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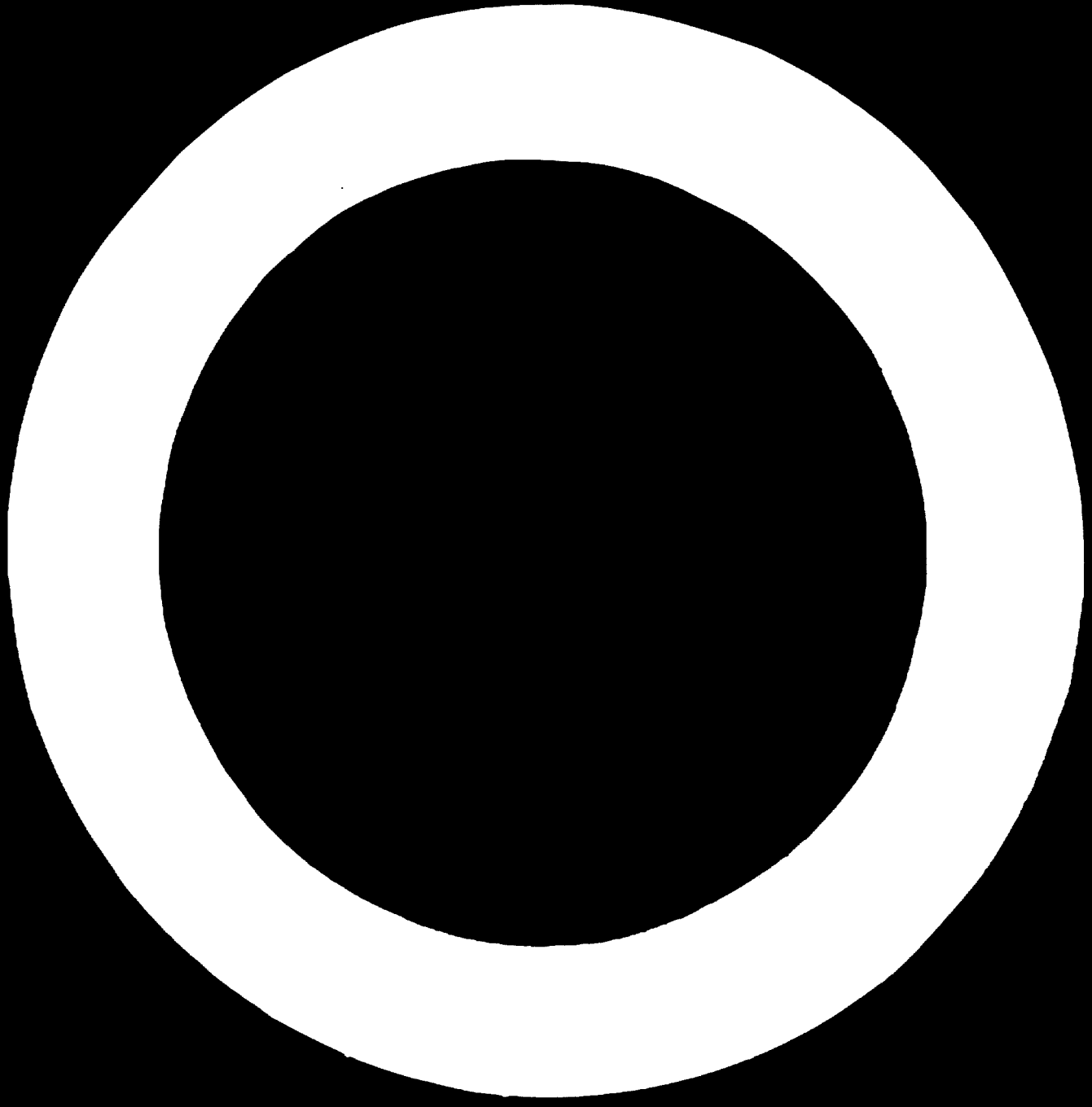
Agenda item 5(a) and (b)

PROGRAMME OF WORK FOR 1971 INCLUDING REPORT OF ACTIVITIES

FOR 1969 AND UPDATING OF 1970 PROGRAMME

PART TWO

Group 3: Construction and Building Materials Industries



NOTE

Documents ID/B/64/Add.1-15 contain a detailed description of the fifteen groups of activities of UNIDO for the years 1969 to 1971. A list of these fifteen groups appears in the preface to document ID/B/64.

The material in each addendum is organized as follows:

Introduction

- A. Operational Activities
- B. Supporting Activities

Section A on Operational Activities lists the field projects by technical assistance programmes (UNDP/SF, UNDP/TA, RP and SIS). Under each programme appears a detailed description of the projects approved as of 30 September 1969 and a forecast of new projects. The list of approved projects is followed by a summary of expenditures. Projects that have been completed in 1969 (barring possible extension) are indicated by an asterisk.

Section B on Supporting Activities is divided into "projects" corresponding to major areas of work, each project being subdivided into "components". Under each component, details of expenditure are given for the following items: staff man/months, meetings and consultants. The priorities A and B, under which components are listed, apply to the programmed activities in 1970 and 1971, priority B indicating that implementation is subject to availability of funds. Unless otherwise indicated, expenditures on supporting activities are financed from the UNIDO Regular Budget. Because of the nature of the item, expenditures on publications are listed separately in this section. Finally, the section contains summary tables of expenditures on supporting activities by sources of funds for 1969, 1970 and 1971.

