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ENGLISH

UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

MODEL
PROJECT DOCUMENT

for

ASSISTANCE IN ESTABLISHING OR DEVELOPING A NATIONAL PACKAGING INSTITUTE

id.73-5201

CONTENTS

UNITED NATIONS DEVELOPMENT PROGRAMME

Project of the Government of

Title: Assistance in the Further Development of the Institute of Packaging in

Number:

Duration: Three years

Sector: Packaging

Co-operating Government Agency: Ministry of Foreign Trade, acting through the Institute of Packaging

Executing Agency: United Nations Industrial Development Organisation

Date of Submission: 6 July 1970

Starting Date:

Government Contribution:

(a) In local currency:

(b) In convertible currency: 19,200 (US Dollars)

UNDP Contribution: US$ 561,500

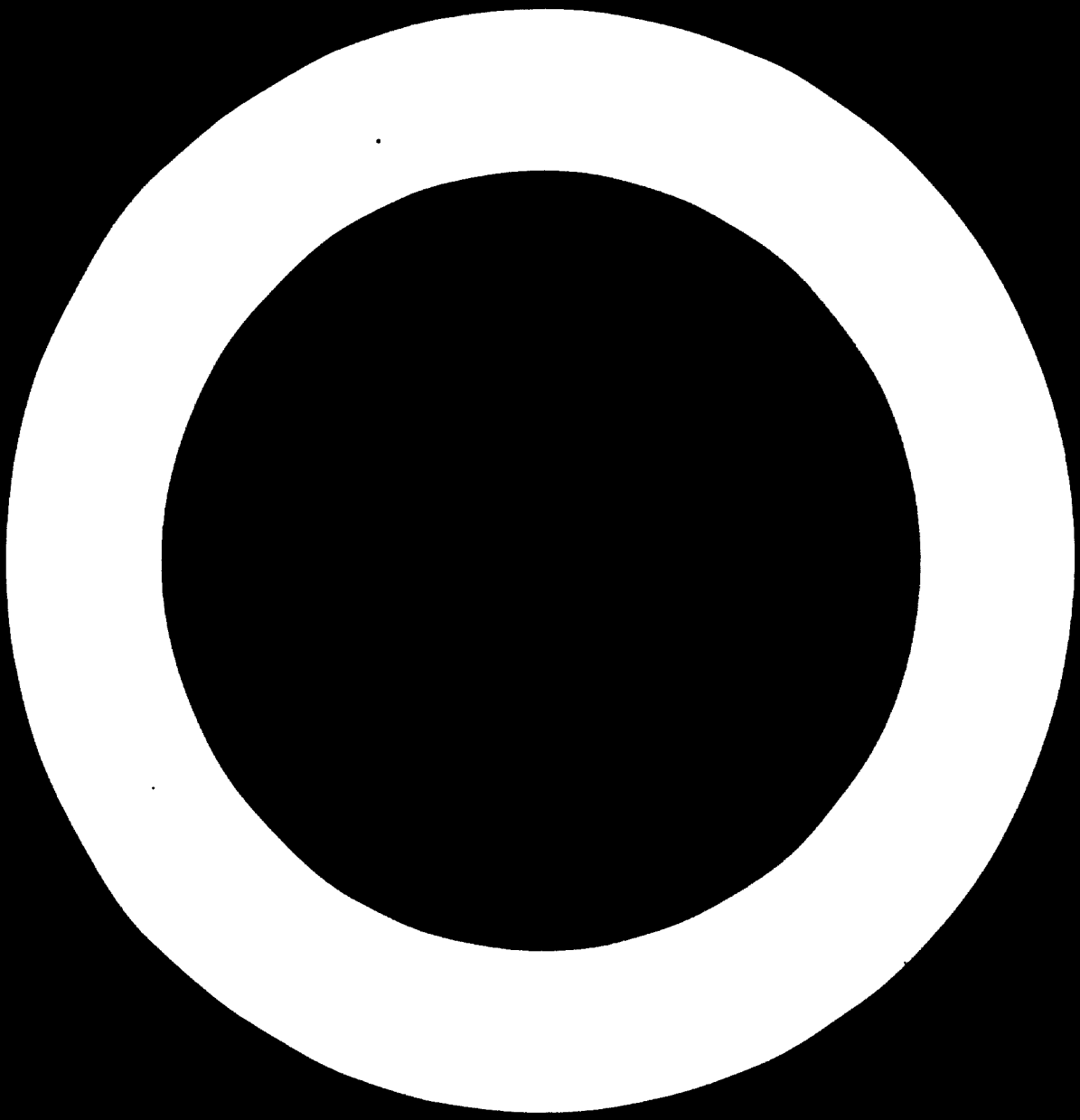
APPROXIMATELY US$ 1,289,200

Approved:

on behalf of the Government (signature) Date:

on behalf of Executing Agency (signature) Date:

on behalf of UNDP (signature) Date:



CHAPTER I

BACKGROUND AND SUPPORTING INFORMATION

A. Justification for the project

1. The standards of packaging and packing in the industries of need to be greatly improved. This requirement is particularly important in the context of the export effort of the country. The packaging standards must necessarily reach such levels where the products and commodities originating from can effectively compete in the world markets against the packaged products of the developed and industrialized countries. The improvement of packaging standards required for the export markets will essentially require the improvement of the base of packaging technology for production of goods for the domestic market. Without improvement of the packaging standards for the home market it will be difficult to effect improvements for presentation of goods to the export markets. These requirements underline the importance and urgency of the development of packaging technology and improvement of packaging standards in the industries of the country.

2. Packaging technology in is yet in the early stages of development. Whereas considerable progress has come about during the past few years in the development of industries, the packaging technology has not kept pace with the advance in the industrial development. It is only during the last few years that the development of packaging technology and standards have started attracting the attention of the industries. Even now there is very little attention being devoted to the development of research in the field of packaging.

3. Adequate and functional packaging as a means of conserving and preserving the produce and retention of their quality are obviously of prime importance. With the increase in the national output of goods, the demand for packaging materials will necessarily grow. No manufacturing process can be complete and no sale of the product can be practicable without appropriate packaging. Production and conservation of packaging materials are often taken as an index of the industrial advance made by the country.

The requirement of packaging assumes greater importance in a country like where the climatic conditions range from sub-tropical to semi-arctic and from arid to humid environments. The packages have to travel long distances in the country, often through hazardous conditions. For adequate and functional packaging there is need for a variety of packaging materials with the requisite barrier and strength properties. There is also a great need for intensive study of the packaging requirements for export markets and the availability of requisite packaging materials and the machinery and equipment to the industries for meeting the standards required for these markets.

B. Institutional framework

4. Recognizing the importance of the development of packaging science and technology, particularly for the improvement of packaging of the export products, the Government of and the packaging industry decided to set up the Indian Institute of Packaging. It was contemplated that the Institute would provide a common platform to all interests connected with packaging, including the manufacturers of packaging materials, manufacturers of packaging machinery, users of packages, advertisers and carriers of packages, government institutions and research institutions, etc. The Institute was registered as a Society under the Societies Registration Act in May 1966. The Registered Office of the Institute is in At the present the Institute is located in small rented premises.

6. Actually, the Institute has on its rolls some 200 members drawn from various sectors of the industrial activity in

The management of the Institute is conducted by the Governing Body consisting of top representatives of the Government, trade and industry, research organizations, export organizations and educational institutions. The Governing Body consists of a Chairman, Director, six persons nominated by the Government of and Research Institutions and nine persons elected by the members of the Institute. Director of the Institute is the Chief Executive Authority. He is assisted by the Secretary and two Deputy

Directors, one in charge of Research and Development Division and the other in charge of Information and Training Division.

Funds of the Institute are derived from two sources, namely the industry and the Government. Income from the industry is received by the Institute through membership fees or services rendered in the shape of training programmes, publications, consultancy etc. Funds from the Government are received in the shape of grants. The Institute has also the authority to accept grants from foreign agencies approved by the Government of India for the furtherance of its activities.

