Completion date
				1967				1968				
				P and above	GS 2/	C	IRA	P and above	GS 2/	C	IRA	
1.	A*	Administrative and technical support	NA	17				35				NA
2	A*	Interdisciplinary projects	Council resolutions 1113 (XL) and 1127 (XLI); GA resolution 2173 (XLI)	27			2	42		10	2	To report to forty-third session of Economic and Social Council
3	A	Annual and biannual report	NA	5				5				NA
4	A*	Advisory Committee on Science and Technology	NA	18			2	30		6	2	NA
5	B*	Resources of the sea	Assembly resolution 2172(XLI), 39 Council resolution 1112(XL)	39			8	42		8		To report to twenty-third session of the General Assembly through the Council
6	A*	Interregional projects	NA	2			8	2		8	8	NA
Total				108	120	8	12	156	180	32	12	

Note: The figures for 1968 will need an upward revision, if the five-year survey programme is approved for implementation.

Type: A - Continuing projects; B - New projects; * - Major projects; NA - Not applicable

a/ General service man-months not shown for individual projects.

Description of major projects

2. Interdisciplinary projects

The Division has proposed a five-year programme for the development of non-agricultural natural resources. In this connexion, the following nine surveys are proposed to be undertaken: (a) world iron-ore resources; (b) important non-ferrous metals; (c) selected (abandoned or undeveloped) mines in developing countries; (d) off-shore mineral potential in developing countries; (e) water needs and water resources in potentially water-short developing countries; (f) the development potential of international rivers; (g) the potential geothermal energy resources in developing countries; (h) oil-shale resources; (i) the needs for small-scale power generating plants in developing countries.

Further, in pursuance of General Assembly resolution 2158 (XXI), it will be necessary to co-ordinate the work of the United Nations in the field of natural resources with that of the other specialized agencies and the regional commissions, and to submit a report to the General Assembly at its twenty-third session.

4. Advisory Committee on Science and Technology

During 1967 and 1968, various presentations and papers are to be made to the Advisory Committee on Science and Technology in connexion with the acceleration of the transfer and adaptation of science and technology to the development of resources in the developing countries. It will also be necessary to attend the various meetings of the ACST.

5. Resources of the sea

It is proposed to survey the present state of knowledge of technology of the mineral and food resources of the sea (excluding fish) beyond the continental shelf, the present activities in the field of marine science and resources and, with the help of a committee of experts, to formulate proposals for an expanded programme of co-operation for strengthening international activities in the field of marine resources development and marine science education.

6. Interregional projects

During 1966, a senior interregional adviser visited Uganda, Kenya, the United Republic of Tanzania and Ethiopia as a member of a team sent by the Special Fund to discuss the utilization of the water of the Nile. He also visited the Niger to forward the Niger River Basin Agreement and several capitals in connexion with the five-year programme for development of natural resources.

It is proposed to continue such assistance in 1967 and 1968.

SUB-PROGRAMME - 2.0612

ENERGY

ORGANIZATIONAL UNIT RESPONSIBLE Resources and Transport Division:
Energy Section

COSTS

(Included under 2.061)

MAJOR RESPONSIBILITIES

The Energy Section is responsible for:

(a) The preparation of reports and studies on specific economic, legislative, administrative, organizational, financial and technical aspects of energy resource exploration, evaluation and development, including problems concerning mineral fuels and natural gas prospecting, development, refining and transportation; transmission, distribution, marketing and tariffs; and non-conventional and new sources of energy including solar energy, wind power and tidal power;

(b) Systematically collecting, analysing and assessing technical data pertinent to the field of energy resources development;

(c) Organizing and servicing meetings and seminars oriented mainly towards supplying concentrated training in the field of energy to high level administrators from developing countries;

(d) Providing substantive support to the United Nations Development Programme, the World Food Programme and other technical aid programmes of the United Nations in the field of energy resources development.

DESCRIPTION OF ACTIVITIES

(a) Substantive support of field operations

During 1966 the Energy Section serviced forty-one experts provided by the United Nations technical assistance programmes (EPTA and regular). These experts worked in twenty-five developing countries in such fields as

petroleum legislation, exploration and production; petroleum refining; electric power generation and transmissions; coal and lignite development; energy planning etc.

As of 31 December 1966, the Energy Section was executing nine UNDP (Special Fund) projects aimed at assisting Governments in the development of their energy resources. The number of projects to be serviced is expected to increase by about nine during 1967 and 1968.

The Section also provides back-stopping to the projects of the World Food Programme, and this support will continue into 1967 and 1968.

(b) Substantive servicing of conferences and meetings

No conferences are scheduled for 1967. But in 1968 two meetings are proposed. First, a symposium for oil shales. The preparation for this is expected to be done in 1967 by an ad hoc group of experts, while the symposium will be held from August 24 to September 7 at Tallinn, Estonian Soviet Socialist Republic. This symposium will deal with and examine the latest development prospects of oil-shale resources in developing countries.

Secondly, an interregional seminar is scheduled for the spring of 1968 on petroleum administration. This is to be held in Trinidad and Tobago.

(c) Research

The research programme for the Section will be as follows:

(i) Periodic reports on developments in techniques of production and utilization of energy resources and their application by developing countries will be submitted to the Advisory Committee on Science and Technology;

(ii) A report on recent developments in new sources of energy (geothermal, solar, wind, fuel cells and oil shales) will be submitted to the forty-second session of the Economic and Social Council;

(iii) Preparation of a study on developments in petroleum refining and their application in developing countries will be completed in 1967;

(iv) A study involving a review of developments in natural gas utilization in developing countries with particular reference to power generation will be completed in 1968;

(v) A study on recent developments in fuel-cell technology and their application to developing countries will be completed in 1967;

(vi) A study reviewing off-shore exploration for hydrocarbons will be started in 1967 and completed in 1968;

(vii) A study of the administration and organization of autonomous and semi-autonomous electricity and energy corporations and agencies, which are either wholly or partly state-owned, will be completed in 1968.

STAFFING PROVISIONS

(See details under 2.061)

LIST OF PROJECTS

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>
A study of small-scale power generation for pioneer electrification work	Council resolution 1033 C (XXXVII)
Progress and prospects in the utilization of oil shales	Council resolutions 980A (XXXVI), 1047 (XXXVII) and 1083 (XXXIX)

B. Projects discontinued, dropped or postponed

<u>Title</u>	<u>Authority</u>	<u>Remarks</u>
Efficiency in energy utilization	Council resolution 1033 (XXXVII)	Study dropped
Interregional seminar on small-scale power generation	Council resolution 1033 C (XXXVII)	Seminar has been postponed pending firm commitment by the host government concerned

C. Continuing projects and new projects to be started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Date of Completion
				1967				1968				
				P and above	GS 2/	C	IRA	P and above	GS 2/	C	IRA	
1	A*	Substantive support of technical assistance programmes and Special Fund projects	Council resolutions 345 (XII) and 877 (XXIII)	39			42	58			41	NA
		Substantive support of World Food Programme projects	Council resolutions 971 (XXVI) and 1080 (XXXIX)									
2	A	New sources of energy	Council resolutions 1033 B and C (XXVII)	1.5		0.5	1	0.5				NA
3	A	Reports to Advisory Committee on Application of Science and Technology to Development	Council resolutions 980 A (XXVI), 1047 (XXVII) and 1083 (XXXIX)	1			4	1			4	NA
4	B*	Oil-shale symposium	Council resolution 1033 B (XXVII)	3		4		3.5		4	1	1968
5	B*	Petroleum refining in developing countries	Council resolutions 740 (XXVIII) and 758 (XXIX)	3.5		6						1967
6	B*	Natural gas utilization for power	Council resolutions 740 (XXVIII) and 758 (XXIX)					2		3	1	1968
7	B	Surveys of petroleum and natural gas resources	GA resolution 2173 (XXI)	1								1967
8	B*	Off-shore hydrocarbons	Council resolutions 740 (XXVIII) and 758 (XXIX)	4.5		4		5		5		1968
9	B	Developments in fuel-cell technology	Council resolutions 980 A (XXVI), 1047 (XXVII) and 1083 (XXXIX)	0.5		3	1					1967
10	B*	Seminar on petroleum administration	Council resolution 758 (XXIX)	6		2		8		2		1968
11	B	Management of public electricity and energy enterprises	Council resolution 1033 (XXVII)					6		4	1	1968
TOTAL				60	48	19.5	48	84	84	18	48	

Types: A - Continuing projects; B - New projects; * - Major projects; NA - Not applicable.

General Service man-months not shown for individual projects.

Description of major projects

4. Oil-shale symposium

The Union of Soviet Socialist Republics has agreed to act as host country to this symposium which will be convened in August-September 1968. The symposium will provide the first opportunity for an international exchange of ideas and experience on the progress that has been made in the utilization of oil shale since 1950. It will consider how modern techniques can be brought into wider use, particularly for the benefit of developing countries. It will provide participants with up-to-date information on progress achieved, and with potentialities and limitations in the utilization of oil shales, especially in those areas lacking in energy or facing high energy costs.

5. Petroleum refining in developing countries

Preparation of a study on developments in petroleum refining and their application to developing countries is under way. A great number of petroleum refineries have been and are being built in many developing countries to replace imports of refined products. The study will provide information and guidance to administrators responsible for petroleum affairs in developing countries. The study will review and analyse both technical and economic developments in petroleum refining, with emphasis on those developments which affect petroleum refining in developing countries, and an attempt will be made to evaluate the impact of petroleum refineries on the economic and social development of selected countries.

6. Natural gas utilization for power generation

This study will review developments in natural gas production, transport and utilization in developing countries, with particular reference to power generation. The wastage of enormous quantities of natural gas by flaring in many developing countries is a serious problem, and this study will analyse the technical and economic considerations for using natural gas for power generation either independently or in association with the development of the industries. It will focus on the economic consequences of technical advances in production, transportation and utilization of natural gas.

8. Off-shore hydrocarbons

This study on off-shore exploration and development of petroleum and gas will review past activities, technological development, economics of off-shore operations, legal and taxation problems and incentives to operators. This study should attract considerable interest in view of the ever-expanding search for petroleum and gas in areas which were previously considered unlikely to yield any hydrocarbons. Increasingly, this expanded search for oil and gas has involved off-shore exploration, and the prospects

for such exploration seem to be very promising in many areas. At present, off-shore exploration for oil and gas is in progress in at least sixty countries, and seventeen countries are already producing off-shore. Sixteen per cent of world petroleum production and 6 per cent of natural gas production already come from off-shore fields. However, the technical, economic and legal problems involved are even more challenging than those encountered in exploration for hydrocarbons on land, and consequently it is felt that such a study will be of considerable assistance to many developing countries involved in off-shore exploration for hydrocarbons.

10. Seminar on petroleum administration

The Government of Trinidad and Tobago has offered to host an interregional seminar in March 1968 which would deal specifically with the problems of petroleum administration. Developing countries are being increasingly faced with administrative problems relating to such petroleum matters as concessions, conservation policy, tariffs, taxation and fiscal policy etc., and a need has thus arisen for United Nations assistance in providing government administrators with the necessary background to equip them to cope with such petroleum affairs. The proposed seminar, which is expected to last for two weeks, is designed to provide government officials with an intensive training course dealing with these administrative questions.

11. Management of public electricity and energy enterprises

Among the conclusions reached by the United Nations interregional seminar on energy policy in developing countries, held in May 1965, was that an effective energy development policy was hindered by the multiplicity of bodies dealing with energy problems in developing countries and, particularly, by the lack of an appropriate co-ordinating agency. This study will review and analyse the institutional framework of energy development, including case studies of selected countries, and will offer recommendations to developing countries on the organization and management of appropriate institutions.

SUB-PROGRAMME - 2.0613

WATER RESOURCES DEVELOPMENT

ORGANIZATIONAL UNIT RESPONSIBLE Resources and Transport Division:
Water Resources Section

COSTS

(Included under 2.061)

MAJOR RESPONSIBILITIES

The Water Resources Section is responsible for:

(a) Preparing reports and studies on specific economic, legislative, administrative, organizational, financial and technical aspects of surface water resources development, including problems concerned with integrated river basin development, multipurpose projects, flood control, long-distance transportation of water, water pollution, water supply, industrial use of water and desalination;

(b) Systematically collecting technical and other pertinent reports in the field of surface water development; analysing and assessing the data collected and maintaining up-to-date records of progress in these fields;

(c) Organizing and servicing meetings and seminars, including study tours, on approaches to water projects, programming and evaluations;

(d) Providing substantive support for all United Nations development programmes, regular technical assistance programmes and world food programmes;

(e) The Section also functions as the United Nations Water Resources Development Centre. In this respect its responsibilities are as follows: (i) to keep the interrelated problems of water resources development and utilization under continuous review; (ii) to pay special attention to the administrative and legislative problems related to water resources development in developing countries; (iii) to foster the diffusion of relevant information among Governments and interested organizations; (iv) to foster, in the case of international rivers, as appropriate, the collection of relevant data, the study of tentative programme schemes and the bringing

together of the parties concerned; (v) to promote efforts towards the formulation of principles of international law applicable to water resources development; (vi) to facilitate the co-ordination of activities between Headquarters and the regional economic commissions; and (vii) to perform as required, on behalf of the Administrative Committee on Co-ordination, the organizational and secretariat functions for the interagency and ad hoc meetings on water resources development.

DESCRIPTION OF ACTIVITIES

(a) Support of field operations

During 1966 the Water Resources Section had a number of experts in hydrology, hydraulic engineering, dam designing, sediment transportation and water resources engineering in over fifteen countries. The variety of experts sought and the number of experts are expected to increase further during 1967/1968.

In the same period the Water Resources Section was providing substantive support to fourteen current Special Fund projects in the field of river navigation, hydropower development, flood control, river training, desalination and integrated development of international river basins.

Support of projects in the framework of the World Food Programme will continue in 1967 and 1968.

According to Council resolution 1033D (XXXVII), the Water Resources Section acts as the Water Resources Development Centre and thus as secretariat for the ACC Sub-Committee on Water Resources Development providing co-ordination and liaison between the various United Nations organizations and organizational units in the water field. The functions of the United Nations Water Resources Development Centre will be continued in 1967-1968.

At the same time periodical reports on the developments in the field of water resources will continue to be provided to the Advisory Committee on Science and Technology.

(b) Substantive servicing of conferences and meetings

There are two conferences planned for 1967 and 1968. The Resources and Transport Division will participate in the International Conference on Water for Peace, to be held in Washington in May 1967, providing six papers to the conference. For 1968 an interregional seminar on water resources development organizations and national water agencies is envisaged. It is proposed to have it at Headquarters in New York, and it will deal with general aspects of water resources development organizations on a national and regional level, with case studies to be prepared by international experts.

(c) Research

The major research projects undertaken by the Water Resources Section relate to: (i) the economic aspects of the use of water, including the economics of conveyance of water; (ii) water desalination: operational experience of water desalination plants, economic application of water desalination, relationship between the capacity of desalination plants and storage facilities required, water rates schedule applicable to desalinated water, problems of water distribution in areas having desalinated water, techniques and economics of solar distillation and its application to developing countries, costs and possible use of contaminated water; (iii) multipurpose and integrated water resources development; and (iv) national water agencies.