INTRODUCTION

1. The economic and social significance of the activities of UNIDO in the area of construction and building materials was stressed by the Industrial Development Board at its third session (A/7617, para. 101), and UNIDO was urged to strengthen its efforts in this group. It was pointed out that the area of construction and building materials was particularly important to the industrialization of a developing country as it provided part of the infrastructure on which other industries were based.
2. The recommendations of the Board have been borne out by an increasing number of technical assistance requests received by UNIDO in the general area of construction and building materials industries and by the findings of UNIDO experts who carried out field assignments. The programme of UNIDO for 1971 concentrates its activities in those areas which are most immediately applicable to the needs of developing countries, including assistance to installations already in existence but requiring improvement and assistance in setting up new facilities.
3. From the experience gained from technical assistance projects, the following sectors have been singled out from the many sectors of this industry requiring assistance as deserving particular attention: cement, fibro-cement composites, plastics in building, clay building materials, prefabrication in the building industries and general building materials.
4. In recognition of the fact that cement represents one of the fundamental requirements of a developing country, the programme of work of UNIDO over the last few years has emphasized technical assistance and supporting studies in this field. In 1969, eleven technical assistance projects were active and the subjects covered included preliminary surveys, feasibility studies and improvement of existing plants. The experts' findings disclosed, among other things, the difficulty of justifying for local market requirements a plant sufficiently large to be economically viable. For instance, the findings from one technical assistance project made it clear that a conventional

rotary kiln type cement plant could not be supported by the local market. The importance of adequate maintenance and suitable training of personnel also became apparent. These problems, together with others relevant to the production of cement in a developing country, will be discussed at a seminar planned for 1971. A number of supporting studies and papers will be prepared in 1969 and 1970. Activity in this field is expected to increase in view of the importance of cement to the infrastructure of a developing country.

5. The technical assistance projects undertaken in 1969 have confirmed the importance of fibro-cement composites to developing countries and highlighted the chief problems, namely the shortage and high price of the components in many developing countries. The possibility of overcoming these problems by the use of suitable substitutes was discussed by an expert working group in Vienna in October 1969.

6. The use of plastics in building is a relatively new activity but one in which considerable interest has been shown by a number of developing countries. The knowledge acquired by UNIDO will be discussed with developing countries at an expert group meeting to be sponsored by UNIDO in 1971 and will provide guidelines for future use. Particular attention will be paid to the possibility of adapting plastics to low-cost housing.

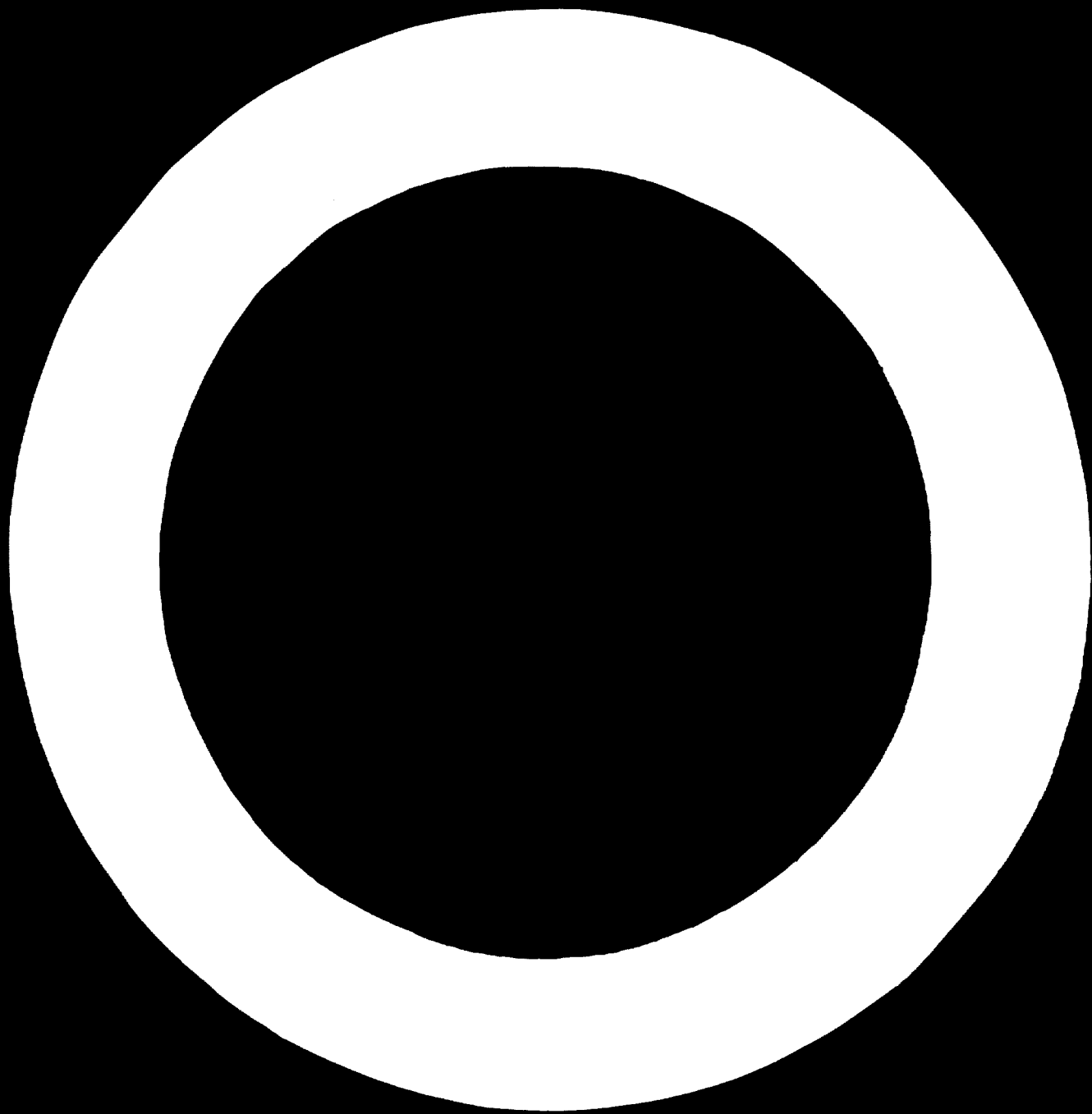
7. Clay building materials have also been the subject of a considerable number of technical assistance projects in 1969. Bricks, tiles, ceramics and similar products are already being produced in many developing countries but there is considerable scope for improvement in the manufacture which is frequently carried out on a handicraft basis. These products provide a useful outlet for local raw materials. The subject of clay building materials was discussed at a seminar held by UNIDO in 1968 in Copenhagen, and the findings have been applied in field work carried out by UNIDO. It is planned, if funds permit, to hold a workshop on clay building materials industries in Africa in 1970 and to follow this up in 1971 with a similar workshop relating to Latin American countries. Technical assistance in this area is expected to increase in 1970 and 1971.