7. In this connexion, it may be mentioned that has been selected as the Headquarters of the Institute, because there exists a big cross section of Chemical, Pharmaceutical, Engineering and consumer goods industries, producers of packaging materials like paper, plastics, metal, glass, etc. and converters of packaging materials. It is also an important port through which a large volume of import and export trade passes, and which is a centre of two major railway systems.

While the Institute at will be the centre for packaging research and technology, the requirements of other regions will be met with by establishing in due course testing and certification facilities and also holding training courses at those centres on as an intensive basis as practicable. The activities of the Institute are those designed to adequately meet the requirements of the entire country with regard to packaging education, training, testing and certification, consultancy and other related subjects in the field of packaging.

There are budgetary provisions for all the counterpart facilities mentioned in this request.

C. Provisions for Government follow up

8. Objectives of the Institute are emphasized by the importance and urgency of the export effort of the country, for which there is great need and scope in the improvement of packaging standards of the export products and manufactures. Broadly, the activities of the Institute cover the following important objectives:

a) The determination of ways and means for improving the currently used packaging materials, packaging machinery and packaging designs in respect of the various commodities, by undertaking programmes of research.

b) Study of the current packaging, handling and transport hazards with a view to improving the transport pattern of packages in relation to exports as well as internal movements.

c) Dissemination of knowledge on all aspects of packaging, package selection, manufacturing, filling, handling and distribution through training programmes, symposia and seminars.

9. For the expansion of the Institute, land measuring 10 acre has been taken from the Government in the Industrial Estate of the . This land is within a short distance of the and about 2 kilometres from the The full amount of representing the cost of the land was given by the Government

The Government of has agreed to pay the entire amount of for the construction of the building and furniture and fittings required for it. This amount can be drawn as and when needed during the current financial year.

10. who were considered suitable for undertaking the job have been appointed as the Architects for the construction of the building. The sketch design prepared by them was presented to the Institute on when UNIDO

experts, Vice-Chairman of the Institute and Senior Architect of the were present.

The design prepared by them would yield a net floor area of 44,000 sq. ft. The sketch design of the Institute prepared by the Architects was discussed thoroughly between the UNIDO experts, the Architects and the representatives of the Institute. Subsequently, they worked out the technological design of the research and testing sections. In addition the building will comprise the following facilities:

1. Library
2. Lecture Halls
3. Auditorium
4. Publications Section
5. Package Design Unit
6. Exhibition Halls
7. Conference Halls
8. Stores
9. Canteen
10. Administrative Blocks

The total built up area will be in the region of 50,000 sq. ft.

Long term staffing and financing is assured by the Government.

D. Other related activities. None

E. Future UNDP assistance. Not envisaged at this time.

CHAPTER II

OBJECTIVES OF THE PROJECT

A. Long term objectives

1. The proper growth of the industrial production and exports is conditioned by the development of packaging.

The project is intended to improve the quality of manufactured packaging materials and containers, modernize packing techniques applied by different industrial branches and achieve the fullest utilization of the country's own packaging material resources and packaging industry capabilities.

B. Immediate objectives

2. Keeping in view the requirements of the industry for the promotion of exports, efforts have to be directed primarily to expand the technical consultancy services, testing, and certification facilities.

The immediate objectives of the project are as follows:

In the field of Research + Development:

a. Study and improve the existing packaging pattern in for selected products;

b. Act as a Central Testing Laboratory for testing packaging materials and packages;

c. Assist in the standardisation of packaging materials, packages and methods in active association with the Standards Institution;

d. Study and evaluate shelf-life of products packaged in different packaging materials;

e. Evaluate packages for their transportability and suggest improvements;

f. Develop prototypes of packages;

g. Assist in the development of packaging machinery and equipment;

h. Study the characteristics of traditional and non-traditional packaging materials produced in [illegible] with a view to improving their functional qualities suited to changing needs;

i. Develop newer applications for available packaging materials and through research develop newer, economical and better functional packaging materials either on its own or in collaboration with other Institutions/Industrial Establishments in the country;

j. Assess the behaviour of packaging materials on packaging machinery and suggest improvements;

k. Undertake intensive studies of techno-economic nature dealing with packaging economics.

In the field of Training & Information Services:

a. Intensify and expand the present training programmes to cover:

   i) Persons engaged in packaging and marketing;

   ii) Individuals aspiring to become packaging technologists and research scientists;

b. Offer training facilities to individuals from other developing countries;

c. Undertake adaptation and publication of text-books and other training materials published abroad;

d. Advise on improvement to package design;

e. Carry out Industrial Market Research with a view to updating information on the general status of the various packaging industries and forecast shifts, trends and the demand for packaging materials and machinery from time to time;

f. Establish a comprehensive Library so as to act as a Centre of Reference and technical information on all aspects of packaging in the country;

g. Disseminate knowledge on all aspects of packaging by publication of Journals, Abstracts, Digests, Lecture Monographs, Directories, Survey

Reports, Bulletins and Pamphlets.

For the purpose of producing an effective programme the Institute will:

a. Organize technical discussion groups and liaise with various agencies for the solution of specific problems faced by the industry;

b. Advise and assist the various Governmental and other agencies on the formulations and regulations on packaging methods and practices.

3. The project is primarily applied research oriented and does not have an immediate investment potential. However some of its activities (such as studies on the general status of the various packaging industries and forecasting the trends and demands for packaging materials and machinery) will yield data which will be of use in planning and financing the expansion of the packaging industry.

CHAPTER III

WORK PLAN

A. Description of project activities

Preparatory activities undertaken by the Government in order to ensure the implementation of the project:

	Project activities	Location	Starting Date	Proposed Duration
a.	Construction of new premises, including furniture and fittings in an area of 50,000 sq.ft. for a total price of $		15 Jan. 1972	11 months
b.	Provision of indigenous equipment worth US$ 137,700		15 Sep. 1972	2 months
c.	Provision of additional personnel to the Institute		To be completed by January 1973	

In the continuation of the expanded objectives of the Institute, the following activities are contemplated:

Research and Development Division

Packaging Material Testing and Development Section

Project Activities	Location	Starting Date	Proposed Duration
1. Studies on the following areas will be undertaken:		1 Jan. 1973	36 months
i) Methods of testing packaging materials;			
ii) Specifications for packaging materials;			
iii) Methods of working in similar packaging laboratories in other parts of the world;			
iv) Methods of manufacturing packaging materials;			
v) Storage and handling of packaging materials.			
2. Identification of areas requiring improvement in the packaging materials for specific purposes and applications, e.g.:		1 January 1974	24 months
i) Conversion, including lamination and coating;			
ii) Printing;			
iii) Corrosion of packaging materials;			
iv) Ageing characteristics of packaging materials.			
3. Assistance in the improvement of packaging characteristics of selected packaging materials in association with concerned Research Laboratories in		1 January 1974	24 months

Project Activities	Location	Starting Date	Proposed Duration
4. Carrying out surveys on selected packaging materials and ascertaining their end use application and utilization in ... The surveys could be on e.g.: i) Metal foils; ii) Films; iii) Paper board; iv) Laminates.		1 January 1974	24 months
5. Development of specifications for relevant packaging characteristics to facilitate ordering packaging materials, processing correct characteristics from the point of view of performance and use.		1 January 1974	24 months
Retail Packaging Testing and Development Section			
1. Studies on the following areas will be undertaken: i) Methods of testing retail packages; ii) Specification for retail packages; iii) Methods of working in similar packaging laboratories in other countries of the world; iv) Methods of manufacture, application, packing processes and supplies with regard to retail packages; v) Methods of distribution including storage and sales; vi) Shelf-life of products packed in different packaging materials.		1 Jan. 1973	36 months

Project Activities	Location	Starting Date	Proposed Duration
2. Specialization in retail packages design and application		1 January 1974	24 months
3. Specialization in different packaging techniques, e.g.:		1 Jan. 1974	24 months
i) Closing and sealing;			
ii) Vacuum packaging;			
iii) Skin and blister packaging;			
iv) Shrink packaging;			
v) Aerosol packaging.			
4. Studies on packaging of selected export products particularly aimed at retail sales, e.g.:		1 Jan. 1975	11 months
i) Chemicals;			
ii) Pharmaceuticals;			
iii) Handicrafts;			
iv) Tea;			
v) Dry fruits and nuts;			
vi) Tobacco;			
vii) Shrimps;			
viii) Textiles, clothing and leather goods;			
ix) Fresh fruits and vegetables;			
x) Light engineering goods.			