Further details of the above projects are given under "Description of major projects".

STAFFING PROVISIONS

(see details under 2.061)

LIST OF PROJECTS

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>
Thirteenth interagency meeting	Council resolutions 1033 D (XXXVII) and 675 (XXV); ACC
Economic application of water desalination	Council resolutions 759 (XXIX), 1033 A (XXXVII) and 1069 (XXXIX)
Interregional seminar and study tour on water resources development	BTAO project; general duties of secretariat

B. Projects discontinued, dropped or postponed

None

C. Continuing projects and new projects to be started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Date of Completion
				1967				1968				
				F and above	GS 5/	C	IRA	F and above	GS 5/	C	IRA	
1	A*	Substantive support of UNEP technical assistance programmes and the World Food Programme	Council resolution 345 (XII)	15			20	33			36	Continuing
2	A*	Preparation of periodic reports to the Advisory Committee on Science and Technology	Council resolutions 980 A (XXVI) and 1083 (XXIX)	3				4				Continuing
3	A*	Fulfilling functions of Water Resources Centre	Council resolutions 675 (XIV) and 1033 B (XXVII), AOC	3				3				Continuing
4	A*	Operational experience of water desalination plants	Council resolutions 1033 A (XXVII) and 1069 (XXIX)	10		8	8	14		8	12	Continuing
5	B*	Comprehensive survey of desalination studies and projects	Council resolutions 1069 (XXIX) and 1114 (XL)	12		16		16		16		1967/1968
6	B*	National water agencies	Council resolutions 345 (XII), 675 (XIV) and 1033 (XXVII)	4		4						1967
7	B	Economics of conveyance of water	Council resolutions 345 (XII) and 1033 C (XXVII)	5		4						1967
8	B*	Proceedings of United Nations interregional seminar on integrated utilization of water resources	Council resolution 1033 C (XXVII) (1960 project)	6								1967
9	B	Economic aspects of the use of water	Council resolutions 675 (XIV) and 1083 (XXIX)	3		4		12		4		1968
10	B*	Multipurpose and integrated water resources development	Council resolutions 345 (XII), 675 (XIV), 1083 and 1083 II (XXIX)	2		4		8		4		1968
11	B	Management of public enterprise and water resources	Council resolution 345 (XII)	2				4				1969
12	B	Conference for World Water Resources Development Programme	Council resolution 1113 (XL)	4								1967
13	B*	Interregional seminar on water resources development organizations and national water agencies	Council resolutions 1033 (XXVII), 675 (XIV) and 345 (XII)	3				14		4		1968
Total				72	36	40	36	108	96	36	48	

Types A - Continuing projects B - New projects * - major projects

1/ General service man-months not shown for individual projects.

Description of major projects

3. Fulfilling the functions of the Water Resources Centre

This will include the servicing of the fourteenth interagency meeting in 1967 and the fifteenth interagency meeting in 1968, as well as preparing the fifth biennial report in 1967 based in part on contributions from specialized agencies, the IAEA and the regional commissions for presentations to the Economic and Social Council.

4. Operational experience of water desalination plants

The Water Resources Section acts as the clearing-house for the exchange of information in the broad field of desalination. This entails the preparation of studies, progress reports to the Council, field assistance, liaison with specialized agencies, Governments, manufacturers and research institutes. An annual report on the operational experience of desalination plants will be prepared from 1967 on, on an annual basis. This will involve a collection of up-to-date operational data based on questionnaires sent to authorities operating such plants.

5. Comprehensive survey of desalination studies and projects

This is a survey of all work undertaken in all member countries by governmental, international and private institutions.

The proceedings of an interregional seminar on the economic application of water desalination held at Headquarters in 1965 are in the process of publication.

A study on the relationship between the capacity of desalination plants and siting facilities required, examining inter alia variations in seasonal water demand, relative costs of storage and peak production capacity, and the economics of pre-treatment was initiated in 1966 by a panel of experts meeting at Headquarters, and will be completed in 1967.

A study on water rates schedule applicable to desalinated water will discuss the modernization of water rates schedules with the advent of high-cost desalinated water as the main source of supply, and will be completed in 1968.

A study on the problems of water distribution in areas having desalinated water will deal with the economic aspects of single and double piping water systems. It is scheduled to be completed in 1968.

Two additional studies in the field of water desalination dealing with techniques and economics of solar distillation and its application to developing countries and with the cost and possible use of contaminated water will be undertaken in 1968.

6. National water agencies

The study will deal with forms of policy-making organizations in the field of water resources development and management in developing countries, with suggestions for setting up a national co-ordinating water agency.

7. Economics of conveyance of water

This is a comparative study of different means of conveying water, their principal cost factors and applicability in developing countries.

8. Proceedings of the United Nations interregional seminar on integrated utilization of water resources

This Seminar was held in Fergana, Uzbek Soviet Socialist Republic, in August 1966. Editing and publication of the proceedings will be completed in 1967.

9. Economic aspects of the use of water

This is a study with particular emphasis on the multiple use of water and the economic productivity of water to provide a guide for allocation of water and broad policy formulation. Part of this study dealing with the economics of water for irrigation has been completed, and it is proposed to complete the rest by 1968.

10. Multipurpose and integrated water resources development

This study will be undertaken in two stages; the first dealing with costing methods in feasibility studies of water resources development projects examining costing standards and practices on a comparative basis; the second being a methodology of cost-benefit analysis in water resources development dealing with the development of methodology adapted to the needs of developing countries, particularly in relation to multipurpose projects.

13. Interregional seminar on water resources development organizations and national water agencies

It is proposed to hold this seminar in New York in 1968. It will deal with general aspects of water resources development organizations at national and regional levels.

SUB-PROGRAMME - 2.0614
GEOLOGY, HYDROGEOLOGY AND MINING

ORGANIZATIONAL UNIT RESPONSIBLE: Resources and Transport Division:
Geology and Mining Section

COSTS

(Included under 2.061)

MAJOR RESPONSIBILITIES

The Geology and Mining Section is responsible for:

- (a) Preparing reports and studies on specific, economic, legislative, administrative, organizational, financial and technical aspects of geology, hydrogeology and mining and mineral resources development, including problems concerning such relevant technologies as geophysics, drilling and geochemistry; and the concentration, processing and refining of minerals;
- (b) Systematically collecting technical and other pertinent data and reports in the fields of geology, hydrogeology, mining and mineral development; analysing and assessing the data and reports so collected and maintaining up-to-date records of progress in these fields;
- (c) Organizing and servicing meetings and seminars in the fields of geology, hydrogeology, mining and mineral development;
- (d) Providing substantive servicing and support for all United Nations technical assistance and development programmes, and World Food Programme in the fields of geology, hydrogeology, mining and mineral development.

DESCRIPTION OF ACTIVITIES

(a) Support of field operations

During 1966 the Geology and Mining Section provided substantive back-stopping to a number of mining advisers, mining geologists, geologists, mining engineers, hydrogeologists, drilling engineers, drillers, analytical chemists, photogeologists, geophysicists, ore-dressing and mining legislation specialists in twenty-two countries within the framework of the technical assistance programme. Most of these experts were assigned to long-term projects which will be implemented over a period of several years.

As of 31 December 1966, the Geology and Mining Section had substantive responsibilities for forty-six current UNIP projects. Thirty-three of these projects were in the field of mining, eight in the field of ground-water exploration and development and five were combined mineral and ground-water projects. These pre-investment projects can be broken down into several categories: mineral and ground-water surveys; rehabilitation of abandoned or marginal mines; economic evaluation of mineral deposits and institution buildings (geological, mining and metallurgical institutes). It is expected that in 1967 and 1968 the number of UNIP projects to be serviced will increase.

In 1967-1968 the Section will keep on providing substantive back-stopping to World Food Programme projects in the field of geology and mining.

(b) Substantive servicing of conference and meetings

The 1967 schedule of meetings which are the direct concern of the Geology and Mining Section includes one seminar and one meeting of ad hoc expert group; the interregional seminar on new methods of mineral exploration with emphasis on geophysical techniques will be held in the Union of Soviet Socialist Republics from 3 to 22 July 1967. An exposé of the latest modern exploration techniques will be given at the seminar, and their application to mineral exploration in developing countries will be the subject of a detailed discussion.

The Section will also be servicing the meeting of an ad hoc panel of experts entrusted with the updating of the survey of world iron ore resources, which was published in a form of a study by the United Nations in 1954. This meeting will take place either in Geneva or in New York in the fall of 1967.

For 1968 also, two meetings are scheduled: the first is the seminar on the exploration, exploitation and treatment of ferrous ores to be held in the Union of Soviet Socialist Republics. The second one will be a seminar on ground-water techniques, the date and site of which are still under discussion.

(c) Research and studies

The section will continue to submit periodic reports to the Advisory Committee on Science and Technology on the application of science and technology to development, selecting from field experience the techniques most suited for speeding up mineral development in developing countries, and will also submit periodic reports to the Council.

The other research programmes of the Section are as follows: a study on mineral resources development - problems and policies; a revision of the survey of world iron ore resources; ground-water development schemes; and underground water storage.

STAFFING PROVISIONS

(See details under 2.061)

LIST OF PROJECTS

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>
Inter-Regional seminar on ore concentration in water-short areas	Council resolution 345 (XII)

B. List of projects discontinued, dropped or postponed

None

C. Continuing projects and new projects to be started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Date of Completion	
				1967				1968					
				F and above	GS 2/	C	IRA	F and above	GS 2/	C	IRA		
1	A*	Substantive support of technical assistance and United Nations development programmes and World Food Programme	Council resolutions 145 (XII) and 877 (XXXIII)	22			253	42				186	Continuing
2	A	Reports to Committee on Science and Technology, Council and other bodies	Council resolutions 982 (XIV) and 1683C (XXIX)	4			3	10				4	Continuing
3	A*	Mineral resources development - problems and policies	Council resolutions 145 (XII) and 877 (XXXIII)	6		8							1967
4	A*	Survey of world iron ore resources	Council resolutions 145 (XII), 877 (XXXIII) and 2033B (XXIX)	4		8		8			4		1968
5	A*	Seminar on new methods of exploration with emphasis on geophysics	Council resolution 1083 (XXIX)	8		2	1	4					1967
6	B	Seminar on exploration, exploitation and treatment of ferrous ores	Council resolutions 982 (XIV) and 1683 (XXIX)	2		2		4			1	1	1968
7	B*	Groundwater development schemes	Council resolutions 145 (XII) and 877 (XXXIII)	4		3		10			2		1968
8	B*	Underground water storage	Council resolutions 145 (XII) and 877 (XXXIII)	3		8		10			2		1967
9	B*	Seminar on ground-water development techniques	Council resolutions 145 (XII) and 877 (XXXIII)	8		2		8			1	1	1968
10	B*	Interregional seminar on hydrometallurgy	Council resolutions 145 (XII) and 877 (XXXIII)			2					3		1968-1969
Total				48	84	19	357	96	144	13	192		

Type: A - Continuing projects B - New projects * - Major projects
 M/ General service man-months not shown for individual projects.

Description of major projects

3. Mineral resources development - Problems and policies

This is a study examining the approaches to the solution of organizational, legal, economic and technical problems confronting developing countries in the development of their mineral resources. Part of it has been done in 1966, and it is hoped to finish in 1967.

4. Survey of world iron ore resources

This study is to update, revise and enlarge the basic publication brought out in 1954. In 1966 an ad hoc expert group met to deal with this and it will continue its work in 1967. It is hoped to complete the work in 1967 and to publish the new study in 1968.

6. Seminar on exploration, exploitation and treatment of ferrous ores

Preparation for this interregional seminar will be made in 1967. It will deal with the latest methods and techniques and their application to the exploration, exploitation, concentration and treatment of ferrous ores. The seminar will be held in the Union of Soviet Socialist Republics in 1968.

7. Ground-water development schemes

This study will deal with the establishment of type schemes for ground-water development projects; and review the combination of particular physical, technical and economic factors facilitating the definition of **certain proto-**types for ground-water exploration and development schemes, with special reference to developing countries.

8. Underground water storage

A study of the physical, technical and economic aspects of ground-water storage facilities and artificial recharge of water, with particular reference to developing countries, will be made. It is hoped to finish this study in 1967.

9. Seminar on ground-water development techniques

It is expected that this seminar will be held in 1968. It will deal with ground-water surveys and development techniques and the economics of ground-water exploration and development schemes. The venue has still to be finalized.

SUB-PROGRAMME 2.0615
CARTOGRAPHY

ORGANIZATIONAL UNIT RESPONSIBLE Resources and Transport Division:
Cartography Section

COSTS

(Included under 2.061)

MAJOR RESPONSIBILITIES

The Cartography Section is responsible for:

(a) Performing the functions of the Central Bureau of the International Map of the World on the Millionth Scale and preparing an annual report on the subject;

(b) Preparing the bulletin World Cartography;

(c) Analysing and evaluating all data collected on modern cartographic methods and techniques and being the central office on cartographic matters in the United Nations;

(d) Co-ordinating international co-operation on the standardization of geographical names;

(e) Organizing and providing secretariat and documentation for both international and regional conferences on cartography and preparing all publications on the results of these conferences;

(f) Providing substantive support for all United Nations Development Programme projects in the fields of cartography;

(g) Planning, organizing and servicing seminars and symposiums in the various fields of cartography.

DESCRIPTION OF ACTIVITIES

(a) Support of field operations

During 1966 the Section has been servicing twenty-two experts in fifteen different countries in such fields as cartography, geodetic surveying, photogrammetric mapping, photo-interpretation, photo-laboratory technology, land surveying and hydrography. This number is expected to increase in 1967 and 1968. It is also anticipated that there will be many fellowships and scholarships covering most of these fields during these two years.

The Section has been providing substantive support and consultative services to four Special Fund projects in Ceylon, Jamaica, India and Pakistan. It is expected that three more projects will be added during 1967 and 1968.

(b) Substantive servicing of conferences and meetings

The following conferences and one seminar are scheduled in 1967: the fifth United Nations Regional Cartographic Conference for Asia and the Far East to be held in Canberra, Australia, from 8 to 22 March 1967; the United Nations Conference on the Standardization of Geographical Names, to be held in Geneva, Switzerland, from 4 to 22 September 1967; and the second United Nations interregional seminar on the application of cartography for economic development to be held in Humlebaek, Denmark, from 15 May to 10 June 1967.

No conferences or meetings are anticipated for 1968, but all reports and publications of the 1967 conferences will be completed according to the dates shown in the list of continuing projects and of new projects to be started in 1967 and 1968.

(c) Research

(i) During the period 1967 and 1968 the Section is expected to submit periodic reports to the Advisory Committee on Science and Technology;

(ii) The preparation of the annual report for publication of the International Map of the World (reports for 1966 and 1967) will be undertaken, hand in hand with a general inventory of the IMW record collection, which consists of over 2,000 sheets at present;

(iii) During 1967 preparatory work will be done to submit for printing volume IX of the World Cartography bulletin. This is to be followed by volume X in 1968. These volumes will contain special technical reports in surveying and mapping, as well as reports on cartographic activities from various countries.