8. As the demand for new buildings increases in developing countries, there is a growing trend towards prefabrication in the building industries. Interest in this subject has been demonstrated in several proposed UNDP/SF projects and

is expected to increase, stimulated by the regional seminars held in previous years and by the one proposed for 1970 in collaboration with ECA.

9. The general field of building materials has been the subject of many technical assistance projects in 1969. Glass, dressed stone, refractory products and building panels have been among the materials considered. In many cases, developing countries are anxious to set up their own manufacturing facilities in view of the heavy transport charges and foreign currency requirements. In order to support these activities, UNIDO proposes to commission a number of studies in this field in 1971.

10. As in the past, UNIDO will continue to co-operate closely with the UN Centre for Housing, Building and Planning (UNCHBP) as well as with the regional economic commissions.



A. OPERATIONAL ACTIVITIES

UNDP/SPECIAL FUND - approved projects

Project
number

THE AMERICAS

Bolivia

BOL-20 Experimental production plant for asbestos processing

Purpose: To assist in establishing a pilot plant for experimental production of asbestos to develop economic processing and sizing techniques for crocidolite ore and to stimulate investment by developing the national and export markets for asbestos and asbestos by-products. Project activities began in May 1968 under a partial allocation from UNDP. The plan of operation was signed in September 1969, and the project manager began his assignment in July 1968.

Approved: January 1968	UNDP: \$527,500
Duration: 2 years	Gov't: \$237,000

Table 1

Estimated expenditures for approved UNDP/SF projects, 1969-1971

(in US dollars)

	1969			1970			1971		
	<u>Experts</u>	<u>Fellows</u>	<u>Other^{a/}</u>	<u>Experts</u>	<u>Fellows</u>	<u>Other^{a/}</u>	<u>Experts</u>	<u>Fellows</u>	<u>Other^{a/}</u>
BOL-20	25,100	-	500	57,600	10,000	268,000	53,400	-	64,600

a/ Including equipment and subcontracting.

UNDP/TECHNICAL ASSISTANCE - approved projects

<u>Project number</u>			<u>1969</u>	<u>1970</u>	<u>1971</u>
			(in US dollars)		
<u>THE AMERICAS</u>					
<u>Argentina</u>					
ARG-68-6	<u>Assistance to the National Institute for Industrial Technology (INTI) - construction technology and methods</u>				
	experts	2/8 m/m	7,700	8,000	-
	fellows	11/60 m/m	7,800	10,200	17,000
<u>ASIA AND THE FAR EAST</u>					
<u>Ceylon</u>					
CEY-68-3	<u>Assistance to the Ceylon Ceramics Corporation - research laboratory (project started in 1968)</u>				
	expert	1/12 m/m	9,625	14,000	-
<u>Mongolia</u>					
MON-68-10	<u>Technological development of glass plant in Nailahi</u>				
	expert	1/6 m/m	1,925	10,000	-
	fellows	3/9 m/m	6,600	-	-
	equipment		3,000	-	-
<u>Pakistan</u>					
PAK-68-9	<u>Assistance to the cement industry* - white and Portland cement production</u>				
	fellows	2/12 m/m	6,800	-	-
<u>Thailand</u>					
THA-68-63	<u>Assistance in ceramics research and training centre* - ceramic whiteware body and glaze</u>				
	expert	1/3 m/m	5,775	-	-

UNDP/TECHNICAL ASSISTANCE - approved projects (cont'd)

<u>Project number</u>			<u>1969</u>	<u>1970</u>	<u>1971</u>
			(in US dollars)		
<u>EUROPE AND THE MIDDLE EAST</u>					
<u>Bulgaria</u>					
BUL-68-14	<u>Modern techniques for the production of glass bottles^a</u>				
	fellow	1/3 m/m	2,200	-	-
<u>Poland</u>					
POL-69-1	<u>Industrial technology^a - construction and building materials production</u>				
	fellows	6/18 m/m	7,200	-	-
<u>Turkey</u>					
TUR-68-3	<u>Building materials - chemical engineering (production and management assistance to the Türkiye Cimento Sanayi State Cement Corporation)</u>				
	expert	1/12 m/m	9,625	14,000	-
TUR-69-4	<u>Development of cement industry - assistance to the Turkish Cement Corporation (limestone quarrying, cement manufacturing maintenance and cement factory planning)</u>				
	experts	3/12 m/m	5,775	18,000	-

Table 2

Estimated expenditures for approved UNDP/TA projects, 1969-1971

	<u>1969</u>		<u>1970</u>		<u>1971</u>	
	<u>m/m</u>	<u>US\$</u>	<u>m/m</u>	<u>US\$</u>	<u>m/m</u>	<u>US\$</u>
Experts	9/22	40,425	7/41	64,000	-	-
Fellows	15/54	30,600	3/18	10,200	5/30	17,000
Other	-	3,000	-	-	-	-
Total		<u>74,025</u>		<u>74,200</u>		<u>17,000</u>