Project Activities	Location	Starting Date	Proposed Duration
Transport Packaging Testing and Development Section			
1. Studies on the following areas will be undertaken:		1 January 1973	36 months
i) Testing methods of transport packages;			
ii) Specifications for transport packages;			
iii) Methods of working in similar packaging laboratories in other parts of the world;			
iv) Methods of handling and transportation and abroad.			
2. Specialisation in the application of the following materials:		1 Jan. 1974	24 months
i) Wood;			
ii) Corrugated Fibreboard;			
iii) Solid Fibreboard;			
iv) Plastics;			
v) Metals;			
vi) Jute (application only for most effective usage)			
3. Specialisation in transport packaging techniques, e.g.:		1 Jan. 1974	24 months
i) Shrink packaging;			
ii) Methods of Closing;			
iii) Cushioning			
4. Specialisation in Packaging for tropical conditions.		1 Jan. 1974	24 months

	Project Activities	Location	Starting Date	Proposed Duration
5.	Standardization of transport packages with regard to: i) Dimensions; ii) Testing methods and schedules; iii) Marking will be undertaken.		1 Jan. 1974	24 months
6.	Assistance in export promotion of selected export commodities, e.g.: i) Light Engineering Goods; ii) Heavy Machinery; iii) Handicrafts; iv) Canned and Processed Foods.		1 Jan. 1974	24 months
	Engineering Section			
1.	Development of expertise on Packaging Machinery and Systems.		1 Jan. 1973.	36 months
2.	Study the various programmes for specific instruments, with a view to identifying specific improvements that may be possible.		1 Jan. 1974	24 months
3.	Development of suitable instruments as may be required by the other Sections of the Institute.		1 Jan. 1974	24 months
4.	Studies on Packaging Machinery and equipment in use abroad and practices by selected groups in respect of packaging machines.		1 Jan. 1974	24 months
5.	Technical consultancy to prospective users and the Government on the choice of the right type of packaging machines (either within or from abroad).		1 Jan. 1974	24 months
6.	Advise Government on the development of packaging machinery industry in the country.		1 Jan. 1974	24 months

Project activities	Location	Starting Date	Proposed Duration
Research Section			
1. Assistance to the other Sections of the Institute in carrying out intensive studies on problems referred to them by other Sections. These may be in the nature of:		1 January 1973	36 months
i) Shelf-life studies;			
ii) Development of improved testing instruments for production;			
iii) Identification of the relevant characteristics in packaging materials from the point of view of end use and application;			
iv) Development of newer and better functional packaging materials;			
v) Assess the behaviour of packaging materials and packaging machinery and suggest improvements;			
vi) Undertake research on packaging economics.			
2. Co-ordination of research activities in packaging with other research bodies in the country with a view to avoiding duplication of effort.		1 January 1975	11 months
Training and Information Division			
Training Section			
This Section will continue with the activities of:			
1. Short-term training courses of three or four days' duration on specific subjects, for instance packaging materials, packaging of selected commodities, principles of packaging, testing and evaluation of packaging materials suited to middle level management		1 January 1973	36 months
2. Intensive training programme of about three months' duration to upgrade packaging technologists.		1 January 1973	36 months
3. Organisation of residential training programmes suited to top management in the packaging and user industries.		1 January 1973	36 months

	Project activities	Location	Starting Date	Proposed Duration
4.	Conduct training programmes suited to non-managerial personnel such as machine operators etc.		1 January 1973	36 months
5.	Assistance in the publication of lecture monographs.		1 January 1973	36 months
6.	Survey of various methods of packaging education adopted by selected packaging institutes and universities abroad.		1 January 1974	24 months
7.	Preparation of slides for educational purposes.		1 January 1974	24 months
8.	Extension of the training programmes for non-managerial personnel connected with handling and transportation.		1 January 1974	24 months
9.	Exploration of the possibilities of packaging education in specialized Institutes and Universities within the country leading to a diploma or a degree in packaging.		1 January 1975	11 months
10.	Undertake adaptation of text-books and educational materials provided abroad.		1 January 1975	11 months
	Economic Research Section			
1.	Survey on the status of packaging industry in the country and abroad with regard to both packaging materials and packaging machinery.		1 January 1973	36 months
2.	Advise industry and the Government on the demand and supply of packaging materials and machinery based on such survey.		1 January 1973	36 months
3.	Survey the methodology of packaging economics applied in other countries.		1 January 1973	36 months

	Project activities	Location	Starting date	Proposed Duration
4.	Survey on handling and warehousing methods.		1 January 1974	24 months
5.	Survey on transport distribution and marketing.		1 January 1974	24 months
6.	Survey on export packaging.			
7.	Carry out techno-economic studies on the production of various packaging materials and machinery.		1 January 1975	11 months

Information Section

a) Library

1.	Location and acquisition of books, standards, patents and trade literature, bibliographies, translations, periodicals, films, slides and other materials related to packaging and allied industries from all parts of the world.		1 January 1973	36 months
2.	Study methods of working of different libraries in similar packaging institutions abroad.		1 January 1973	36 months
3.	Publish catalogues periodically.		1 January 1973	36 months
4.	Commence a title service carrying titles of articles published in the journals received at the Institute.		1 January 1974	24 months

b) Publication

5.	Arrange for publication: i) monthly newsletter; ii) quarterly journal; iii) seminar reports; iv) lecture monographs; v) monthly information abstracts; vi) packaging directory.		1 January 1973	11 months
6.	Bring out reports on surveys conducted by the Economic Research Section.		1 January 1973	11 months

	Project activities	Location	Starting Date	Proposed Duration
7.	Increase the periodicity of the Journal to bi-monthly.		1 January 1974	24 months
8.	Commencement of selective dissemination of information through card sorting of abstracts of articles in association with the Abstracting Section.		1 January 1974	24 months
9.	Collection of information on text books which could be published in [illegible].		1 January 1974	24 months
10.	In association with abstracting agencies abroad arrange to obtain publishing rights for their abstracts in [illegible] arrange to publish these monthly.		1 January 1974	24 months
11.	Study the methods of dissemination of information in various packaging institutions in the world.			
12.	Arranging for publication of adapted text-books and other educational materials published abroad.		1 January 1975	11 months
	(c) Abstracting			
13.	Preparation of abstracts for publication.		1 January 1973	36 months
14.	Preparation of materials for publication section in the selective dissemination of information cards.		1 January 1974	24 months
15.	Study the systems prevalent in various packaging institutions in information, collection and retrieval.		1 January 1973	11 months
	Package Design Section			
1.	Carrying out services of locating suitable designers of packages for specific commodities.		1 January 1973	36 months
2.	Assistance to the Training and Research Divisions of the Institute in their day-to-day working where designs are concerned.		1 January 1973	36 months

Project Activities	Location	Starting Date	Proposed Duration
3. Survey the existing facilities available with institutions connected with graphic design in the country with a view to identifying expansion necessary for the introduction of package design in their curricula.		1 January 1973	36 months
4. Assistance to institutions connected with graphic design in starting training programmes aiming at developing package designers.		1 January 1974	24 months
5. Undertake efforts aimed at forming agencies such as Package Designers Council within the country.		1 January 1974	24 months
6. Promotion of consciousness of improved package design in the industries and educational institutions.		1 January 1974	24 months
7. Development of educational information materials to highlight the role of package design in assisting the marketing effort.		1 January 1974	24 months

B. Description of UNIDO inputs

1. Assignment of international staff

Activity	Location	Starting date	Duration m/m
Project manager		1 January 1973	36 months

2. Subcontracts

I. Packaging material testing and development

i) Mechanical properties testing;	1 October 1973	1 month
ii) Physico-Chemical testing;	1 November 1973	1 month
iii) Microbiological testing;	1 February 1974	1 month
iv) Corrosion prevention;	1 April 1974	3 months
v) Film, foil, laminates and development testing;	1 August 1974	3 months
vi) Paper and board testing and development.	1 December 1974	3 months