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E/AC.51/8, para.6
English
Page 29

(iv) Preliminary work for the development of uniform cartographic standards has been continuing for several years, and reports on methods and techniques which might be utilized in the development of uniform cartographic standards internationally are needed. It is proposed to complete these studies and reports during 1968.

(v) A complete report of the status of world topographic mapping has been pending for some years. Based on the results and comments of a preliminary survey which was done as late as 1955-1956, it is proposed to continue this study, as it would bring to light many of the needs of developing countries which would be necessary in the cartographic field, and in turn would greatly benefit directly natural and mineral resources projects.

(vi) To keep abreast of advancing technology in the field of surveying, it is proposed to initiate in 1967 a programme for the study of the feasibility of using space photography and other orbital remote sensing data for resources inventories. This study will be continued into 1968.

STAFFING PROVISIONS

(see details under 2.061)

LIST OF PROJECTS

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>
United Nations interregional seminar on the application of cartography for economic development, 1965: Publication of national reports in <u>World Cartography</u> Vol. VIII	Council resolution 345 (XII)
First United Nations Regional Cartographic Conference for Africa: Publication of proceedings and technical papers of the Conference, Vol. 2	Council resolution 1816 (XXXI)

B. Projects discontinued, dropped or postponed

None.

C. Continuing projects and new projects to be started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Date of Completion	
				1967				1968					
				P and above	GS 2/	C	IRA	P and above	GS 2/	C	IRA		
1	A	(a) <u>Support of field operations</u> Substantive support of technical assistance programme and Special Fund projects	Council resolution 149 (XII)	10					14				
2	B	(b) <u>Revising of uniform maps and symbols</u> Fifth United Nations Regional Cartographic Conference for Asia and the Far East	Council resolution 1070 (XVIII)	5					4				August 1968
3	B	United Nations Conference on the Standardization of Geographical Names	Council decision, 1358th meeting, thirty-ninth session	5					6				December 1968
4	B	Second United Nations interregional seminar on the application of cartography for economic development	Council resolution 149 (XII)	4					5				October 1968
5	A	(c) <u>Research</u> Periodic reports to the Advisory Committee on Science and Technology	Council resolution 1083 (XVIII)	2					5				
6	A	International Map of the World on the Millionth Scale	Council resolution 476 B (IV) and protocol concerning transfer to the United Nations of functions hitherto performed by the Central Bureau, EMS	3					6				1966 report, June 1967 1967 report, June 1968
7	A	<u>World Cartographic Unification</u>	Council resolution 961 (II)	4					6				Vol. II, November 1967
8	A	Development of uniform cartographic standards	Council resolution 131 (VI)	1					7		1		
9	A	Study of the status of world topographical mapping	Idem	1					6		2		
10	B	Study of the feasibility of using space photography and other orbital remote sensing data for resource inventories	Idem	1					1		3		
Total				36	24				60	16	6		

Type: A - Continuing projects

B - New projects

2/ General service man-months set shown for individual projects

Description of major projects

1. Support of field operations

The four UNDP/Special Fund projects for which the section has carried the substantive responsibility will continue through 1967 and 1968, and beyond. It is expected that three new projects may be added during 1967 and 1968. The substantive servicing of the experts under the regular and expanded programme of technical assistance will continue, and an increase in the number of such projects is expected in 1967 and 1968. It will also be a continuing need to service many fellowships and scholarships within this period.

2. United Nations Conference on the Standardization of Geographical Names

The preparations for this conference started in 1960 when a group of experts on geographical names set up by the Secretary-General, in pursuance of Council resolution 715 A (XXVII), convened at the United Nations, New York. Further strengthened by the resolutions adopted at several regional cartographic conferences, a preparatory meeting for the United Nations Conference on the Standardization of Geographical Names was held in New York in 1960. At this meeting, which was held on the basis of a decision by the Council in its 1365th meeting of its thirty-ninth session in 1965, a group of experts defined the objectives of the Conference and prepared a provisional agenda. The Conference will take place in Geneva in September 1967.

3. International Map of the World on the Millionth Scale

The Cartography Section has functioned as the Central Bureau for the International Map of the World on the Millionth Scale (IMW), since 1954. In this capacity it maintains the IMW record collection, serves as a liaison between Governments, distributes adopted specifications and standards, and prepares and publishes an annual report on the status of publication of this map series, until now. The 1966 annual report will be completed this year. The 1967 annual report will be prepared in 1968, and a general inventory of the official records collection will be performed, with particular emphasis on the status of map sheets completed in accordance with the new specifications adopted at the United Nations Technical Conference on the IMW, Bonn, 1962.

4. World Cartography bulletin

The World Cartography bulletin reports upon activities, plans and progress in various branches of cartography, taking into account the present needs of all countries. Seven volumes have been published until now. The preparatory work for volume VIII was completed in 1966, and its publication is expected in 1967. Volume IX will be submitted for printing in November 1967, and volume X will be completed in 1968.

8. Development of uniform cartographic standards

At the Second Regional Cartographic Conference for Asia and the Far East held in Tokyo in 1958, a resolution recommended the adoption of standard cartographic practices for international use for land maps. Until now, the IMW is the only land map series based on internationally adopted standards. The establishment of similar, although possibly less rigid, uniformity should be promoted for larger scale map series. Preliminary work on this has been done for several years, and it is now proposed to attempt to complete these studies in 1968.

9. Study of world status of world topographic mapping

The exact state of the topographic map coverage of the world is unknown. The study would include on a global basis a determination of the existing topographic map coverage and its value for economic development purposes. This study would also include a determination of aerial photographic coverage and basic geodetic networks, as well as a report on authoritative national surveying and mapping agencies. The completion of this study would be most useful as a basic reference for the United Nations and its specialized agencies and to any other authority engaged in assistance for economic and social development. An attempt will be made to complete this study in 1968.

DEVELOPMENT OF NATURAL RESOURCES

ORGANIZATIONAL UNIT RESPONSIBLE

Division of Natural Resources and
Transport: Natural Resources Section,
including Energy Unit, Water Resources
Unit, Mineral Unit and Cartographic
Unit

		<u>Gross</u>	<u>Net</u>
<u>COSTS</u>	1968 DE		
	1967 VE	385.7	313.2
	1966 CA	202.0	171.1
	1965 CA	138.9	123.3

DEFINITION OF PROGRAMME

In the field of natural resources the principal aims are:

- (a) To organize known data on the natural resources of the region, including the protection and preservation of records;
- (b) To assist Member States to build up competent manpower and establish effective machinery for the exploration, measurement, evaluation and management of natural resources;
- (c) To assist Member States to determine their natural resources endowment through the work of joint centres for specialized services in surveying and mapping;
- (d) To collaborate with UNESCO and with other United Nations and bilateral agencies in the implementation of the Lagos and Toulouse Plans;
- (e) To evaluate the prospective needs for, and the availability of, natural resources for export and for domestic consumption.

In view of the dimensions and continuing nature of the work on natural resources, the bulk of the work must be carried out by national staffs through national machinery. It is felt that the most effective contribution the Division can make is to enable Member States to undertake these tasks themselves - hence the emphasis on manpower, machinery and policy; and that while this capacity is being developed, direct assistance should be afforded

to Member States in exploration, measurement and evaluation. In this connexion the Division takes special interest in new developments of integrated methods of natural resources surveying.

DESCRIPTION OF ACTIVITIES

1. Energy

The activities of ECA in the energy field are designed mainly to help Governments in developing the most adequate and economical forms of energy. This is done through the collection and dissemination of up-to-date information on the energy situation and plans of further development, periodic contacts among officials convened through regional and subregional meetings, and the provision of advisory services upon request.

2. Water resources

The major activities in the field of water resources development comprise:

(a) Studies and surveys relating to the establishment, expansion or improvement of hydrological networks; the needs and availability of water resources; and the requirements and availability of personnel and training facilities.

The Section prepares reports and technical papers on these subjects to service meetings convened by ECA or to support the establishment of necessary institutions, or for publication;

(b) Organization of, and participation in, related meetings, conferences and seminars convened and serviced by the Secretariat or by other United Nations bodies;

(c) Advisory services to member Governments, upon request, on the development of international river basins, and in particular to the Inter-State Committee for the Development of the Senegal River Basin, the Niger River Basin Committee, the Chad Basin Commission and the Governments interested in the survey of the catchments of Lakes Victoria, Kioga and Albert;

(d) Preparation and publication of the Natural Resources Newsletter with a view to disseminating information on developments in the **fields of water resources, mineral resources, energy, cartography and the application of science and technology for economic development.**

3. Mineral resources

Activities in the field of mineral resources include the building up of

data on African mineral resources; and research into the solution of specific problems which have to be faced to develop these resources, such as shortage of qualified African personnel, training facilities in geology and mining, well-equipped national laboratories, and lack of co-ordination of work carried out in different Member States and its synthesis on a regional scale.

Advisory services provided at the request of Member States include assistance in drawing up applications to the Special Fund, briefing of experts at the headquarters of the Commission and reviewing their reports.

4. Surveying and mapping

There are two main groups of projects in the field of surveying and mapping: (a) those relating to the Member States of the Commission, and (b) those relating to the work of other divisions, sections and units of the secretariat.

With regard to the surveying and mapping work relating to Member States, in addition to advisory services, the main activities consist of study of the need of African countries in surveying and mapping and advice on how to meet these needs; organization and participation in conferences; meetings of experts; and training courses.

Intensive consultations with interested Governments and international organizations will continue, with a view to expediting the creation of a centre for aerial surveys, which include photogrammetry, photo-interpretation and airborne geophysical surveys, and another centre for specialized services in surveying and mapping, which would involve great efforts on the part of the ECA secretariat. Consultations are required during all the phases of the preparatory period, as well as at the initial stage of actual operation.

With regard to surveying and mapping activities relating to other parts of the secretariat, the Unit has a Map Documentation and Reference Centre with collection of different types of maps published about Africa for consultation by staff members. Other continuous activities include:

(a) Preparation of basic maps, topical maps and charts required by ECA for its publications and research work;

(b) Interpretation of surveying and mapping needs of ECA and advice on specific cartographic problems;

(c) Publication of list of maps received by the Map Documentation and Reference Centre;

(d) Preparation and distribution of list of recent technical publications on surveying and mapping.

CLASSIFICATION OF EXPENDITURE ACCORDING TO OBJECT

	<u>1965</u> CA	<u>1966</u> CA	<u>1967</u> VE	<u>1968</u> DE
Established posts, including common staff costs and home leave travel	76.4	129.7	250.4	
Temporary staff, including consultants and temporary assistance	9.4	13.3	16.8	
Travel of staff on official business	11.8	13.5	12.4	
Total extra costs of conducting conferences		11.6 ^{a/}	31.0 ^{a/}	
Conference services	41.4	33.9 ^{a/}	39.7 ^{a/}	
Printing	-	-	2.4	
TOTAL	<u>138.9</u>	<u>202.0</u>	<u>358.7</u>	

^{a/} Including costs incurred in connexion with the Regional Cartographic Conference.

STAFFING PROVISIONS

	Established posts						G.S.
	D-1	P-5	P-4	P-3	P-2/1	Total	
Division of Natural Resources and Transport ^{a/}							
1967 E	1	2	5	1	1	10	9
1966 a		1	3		1	5	8
1965 a		1	1	-	1	3	4

^{a/} Excluding Transport Section.

As part of the United Nations Development Programme, there were five regional advisers and one consultant serving in 1966. Provision is made for one additional adviser in 1967.

LIST OF PROJECTS

Energy Unit

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>
Document on situation trends and prospects of electric power supply in Africa (E/CN.14/EP3/Rev.1)	E/4004,p.100
Paper on energy development in the countries of the East African subregion (E/CN.14/INR 104)	E/4004,p.100
Paper on "Le Développement de l'énergie dans les pays de la sous-région d'Afrique de l'Ouest" (E/CN.14/INR 106)	

B. Projects discontinued, dropped or postponed

None.

C Continuing projects and new projects to be started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Date of Completion	
				1967				1968					
				P and above	GS	C	IRA	P and above	GS	C	IRA		
2 a	A*	Compilation and publication of data on all forms of energy	E/CN.11/340/Rev.1/Corr.1, p.3				5.5					7	
2 b	A*	Promotion of subregional and regional development of all forms of energy	Idem			13	11.5			10	11.5		
3	B	Non-conventional sources of energy	Idem, p.4							4	2.5		Deferred from 1967
4	A	Survey of manpower in the field of energy	Idem, p.5			7	3.5						
5	B	Seminar on recent developments in electric power production, including the small-scale power supply	Idem, p.5							2	2.5		Deferred from 1967
6	B	Seminar on rural electrification	Idem							3	2.5		
7	B	Financing of energy projects	Idem, p.6			3	1						
8	A	Organizational and operational efficiency in the electric power industry	Idem, p.6							2	2.5		
9	B	Standardization in the electric energy field	Idem, p.7			3	2.5			-	-		
10	B	Safety rules in the electric power industry	Idem, p.7							2	2.5		
Total						22	26			23	31		

Type: A - Continuing projects; B - New projects; * - Major projects; NA - Not applicable.

/ E/CN.11/340/Rev.1/Corr.1.

/ General Service man-months not shown for individual projects.

Description of major projects

2(a) Compilation and publication of data on all forms of energy

Detailed reports on energy development in the East and West African subregions have already been prepared for the Lusaka and Niamey meetings. Similar reports will be elaborated for Central and North Africa. A special study will deal with the possibilities of high voltage interconnexion between the countries of the North African subregion. Starting with 1967, short statistical reports on energy development in all of Africa will be issued each year for the preceding year.

2(b) Promotion of subregional and regional development of all forms of energy

It is intended to convene meetings on a subregional or multinational basis to explore ways and means of co-operation in the development and utilization of energy resources. Preparatory work will be done towards the convening of the Second African Energy Meeting in 1968, where energy problems of general interest for the region will be discussed. Subject to the availability of funds, special feasibility studies will be made on some important energy problems, e.g. methane gas of Lake Kivu large-scale exploitation; Madagascar's hydropower potential evaluation in the context of a global planning development; and geothermal energy exploitation in various East African countries.

3. Non-conventional sources of energy

The secretariat will continue to follow technological and economic developments in the area of such non-conventional forms of energy as atomic power, MHD (magneto-hydro-dynamic), solar and geothermal energy. It is understood that a major solar energy centre will be established in Niamey, under the aegis of the United Nations in 1967. It should be noted that the development of non-conventional uses of energy is closely affected by the availability of cheap conventional power in neighbouring countries, and on the technology and economics of long-distance transmission of electricity. Special attention will be given to the energy needs and problems of sub-Saharan areas.

4. Survey of manpower in the field of energy

This involves a survey of manpower requirements and availability at the high and intermediate levels in the field of energy development in African countries and of the existing training facilities. This project will be undertaken in collaboration with other appropriate United Nations and bilateral

agencies. It is proposed to study the needs and possibilities of establishing an institute of fuel science and technology. Aid for the setting up of the institute will be sought under the proposed United Nations programme for the application of science and technology to development.