UNDP/TECHNICAL ASSISTANCE - forecast of new projects for 1971

	<u>Experts</u> <u>n/a</u>	<u>Fellows</u> <u>n/a</u>	<u>Other</u> <u>US\$</u>
<u>AFRICA</u>			
Utilisation of gypsum	1/12	-	-
Development of cement industry	4/24	5/30	25,000
Manufacturing of low-cost building materials from local raw material	5/30	-	-
<u>THE AMERICAS</u>			
Development of cement industry	2/12	-	-
Ceramics industry development	3/15	4/24	-
Building materials industry, including prefabrication	2/12	-	10,000
<u>ASIA AND THE FAR EAST</u>			
Ceramics industry development	3/18	6/36	-
Assistance in the development of low-cost building material industries	4/24	-	-
Glass industry development	2/12	-	-
Decorative building stones industry	1/6	-	-
<u>EUROPE AND THE MIDDLE EAST</u>			
Cement industry development	2/12	4/24	-
Assistance to the building materials research institutes	2/6	6/36	-
New technologies in building materials production	-	8/48	-

UNIDO REGULAR PROGRAMME - approved projects

<u>Project number</u>			<u>1969</u>	<u>1970</u>
			(in US dollars)	
<u>AFRICA</u>				
<u>Cameroon</u>				
NP-03-2	<u>Building materials industries - pre-feasibility studies</u>			
	experts	2/6	n/a	- 11,550
<u>Chad</u>				
NP-03-4	<u>Building materials industries - cement</u>			
	expert	1/6	n/a	- 3,400
<u>Madagascar</u>				
NP-03-58	<u>Building materials industries* - brick production</u>			
	fellow	2/12	n/a	6,800 -
<u>THE AMERICAS</u>				
<u>Jamaica</u>				
NP-03-99	<u>Building materials* - ceramics</u>			
	fellow	1/6	n/a	3,400 -
<u>PARAGUAY</u>				
NP-03-103	<u>Building materials* - cement</u>			
	fellow	1/6	n/a	3,400 -
<u>ASIA AND THE MIDDLE EAST</u>				
<u>Ceylon</u>				
NP-03-52	<u>Building materials* - ceramics</u>			
	fellow	1/6	n/a	2,600 -

UNIDO REGULAR PROGRAMME - approved projects (cont'd)

<u>Project number</u>			<u>1969</u>	<u>1970</u>
			(in US dollars)	
<u>ASIA AND THE FAR EAST (cont'd)</u>				
<u>Iran</u>				
RP-03-3	<u>Building materials industries - glass</u> fellow	1/6 m/m	-	3,400
<u>Nepal</u>				
RP-03-68	<u>Construction industries* - prefabrication of buildings</u> fellow	1/4 m/m	2,600	-
<u>Papua and New Guinea (Oceania)</u>				
RP-03-1	<u>Building materials - production</u> fellow	1/6 m/m	-	3,400
<u>Thailand</u>				
RP-03-77	<u>Building materials* - ceramics</u> fellow	1/6 m/m	3,400	-
<u>EUROPE AND THE MIDDLE EAST</u>				
<u>Albania</u>				
RP-03-112	<u>Building materials industries* - tiles production</u> fellow	1/3 m/m	1,200	-
<u>Romania</u>				
RP-03-3	<u>Building materials industries - hydrofuge and phonic insulation, organic resins used as concrete additives and corrosion preventives</u> fellows	2/6 m/m	-	3,000

UNIDO REGULAR PROGRAMME - approved projects (cont'd)

<u>Project number</u>		<u>1969</u>	<u>1970</u>
		(in US dollars)	
<u>EUROPE AND THE MIDDLE EAST (cont'd)</u>			
<u>Yugoslavia</u>			
RP-03-5	<u>Building materials industries - production of perlite</u>		
	fellow	1/2 m/m	- 1,000
RP-03-123	<u>Industrial construction* - industrial design</u>		
	fellow	1/4 m/m	1,500 -

Table 3

Estimated expenditures for approved RP projects, 1969-1970

	<u>1969</u>		<u>1970</u>	
	<u>m/m</u>	<u>US\$</u>	<u>m/m</u>	<u>US\$</u>
Experts	-	-	3/12	14,950
Fellows	9/47	24,900	5/20	10,800
Other	-	-	-	-
Total		<u>24,900</u>		<u>25,750</u>

UNIDO REGULAR PROGRAMME - forecast of new projects for 1971

	<u>Experts</u> <u>n/m</u>	<u>Fellows</u> <u>n/m</u>
<u>AFRICA</u>		
Cement industry development	-	2/6
<u>THE AMERICAS</u>		
Glass industry	-	2/6
<u>ASIA AND THE FAR EAST</u>		
Ceramics technology	-	3/9
<u>EUROPE AND THE MIDDLE EAST</u>		
Building materials production	-	2/12
Building materials production	-	1/6

SPECIAL INDUSTRIAL SERVICES - approved projects

<u>Project number</u>		<u>1969</u>	<u>1970</u>
		(in US dollars)	
<u>AFRICA</u>			
<u>Algeria</u>			
67/88 ALG-4	<u>Assistance for the reactivation of the glass industry - glass production engineer</u> expert	1/6 m/m	- 14,000
<u>Dahomey</u>			
67/155 DAH-1	<u>Assistance to a marble cutting and polishing factory - cutting, polishing and marketing specialist</u> expert	1/3 m/m	1,000 6,000
<u>Madagascar</u>			
67/128 MAG-1	<u>Technical assistance to SONABRI brickworks - clay building products</u> expert	1/1 m/m	2,000 -
<u>Mauritius</u>			
69/465 MAR-7	<u>Feasibility study for the establishment of a cement industry</u> expert	1/6 m/m	6,000 6,000
69/600 MAR-10	<u>Survey of the clay products industry - ceramics adviser</u> expert	1/4 m/m	- 8,000
<u>Sudan</u>			
68/263 SUD-9	<u>Assistance to the Nile Cement Company in Rabak - production</u> expert	1/3 m/m	- 6,200