II. Transport Packaging Testing and development

i) Wooden packaging;	1 May 1973	2 months
ii) Performance testing;	1 August 1973	3 months
iii) Fibreboard packaging;	1 December 1973	3 months
iv) Shrink packaging;	1 November 1974	2 months
v) Sacks;	1 April 1975	2 months
vi) Plastic Packaging (other than flexible).	1 November 1975	2 months

III. Retail Packaging Testing and Development

i) Folding boxes;	1 July 1973	2 months
ii) Performance testing;	1 November 1973	3 months
iii) Semi-rigid portion packs;	1 September 1974	2 months
iv) Flexible packaging (including vacuum packaging).	1 July 1975	2 months

IV. Engineering

i) Improvement and development of suitable laboratory equipment, evaluation and application of packaging machinery;	1 March 1973	2 months
ii) Installation and calibration of laboratory equipment;	1 November 1973	2 months

Activity	Location	Starting Date	Duration m/m
V. Research in the following fields			
i) Fibreboard;		1 December 1973	3
ii) Cushioning;		1 April 1974	3
iii) Shelf-life;		1 August 1974	3
iv) Packaging for tropical conditions;		1 April 1975	3
v) Recainability of packaging materials.		1 August 1975	3
VI. Organization and methods of training		1 May 1973	1
VII. Package Design		1 May 1973	3
VIII. Organization and management of documentation and information services		1 July 1973	3
3. Training Programme			
I. Packaging materials testing and development			
i) Testing of packaging materials, especially paper and board;	Europe	1 April 1973	3
ii) Testing of packaging materials especially films, foils and laminates;	USA and Europe	1 July 1973	3
iii) Statistical analysis of test results	Europe	1 May 1973	3
II. Transport packaging testing and development			
i) Testing and development of transport packages especially fibreboard packages;	Europe and USA	1 October 1973	3
ii) Testing and development of transport packages especially sacks and shrink packaging	USA and Europe	1 October 1973	3

	Activity	Location	Starting Date	Duration m/m
	iii) Transport packaging of fruits and vegetables;	USA and Europe	1 January 1974	3
	iv) Packaging of light engineering goods - electrical goods;	USA and Europe	1 April 1974	2
	v) Packaging of heavy machinery;	Europe	1 June 1974	2
	vi) Testing and development of seaworthy packagings	Europe	1 August 1974	3
III.	Retail packaging testing and development			
	i) Pre-packaging of frozen fruits and vegetables;	Europe	1 May 1974	3
	ii) General survey on packaging of pharmaceuticals, food, textiles, and clothes;	Europe	1 March 1974	2
	iii) Vacuum packaging techniques;	Europe	1 October 1974	2
	iv) Flexible packaging for liquid;	Europe	1 June 1974	2
	v) Testing and evaluation of performance of retail packages;	Europe	1 June 1973	3
	vi) Testing, development, quality control of glass packaging.	Europe	1 March 1975	2
IV	Engineering			
	i) Mechanisation of packaging operations;	Europe	1 May 1975	4
	ii) Development of packaging testing equipment.	Europe	1 July 1975	4
V.	Research			
	i) Application on development of adhesives;	Europe	1 May 1975	2
	ii) Corrosion prevention through packaging;	USA and Europe	1 March 1974	2
	iii) Evaluation methods on the effect of climate on package;	To be determined	1 September 1975	3
	iv) Development of cushioned packaging;	USA and Europe	1 March 1974	2

Activity	Location	Starting Date	Duration m/m
v) Identification of relevant characteristics of packaging materials from the point of view of processing and use and application;	Europe	1 July 1974	9
vi) Packaging, planning and forecast.	USA	1 March 1974	3
VI. Training and information			
i) Packaging economics;	Europe	1 November 1974	3
ii) Documentation;	Europe	1 June 1973	2
iii) Training;	Europe	1 March 1973	2
iv) Package design.	Europe + USA	1 February 1973	3
VII. General			
Methods of technical, financial control, evaluation of research and development (2 persons).	Europe	1 January 1975	4

4. UNDP provided supplies and equipment

All equipment will be installed in the new premises of the Institute of Packaging in [illegible] according to the delivery schedule.

No.	Item	Quantity	Delivery Time (To be completed by	Cost (Approx.) in US Dollars
1	Mechanical drop tester	1		3,500
2	Height and angle device	1		600
3	Release devices	Several		300
4	Buffers for inclined impact tester	Several		200
5	Impact pendulum	1		600
6	Electronic compression tester	1		20,700
7	Vibrating table	1		13,800
8	Instruments for climatic rooms with control temperature and humidity	Several		46,000
9	Measuring instrument	1		17,300
10	2-way ride recorder	2		1,600
11	Strapping devices	Various		800
12	Stapling and stitching devices	Various		1,000
13	Stitching machines for boxes	Various		1,600
14	Overhead sewing machine for bags	1		800
15	Shrinking tunnel	1		11,500
16	Cameras	3		700
17	Air conditioning apparatus (constant humidity and temperature)	1		10,400
18	Humidity Cabinet (Plate)	1		1,600
19	Electronic tensile and compression tester	1		18,400
20	Stiffness device on above	1		800
21	Tape dispenser	1		200
22	4-point bending stiffness tester	1		2,300
23	Gm. Sq. m. scale	1		200
24	Densometer	1		300

No.	Item	Quantity	Delivery Time	Cost(approx.) in US Dollars
25	Rubber resistance tester	1		800
26	Gas pressure tester for glass bottles	1		1,200
27	Hydrostatic pressure tester for glass bottles	1		4,000
28	Dynamic stiffness tester	1		1,200
29	Taber stiffness tester	1		1,700
30	Bursting strength tester	1		2,300
31	Tear tester Elmendorff	1		1,700
32	Corrugated medium tester	1		7,500
33	PIRA creaser and board stiffness tester	1		800
34	PIRA carton board creaser	1		300
35	Paperstrip cutting devices	Various		100
36	Tape adhesion tester	1		2,300
37	Glue spreading machine for tape tester	1		300
38	Puncture tester (Beech)	Several		1,700
39	Devices for ring crush test (short column)	Several		1,200
40	Static friction tester	1		900
41	Dynamic friction tester	1		900
42	Analytical balance (200 gm. capacity c.l.mg. sensitivity)	1		700
43	Equipment for Cl^-, SO_4^- and S^-			100
44	Thickness gauge continuous	1		900
45	Thickness gauge	1		1,000
46	Flat bed recorder (Philips)	1		1,200
47	2-channel flat bed recorder (varian)	1		2,000
48	X-Y recorder	1		2,300
49	U-V recorder	1		800
50	Universal measuring bridge	1		1,500
51	Stroboscope	1		1,200
52	2-channel oscilloscope with photographic equipment	1		3,500
53	Potentiometer	1		600

No.	Item	Quantity	Delivery Time	Cost (approx.) in US Dollars
54	Worksnop (co-ordinates) microscope	1		500
55	3-psychrometers (moisture measurement)	3		500
56	3-hygroscopes	3		500
57	Mid construction set	1		500
58	Oxygen analyser	1		500
59	Laboratory heat-seal apparatus	1		4,000
60	Apparatus for measurement of gas permeability of films	1		2,300
61	Water vapour permeability tester	1		1,400
62	Electro-magnetic drop table	1		900
63	Vibrating table for retail packaging	1		3,500
64	Vacuum packaging apparatus	1		2,100
65	Humidity cabinet	1		1,400
66	Gaschromatograph and integrator	1		2,300
67	24-point temperature bridge	1		300
68	Heater, stirrer, shaker, hot air blowers, monogeniser, centrifuge, glass-ware and apparatus	1		9,200
69	Dark room equipment	1		800
70	Camera high precision	1		500
71	Xerographic equipment	1		17,300
72	Books			17,300
73	Package design and evaluation equipment			3,500
74	4-channel tape recorder	1		600
75	Cassette tape recorder	1		200
76	Film projector 8mm	1		300
77	Continuous slide projector	1		200
78	Electric typewriters	4		2,300
79	Electronic calculating machine	1		1,400
			TOTAL:	274,500

C. DESCRIPTION OF GOVERNMENT INPUTS

1. Financial obligations

The Government of agrees to assist in the further development of the Institute of Packaging during three years with US$ 1,24 ,000 in as counterpart contribution an US$1 ,900 as a contribution towards local operating costs of experts (in foreign exchange).