9. Standardization in the electric energy field

The standardization study would include country surveys of the existing standards; the specific component variations which hinder the development of electrical interconnexions between the countries and of economic production of electrical equipment for regional use; and proposals and recommendations for solving these problems.

Water Resources Unit

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>
Report on proposed water resources development institute for the East African subregion	E/4004, pp.99-100
Report on deficiencies in hydrologic data in Africa	idem

B. Projects discontinued, dropped or postponed

None.

C. Continuing projects and new projects to be started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Date of Completion	
				1967				1968					
				P and above	GS ^b	C	IRA	P and above	GS ^b	C	IRA		
11	A*	Establishment and expansion of hydrological network	E/CN.14/360/Rev.1/Corr.1, p.8	4.0		3			10		6		Continuing
12	A*	Survey of available water resources and needs	Idem, p.8						4.5		4	3.5	Continuing (deferred from 1967)
13	A	International river basin development	Idem, p.9					5				6	Continuing
14	A	Survey of manpower in the field of water resources	Idem	2.5		2	1		4.5		2	4.5	Continuing
15	A	Fellowships and study tours	Idem, p.10	1			2	2				2.5	Continuing
16	A	Establishment of a water resources development	Idem	2.5				1	2			1	Continuing
17	B	Research in zones	Idem, p.11					1				1	
18	B	Seminar on hydrometeorological instruments, methods of observation	Idem	2		2.5							Consultants from STAO allocation
19	A*	Training centre on small-scale water storage	Idem, p.12						3		4		Consultants from STAO allocation
20	B	ECA/WHO conference on parasitic diseases	Idem			4	1						
21	MA	Working party on water resource planning	Idem						2.5		4	1	
	A	Natural Resources Newsletter (publication)							2				Continuing
		Technical papers for meeting of other United Nations agencies							2.5			3.5	Continuing
		Support of United Nations field operations						1				6	Continuing
Total				12	12	11.5	12	12	12	8	20	29	

Type: A - Continuing projects; B - New projects; * - Major projects; MA - Not applicable.

^a E/CN.14/360/Rev.1/Corr.1.

^b General Service man-months requirements not shown for individual projects.

Description of major projects

11. Establishment and expansion of hydrological network

Within the framework of the international hydrological decade and as a follow-up to the ECA/WHO study of deficiencies in hydrological data in Africa, it is hoped to arrange for joint teams of experts to visit interested countries to study the situation and advise on the establishment, expansion or improvement of their observational network.

12. Survey of water resources and water needs

As a part of the five-year plan for the development of natural resources, surveys of available water resources and water needs will be undertaken in co-operation with the Resources and Transport Division at Headquarters. The survey will concentrate on potentially water-short areas and will collect and analyse data on present needs and future growth requirements over the next twenty years.

13. International river basin development

The project covers provision of assistance to member Governments, upon request, in securing bilateral and multilateral aid in the conduct of surveys and studies of international and other river basins. Promotion of international co-operation in the development and uses of water resources of river basins in the region is an important element in this activity.

14. Survey of manpower in the field of water resources

A survey of the requirements and availability of various categories of personnel and of training facilities in the region is to be undertaken, with a view to developing institutional facilities and training programmes to meet the manpower requirements to carry out water development projects. It is hoped, in particular, to assess needs and institutional facilities for hydrology, hydraulic engineering, water resources economic and management, irrigation and drainage and water pollution problems.

It is intended to seek assistance, under the proposed United Nations programme for the application of science and technology to development, for projects to institute or improve facilities for manpower development in this field.

15. Fellowships and study tours

Arrangements are being made for a group of government officials from the West African subregion, in particular those who are in charge of the

development of the Senegal River Basin, Niger River Basin and Lake Chad Basin to visit, during 1967, countries which have been confronted with similar problems in water resources development and to compare experiences and achievements. Arrangements are being made for similar personnel from the East African subregion to go on a study tour during 1968.

16. Establishment of a water resources development institute in East Africa

A joint ECA/Hungarian mission visited the countries of the East African subregion, undertook a comprehensive survey of the problems and needs of this subregion in regard to water resources development and made recommendations for the establishment of a water resources development institute.

Further steps will be taken in consultation with UNESCO (which is sponsoring a natural resources institute for Kenya, Uganda and the United Republic of Tanzania) towards the implementation of the recommendations of the Hungarian mission.

19. Training centre on small-scale water storage

A training course on the design and construction of small-scale water storage works for the English-speaking and French-speaking countries of the West African subregion is scheduled for 1968, subject to the availability of resources and the successful co-ordination of arrangements for its implementation with WHO and FAO.

21. Working party on water resources planning

The purpose of the seminar is to examine the most up-to-date techniques of water resources development planning, with particular reference to African conditions, and to survey existing national machinery and personnel for such planning.

Mineral Resources Unit

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>	<u>Remarks</u>
Training in geology and mining	E/4004,p.102	A preliminary review has been made and a questionnaire has been circulated to African countries
Research and assistance	E/4004,p.103	A review of the mineral resources of the East and West African sub-regions was completed. Also a short review of the mineral resources of Africa A Coal Map for Africa and accompanying explanatory notes were published.

B. Projects discontinued, dropped or postponed

Study of present state of mining legislation	E/4004,p.103
Setting up a regional centre for rock-age determination	idem
African Mining Congress	idem

C. Continuing projects and new projects to be started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Date of Completion	
				1967				1968					
				P and above	GS	C	IRA	P and above	GS	C	IRA		
29	A*	Collection and dissemination of information	E/CN.14/360/Rev.1/Corr.1,	7.5		4		13.5		4			
30	A	Research and assistance to Governments	idem, p.9	2			6.5					7	
31	*	Survey of manpower in the field of geology and mining	idem			6	3.5	7		4	4.5		
32	B*	Directory of existing mineral laboratories and the establishment of an African mineral development centre	idem, p.10	2.5		4	2	14		4	2		
33	B	Seminar on new metals and minerals	idem					4.5		10	1	1968	
34	B	Seminar on exploration for petroleum and natural gas in Africa and follow-up action	idem, p.11					3.5		10	1	1968	
35	B	Symposium in mining policy and legislation	idem					2		9	2.5		
TOTAL				12		14	12	44.5		41	18		

Type: A - Continuing projects; B - New projects; * - Major projects; NA - Not applicable.
 a/ E/CN.14/360/Rev.1/Corr.1.
 b/ General Service man-months requirements not shown for individual projects.
 c/ Tentative provision for a Director for the Centre.

Description of major projects

29. Collection and dissemination of information

The project involves the compilation and dissemination of an inventory of mineral resources, the preparation of mineral maps, continuing studies of the economic aspects of mineral exploration and world and regional trade in minerals.

31. Survey of manpower in the field of geology and mineral resources development

A survey of the requirements and availability of various categories of personnel and of training facilities in the region will be undertaken, with a view to developing institutional facilities and training programmes to meet present and expected future manpower needs in the field. The project will be carried out in collaboration with UNESCO and other interested agencies.

32. Establishment of regional mineral development centres

It is proposed to examine the need for one or more major centres devoted to advanced work on geological, geophysical and geochemical surveying on mineral testing and preparation and for providing information and advice. The first stage of the survey will be included in project 31. It is intended to organize more detailed field work to follow this reconnaissance survey, with a view to determining the most advantageous locations for the centres and for designing them. It is also intended to seek assistance from bilateral agencies and, under the proposed United Nations programme for the application of science and technology to development, for the second part of the survey and the establishment of the centres.

33. Seminar on new metals and minerals

It is hoped to convene a seminar of senior personnel engaged in mineral resources development to interest them in the impact of changes in technology in advanced countries on the demand for new rare metals and minerals; the occurrence, redressing, extraction and purification of new rare metals and minerals; recent development in techniques of exploration and evaluation; applications in industry; and problems of extraction and preparation in the light of increasingly refined standards of demand. The assistance of BTAO has been sought.

34. Seminar on exploration for petroleum and natural gas in Africa

It is intended to hold a seminar on the above subject in 1967. The seminar will discuss (a) work already completed or in progress in the field

E/4331/Add.6
E/AC.51/8/Add.6
English
Page 49

ECA
2-062

of exploration for oil and natural gas in Africa; (b) the relation between geology and origin and occurrence of petroleum and natural gas, and (c) recent techniques and methods of exploration for petroleum.

35. Symposium on mining policies and legislation

It is intended to convene in 1968 a symposium of senior personnel and of experts engaged in questions of mining concessions to discuss mining policies and legislation (including economics, conservation, mine safety, mine inspection and reclamation of mined land) in African countries.

Cartographic Unit

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>	<u>Remarks</u>
Documentation and dissemination of information	E/4004,p.109	Preliminary list of technical publications on surveying and mapping was issued; Map Documentation and Reference Centre was established.
Second United Nations Regional Cartographic Conference for Africa	Resolution 1 of the First United Nations Regional Cartographic Conference for Africa (1963). This resolution was endorsed by the Standing Committee on Industry, Natural Resources and Transport of ECA	

B. Projects discontinued, dropped or postponed

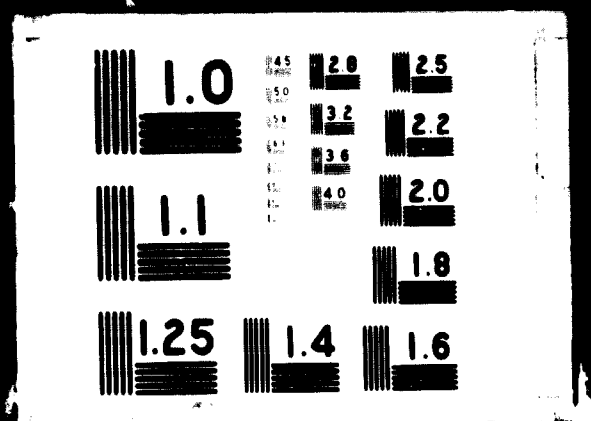
Seminar on cartography for resources development	E/CN.14/360/Rev.1/Corr.1, p.13	
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2 OF 2

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C. Continuing projects and new projects to be started in 1967 and 1968.

Project number	Type	Title	Authority	Man-months required								Date of completion
				1967				1968				
				P and above	OS	C	IRA	P and above	OS	C	IRA	
20	A	Training centre(s) in photogrammetry, photo-interpretation and air-terre geographical surveys	E/CN.14/340/Rev.1/Corr.1, P.13	7						12	2	
21	A	Common centres for specialized services in surveying and mapping	Idem	8			2	7		12	2	
22	B	Comprehensive research centre in aerial surveys	Idem					7		12	2.5	
23(i)	B	Seminar on new developments in surveying and mapping	Idem					2		2	0.5	
23(ii)	B	Seminar on "Cadastral"	Idem					2		2.5	0.5	
23(iii)	B	Seminar on basic cartographic services for resources development	Idem	2.5			2.5					
24	B	Meeting of group of experts on regional mapping	Idem					2.5			0.5	
25	B	Meeting of experts on topical mapping	Idem	2			2.5					
26	A	Collection and dissemination of information	Idem									
(i)		Bulletin								4.5		
(ii)		Catalogue of maps								1		
(iii)		Exhibition								2.5		
	MA	Support for United Nations regional activities						2.5			2.5	
	MA	Attendance at meetings		0.5			2.5	0.5			0.5	
	MA	Writing research papers									2.5	
	MA	Advisory services to African Governments and ECA staff members		3			3.5	4.5			3.5	
Total				26		13	12	41.5		39.5	17	

Type: A - Continuing projects; B - New projects; * - Major projects; MA - Not applicable.

E/ CN.14/340/Rev.1/Corr.1

General service man-months not shown for individual projects.

Tentative provision for a Director of the Centre.

On a bilateral basis.

Description of major projects

22. Training centre(s) in photogrammetry, photo-interpretation and airborne geophysical surveying

A team of experts conducted during 1965 on-the-spot inspection of sites and facilities offered by certain Governments for the establishment of one or more training centres in photogrammetry, photo-interpretation and airborne geophysical surveys. Investigation of further offers of sites is proceeding. Draft agreements and charters for the centres have been completed, together with up-to-date estimates of needs, revised syllabuses of courses etc. It is expected that one centre will be in operation before 1968.

23. Common centres for specialized services in surveying and mapping

Offers from a number of African countries to act as host for a centre for specialized services in surveying and mapping are being investigated, and a model charter for such a centre has been circulated to Governments. It is intended to organize a high-level mission to advise on the suitability of sites, to convene a meeting to finalize arrangements with participating African Governments and to conclude negotiations with potential donors. It is the first centre, with limited services, expected to be in operation in 1968.

24. Comprehensive research centre in aerial surveys

The project involves preparation of a programme, including consultations with Governments, the specialized agencies and international organizations concerned, for the setting up of a comprehensive research centre covering all aspects of aerial surveys in Africa on a regional or subregional basis.

DEVELOPMENT OF NATURAL RESOURCES

ORGANIZATIONAL UNITS RESPONSIBLE

Industries Division: Mineral Resources Development Section, Electric Power Section; Division of Water Resources Development; Office of the Executive Agent for the Mekong Project

		<u>Gross</u>	<u>Net</u>
<u>COSTS</u>	1968 DE		
	1967 VE	562.3	479.9
	1966 CA	487.3	411.2
	1965 CA	413.7	346.9

DEFINITION OF PROGRAMME AND DESCRIPTION OF ACTIVITIES

1. Mineral resources

The Mineral Resources Development Section prepare studies and publishes reports of a regional nature, including regional maps on geology and mineral distribution, studies of particular important minerals in the region and an annual review of mining developments in the region. It studies and organizes programmes relating to regional training and research relating to mineral resources. It assists and advises countries, at their request, in preparing and implementing programmes, feasibility surveys and pre-investment project reports for mineral development projects, and in conducting special studies of mineral exploration and exploitation problems, including beneficiation of ores. In addition, the Section services committees and other meetings dealing specifically with mineral resources development, both on land and offshore.

2. Electric power

The Electric Power Section prepares studies on and publishes reports and manuals relating to the development of electric power in the ECAFE region, including the preparation of a regional energy atlas showing broad particulars of energy resources of electric power development and status of electricity utilization, and the Electric Power Bulletin; and it organizes programmes relating to regional training and research in the field of electric power. It assists and advises countries, at their request, in initiating and guiding energy surveys and in other matters related to the

development of electric power. The Section also services the Sub-Committee on Energy Resources and Electric Power Development, the Asian Electric Power Conference, and other meetings specifically dealing with electric power.

3. Water resources

The work of the Division of Water Resources Development, as outlined by the Regional Conference on Water Resources Development, evolves around four main activities.

Under the first activity are grouped all projects dealing with policy matters, including formulation of long-range national master water plans; studies on basic problems affecting policies in water resources development; collection and dissemination of technical experience and information; rendering of advisory services; and organization of the biennial Regional Conference on Water Resources Development and other meetings of a regional character having a bearing on the broad aspects of policy issues. Several country surveys of water resources development have been published and updated and seven are now in hand. A comparative study on water codes and a comprehensive study dealing with essential aspects of water-law drafting for use in the countries of the region are being prepared and will be the subject of discussion at a working party of experts on water codes to be held in the latter part of 1967.