SPECIAL INDUSTRIAL SERVICES - approved projects (cont'd)

<u>Project number</u>			<u>1969</u>	<u>1970</u>
			(in US dollars)	
<u>THE AMERICAS</u>				
<u>Bolivia</u>				
68/296 BOL-5	<u>Development of the ceramics industry</u> - ceramics technologist	expert	1/6 m/m	10,000 2,000
69/506 BOL-2	<u>Assistance in the establishment of a refractory products industry</u> - industrial adviser	expert	1/6 m/m	2,000 10,000
<u>British Honduras</u>				
69/553 BRH-1	<u>Assistance in the establishment of a lime industry</u>	expert	1/3 m/m	- 6,000
<u>Jamaica</u>				
68/272 JAM-3	<u>Assistance to Jamaica Ceramics Limited</u> - production and technical operations control (ceramics specialist (OPEX))	expert	1/15 m/m	8,700 13,800
<u>ASIA AND THE FAR EAST</u>				
<u>Iran</u>				
69/608 IRA-26	<u>Assistance in the mining of decorative building stones</u>	expert	1/3 m/m	- 6,000

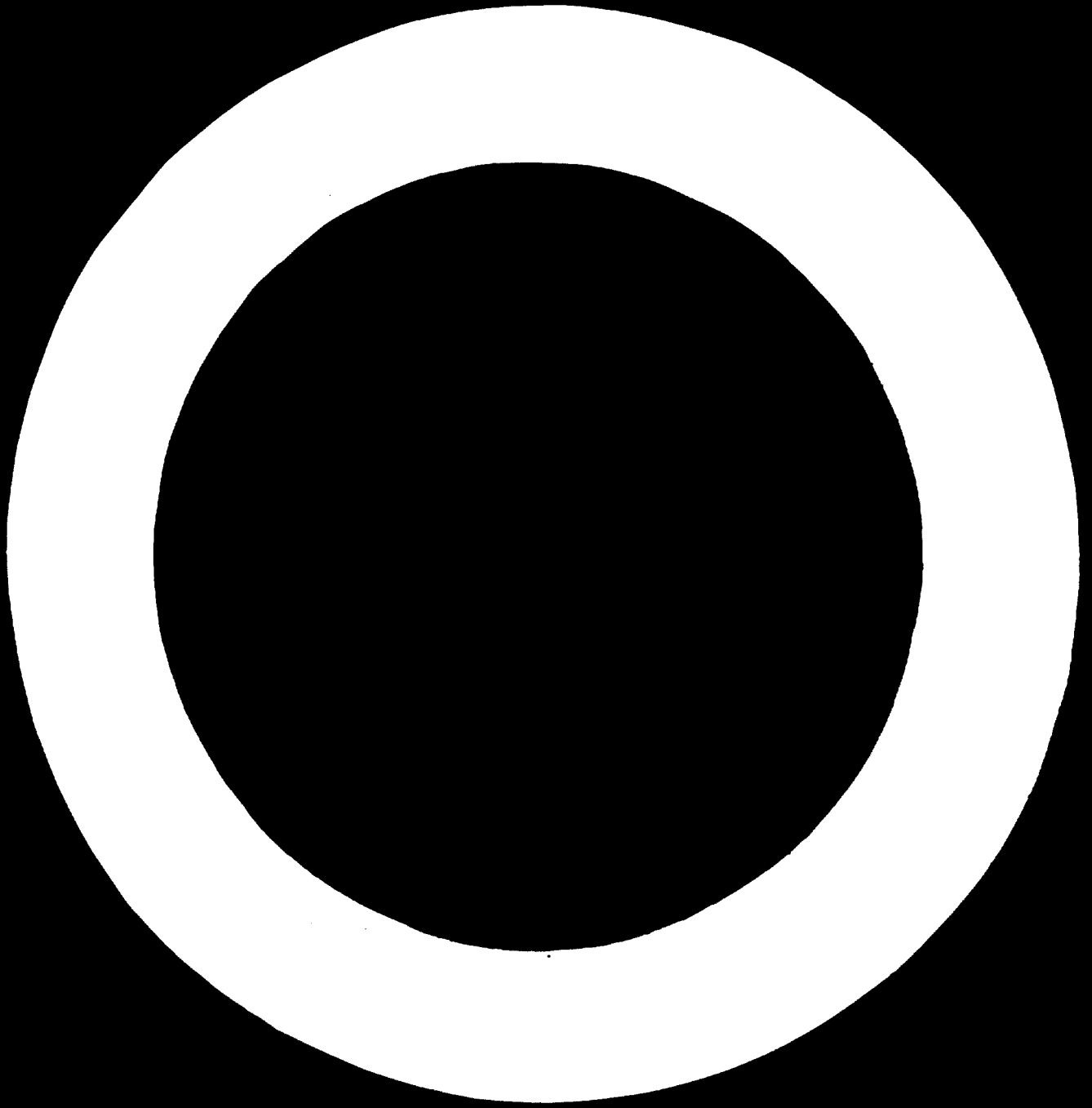
SPECIAL INDUSTRIAL SERVICES - approved projects (cont'd)

<u>Project number</u>		<u>1969</u>	<u>1970</u>
		(in US dollars)	
<u>EUROPE AND THE MIDDLE EAST</u>			
<u>Cyprus</u>			
66/48 CYP-6	<u>Assistance to asbestos pipe plant project*</u> consulting firm	6,000	-
<u>Romania</u>			
69/485 ROM-4	<u>Assistance to the building research institute*</u> - industrial building specialist expert	1/1 m/m	3,000 -
<u>Syria</u>			
68/448 SYR-14	<u>Assistance to asbestos-cement processing factory*</u> consulting firm	3,000	14,600