2. Assignment of national staff

In addition to the existing staff of the Institute, the following new staff will be provided by the Government to the Institute in

POST	STARTING DATE	TAKE-OVER DATE
1 Deputy Director (industrial liaison)	1 January 1973	1 January 197
4 Assistant Directors	1 January 1973	1 December 197
1 Economic Research Officer	1 January 1973	1 January 197
3 Technical Officers	1 January 1973	1 January 197
2 Technical Officers	1 January 1974	1 January 197
1 Technical Officer	1 January 1975	1 January 197
1 Librarian	1 January 1973	1 January 197
1 Publications Officer	1 January 1973	1 January 1975
1 Packaging Economist	1 January 1973	1 January 1975
1 Assistant Secretary	1 January 1973	1 January 197
1 Accounts Officer	1 January 1974	1 January 197
2 Technical Assistants	1 January 1973	1 January 197
1 Technical Assistant	1 January 1974	1 January 197
1 Technical Assistant	1 January 197	1 January 197
3 Assistants (training and information)	1 January 1973	1 January 197
1 Assistant - " -	1 January 1974	1 January 197
1 Assistant - " -	1 January 197	1 January 197
1 Draughtsman	1 January 1973	1 January 197
1 Office Assistant	1 January 1973	1 January 197
1 Office Assistant	1 January 1974	1 January 197
1 Office Assistant	1 January 1975	1 January 197
1 Stores Assistant	1 January 1973	1 January 197
1 Cashier	1 January 1973	1 January 197
3 Stenographers	1 January 1973	1 January 197
1 Stenographer	1 January 1974	1 January 197
1 Stenographer	1 January 197	1 January 197
3 Laboratory Assistants	1 January 1973	1 January 1975
2 Laboratory Assistants	1 January 1974	1 January 1975
Laboratory Assistant	1 January 197	1 January 1975
3 Jr. Office Assistants	1 January 1973	1 January 1975
1 Jr. Office Assistant	1 January 1974	1 January 1975
1 Jr. Office Assistant	1 January 197	1 January 197
1 Jr. Stenographer	1 January 1973	1 January 197

POST	STARTING DATE	TAKE-OVER DATE
1 Machine Operator	1 January 1973	1 January 197
1 staff Car Driver	1 January 1973	1 January 197
1 Staff Car Driver	1 January 1974	1 January 197
3 Laboratory Attendants	1 January 1973	1 January 197
1 Laboratory Attendant	1 January 1974	1 January 197
	1 January 1973	1 January 197
	1 January 1974	1 January 197
	1 January 197	1 January 197
4 Watchmen	1 January 1973	1 January 197
1 Pump attendant	1 January 1973	1 January 197
1 Gardener	1 January 1973	1 January 197

3. Government provided supplies and equipment

All equipment will be installed in the new premises of the Institute of Packaging in according to the delivery schedule.

No.	Item	Quantity	Delivery time	Approx. Cost in US$
1	Inclined impact tester	1		3,000
2	Rotating drum (barrel)	1		,000
3	Instruments for climatic rooms with temperature and humidity control	several		10,000
4	Shower test	1		600
5	Strapping devices	various		100
6	Stapling and stitching devices	various		100
7	Closing machines for round tins	various		300
8	Sample fibre-board box making machine	1		3,000
9	Tan lin equipment			3,000
10	Air conditioning apparatus (constant humidity and temperature)	1		6,000
11	Drying oven	1		300
12	Sample cutting press concure liner	1		300
13	Cobb tests	3		100
14	pH meter	1		300
15	Universal Microscope	1		600
16	Binocular microscope	1		700
17	Drying stove	1		300
18	Freeze box	1		00
19	Refrigerator	1		400
20	Temperaturemeter	1		400
21	Heater, stirrer, shaker, hot air blowers, monogeniser, centrifuge, glass-ware and apparatus	1		5,000
22	Centre lathe (cabinet base 153 mm centre, 360 mm swing with 610 mm between centres) chucks, face plate, 4-way indicating turret, tool, holders, etc	1		2,000

No.	Item	Quantity	Delivery time	Approx. Cost in US$
23	Pillar drill (330 mm square table 7/8 capacity mild steel) Chucks, drills, vices, etc.	1	1	400
24	Band saw (for metaland other materials, 510 mm throat, 203 mm depth under guide, 584 mm square table	1		1,400
25	Treadle guillotine (for 1.6 mm steel; 1219 mm capacity)	1		400
26	Milling machine (table size 1200 mm x 254 mm + vices, heads, cutters, tools, chucks)	1		4,000
27	Power saw - 153 mm capacity	1		400
28	Electric hand drill - 2-speed 0-13 mm capacity	1		100
29	Double ended grinding machine (204 mm wheel)	1		100
30	Gas welding and brazing equipment	1		200
31	Micrometers 6-25 mm; 25 - 50 mm 0-75 " ; 75 -100 mm	various		100
32	Vernier height gauge 0-310 mm	1		100
33	Vernier calipers 0-250mm; Knurling tool			100
34	Miscellaneous gauges, calipers, plates etc.	several		100
35	Radial arm saw (bench type)	1		400
36	Bench saw	1		400
37	Bench drill - 13 mm capacity; 178 mm throat	1		100
38	Bench grinder	1		100
39	Hand tools	various		300
40	Dark room equipment	various		300
41	Books	several		2,000
42	Auditorium equipment	various		3,000
43	Other office equipment	various		6,000
44	Pick-up van	1		5,000
45	Car	1		3,000
46	Office copy machine photographic-heat or ammonia process or 1 to 1 copy of continuous tone material	1		600
47	Typewriters with long carriage	4		2,000
48	Comptometer	1		400
49	Addressing machine	1		3,000
			TOTAL	80,500

WORK PLAN - BAR CHART (or Activity Network)

(To be completed by

CHAPTER IV

BUDGET

A. Project Budget covering UNDP Contribution
(In U.S. Dollars)

Country:

Project No:

Title: Assistance in the further development of the Institute of Packaging in

Code No.									
10	**Project Personnel Component**								
11	**Experts**								
01	Project Manager	36	90,000	12	30,000	12	30,000	12	30,000
19	Component Total	36	90,000	12	30,000	12	30,000	12	30,000
20	**Sub-Contract Component**								
21	**Sub-contracts**								
21.01	Mechanical Properties Testing	1	2,500	1	2,500				
02	Physico-Chemical Testing	1	2,500	1	2,500				
03	Microbiological	1	2,500			1	2,500		
04	Corrosion Prevention	3	7,500			3	7,500		
05	Film, foil, laminates	3	7,500			3	7,500		
06	Paper and Board	3	7,500					3	7,500
07	Wooden Packaging	2	5,000	2	5,000				
08	Performance testing	3	7,500	3	7,500				
09	Fibreboard Packaging	3	7,500			3	7,500		
10	Shrink Packaging	2	5,000	2	5,000				
11	Sacks	2	5,000					2	5,000
12	Plastic Packaging (other than flexible)	2	5,000					2	5,000
13	Folding boxes	2	5,000	2	5,000				
14	Performance Testing	3	7,500	3	7,500				
15	Semi-rigid portion packs	2	5,000			2	5,000		
16	Flexible packaging (including vacuum packaging)	2	5,000					2	5,000
17	Laboratory instruments packaging machinery	2	5,000	2	5,000				
18	Laboratory instruments	2	5,000	2	5,000				
19	Fibreboard	3	7,500			3	7,500		