The regular staff members of the Division render short-term advisory services to countries on specific problems on request. Advisory services for longer periods are rendered by the Division's regional advisors. Requests for short-term advisory services have been received in an increasing number in recent years.

The second main project relates to water resources development of international rivers. Operating through the Division of Engineering Services of the Mekong secretariat, the Division serves as the Mekong Committee's planning arm. During 1967 and 1968, work on this project will continue to be directed towards the amplification of the basin plan due for completion by the end of 1968. A compendium of major international rivers in the ECAFE region covering twelve rivers has been completed. Studies of other international rivers will be undertaken as more data become available.

The third main area of activity relates to flood control methods. A roving seminar on hydraulic structures will visit four countries in 1967 and another four in 1968. In addition to the experts to be provided by the United Nations, it is expected that a number of specialists will be made available by member Governments. An ECAFE/WMO preparatory mission which started its work in December 1966 will cover nine countries affected by typhoons and recommend measures to improve networks of observation, communications and flood-warning systems, and examine the possibility of establishing a regional typhoon

centre for centralized dissemination of information, research and, possibly, experiments in typhoon modification. A comparable project is also in hand to consider practical ways of minimizing the adverse effects of cyclones and propose the most expeditious ways of establishing a regional cyclone centre.

In the fourth major area of activity, the Division organizes in co-operation with the specialized agencies concerned, regional seminars on various subjects of hydrology and meteorology. The Regional Conference on Water Resources Development, at its eighth session in 1966, recommended the convening of the fifth ECAFE/WMO/BTAO seminar on hydrology and the third ECAFE/BTAO/UNESCO seminar on the development of water resources in 1968. On the recommendation of the fourth ECAFF/WMO/BTAO seminar on hydrology held in 1966, preparations are in hand in co-operation with WMO for providing generalized regional rainfall maps and charts for guiding hydrologists in their hydrologic design of water resources development projects and the preparation of appraisal reports.

CLASSIFICATION OF EXPENDITURE ACCORDING TO OBJECT

	<u>1965</u> CA	<u>1966</u> CA	<u>1967</u> VE	<u>1968</u> DE
Established posts, including common staff costs and home leave travel	367.6	426.9	458.0	
Temporary staff, including consultants and temporary assistance	3.2	6.1	6.0	
Travel of staff on official business	13.0	13.5	12.0	
Total extra costs of conducting conferences.	9.5	5.1 ^{a/}	60.5 ^{a/}	
Conference services	11.8	16.6 ^{a/}	14.1 ^{a/}	
Printing	<u>8.6</u>	<u>19.1</u>	<u>11.7</u>	
TOTAL	<u>413.7</u>	<u>487.3</u>	<u>562.3</u>	

^{a/} Including costs incurred in connexion with the Regional Cartographic Conference.

STAFFING PROVISIONS

		Established posts							
		D-2	D-1	P-5	P-4	P-3	P-2/1	Total	G.S.
Industries Division									
Mineral Resources									
Development Section									
	1967 E	-	-	1	1	1	1	4	1
	1966 A	-	-	1	1	1	1	4	2
	1965 A	-	-	-	1	1	1	3	3
Electric Power									
Section									
	1967 E	-	-	1	1	1	-	3	2
	1966 A	-	-	1	-	1	-	2	2
	1965 A	-	-	-	1	1	-	2	2
Division of Water									
Resources Development									
	1967 E	-	1	3	-	4	1	9	6
	1966 A	-	1	1	1	3	1	7	6
	1965 A	-	1	2	-	4	1	8	5
Office of Executive									
Agent, Mekong Project									
	1967 E	1	-	-	1	1	-	3	6
	1966 A	1	-	-	1	-	-	2	4
	1965 A	1	-	-	1	1	-	3	.
Total									
	1967 E	1	1	5	3	7	2	19	15
	1966 A	1	1	3	3	5	2	15	14
	1965 A	1	1	2	3	7	2	16 a/	10

a/ Excluding two short-term appointments (1 P-5 and 1 P-4).

As part of the United Nations Development Programme, the services of ten experts and twenty-four staff in the General Service category were provided in 1965 on the Mekong Project; in 1966 and 1967 the number of project service personnel increases to seventeen and the number of General Service staff financed from project funds increases to thirty-nine. The Mekong Office is further strengthened by five short-term advisers and one short-term interpreter/translator. In addition, there is one regional adviser and one consultant on water resources serving in 1966 and 1967.

LIST OF PROJECTS

Mineral Resources Development Section

C. Continuing projects and new projects to be started in 1967 and 1968.

Project number	Type	Title	Authority	Man-months required								Date of Completion ^{b/}
				1967				1968				
				P and above	GS ^{a/}	C	IRA	P and above	GS ^{a/}	C	IRA	
IC3: 31-51	A	Development of petroleum and natural gas resources of Asia and the Far East	Work programme of Mineral Resources Sub-Committee, Industry and Natural Resources Committee and Commission	4		3		4		9		Continuous
IC5: 31-61	A	Regional mining development review	idem	6		9		6		9		idem
IC5: 31-62	A	Methods of exploration, exploitation and processing of minerals and technical studies on selected minerals	idem	6			24	6			24	idem
IC5: 32-63	A	Mineral raw material resources for the fertilizer industry	idem	5		12		5		12		1968
IC5: 32-64	A	Technical training in the field of mineral resources development	idem	6		6		6		6		Continuous
IC5: 32-65	A	Mining legislation and administration	Mineral Resources Sub-Committee	3		4		3		4		1969
1D4: 31-81	A	Regional geological and mineral development	Senior geologists working party, Industry and Natural Resources Committee and Commission	13		6		13		6		Continuous
1D4: 32-82	A	Off-shore prospecting for mineral resources: committees for co-ordination of joint programmes	Mineral Resources Sub-Committee, senior geologists working party, Industry and Natural Resources Committee and Commission	1			18	1			24	idem
1D4: 32-83	A	Symposium on rock weathering under tropical conditions	Senior geologists working party, Industry and Natural Resources Committee and Commission	1		6		1		6		1969
1D4: 32-84	b	Geological survey, investigation and exploration of geothermal energy resources	Industry and Natural Resources Committee and Commission	1		6		1		6		1969
1D4: 32-85	b	Seminar on geochemical prospecting methods and techniques	Senior geologists working party	1		6		1		6		1969
1D4: 32-86	b	Seminar on engineering, geological and geophysical methods and techniques	idem	1		6		1		6		1969
TOTAL				48	36	64	42	48	36	70	48	

Type: A - Continuing projects b - New projects * - Major projects

a/ General Service man-months not shown for individual projects.

b/ Say, 1967, 1968 or later.

Description of major projects

IC3:31-51. Development of petroleum and natural gas resources of Asia and Far East

The project involves the convening of symposia and seminars on petroleum and natural gas, publication of their proceedings and assistance to Governments in the implementation of their recommendations. These recommendations relate to such aspects as standardization of statistical data; establishment of a regional petroleum institute in Asia; case histories of discoveries of oil and gas fields; collection and dissemination of information on technical aspects of natural gas development; and joint projects and specific projects aimed at advancement of food production. Advisory services are available to Governments on aspects of petroleum and natural gas development of particular interest to them.

IC5:31-61. Regional mining development review

The project involves a periodic review of mining activities in the region, including discoveries of mineral resources, development of new mines, installation and expansion of processing plants and economic aspects of mineral production. Co-ordination of mining development with development in other sectors will also be featured in the reviews.

IC5:31-62. Methods of exploration, exploitation and processing of minerals and technical studies on selected minerals

Assistance is provided to Governments through various means, including organization of groups of experts in specialized fields whose services will be available on request; technical studies on various minerals and mineral-based industries; collection and dissemination of information on improved methods of exploration, exploitation and extraction; and measures for rational utilization and conservation of resources and equipment. Possibilities are being examined for the organization of a study tour for mining geologists and engineers to observe advanced drilling techniques. A symposium on mineral conservation and another on bauxite and aluminium may be convened.

IC5:32-63. Mineral raw-material resources for the fertilization industry

A report covering the whole field of mineral raw materials for the fertilizer industry and a separate study on phosphatic deposits are to be prepared. A seminar on sources of raw materials for fertilizers and on methods used for exploration prospecting, evaluation and development, with particular emphasis on phosphates, is to be organized in co-operation with appropriate international agencies.

IC5:32-64. Technical training in the field of mineral resources development

The current survey of training facilities for in-service, on-the-job training and academic training (in co-operation with UNESCO) is to be continued, and arrangements are to be made (in co-operation with the ILO) for fellowships utilizing training facilities available in the region.

IC5:32-65. Mining legislation and administration

The possibility of organizing a seminar in mining legislation and administrative aspects of improving conditions for the development of mineral resources is to be examined.

ID4:31-81 Regional geological and mineral development

The project involves the preparation, review and revision of regional maps; follow-up action on the recommendations made by the working party of senior geologists; assistance to Governments on the organization of joint geological and related surveys of border areas; studies of the possibilities of expanding national geological surveys for regional use; and feasibility of establishing regional geological centres. The project is being carried out in co-operation with the Commission for the Geological Map of the World and its Sub-Commissions, UNESCO, the United Nations Cartographic Office and expert working bodies of ECAFE. Preparatory work is also being done for the organization of the regional cartographic conference. Subject to availability of resources, an expert working party will be convened in 1967 to consider standards of stratigraphic nomenclature and correlation of sedimentary rocks of late Palaeozoic, Mesozoic and Cenozoic formations in the region.

ID4:32-82. Off-shore prospecting for mineral resources; committee for co-ordination of joint programmes

Assistance is provided under this project in formulating off-shore and geophysical and other survey projects in the marine-shelf areas; establishing and servicing, at the request of interest Governments, committees for co-ordination of joint prospecting programmes; and arranging for the training of personnel for off-shore prospecting for mineral resources.

ID4:32-83. Symposium on rock weathering under tropical conditions

A symposium on rock weathering under tropical conditions, with particular reference to south and south-east Asia, will be convened in co-operation with UNESCO.

ID4:32-84. Geological survey, investigation and exploration of geothermal energy resources

The project covers the collection and dissemination of

information on geothermal resources. An expert group meeting on the geological survey, investigation and exploration of geothermal energy resources is to be considered.

ID4:32-85. Seminar on geochemical prospecting methods and techniques

A seminar on geochemical prospecting methods and techniques applicable in both the dry and humid zones of the ECAFE region is to be organized.

ID4:32-86. Seminar on engineering geological and geophysical methods and techniques

In co-ordination with UNESCO, the secretariat will organize a seminar on engineering geological and geophysical methods and techniques applicable to surface and ground-water development projects, industrial and land communications projects, and mitigation of natural catastrophes in countries of the region.

E/4331/Add.6
E/AC.51/8/Add.6
English
page 60

ECAFE
2.063

Electric Power Section

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>
Manual on a model system of accounting for the electricity supply industry	Sub-Committee on Electric Power, tenth session, 1966; Committee on Industry and Natural Resources, eighteenth session, 1966; Commission, twenty second session, 1966

B. Projects discontinued, dropped or postponed

None.

C. Continuing projects and new projects to be started in 1967 and 1968.

Project number	Type	Title	Authority	Man-months required								Date of Completion ^{b/}	
				1967				1968					
				P and above	GS ^{a/}	C	IRA	P and above	GS ^{a/}	C	IRA		
IC3: 31-41	A	Electric power development and planning	Sub-Committee on Electric Power, Committee on Industry and Natural Resources, and Commission	9				8					Project c(ii), in 1967; the remaining are continuing projects
IC3: 31-42	A	Rural electrification	idem	3				3		6			Continuing project
IC3: 31-43	B	Asian Electric Power Conference	Sub-Committee on Electric Power and Committee on Industry and Natural Resources					2					Preparatory work in 1968 for the conference, tentatively scheduled for 1969
IC3: 32-44	A	Regional research and training centre(s) in the field of electric power and information and documentation services	idem, and Commission	2				1					Continuing project
IC3: 32-45	A	Regional study of energy supply and demand	idem	6			6	6				12	Continuing project
IC3: 32-46	A	Study of the problems of standardization of equipment, methods and practices in the field of electric power	idem	2		6		2		6			1968
IC3: 32-47	B	Power systems	Sub-Committee on Electric Power and Committee on Industry and Natural Resources	2				2					1968
TOTAL				24	36	6	6	24	36	12	12		

Type : A - Continuing projects B - New projects * - Major projects

^{a/} General Service man-months requirements not shown for individual projects.

^{b/} May, 1967, 1968 or later.

Description of major projects

IC3:31-41. Electric power development and planning

The project involves the collection and dissemination of information on electricity and other forms of energy; publication of special articles of regional interest, the annual Electric Power Bulletin and a regional energy atlas; and provision of clearing-house services in regard to matters connected with electricity supply in the region. A manual on a model system of accounting for the electric power industry will be published 1967. It is also planned to hold in the Union of Soviet Socialist Republics a seminar on electric power development in that country and to organize a study tour for experts from the region with BTAO co-operation. A seminar is also to be organized on the latest developments in the electronics industry.

IC3:31-42. Rural electrification

This project involves various studies relating to rural electrification, including examination of the possibilities of obtaining international financial assistance for electrification in non-urban areas and the use of pools of equipment to be lent to small countries on request in special situations.

IC3:32-45. Regional study of energy supply and demand

Under this project, direct assistance is to be given to Governments of the region in initiating and guiding energy surveys. A regional study of energy supply and demand, extending over a period of three years, is to be undertaken in co-operation with BTAO and interested specialized agencies. Work will also be done on the compilation of basic energy statistics, the possibility of developing joint electric power projects and the effect on cost of power production by combination of electric power developments and thermal stations with other applications, such as supply of industrial steam, space heating etc.

IC3:32-46. Study of problems of standardization of equipment, methods and practices in the field of electric power

An expert working group is to be organized to carry out a comprehensive survey of standards governing installations, operating methods and codes of practices etc., with a view to introducing as much uniformity as is feasible.

Division of Water Resources Development

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u> ^{a/}
Hydrologic studies:	Commission, Twenty first session, 1965
(a) Advisory group on the use and interpretation of hydrologic data	
(b) Fourth ECAFE/BTAO/WMO interregional seminar on assessment of the magnitude and frequency of flood flows	Commission, Twenty second session, 1966
(c) Second regional seminar on development of ground-water resources	Commission, Twenty second session, 1966

B. Project discontinued, dropped or postponed

None.

a/ Sixth Regional Conference, 1964.