Table 4

Estimated expenditures for SIS projects, 1969-1970

	<u>1969</u>		<u>1970</u>	
	<u>m/m</u>	<u>US\$</u>	<u>m/m</u>	<u>US\$</u>
Experts	7/15	32,700	10/42	78,000
Fellows	-	-	-	-
Other	-	<u>9,000</u>	-	<u>14,600</u>
Total		41,700		92,600



B. SUPPORTING ACTIVITIES

11. The supporting activities for Group 3 are classified under the following projects:

Cement	3.01
Fibro-cement composites	3.02
Plastics in building	3.03
Clay building and allied materials	3.04
Prefabrication in the building industries	3.05
Building materials industry studies	3.06

12. As was mentioned in the prefatory remarks to the section on supporting activities in Part One (ID/B/64), the objective of the supporting activities is to establish a two-way flow of information and experience between the supporting activities at headquarters and the field. A great deal of material on which headquarters' studies and meetings are based is derived from information received from the field. In turn, the studies and meetings are intended to improve the substantive support given by headquarters to the field operations. In many cases these results are fed directly to the field in the form of reports. In all cases, they constitute an accumulation of knowledge and experience on which both headquarters and field staff are able to draw in response to the needs arising in the technical assistance operations.

Cement (3.01)

Manufacture of cement (3.01.01)

13. In 1964, an Interregional Seminar on the Cement Industry was held in Denmark which highlighted the needs of developing countries for technical assistance in this sector (ST/TAO/SER.C/71). The needs have been reflected by numerous requests for technical assistance received by UNIDO in the area of cement manufacture, involving both feasibility studies for new installations as well as improvement of existing plants.

14. Experience gained in the implementation of these technical assistance projects indicated the need for information on the use of gypsum as a raw material for the production of cement. Accordingly, UNIDO commissioned a study on the subject of "The manufacture of cement and sulphuric acid from calcium sulphate" (ID/B/26 para. 66) which was prepared in 1969, financed by the 1968 budget. This study, which will be published and distributed in 1970, will provide developing countries with information on simultaneous manufacture of cement and sulphuric acid.

15. The technical assistance activities and study mentioned above indicated the need for a survey in 1970 to provide manufacturing and demand data for developing countries (ID/B/44, para. 99, 100).^{1/} In 1971, it is proposed to consolidate this information and submit it to 20 participants from developing countries at an interregional seminar to be held for two weeks in Vienna. The seminar will be held by UNIDO in co-operation with UNCHEP. Representatives from ILO and the regional economic commissions will be invited to attend.

Priority A

	<u>Staff (in m/m)</u>	<u>Meetings (US\$)</u>	<u>Consultants (US\$)</u>
1969	1	-	-
1970	1	-	-
1971	3	21,000 ^{a/}	7,000 ^{a/}

Priority B

	<u>Staff (in m/m)</u>	<u>Meetings (US\$)</u>	<u>Consultants (US\$)</u>
1970	-	-	4,000

^{a/} UNDP/TA funds.

^{1/} This survey will be carried out subject to availability of funds.

Fibro-cement composites (3.02)

Expert Working Group on
Fibro-cement Composites (3.02.01)

16. The importance of establishing asbestos-cement manufacturing facilities has been recognized by several developing countries as evidenced by two technical assistance projects carried out by UNIDO in 1969. One UNDP/EF project focuses on production of asbestos in connexion with asbestos-cement and other asbestos-based products. In many developing countries the conventional materials used, namely asbestos and cement, are either expensive or in short supply.

17. With a view towards assisting these countries in finding substitutes for asbestos and minimizing the use of cement, an Expert Working Group on Fibro-Cement Composites was held by UNIDO in Vienna in October 1969. The proceedings of this group will be printed and distributed in 1970.

PRIORITY A

	<u>Staff</u> (in E/E)	<u>Meetings</u> (US\$)	<u>Consultants</u> (US\$)
1969	2	4,424	6,990
1970	1	-	-
1971	2	-	-

Plastics in building (3.03)

Expert group meeting on the use of plastics
in the building industry (3.03.01)

18. The utilization of plastics in building is being given attention as it may result in cheap but efficient construction of housing in developing countries. The problems involved vary in many cases from those in developed countries owing to the different conditions of climate, taste and traditions. Expressions of interest for technical assistance have already been received

from three countries. Accordingly, UNIDO proposes to hold an expert group meeting on this subject in 1971 in co-operation with the UNCHEP. ECE, which may be interested in this work, will be invited to attend the meeting. This meeting will consider two papers commissioned by UNIDO in 1968 and prepared in 1969 as well as studies planned for 1970 (ID/B/44, para. 102). Certain aspects of production and uses of plastics were discussed at the Interregional Petrochemical Symposium on the Development of Petrochemical Industries in Developing Countries held at Baku in October 1969.

Priority A

	<u>Staff</u> <u>(in E/P)</u>	<u>Meetings</u> <u>(US\$)</u>	<u>Consultants</u> <u>(US\$)</u>
1969	1	-	-
1970	1	-	3,000
1971	3	8,000	5,000

Clay building and allied materials (3.04)

19. Although many developing countries produce clay and allied building materials, the processes employed often involve manual labour and little mechanisation. Thus there is considerable scope for improved methods and expansion of facilities. UNIDO technical assistance programmes in nine countries were related to these problems in 1969.

Workshop on clay building materials
industries in Africa (3.04.01)

20. The subject of clay building materials was considered at the clay building materials interregional seminar held by UNIDO in collaboration with the Danish Government and UNCHEP in 1968. At this seminar it was recommended that a series of regional workshops be scheduled. The first of these workshops,

to be held in collaboration with ECA and UNCHP, is planned for 1970 (ID/B/44, para. 106). This workshop is expected to translate the findings of the 1968 seminar into guidelines applicable to the particular circumstances obtaining in Africa. The proceedings of the workshop will be published and distributed in 1971.