Code No.		m/m	Total	m/m	1973	m/m	1974	m/m	1975
20	Cushioning	3	7,500			3	7,500		
21	Shelf-life	3	7,500			3	7,500		
22	Packaging for tropical conditions	3	7,500					3	7,500
23	Recyclability of packaging materials	2	5,000					2	5,000
24	Training	1	2,500	1	2,500				
25	Package Design	3	7,500	3	7,500				
26	Documentation	3	7,500	3	7,500				
19	Component total	60	150,000	25	62,500	21	52,500	14	35,000
30	Training Component *								
31	Fellowships								
31.01	Testing of packaging materials special paper and board	3	2,350	3	2,350				
02	Testing of packaging materials especially, films, foils and laminates	3	2,350	3	2,350				
03	Statistical analysis of test results	2	1,900	2	1,900				
04	Testing and development of transport packages especially fibreboard	3	2,350	3	2,350				
05	Testing and development of transport packages especially sacks and shrink packaging	3	2,350	3	2,350				
06	Transport packaging of fruits and vegetables	3	2,350			3	2,350		
07	Packaging of light engineering - electrical goods	2	1,900			2	1,900		
08	Packaging of heavy machinery	2	1,900			2	1,900		
09	Testing and development of sea-worthy packaging	3	2,350			3	2,350		
10	Pre-packaging of fresh fruits and vegetables	3	2,350			3	2,350		
11	General survey on packaging of pharmaceuticals, food, textiles and clothes	2	1,900			2	1,900		
12	Vacuum packaging techniques	2	1,900			2	1,900		
13	Flexible packaging for liquid	2	1,900			2	1,900		
14	Testing and evaluation of performance of retail packages	3	2,350	3	2,350				
15	Testing development quality control of glass packaging	2	1,900			2	1,900		

Code No.		m/m	Total $	m/m 1973	$	m/m 1974	$	m/m 1975	$
16	Mechanization of packaging operations	4	2,800			4	2,800		
17	Development of packaging testing equipment	4	2,800			4	2,800		
18	Application and development of adhesives	2	1,900			2	1,900		
19	Corrosion prevention through packaging	2	1,900			2	1,900		
20	Evaluation methods on the effect of climate on packaging	2	1,900			2	1,900		
21	Development of cushioned packaging	2	1,900			2	1,900		
22	Identification of relevant characteristics of packaging materials from point of view of processing, end use and application	9	5,050			5	3,250	4	1,800
23	Packaging, planning and forecast	3	2,350			3	2,350		
24	Packaging economics	3	2,350			2	1,900	1	450
25	Documentation	2	1,900	2	1,900				
26	Training	2	1,900	2	1,900				
27	Package Design	3	2,350	3	2,350				
28	Methods of tech. fin. control evaluation & development (2 persons)	4	2,800					4	2,800
29	Component total:	80	64,000	24	19,800	47	39,150	9	5,050
40	Equipment Component								
41	Non-expendable equipment		274,100		274,100				
49	Component total:		274,100						
99	Grand total:		578,100		386,400		121,650		70,050

* In the indicated amount the $1,000 for travel costs are also included.

B. Project Budget covering Government Counterpart Contribution in kind (local currency)

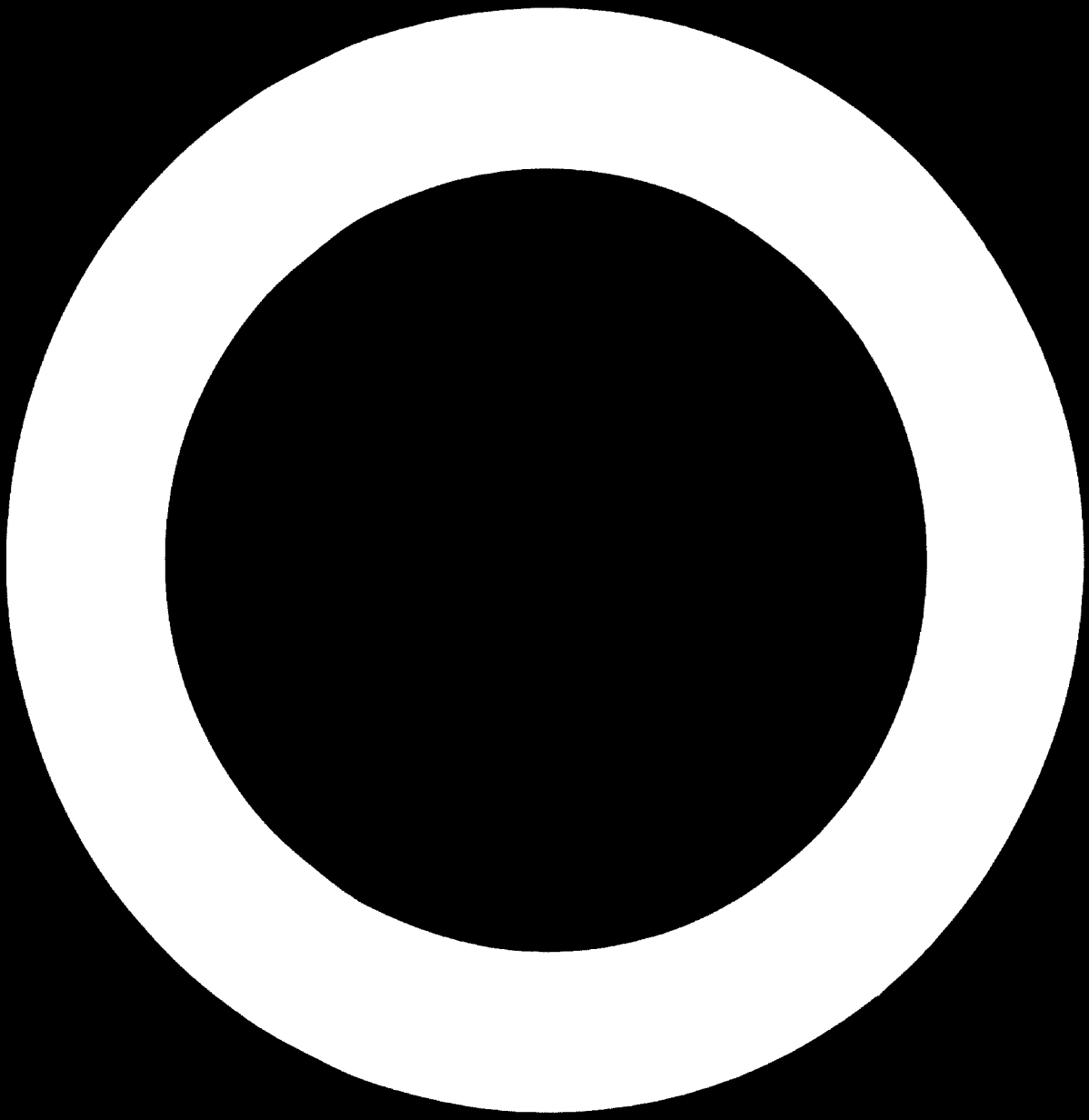
Country:

Project No:

Title: Assistance in further development of the Institute of Packaging in

10	Project Personnel Component	m/m	Total	m/m	1973	m/m	1974	m/m	1975
	4 Assistant Directors	36	1[illegible],400	12	[illegible],600	12	61,600	12	65,600
	6 Technical Officers	36	172,800	12	[illegible],600	12	[illegible],400	12	54,800
	Draftsman	36	1[illegible],300	12	[illegible],100	12	6,100	12	6,100
	5 Technical Assistants	36	[illegible],100	12	20,400	12	[illegible],240	12	30,540
	6 Laboratory Assistants	36	0, 00	12	13,200	12	21,600	12	21,900
	4 Laboratory Attendants	36	22,36[illegible]	12	[illegible], 00	12	7,96[illegible]	12	9,600
	Machine Operator	36	1[illegible],300	12	6,100	12	6,100	12	6,100
	Economic Research Officer	36	4 ,200	12	11,400	12	11,200	12	15,000
	Librarian	36	32,400	12	10,800	12	10,800	12	10,800
	Publications Officer	36	32,400	12	10,800	12	10,800	12	10,800
	Documentation Officer	36	32,400	12	10,800	12	10,800	12	10,800
	Assistants	36	7[illegible], 00	12	21,[illegible]20	12	2[illegible],400	12	30,600
	Accounts Officer	36	32,400	12	10, 00	12	10,800	12	10,800
	3 Assistants	36	47,700	12	12, [illegible]	12	16,[illegible]60	12	16,360
	Cashier	36	1[illegible],300	12	6,100	12	6,100	12	6,100
	Stores Assistant	36	1[illegible],300	12	6,100	12	6,100	12	6,100
	7 Stenographers	36	104,[illegible]	12	29,[illegible]20	12	32,0[illegible]	12	42,[illegible]40
	2 Jr. Stenographers	36	24,192	12	[illegible],912	12	[illegible],640	12	[illegible],640
	7 Jr. Assistants	36	[illegible],900	12	13,000	12	17,300	12	21,600
	Clerk	36	10,800	12	3,600	12	3,600	12	3,600
	2 Drivers	36	1[illegible],200	12	1, 00	12	[illegible],200	12	7,200
	Pump Attendant	36	7,200	12	2,400	12	2,400	12	2,400
		36	4[illegible],232	12	11,[illegible]	12	16,224	12	19,200
	Gardener	36	7,[illegible]00	12	2,400	12	2,400	12	2,400
	3 Watchmen	36	21,600	12	7,200	12	7,200	12	7,200
19	Component Total	[illegible]00	11[illegible],320	300	[illegible]2,612	300	401,620	300	[illegible]44,000
40	Equipment								
41	Non-expendable equipment		604,000		604,000				
42	Premises		[illegible]30,000		45,[illegible]0,000				