C. Continuing projects and new projects to be started in 1967 and 1968.

Project number	Type	Title	Authority	Man-months required								Date of Completion ^{b/}		
				1967				1968						
				F and above	GS 2/	C	IRA	F and above	GS 2/	C	IRA			
IA2: 51-01	A	Planning and development of water resources	Seventh Regional Conference on Water Resources Development, 1966; Commission Twenty second session, 1966											Continuing project
		(a) Assistance to Governments		7			12	5						
		(b) Studies		27				19						
		(c) Collection and dissemination of information		12				12						
		(d) Conference, regional meetings, regional seminar and expert groups		8		5		13			3			
ICA: 51-02	A	Water resources development of international rivers	idea											Continuing project
		Assistance to Governments		18				18						
		Studies		2				2						
ICA: 51-03	A	Flood control methods	idea											Continuing project
		Assistance to Governments		2				3						
		Studies		4				2			2			
		Conferences, meetings and seminars		4				4						
ICA: 51-04	C	Hydrologic studies	idea											Continuing project
		Assistance to Governments		4				5						
		Studies		6				5						
		Collection of information		2				3						
		Conference, meetings and seminars						5						
		TOTAL		96	72	5	12	96	72	5				

Type: A - Continuing projects B - New projects * - Major projects

a/ General Service man-months not shown for individual projects.

b/ May, 1967, 1968 or later.

Description of major projects

IA2:51-01. Planning and development of water resources

The project comprises the following:

(a) Advisory services to Governments, provided through a regional adviser, an ECAFE water resources consulting group and services as executing agent for Special Fund projects, such as the Mu River survey, which is expected to be completed in 1969;

(b) Updating country surveys already published by ECAFE, a biennial review of water and related resources in the region; study of subjects to be included in a comprehensive water code; preparation of a manual on costing and water resources projects (jointly with the Central Power Commission, India); and an assessment of manpower and training needs in the field;

(c) Collection and dissemination of information, in particular, publication of the water resources series and the quarterly Water Resources Journal;

(d) Preparatory work for and the servicing of various meetings, i.e. the eighth session of the Regional Conference on Water Resources Development (1968), the expert group on water resources planning (1967-1968), the expert working group on water codes (1967) and the Asian symposium on the role of water in economic and social development (1967-1968).

IC4:51-02. Water resources development of international rivers

The project covers servicing, assisting and advising the Mekong Development Committee, and assistance to the office of the executive agent, BTAO and UNDP; assistance is given to riparian Governments, on request, in the investigation and development of international rivers in the ECAFE region. Detailed studies of selected international rivers, as an extension of the study of a compendium of major international rivers in the ECAFE region completed in 1965, are being made for submission to the countries concerned.

IC4:51-03. Flood control methods

A preparatory mission is to visit countries in the region affected by typhoons, with a view to determining possible improvements in the existing systems and measures for minimizing typhoon damage; draw up a programme of action; and propose the most expeditious way of establishing a regional typhoon centre. Comprehensive investigation of typhoon damage

E/4331/Add.6
E/AC.51/8/Add.6
English
Page 66

ECAFE
2.063

control, including statistical analysis of damage, forecast and warning systems, typhoon protection measures, both planned and taken in advance, and emergency measures will be conducted, and preparatory work will be done for the working group on typhoons to be held in 1967-1968.

IO4:51-04. Hydrologic studies

The project involves the organization of a ground-water development training centre for engineers and technicians in the region and assistance to Governments in all phases of work concerned with the UNESCO International Hydrological Decade Programme. Work will be continued on research and experimentation on typhoons (jointly with WMO), studies and analysis of maximum floods in the ECAFE region; preparation of a rainfall frequency atlas and a compendium of rainfall volume of major flood-producing storms in the ECAFE region; review, promotion and co-ordination of hydraulic research programmes of experimental stations in the region; and dissemination of hydrologic and hydraulic information and compilation of representative hydrologic data of major river basins.

Preparatory work is in hand for the fifth ECAFE/WMO/BTAO inter-regional seminar on droughts (1968), the third ECAFE/BTAO/UNESCO regional seminar on development of ground-water resources (1968) and working group of experts on applied hydraulic research and experimentation.

PROGRAMME 2.064 - ECONOMIC
COMMISSION FOR EUROPE

DEVELOPMENT OF NATURAL RESOURCES

ORGANIZATIONAL UNIT RESPONSIBLE Energy Division : Electric Power Section,
Gas Section, Coal Section

		<u>Gross</u>	<u>Net</u>
<u>COSTS</u>	1968 DE		
	1967 VE	722.0	611.5
	1966 CA	686.1	578.2
	1965 CA	586.5	499.0

DEFINITION OF PROGRAMME

The activities of the Energy Division cover four different fields, namely, energy in general, electric power, coal and gas.

In the field of energy in general, the Division has carried out decisions of the Economic Commission for Europe; its programme of work in the other three fields is the concern of the respective committees (the Electric Power Committee, the Committee on Gas and the Coal Committee), assisted by twenty-two groups of experts.

The main objectives are as follows:

(a) To publish an annual economic survey of the current and prospective situation in each sector, to be supplemented whenever warranted by publication of statistical bulletins and other specific studies;

(b) To promote an exchange of information among member countries;

(c) To initiate action at the request of member countries in order to deal with problems of common interest;

(d) To service meetings. It should be emphasized that while the resources of the whole Division are used in servicing the meetings, e.g. providing documentation, a number of studies - mainly in the field of rural electrification and thermal power stations - are undertaken by governmental rapporteurs. The same applies to the documentation submitted to symposia.

DESCRIPTION OF ACTIVITIES

1. Electric Power

The main functions of the Electric Power Committee are to provide a forum for discussion and exchange of information on all aspects concerning energy and electric power; and to undertake studies and formulate recommendations relating to the efficient utilization of available resources as well as the best means of achieving a co-ordinated development of electric power in Europe, on condition that no measure which affects a given country should be adopted without the consent of its Government. These functions are carried out by means of continuing analysis of the economic situation, exchange of information and promotion of international co-operation.

The analysis of the economic situation in the field of electric power forms the first part of the work programme of the Committee. It consists in the publication of statistical bulletins, and annual and triennial surveys of the electric power situation and the state of rural electrification. Under this item are also included special studies on development undertaken by the Committee. Many standing and ad hoc expert groups conduct studies of the legal, geographical, economic and technical aspects of the economics of electric energy. This activity leads to important exchanges of information between experts of different countries on the general situation in their respective countries, methods of production, transmission and distribution of electric power, and on technical "know-how". This information is incorporated in the reports published by the Committee. With regard to the promotional activities, studies are undertaken with a view to exploring the possibilities for international co-operation in the implementation of projects of common interest, such as the development of transfers of electric power across frontiers.

2. Gas

The Gas Section services meetings of the Committee on Gas and of its standing subsidiary bodies, as well as meetings of a number of groups of experts or symposia, which will be called upon in 1967 and 1968 to deal in an ad hoc manner with certain of the problems appearing under the long-term programme of work of the Committee (GAS: working paper No. 182). It assists in implementing the programme of work of the Committee and of its subsidiary bodies, as well as the relevant decisions of the Economic Commission for Europe. The Section undertakes the study of certain aspects of general energy problems and fulfilment of other tasks, such as the study of the gas aspects of studies undertaken jointly by the committees served by the Division, such as the utilization of gas in thermal power stations; consultation, advice or collaboration in relation to the gas aspects of studies carried out in the general energy field;

and, when required consultation and advice on matters related to fuel gas economy, given to other United Nations bodies or international organizations.

On account of the dynamism shown by the European gas industry, the number and diversity of the problems to be worked on are such that a priority has to be given to the questions which are retained for study, and the Committee on Gas has to formulate its programme of work in as comprehensive terms as possible.

In 1967 and 1968, the following major topics will be covered:

(a) Gas - and more specially natural gas - availability and disposal; survey of the recent evolution of the gas situation in Europe and prospects; periodic assessment of gas resources;

(b) Utilization of gas in a number of consuming sectors retained for detailed analysis;

(c) Transportation and distribution of gas (including massive storage of gas);

(d) Technical co-operation and development of all-European contacts;

(e) Selection, definition and compilation of gas statistics

3. Coal

The Coal Section services meetings of the Coal Committee, its subsidiary bodies and symposia and set up to deal with special problems included in the long-term programme of work of the Committee (E/ECE/COAL/17), Annex II). It assists in the implementation of the programme of work of the Coal Committee and of its subsidiary bodies, as well as of the relevant decisions of the Economic Commission for Europe. In addition, the Section carries out certain special studies. In pursuance of the investigation of harmonization in the general energy field, a major project to be undertaken concerns the possibility of reducing the cost of production of electrical power, if coal mines, means of transport and the thermal power plant form an economic unit. In addition, the Secretariat will fulfil various other tasks arising out of its co-operation with the other parts of the United Nations Secretariat and other international organizations concerned.

In 1967 and 1968, the programme of work will cover the following main fields:

(a) Coal production, problems and consumption trends in Europe including over-all examination of the coal situation, and short-term and long-term problems of coal production in its economic, technical and scientific aspects;

(b) Coal trade, including studies by sector of consumption, distribution and transport of coal;

(c) Consideration of all aspects of the most important problems relating to the efficient utilization of solid fuels;

(d) Coal problems related to other economic problems, with particular reference to the utilization of other sources of energy;

(e) Technical co-operation and development of all European contacts;

(f) Compilation of coal statistics.

CLASSIFICATION OF EXPENDITURE ACCORDING TO OBJECT

	<u>1965</u> CA	<u>1966</u> CA	<u>1967</u> VE	<u>1968</u> DE
Established posts, including common staff posts and home leave travel	308.7	330.5	354.7	
Temporary staff, including consultants and temporary assistance	3.0	5.0	4.0	
Travel of staff on official business	2.7	3.3	4.6	
Conference services	272.1	343.2	338.2	
Printing	-	4.0	20.4	
Other	-	2.1	0.1	
	<u>586.5</u>	<u>686.1</u>	<u>722.0</u>	
TOTAL	<u>586.5</u>	<u>686.1</u>	<u>722.0</u>	

STAFFING PROVISIONS

		Established posts						
		D-1	P-5	P-4	P-3	P-2/1	Total	G.S.
Energy Division								
Office of the Chief								
	1967 E	1	-	-	-	-	1	3
	1966 A	1	-	-	-	1	2	3
	1965 A	1	-	-	-	-	1	3
Electric Power Section								
	1967 E	-	1	1	2	-	4	3
	1966 A	-	1	1	2	1	4	4
	1965 A	-	1	1	2	1	4	4
Coal Section								
	1967 E	-	1	1	1	1	4	2
	1966 A	-	1	1	1	1	4	4
	1965 A	-	1	1	1	1	4	3
Gas Section								
	1967 E	-	1	-	2	-	3	2
	1966 A	-	1	-	2	-	3	3
	1965 A	-	1	-	2	-	3	3
Statistical Unit								
	1967 E	-	-	-	1	-	1	4
	1966 A	-	-	-	.	-	.	.
	1965 A	-	-	-	.	-	.	.
TOTAL								
	1967 E	1	3	2	6	1	13	14
	1966 A	1	3	2	5	2	13	14
	1965 A	1	3	2	5	1	12	13

LIST OF PROJECTS

Electric Power Section

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>
Survey of the recent energy situation in Europe (1963) (ST/ECE/ENERGY/5)	Programme of work of the Economic Commission for Europe
Study of the comparative economics of transport and storage operations for different forms of energy (ST/ECE/ENERGY/6)	
Survey of the recent energy situation in Europe (1964) (ST/ECE/ENERGY/7)	
Half-yearly <u>Bulletin of Electric Energy Statistics for Europe</u> (vol. XI, Nos. 1 and 2)	Committee on Electric Power
The electric energy situation in Europe in 1964/1965 and its future prospects (ST/ECE/EP/36)	
Half-yearly <u>Bulletin on the Conditions of Hydraulicity in Europe</u> (vol. II, No.2)	
Half-yearly <u>Bulletin on the Conditions of Hydraulicity in Europe</u> (vol. VIII, No. 1)	
Symposium on problems of optimum economic exploitation of energy supply for heating and air conditioning of large housing developments, Prague, September 1966	Committee on Electric Power, Coal Committee, Committee on Gas and Committee on Housing Building and Planning
Comparative study of supply contracts (ST/ECE/EP/37)	Committee on Electric Power
Principles for assessing compensation payable for the burning of agricultural land by electric power transmission and distribution (ST/ECE/EP/38)	

<u>Title</u>	<u>Authority</u>
The state of rural electrification in Europe in 1964 (ST/ECE/EP/35)	Committee on Electric Power
Rural electrification; transport capacity of rural networks; transport and communication means used for repair of overhead lines; standardization of voltages; typical electric equipment for pilot farms; use of electric lines in horticulture; technical and economical characteristics of electric appliances in family farms (E/ECE/260-E/ECE/EP/178, vol. VIII)	
Problems in the design and operation of thermal power stations (ST/ECE/EP/23)	Committee on Electric Power
Experience acquired in the operation of thermal power stations consisting of blocks with a rated capacity of over 100 MW. (vol. IV)	
Economy of heat exchanges at the end of the boiler cycle (vol. V)	
Economic selection of investment in the electric power industry (ST/ECE/EP/34)	Committee on Electric Power

B. Projects discontinued, dropped or postponed in 1966

Organization of a second symposium on rationalization of electric power consumption	Committee on Electric Power
Study of the use of the computer techniques to solve problems involved in the development and operation of electric power networks	Committee on Electric Power

E/4331/Add.6
E/AC.51/8/Add.6
English
Page 74

ECE
2.064

Title

Authority

Evaluation of the economic efficiency
resulting from the introduction of
automation in electric power plants

Committee on Electric Power

Investment selection in the field of
electric power

Committee on Electric Power

C. Continuing projects and new projects to be started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Completion date
				1967				1968				
				P and above	GS 2/	C	IRA	P and above	GS 2/	C	IRA	
01.2.2	A	Energy problems in Europe	Economic Commission for Europe, twenty-first session	10							12	
04.1.1	A*	Analysis of the electric power situation in Europe	Programme of work of the Committee on electric power	9				9				
04.1.3	A*	Development of transfers of electric power across frontiers	Idem	10				5				
04.1.6	A	Technical co-operation and development of all European contacts	Idem	2				1				
04.2.1	A	Legal questions	Idem	3				3				
04.2.2	A*	Hydroelectric resources in Europe and their utilisation	Idem	6				6				
04.2.3	A*	Rural electrification	Idem	9				9				
04.2.4	A	Statistical questions	Idem	3				3				
04.2.5	A*	Problems of the design and operation of thermal power stations	Idem	6				6				
04.3.8	B	Safety regulations for high voltage overhead lines	Idem	1				1				1967
04.3.9	B	Electricity tariff structure in Europe	Idem	1				-				1967
Total				60	72			51	51	12		

Type: A - Continuing projects; B - New projects; * - Major projects; NA - Not applicable

a/ General service man-months not shown for individual projects.

Description of major projects

01.2.2 Energy problems in Europe

The project covers the annual survey of the recent energy situation in Europe, showing the evolution of the structure of the energy economy and the mutual dependency of development of commercial energy sources; and a study of the degree of accuracy achieved in projecting requirements for the various forms of energy and methods used for systematical assessing, the influence of the energy market and energy policy aimed at determining causes of errors in estimates and finding means for avoiding such errors in the future.