Priority A

	<u>Staff</u> <u>(in man)</u>	<u>Meetings</u> <u>(US\$)</u>	<u>Consultants</u> <u>(US\$)</u>
1969	-	-	-
1970	2	7,000	3,000
1971	2	-	-

**Workshop on clay building materials industries
in Latin America (3.04.02)**

21. Subject to availability of funds, it is proposed to hold a one-week workshop in 1971 in Latin America in collaboration with ECLA and UNCHP. Fifteen representatives of Latin American countries will be invited to participate.

Priority B

	<u>Staff</u> <u>(in man)</u>	<u>Meetings</u> <u>(US\$)</u>	<u>Consultants</u> <u>(US\$)</u>
1969	-	-	-
1970	2	-	-
1971	2	8,000	5,000

Prefabrication in the building industries (3.05)

Regional seminar on prefabrication
in Africa (3.05.01)

22. The importance of prefabrication in the building industries was stressed by the Industrial Development Board at its third session (A/7617, para. 103). Indications of interest received by UNIDO from the field bear out the findings of the Board as indicated by two proposed UNDP/SF projects. Two seminars on this subject have already been held, one in 1967 and the other in 1968, both in Denmark, by UNCHBP in collaboration with ECLA and ECAFE.

23. A third seminar, which was to be organized by UNIDO and held in 1969 (ID/B/26, para. 65), had to be postponed because of lack of funds. This seminar will now be held in 1970, probably also in Denmark, in co-operation with ECA and UNCHBP. The proceedings of this one-week seminar will be published and distributed in 1971.

Priority A

	<u>Staff</u> (in m/m)	<u>Meetings</u> (US\$)	<u>Consultants</u> (US\$)
1969	1	-	-
1970	2	9,000	7,000
1971	2	-	-

Building materials industry studies (3.06)

Studies in building materials industry (3.06.01)

24. The interregional Workshop on Organizational and Technical Measures for the Development of Building Materials, held in the Union of Soviet Socialist Republics in 1968, recommended that a number of studies be carried out in the field of building materials industries. Subsequently, six technical assistance requests were received by UNIDO, the findings of which supported the above recommendation for additional studies.

25. Consequently, UNIDO proposes to carry out studies in 1971 on the building materials industry relevant to the needs of developing countries. This will be done in collaboration with UNCHEP and will be financed from voluntary contributions to UNIDO. The topics proposed for 1971 are related to technical assistance work being undertaken or envisaged by UNIDO in the field and comprise the following:

- Survey of techno-economic project data of basic materials;
- Process and equipment for stone cutting and dressing;
- Manufacture of reed panels with particular reference to seismic zones;
- Manufacture and use of special glasses, glass products and refractories;
- Manufacture of large wall panels, both cement-based and of other composition.

Priority A

	Staff (in m/m)	Consultants (US\$)
1969	-	-
1970	-	-
1971	2	10,000 ^{a/}

^{a/} To be financed from the General Trust Fund of UNIDO.

Building materials research (3.07)

Meeting of the heads of building materials
research and development organisations (3.07.01)

26. While dealing with the role of research in the development of building materials industries in the ECAFE region, the Seminar on the Development of Building Materials, held in Bangkok in January 1968, observed that there was a considerable amount of overlapping. The developing countries could ill afford the luxury of duplication of efforts. The Seminar noted that there

was considerable scope for collaboration and co-operation in research among the countries of the region. It therefore recommended that periodic meetings of heads of building research institutes in the region would facilitate joint action and division of research projects among the existing research institutes. It is proposed to hold a meeting in Bangkok in 1970 and application has been made for the necessary funds from UNDP/TA.

Priority A

	<u>Meetings</u> <u>(US\$)</u>
1969	-
1970	9,000 ^{a/}
1971	-

^{a/} UNDP/TA funds.

PRINTED PUBLICATIONS

Publications issued in 1969

		<u>Languages</u>	<u>Cost</u> <u>(US\$)</u>
ID/15	The establishment of a brick and tile industry in developing countries	E F	
ID/28	Report of the interregional seminar on the development of clay building materials in developing countries (Copenhagen, August 1968)	E F S	
			<hr/> 3,838

1970 publications programme

ID/15	The establishment of a brick and tile industry in developing countries	S	
ID/39	The manufacture of cement and sulphuric acid from calcium sulphate	E	
-	Report of expert group meeting on fibro-cement composites	E	
			<hr/> 3,000

Forecast of 1971 publications programme

	Small-scale manufacture of Portland cement	E S	
	Proceedings: Expert group on fibro-cement composites (Vienna, October 1969)	E F	
	Report and proceedings: Prefabrication in the building industries (1970)	E	
	Report and proceedings: Clay building materials industries workshop (1970)	E	
			<hr/> 10,200

Note: In the computation of the printing costs a standard formula was applied, based on averaging the cost of printing inside UNIDO and by an outside firm. The standard formula is used to provide for comparability of the cost of printing.

Table 5

Expenditures for supporting activities in 1969^{a/}

Project components	UNIDO Regular Budget				UNDP/TA	UNIDO General Trust Fund	Total ^{b/}
	(1) Staff n/a	(2) Meetings US\$	(3) Consultants US\$	(4) Publications US\$			
3-01-01	1	-	-		-	-	-
3-02-01	2	4,424	6,950		-	-	11,374
3-03-01	1	-	-		-	-	-
3-05-01	1	-	-		-	-	-
Total	5	4,424	6,950	3,838	-	-	15,212

^{a/} Expenditures have been calculated on the basis of actual expenditures up to 30 September 1969, projected to the end of the year.

^{b/} The totals in column 7 do not include the cost of publications. Thus the total of the items in this column does not correspond to the last line of the column.