50	Miscellaneous		Total	1973	1974	1975
51	Installation charges		1,16,000	1,16,000		
52	Electricity and water charges		56,000	10,000	13,000	14,000
53	Printing, stationery and postage		1,85,000	50,000	60,000	75,000
54	Conveyance and travelling allowance		1,85,000	50,000	60,000	75,000
55	Advertisements		50,000	20,000	20,000	10,000
56	Running expenses of laboratory		1,50,000	50,000	50,000	50,000
57	Seminars, symposia		30,000	10,000	10,000	10,000
58	Auditors' fee, rates and taxes		75,000	25,000	25,000	25,000
59	COMPONENT TOTAL		59,61,000	54,65,000	2,37,000	2,59,000
99	GRAND TOTAL		71,49,320	58,07,612	6,38,628	7,03,080



ANNEX I

ORGANIZATION OF THE PROJECT

General responsibilities

1. The Government, the UNDP and the Executing Agency shall jointly be responsible for the execution of the project and the realization of its objectives as described in Part II of this Project Document.

2. The Government shall provide or arrange for the national project personnel, training facilities, land, buildings, equipment and other required services and facilities. It will designate the Government co-operating Agency named in the cover page of this document which will hereinafter be referred to as the "Co-operating Agency" and which will be directly responsible for the implementation of the Government contribution to the project.

3. The UNDP undertakes to complement and supplement the Government participation and will provide, through the Executing Agency, the required expert services, training, equipment and other services within the funds available to the project.

4. Upon commencement of the project the Executing Agency may be requested to assume primary responsibility for project execution. However, that primary responsibility shall be exercised in consultation and in agreement with the Co-operating Agency. Arrangements to this effect shall be stipulated in the project Work Plan as well as for the transfer of this responsibility to the Government or to an entity designated by the Government during the execution of the project.

5. Part of the Government's participation may take the form of a cash contribution to UNDP. In such cases, the Executing Agency will provide the related services and facilities and will account annually to the UNDP and to the Government for the expenditure incurred.

Participation of the Government

6. The Government shall provide to the project the services, equipment and facilities in the quantities and at the times specified in the Work Plan. Budgetary provision - either in kind or in cash - for the Government's participation so specified shall be set forth in the Project Budgets.

7. The Co-operating Agency shall in consultation with the Executing Agency assign a director for the project on a full-time basis. He shall carry out such responsibilities in the project as are assigned to him by the Co-operating Agency.

8. The estimated cost of items included in the Government contribution, as detailed in the Project Budget, shall be based on the best information available at the time of drafting this project proposal. It is understood that price fluctuations during the period of execution of the project may necessitate an adjustment of said contribution in monetary terms; the latter shall at all times be determined by the value of the services, equipment and facilities required for the proper execution of the project.

9. Within the given number of man-months of personnel services described in the Work Plan minor adjustments of individual assignments of project personnel provided by the Government may be made by the Government in consultation with the Executing Agency, if this is found to be in the best interests of the project.

10. The Government shall continue to pay the local salaries and appropriate allowances of national project personnel during the period of their absence from the project while on UNDP fellowships.

11. The Government shall defray any customs duties and other charges related to the clearance of project equipment, its transportation, handling, storage and related expenses within the country. It shall be responsible for safe custody of the equipment, its installation and maintenance, insurance, and replacement if necessary, after delivery to the project site.

12. The Government shall make available to the project - subject to existing security provisions - any published and unpublished reports, maps, records and other data which are considered necessary to the implementation of the project.

13. The Government shall assist all project personnel in finding suitable housing accommodation at reasonable rents.

14. The services and facilities specified in the Work Plan which are to be provided to the project by the Government by means of a contribution in cash shall be set forth in the Project Budget. Payment

of this amount shall be made in local currency to the UNDP in accordance with the Schedule of Payments by the Government

15. Payment of the above-mentioned contribution to the UNDP on or before the dates specified in the Schedule of Payments by the Government is a prerequisite to commencement or continuation of project operations.

Participation of the UNDP and of the Executing Agency

16. The UNDP shall provide to the project through the Executing Agency the services, equipment and facilities described in the Work Plan. Budgetary provision for the UNDP contribution as specified shall be set forth in the Project Budget.

17. The Executing Agency shall consult with the Government on the candidature of the Project Manager [1] who, under the direction of the Executing Agency, will be responsible in the country for the Executing Agency's participation in the project. The Project Manager shall supervise the experts and other agency personnel assigned to the project, and the on-the-job training of national project personnel. He shall be responsible for the management of all equipment provided to the project from UNDP funds.

18. The Executing Agency, in consultation with the Government, shall assign international staff and other personnel to the project as specified in the Work Plan, select candidates for fellowships and determine standards for the training of national project personnel.

19. Fellowships shall be administered in accordance with the fellowship regulations of the Executing Agency.

20. The Executing Agency may, in agreement with the Government and UNDP, execute part or all of the project by subcontract. The selection of subcontractors shall be made, after consultation with the Government, in accordance with the Executing Agency's procedures.

21. All material, equipment and supplies which are purchased from UNDP resources will be used exclusively for the execution of the project, and will remain the property of the UNDP in whose name it will be held by the Executing Agency. Equipment supplied by the UNDP shall be marked with the insignia of the UNDP and of the Executing Agency.

1/ May also be designated Teamleader or Chief Technical Adviser, as appropriate.

22. Arrangements may be made, if necessary, for a temporary transfer of custody of equipment to local authorities during the lifetime of the project, without prejudice to the final transfer.

23. Prior to completion of UNDP assistance to the project, the Government, the UNDP and the Executing Agency shall consult as to the disposition of all project equipment provided by the UNDP. Title to such equipment shall normally be transferred to the Government, or to an entity nominated by the Government, when it is required for continued operation of the project or for activities following directly therefrom. The UNDP may, however, at its discretion, retain title to part or all of such equipment.

24. At an agreed time after the completion of UNDP assistance to the project, the Government and the UNDP, and if necessary the Executing Agency, shall review the activities continuing from or consequent upon the project with a view to evaluating its results.

Facilities, privileges and immunities

UNDP and Executing Agency personnel

25. In accordance with the Agreement concluded by UNDP and the Government concerning the provision of assistance, the personnel of UNDP and other United Nations organizations associated with the project, shall be accorded facilities, privileges and immunities specified in the said Agreement.