04.1.1 Analysis of the electric power situation in Europe

The project involves a regular consideration of the electric power situation and its prospects, and periodic examination of the various factors likely to affect it, including development of nuclear energy and other sources of energy.

04.1.3 Development of transfers of electric power across frontiers

This involves economic analysis of the possibilities of transfer of electric power between European countries, and consideration of technical, economical and political problems that might hamper development in this field of all studies under this project.

04.1.6 Technical co-operation and development of all-European contacts

The project covers organization of study tours and symposia, exchange of information etc.

04.2.1 Legal questions

Legal questions connected with production, transmission and distribution of, and international trade in, electric power will be studied under this project. (see also 04.1.5(a)).

04.2.2 Hydroelectric resources in Europe and their utilization

The project involves an assessment of exploitable hydroelectric resources in Europe. Problems arising out of the effective use of such resources, multipurpose schemes and technical development in electric power production are to be studied. (see also 04.1.4 and 04.1.5(b)).

04.2.3 Rural electrification

The project comprises a study of problems connected with the production, transmission, distribution and utilization of electric power in rural areas, and related economic, administrative and financial questions and an annual economic study on the state of rural electrification in Europe. (see also 04.1.5 (c)).

04.2.4 Statistical questions

This project covers a study of problems arising in the Committee's statistical work. (see also 04.1.5(d)).

04.2.5 Problems of the design and operation of thermal power stations

Technical and economic problems in the design and operation of thermal power stations will be studied under this project. (see also 04.1.5(e)).

04.3.8 Safety regulations for high-voltage overhead lines

The project covers a comparative study of regulations concerning the construction of overhead lines.

04.3.9 Electricity tariff structure in Europe

This study is aimed at analysis and synthesis of information contained in document ST/ECE/EP/27.

E/4331/Add.6
E/AC.51/8/Add.6
English
page 78

ECE
2.064

Gas Section

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>	<u>Remarks</u>
<u>Annual Bulletin of Gas Statistics for Europe</u> (vol. XI, 1965)	Programme of work of the Committee on Gas for 1966-1967 (E/ECE/GAS/37, annex II, p. 1); approved by ECE at its twenty-first session (E/4177-E/ECE/622, p. 80)	
<u>Supplementary Bulletin of Gas Statistics for Europe, 1960-1965</u> (vol. II, 1966)	Decision by the <u>ad hoc</u> group of experts on gas statistics at its fifth session, approved with the report on that session by the Committee on Gas (E/ECE/GAS/37, para. 78)	
The gas situation in Europe in 1963/1964 and its prospects	Decision by the Committee on Gas at its twelfth session (E/ECE/GAS/37, para. 88); endorsed by ECE at its twenty-first session (E/4177 - E/ECE/622, p. 12, para 84)	ST/ECE/GAS/16
The use of gas in the glass industry	Programme of work of the Committee on Gas for 1966/1967 (E/ECE/GA/37, annex II, p. 2); approved by ECE at its twenty-first session (E/4177 - E/ECE/622, p.8)	Study to be issued in 1967
The use of gas in the iron and steel industry	Idem (p. 81)	Idem
Symposium on the technical and economic effectiveness of the use of gas in the main branches of industry (Moscow, 20-29 June 1966)	Idem (annex II, p.1 - E/4177-E/ECE/622, p. 80)	ST/ECE/GAS/17 and Add. 1

ECE
2.C64

E/4331/Add.6
E/AC.51/8/Add.6
English
Page 79

<u>Title</u>	<u>Authority</u>	<u>Remarks</u>
Methods of forecasting gas demand, and their application to the industrial sector (basis for an appraisal of the present situation)	Idem (annex II, p. 3 - E/4177-E/ECE/622, p. 81)	ST/ECE/GAS/14

B. Projects discontinued, dropped or postponed in 1966

None.

C. Continuing projects and new projects to be started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Completion date
				1967				1968				
				F and above	CS 2/	C	IRA	F and above	CS 2/	C	IRA	
06.1.1	A*	Analysis of the situation and prospects of the gas industry in Europe	Programme of work of the Committee on Gas for 1967/1968 (to be considered at forthcoming thirteenth plenary session)	7		1		7		1		
06.2.1	A	Preferential uses of gas in the sectors selected for detailed analysis	Idem	7				10				
06.1.2	A	Technical co-operation and development of all European contacts	Idem									
06.2.2	A	Use of liquid and gaseous petroleum products for the manufacture of gas	Idem	3				3				
06.2.3	A	Evaluation of natural gas reserves	Idem	6				6				
06.2.4	A*	Legal status of international gas pipelines	Idem	5				6				
06.2.5	A	Forecasting gas demand	Idem	4				4				
06.2.6	A	Economics of the transport of gas in all its forms	Idem	7				14				
06.1.2	NA	Technical co-operation and development of all European contacts	Idem	2				2				
06.3.1	A*	Productivity in the gas industry	Idem	2				2				
06.3.2	A	Billing problems	Idem	2				2				
06.1.2	B	Economic problems related to the distribution of gas	Idem	2				2				
		Total		43	54	1		55	48	1		

Key: A - Continuing projects; B - New projects; * - Major projects; NA - Not applicable
 by General service man-months not shown for individual projects.

Description of major projects

06.1.1 Analysis of the situation and prospects of the gas industry in Europe

This project involves the publication of an annual Bulletin of Gas Statistics relating to countries participating in the Committee's work. (see also 06.1.3); consideration of the gas situation in the gas industry during the previous year and of its prospects; and periodic examination of the trends of various factors likely to affect the gas situation in Europe, including development of other sources of energy.

06.2.1 Preferential uses of gas in the sectors selected for detailed analysis

This project deals with an analysis of the preferential uses of gas in the sectors selected: heating and air conditioning of dwellings, the chemical industry and the electric power stations. (see also 06.1.3).

06.1.2 Technical co-operation and development of all European contacts

Symposium on the use of gas in the chemical industry (Romania)

06.2.2 Use of liquid and gaseous petroleum products for the manufacture of gas

This study covers the use of liquid and gaseous petroleum products for the manufacture of gas, and use of oil products by the gas industry for the manufacture of town gas, gas interchangeable with natural gas and the recently developed relevant processes.

06.2.3 Evaluation of natural gas reserves

This project covers methodology for estimating natural gas reserves; preparation of the maps of hydrocarbon deposits (especially gas) in Europe, and economic optimization of the operation of a cluster of natural gas fields of differing characteristics.

06.2.4 Legal status of international gas pipelines

The project deals with legal problems likely to arise with the establishment of international gas transport pipelines, and which must be resolved for a smooth development of an international trade in gas in Europe for the benefit of its economy.

06.2.5 Forecasting gas demand

The study of the methodology of forecasting gas demand has in past years been given priority by the Committee on Gas, on account of the new scale of development of the European gas industry following the discovery of important sources of natural gas; this in turn requires a high level of investment, which, to be successful, has to be well directed; hence, the importance of this subject of study.

06.2.6 Economics of the transport of gas in all its forms

The study of the economics of transport of gas in all its forms has been given great importance by the Committee on Gas: on the one hand, the transport of large volumes of gas over long distances and across borders is going to condition the future of the gas economy in Europe; on the other hand the cost of transport of gas in large volumes will in many instances determine the degree of competitiveness of a particular source of natural gas in Europe.

06.1.2 Technical co-operation and development of all European contacts

Symposium on the economy of the transport of gas (Hungary, 1967)

06.3.1 Productivity in the gas industry

The study of labour productivity not only in the gas industry, but also of possible gains in labour productivity in other industries following the introduction or development of use therein of gas, retains the close attention of the Committee on Gas. As the gas industry in Europe already is highly automated in many of its activities, the Committee on Gas is also likely to look into productivity aspects other than those solely related to manpower.

06.3.2 Billing problems

The problems to be studied are those of consumers' meter reading, recording of gas consumption figures, application of appropriate tariffs and money collection by the accounting services of the gas industry.

06.1.2 Economic problems related to the distribution of gas

Next to transport problems, those of distribution are likely to become very acute in the very near future because of the general inadequacy of existing distribution networks vis-à-vis the considerable development expected for gas consumption in Europe. The Committee on Gas will probably have to concern itself first with investment needs and related problems in this field.

Coal Section

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>
<u>Analysis of the situation and prospects of the coal industry in Europe: Fifty-second session of the Coal Committee, 1966; The coal situation in 1964/1965 and its prospects (ST/ECE/COAL/15); Quarterly Bulletin of Coal Statistics for Europe (vol. XV, No. 1); Quarterly Bulletin of Coal Statistics for Europe (vol. XV, No. 2)</u>	E/ECE/COAL/179
<u>Harmonization of work in the energy field: the Coal Committee's contribution to the symposium on problems of the optimum economic exploitation of energy supply for heating and air conditioning of large housing developments, held in Czechoslovakia, 1966</u>	Idem
<u>Activities of the standing subsidiary bodies: Sixty-fifth session of the Coal Trade Sub-Committee, 1966; Sixty-sixth session of the Coal Trade Sub-Committee, 1966; Fourth session of the Sub-Committee on Mining Problems, 1966; Fourth session of the group of experts on productivity, 1966; First session of the group of experts on opencast mining, 1966; Fourth session of the Sub-Committee on Solid Fuel Utilization, 1966; Group of rapporteurs on the utilization of ash, 1966; Third session of the group of experts on coal statistics, 1966</u>	Idem
<u>Technical co-operation and development of all European contacts: Scientific, technical and economic collaboration between countries on questions coming within the terms of reference of the Coal Committee (COAL:working paper No. 149 and addenda), 1966</u>	Idem

<u>Title</u>	<u>Authority</u>
Study tour of the Coal Committee in the United States of America, 1966;	
Study tour in France of the group of rapporteurs on utilization of ash, 1966;	
Symposium on the exploitation of thick seams held in Romania, 1966;	
Symposium on hydraulic transport of coal underground and at the surface, held in Poland, 1966	
<u>Trade problems</u>	
Group of rapporteurs on the consumption of solid fuels in the domestic sector, 1966	Idem
<u>Mining problems</u>	
Concentration indices in the European coal industry, vol. III;	
Modernization and reconstruction of collieries (ST/ECE/COAL/18);	Idem
Remote control and automation of mining operations (ST/ECE/COAL/16).	
<u>Exploitation of coal at great depth</u>	Idem
Instantaneous outbursts of coal and gas (ST/ECE/COAL/17)	
<u>Meeting of directors of national mining research institutes</u>	Idem
Third meeting of directors of national mining research institutes, held in the Union of the Soviet Socialist Republics, 1966	
<u>Coking problems</u>	Idem
Third session of the <u>ad hoc</u> group of experts on coking	

B. Projects discontinued, dropped or postponed in 1966 (Coal)

Preparation of a half-yearly study on the coal market

E/ECE/COAL/181

C. Continuing projects and new projects to be started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Completion date	
				1967				1968					
				F and above	CS 2/	C	IRA	F and above	CS 2/	C	IRA		
03.1.1	A*	Analysis of the situation and prospects of the coal industry in Europe	E/ECE/COAL/181, annex III	6				6					
03.1.2	A*	Harmonisation of work in the energy field	Idea	7				10					
03.2.1	A*	Trade problems	Idea	11				11					
03.2.2	A*	Mining problems	Idea	7				2					
03.2.3	A	Productivity in the coal mining industry	Idea	2				3					
03.2.4	A	Exploitation of coal at great depth	Idea	1				2					
03.2.5	A	Meeting of directors of national research mining institutes	Idea	1				1					
03.2.7	A*	Solid-fuel utilisation	Idea	6				2					
03.2.8	A*	Coking problems	Idea	1				2					
03.2.9	A	Utilization of ash	Idea	1				2					
03.2.10	A*	Statistical problems	Idea	12				12					
Total				55	42			67					

Type: A - Continuing projects; B - New projects; * - Major projects; NA - Not applicable

a/ General service man-months not shown for individual projects.

Description of major projects

03.1.1 Analysis of the situation and prospects of the coal industry in Europe

This project includes the publication of a quarterly and of an annual Bulletin of Coal Statistics relating to the countries participating in the ECE Coal Committee's work; consideration of the situation of the coal industry during the previous year and of its projects; and examination of the trends of solid fuel consumption by sectors and the various factors likely to affect the coal situation in Europe, more especially the development of other forms of energy.

03.1.2 Harmonization of work in the energy field

This project involves periodic examination of the work of the other committees for which the Energy Division acts as secretariat, with a view to avoiding duplication and selection of topics for joint study. As regards the topics for joint study, the following subjects continue to be examined: optimum economic exploitation of power supply for the heating and air conditioning of large housing developments; and optimum economic exploitation of the aggregate formed by a powerful thermal station, the mines which are to supply it with fuel and the means of transport for conveying the fuel to the power station.

03.2.1 Trade problems

The purpose of this project is the study of the main problems facing the solid-fuel industries of the interested countries participating in the work of the ECE and being actually investigated, such as consumption, and a periodic study of the European coal market.

03.2.2 Mining problems

This project studies the economical, technical and scientific aspects of the major problems of the coal mining industries. It promotes directly or indirectly international co-operation and contacts through symposia on selected subjects. In 1967 a symposium will be held in the United Kingdom on the use of computers in the coal mining industry. An analysis of the concentration indices in the European coal mining industries is published each year. In 1967, studies will be completed on hydraulic transport of coal and mechanized mobile supports. Work on open-cast mining problems will be continued.

03.2.3 Productivity in the coal mining industry

This study concerns the problems of improving productivity in the coal industry. In 1967, the following subjects will be examined: methods of working thin and thick seams; measures adopted with a view to improving machine utilization at the face, including the telemonitoring of information; problems of investment relating to production at mechanized faces; and underground transport and optimum organization at mechanized faces.

03.2.4 Exploitation of coal at great depth

Under this project, solution is being sought to problems caused by the increasing depth at which mining operations are conducted, such as the control of gas, dust and heat, methods of combating the various forms of rock pressure, the layout and preparation of coal fields etc. In 1967, economic aspects of ventilation will be examined, and a study tour on this subject will take place in Belgium and the Netherlands.

03.2.5 Meeting of the directors of national research mining institutes

03.2.7 Solid-fuel utilization

This project considers problems relating to the efficient utilization of solid fuels. In 1967, the following subjects will be examined: utilization of solid fuels in the domestic sector, solid smokeless fuels, methods in the quality control of coal and coal preparation.

03.2.8 Coking problems

The project covers the study of technical and economic problems relating to the efficient coking of coal, such as mechanization and automation in coking plants; economic aspects of the coking industry; air pollution by coking plants; chemical products obtained in the coking process; and pollution of water outside coking plants by liquid effluents from such plants.

03.2.9 Utilization of ash

The purpose of this project is to study the problems connected with the utilization of ash from thermal power stations. In 1967, a meeting of experts will take place in the United States of America. It will examine the evolution of production and utilization of ash in a number of countries and will establish a programme of work for future activities.