Table 6

Estimated expenditures for supporting activities in 1970

Project components	UNIDO Regular Budget				UNDP/TA	UNIDO General Trust Fund	Total ^{a/}
	(1) Staff n/a	(2) Meetings US\$	(3) Consultants US\$	(4) Publications US\$	(5) US\$	(6) US\$	(7) US\$
Priority A							
3-01-01	1	-	-		-	-	-
3-02-01	1	-	-		-	-	-
3-03-01	1	-	3,000		-	-	3,000
3-04-01	2	7,000	3,000		-	-	10,000
3-05-01	2	9,000	7,000		-	-	16,000
3-07-01	-	-	-		9,000	-	9,000
Total	7	16,000	13,000	3,000	9,000	-	41,000
Priority B							
3-01-01	-	-	4,000		-	-	4,000
3-04-02	2	-	-		-	-	-
Total	2	-	4,000	-	-	-	4,000

^{a/} The totals in column 7 do not include the cost of publications. Thus the total of the items in this column does not correspond to the last line of the column.

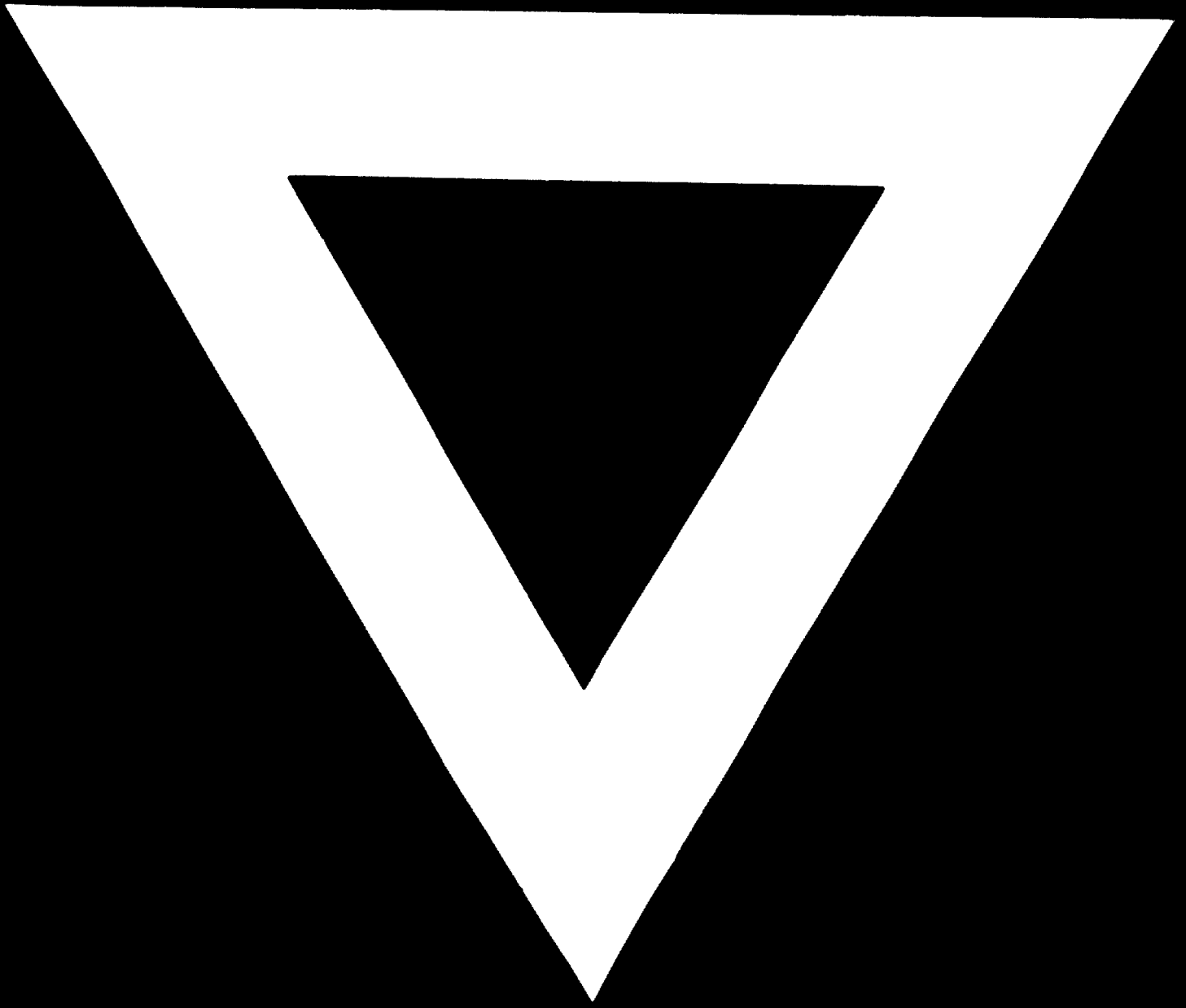
Table 7

Estimated expenditures for supporting activities in 1971

Project components	UNIDO Regular Budget				UNDP/TA	UNIDO General Trust Fund	Total ^{a/}
	(1) Staff n/m	(2) Meetings US\$	(3) Consultants US\$	(4) Publications US\$	(5) US\$	(6) US\$	(7) US\$
Priority A							
3-01-01	3	-	-		28,000	-	28,000
3-02-01	2	-	-		-	-	-
3-03-01	3	8,000	5,000		-	-	13,000
3-04-01	2	-	-		-	-	-
3-05-01	2	-	-		-	-	-
3-06-01	2	-	-		-	10,000	10,000
Total	14	8,000	5,000	10,200	28,000	10,000	61,200
Priority B							
3-04-02	2	8,000	5,000		-	-	13,000
Total	2	8,000	5,000	-	-	-	13,000

^{a/} The totals in column 7 do not include the cost of publications. Thus the total of the items in this column does not correspond to the last line of the column.





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