E/4231/Add.6
E/CN.C.51/8/Add.6
English
page 88

ECE
2.064

3.3.10 Statistical problems

This project relates to an examination of presentation and definition of problems connected with statistical information for the coal mining industries. In 1967, it will cover a special analysis of the use of coal for power generation; methods of estimating consumers' stocks; exchange of information on the control of quality; feasibility of obtaining statistics of coal by quality; consumption of materials and electric power per ton of coal produced; methods of classifying investments; and a comparison of methods of collecting mechanization statistics.

PROGRAMME 2.065 - ECONOMIC COMMISSION
 FOR LATIN AMERICA

DEVELOPMENT OF NATURAL RESOURCES

ORGANIZATIONAL UNIT RESPONSIBLE Natural Resources and Energy Programme

		<u>Gross</u>	<u>Net</u>
<u>COSTS</u>	1968 DE		
	1967 VE	134.9	114.2
	1966 CA	179.0	153.5
	1965 CA	125.2	108.0

DEFINITION OF PROGRAMME AND DESCRIPTION OF ACTIVITIES

The Natural Resources and Energy Programme includes the evaluation of natural resources in the region, together with studies of their rational development and conservation; the survey, in co-operation with the World Meteorological Organization and, since 1965, the World Health Organization, of regional water resources and their uses, present and future; and the study of methods of production and utilization of energy from all sources, and its programming in relation to the needs of economic and social development of Latin American countries, including the evaluation of hydroelectric resources in the region and the collection of information on the economic aspects of atomic energy.

No additional posts are being requested for 1968, since many of the special aspects of the work are more effectively handled by short-term consultants; however, for this purpose, consultant funds are required.

Work in connexion with the development of electric power and other natural resources, will be done in close consultation with the Pre-Investment Fund established recently by the Inter-American Development Bank.

CLASSIFICATION OF EXPENDITURE ACCORDING TO OBJECT

	<u>1965</u> CA	<u>1966</u> CA	<u>1967</u> VE	<u>1968</u> DE
Established posts, including common staff costs and home leave travel	84.4	137.2	108.4	
Temporary staff, including consultants and temporary assistance,	16.5	11.1	--	
Travel of staff on official business	3.4	4.6	4.0	
Conference services.	20.8	26.1	22.5	
Printing	0.1	--	--	
TOTAL	<u>125.2</u>	<u>179.0</u>	<u>134.9</u>	<u>-----</u>

STAFFING PROVISIONS

	Established posts					
	D-1	P-4	P-3	Total	General Service	
					L-6/7	Other
Natural Resources and Energy Programme						
1967 E	1	2	1	4	2	3
1966 A	1	2	1	4	2	3
1965 A	1	-	1	2	2	2

As part of the United Nations Development Programme, three regional advisers were provided in 1966; one expert each was made available by UNCTAD and UN/INR. The first two will continue in 1967 together with two regional advisers, for twelve months each during the two years, and one, on legal aspects of water development, for six months during 1967. In addition, two experts were provided in 1966 and will continue during 1967 as part of the Central American Economic Information Programme.

LIST OF PROJECTS

A. Projects completed in 1966

<u>Title</u>	<u>Authority</u>	<u>Remarks</u>
Electric power	CCE resolution 126	(a) Statistics of electric power in Central America and Panama, 1960 and 1961 (E/CN.12/CCE/SC.5/9); (b) Co-ordinated development of the electric power sector in Central America (E/CN.12/CCE/SC.5/10); (c) Uniform system of accounts for electric power enterprises (E/CN.12/CCE/SC.5/15)
Combined development and interconnexion of electricity systems between countries	Idem	(a) Combined development of the central systems of El Salvador and Honduras (E/CN.12/CCE/SC.5/11/TAO/LAT/40); (b) Combined development of the electricity systems of Chiriquí (Panama) and Golfito (Costa Rica) (E/CN.12/CCE/SC.5/12/TAO/LAT/41); (c) Combined development of the Pacific system of Nicaragua and the central system of Costa Rica (E/CN.12/CCE/SC.5/31/TAO/LAT/49). (d) Development of the central electricity system of Guatemala (E/CN.12/CCE/SC.5/32/TAO/LAT/49)
Water resources in Central America and Panama	Idem	A study was completed in 1966, for the Electric Power Sub-Committee's third session, on a project for establishing a regional network of hydro-metereological and hydrological stations (E/CN.12/CCE/SC.5/14/TAO/LAT/43)

E/4331/Add.6
E/AC.51/8/Add.6
English
Page 92

ECLA
2.065

<u>Title</u>	<u>Authority</u>	<u>Remarks</u>
Water resources survey mission to Argentina	ECLA resolutions 166 (VIII) and 204 (IX)	Final drafting of the report was completed in 1966; it is awaiting comments before final revision.
Water resources survey mission to Peru	Idem	Idem
Water resources survey mission to Uruguay	Idem	Final drafting is being completed.

B. Projects discontinued, dropped or postponed in 1966

Multiple utilization of water resources in Latin America	ECLA resolutions 166 (VIII) and 204 (IX)	No special study will be undertaken in 1967/1968, although this subject is dealt with in all the country water surveys.
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C. Continuing projects and new projects to be started in 1967 and 1968

Project number	Type	Title	Authority	Man-months required								Date of completion
				1967				1968				
				P and above	CS a/	C	IRA	P and above	CS a/	C	IRA	
07-0	A	Energy	ECLA resolutions 164 (VIII) and 165 (VIII)	2				12		6		
07-01	A	Follow-up to the Latin American electric power seminar	Idem	3				4				
07-02	A	Study of petroleum resources and their utilization in Latin America	ECLA resolution 99 (VI)	16		12		7		6		1966
07-1	A	Water resources	ECLA resolutions 166 (VIII) and 204 (IX)	5				6 340 300	6		6 340 300	
07-11	A	Water resources survey mission to Central America (see also project 04-43 below)	Idem and CCE resolution 139	2				16 640 700	2		18 940 900	1968
07-12	B	Water resources survey mission to Paraguay	ECLA resolutions 166 (VIII) and 204 (IX)	3				2 340 200				1967
07-2	A	Other natural resources	ECLA resolution 239 (X)	2					2			
07-21	A	Study of mineral resources and mining	Idem	13					13			
07-22	A	Utilization of international rivers and lakes	ECLA resolution 131 (VII)	2					2			
<u>Projects undertaken by the ECLA Mexico Office</u>												
04-42	A	Energy	ECLA resolutions 164 and 165 (VIII); CCE resolution 139	2				4	1			4
04-421	A	Electric power ^{d/}	Idem					230	6		230	7
04-43	A	Water resources ^{d/} (see also project 07-11 above)	Idem					350	10		400	9
Total				50	42	12	44	49	12	44		

Type: A - Continuing projects; B - New projects; * - Major projects;

- a/ General service man-months not shown for individual projects.
- b/ Number changed.
- c/ To be financed by NCE.
- d/ Title modified.
- e/ To be provided by SIECA and the Governments of Mexico and Venezuela.

Description of major projects

07-0. Energy

Material on the energy sector is prepared each year for the Economic Survey of Latin America, and statistical series for it are maintained on a permanent basis. Assistance has been given in the formation of the newly established Regional Electricity Interconnexion Committee (CIER), with which the Revista Latinoamericana de Electricidad is being merged. Advice and assistance will continue to be rendered to CIER.

Follow-up to the Latin American electric power seminar (07-01) has continued in the form of advice to the authorities in Chile and Peru concerning the organization of two meetings. A Latin American Conference on rural electrification is being organized by the former for April 1967, and the Peruvian authorities are now scheduled to hold their seminar on the planning of electricity systems in November 1967. The secretariat has been active **in preparation for these projects**. Help will also be provided in connexion with another meeting on rural electrification being organized by the Mexican authorities for November 1968.

The study on petroleum resources and their utilization in Latin America (07-02) will be discussed at a meeting of experts in February 1967 and revised in the light of their findings for presentation at the **twelfth** session. It will then be finally revised before publication, scheduled for 1968.

07-1. Water resources

With the completion of the missions to Argentina, Peru and Uruguay, work will continue in 1967 on the final drafts of the respective reports, once the necessary comments have been received from the countries concerned. A water resources mission to Paraguay (07-12) was started in 1966, and drafting of the final report should be completed in 1967. The water resources survey mission to Central America (07-11) has been rescheduled for early 1967 and will be undertaken by the experts attached to the Mexico office, with assistance from the experts and staff in Santiago.

Three papers are being prepared for the Conference on Water for Peace, scheduled to take place in the United States in May 1967: they deal with water potentials in Latin America basic data for meteorology and hydrology in Latin America and ECLA work on water development.

Advice is being given to the Government of Brazil concerning the development of water resources, and the secretariat **is collaborating in a joint mission** requested by the Brazilian Government through WHO to study integral use of water resources in the respective regions and water supply for six major cities in that country. The secretariat will also contribute to a symposium on river basin development organized by Brazilian authorities and WHO for June 1967;

in addition to active participation in discussions and seminars, a paper is being prepared by the secretariat on benefits and costs of different uses of river basins. The secretariat has continued to participate in consultations concerning a proposed meeting of United Nations international experts on water resources in developing countries, now planned tentatively for 1967.

07-2. Other natural resources

Material is prepared on different natural resources for the annual Economic Survey of Latin America. Co-ordination is maintained with the specialized agencies and other organizations concerned with different natural resources; in particular, participation in the work of the FAO Latin American Forestry Commission's Committee on Watershed Management and Flood Control is being continued. Work continued on the study of mineral resources and mining (07-21), both for the Survey and with a view to bringing up-to-date and expanding earlier work on these subjects. The secretariat has continued to co-operate with UNDP and INTAL/IDB in connexion with the project for the development of the River Plate basin (C7-22).

Projects undertaken by the ECLA Mexico Office

04-42. Energy

At its third session (Tegucigalpa, September 1966) the Central American Electric Power Sub-Committee decided to extend its activities to water resources as well as energy. The studies to be prepared for the fourth session (November 1967) will be undertaken with the help of the regional technical assistance advisers, ICAITI, national and regional authorities. This project includes over-all preparations for the Sub-Committee's next session, with continuing studies on energy resources, the administrative organization for the sector in each country, a review of regional policy concerning petroleum refining and nuclear power.

04-421. Electric power

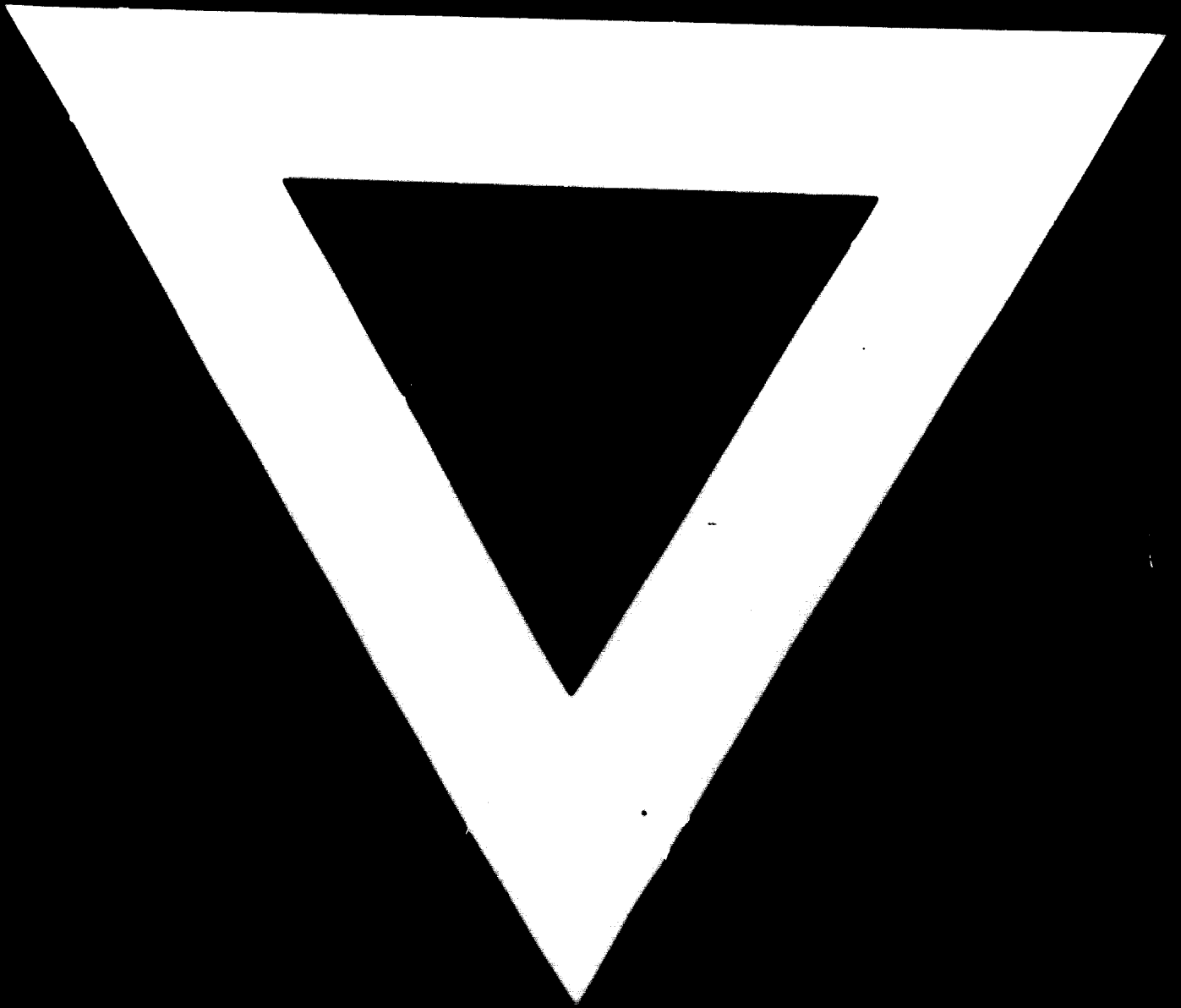
Work will continue on problems of electric power interconnexion between pairs of countries and at frontier areas, as well as on a **general study of electricity interconnexion** between Central America and Panama from 1966 to 1986. Other studies will deal with the standardization of equipment and material for electric power transmission, distribution and utilization. A working group was established by the Sub-Committee to explore and examine these subjects, with three meetings scheduled in both 1967 and 1968. Studies will also be carried out on tariff equalization proposals for adoption by the Sub-Committee after examination by the working group. Finally, the comparative studies on costs and statistics (some of which were completed in 1966) will be continued for 1965, 1966 and 1967.

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ECLA
2.065

4.3. Water resources

A very comprehensive programme has been drawn up in this connexion; it will be supported by the water resources survey mission based at Santiago, by UNESCO, and by the governments of Mexico and Venezuela, as well as by short-term experts obtained by the different countries themselves. National committees have already been established to co-ordinate the work among the participating water organizations, and the Sub-Committee established a regional committee to direct the project, which held its first meeting in December 1966. On that occasion the Sub-Committee approved the project for improving hydrometeorological and hydrological services in Central America, to be started in 1967 with the help of the United Nations Special Fund.



27.3.74