Subcontractors and their personnel

26. The Executing Agency's contractors and their personnel (except Government nationals employed locally) shall:

(a) Be immune from legal process in respect of all acts performed by them in their official capacity in the execution of the project;

(b) Be immune from national service obligations;

(c) Be immune together with their spouses and relatives dependent on them from immigration restrictions;

(d) Be accorded the privileges of bringing into the country reasonable amounts of foreign currency for the purposes of the project or for personal use of such personnel, and of withdrawing any such amounts brought into the country, or, in accordance with the relevant foreign exchange regulations, such amounts as may be earned therein by such personnel in the execution of the project;

(e) Be accorded together with their spouses and relatives dependent on them the same repatriation facilities in the event of international crises as diplomatic envoys

27. All personnel of the Executing Agency's contractors shall enjoy inviolability for all papers and documents relating to the project

28. The Government shall either exempt from, or bear the cost of any taxes, duties, fees or levies which it may impose on any foreign firm or organisation which may be retained by the Executing Agency and on the foreign personnel of any such firm or organization in respect of:

(a) The salaries or wages earned by such personnel in the execution of the project;

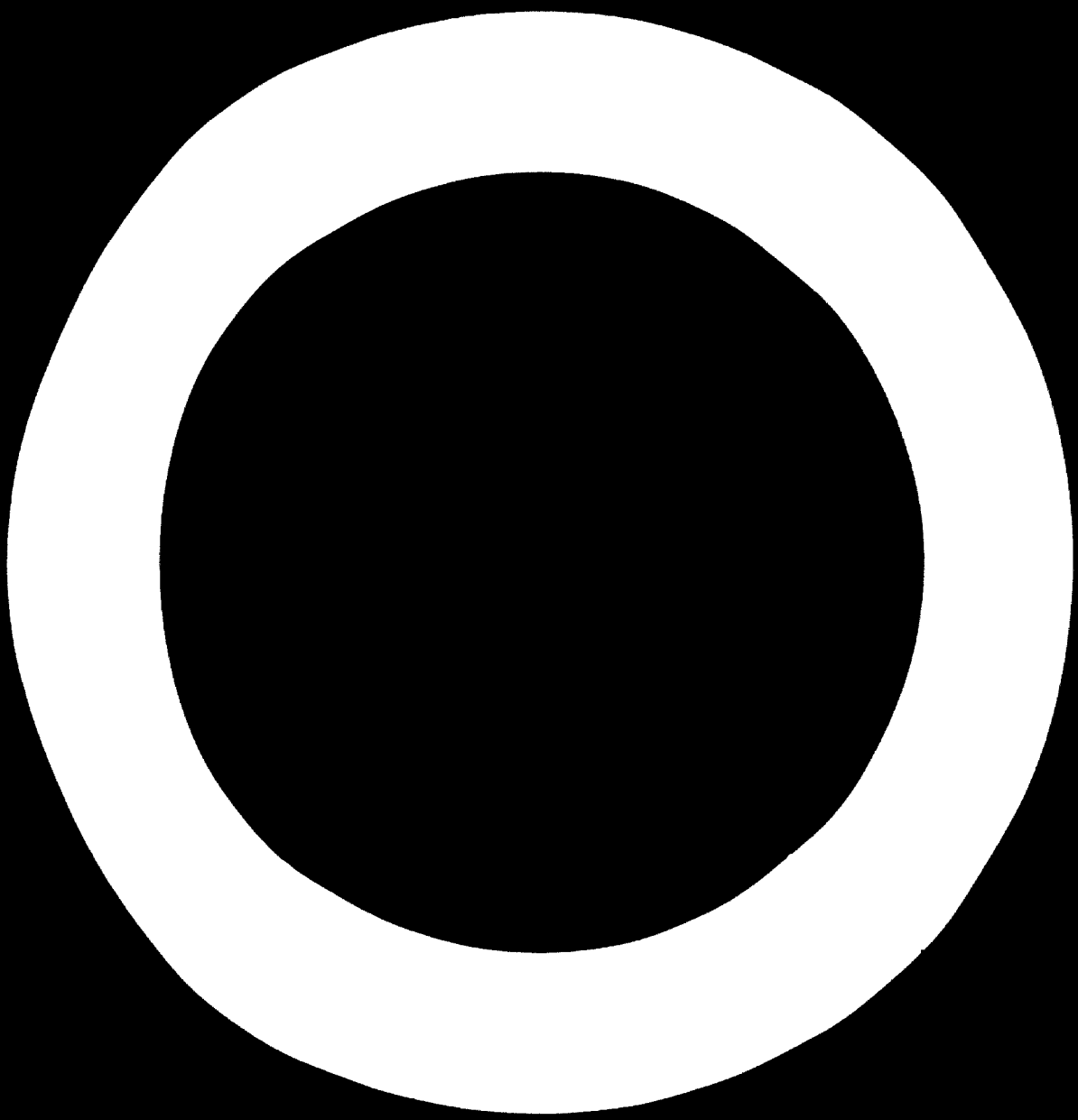
(b) Any equipment, materials and supplies brought into the country for the purposes of the project or which, after having been brought into the country, may be subsequently withdrawn therefrom;

(c) Any substantial quantities of equipment, materials and supplies obtained locally for the execution of the project, such as, for example, petrol and spare parts for the operation and maintenance of equipment mentioned under (b) above, with the provision that the types and approximate quantities to be exempted and relevant procedures to be followed shall be agreed upon with the Government and, as appropriate, recorded in the Work Plan; and

(d) As in the case of concessions currently granted to UNDP and Executing Agency's personnel, any property brought, including one privately owned automobile per employee, by the firm or organization or its personnel for their personal use or consumption or which after having been brought into the country, may subsequently be withdrawn therefrom upon departure of such personnel.

29. The privileges and immunities to which such firm or organisation and its personnel may be entitled, referred to in the paragraphs above, may be waived by the Executing Agency where, in its opinion or in the opinion of the UNDP, the immunity would impede the course of justice and can be waived without prejudice to the successful completion of the project or to the interest of the UNDP or the Executing Agency.

30. The Executing Agency shall provide the Government through the Resident Representative with the list of personnel to whom the privileges and immunities enumerated above shall apply.



LIST OF EQUIPMENT — TRANSPORT PACKAGING, TESTING & DEVPT. SECTION — ANNEX II

NAME OF EQUIPMENT	POSSIBLE MANUFACTURER(S)	ESTIMATED PRICE IN U.S. DOLLARS	IMPORT	INDIGENOUS
DROP-TESTS				
Mechanical drop table	B.K. or build from drawings	3,500	3,500	
Height and angle device	B.K. or build from drawings	600	600	
Release Devices	Several	800	800	
IMPACT TESTS				
Inclined impact tester	Build from drawings	3,000		3,000
Buffers for above		200	200	--
Retaining drum (large)	Build from drawings	1,000	--	1,000
Impact pendulum	B.K. or build from drawings	600	600	--
COMPRESSION TESTS				
Electronic compression tester	L & T	20,700	20,700	--
VIBRATION TESTS				
Vibrating Table	L & T and L.C.S.	13,800	13,800	--
CLIMATE				
Instruments for climatic rooms with control temp. & humidity	Voltas & MICO	50,000	40,000	10,000
Shower Test	Build from drawings	600	--	600
EQUIPMENT FOR MEASURING SHOCK, FRAGILITY & CUSHIONING EVLTN.				
Measuring instrument	Monterey, U.S.A.	17,300	17,300	--
2-way ride recorder (2)	Impact Register, U.S.A.	11,600 (2 x 800)	1,600	--
		1,27,900	1,05,100	22,600

Annex -II Contd

Transport Packaging, Testing & Devpt.Section (Contd..)

NAME OF EQUIPMENT	POSSIBLE MANUFACTURERS	ESTIMATED PRICE IN U.S.DOLLARS	IMPORT	INDIGENOUS
VARIOUS INSTRUMENTS & DEVICES		B/F 1,..7,700	1,[illegible],100	[illegible]
Strapping devices	Various	900	[illegible]	[illegible]
Stapling & Stitching devices	Various	1,100	1,[illegible]	[illegible]
Stitching Machines for boxes	Sc[illegible] U.K.	1,[illegible]	[illegible]	–
Overhead Sewing Machine for bags	Union	[illegible]	[illegible]	
Tape Dispenser	--	[illegible]	[illegible]	
Closing machine for [illegible]	--	[illegible]	–	
Shrinking tunnel	[illegible]	[illegible]	[illegible]	–
Sample fibre-board box making machine		[illegible]	—	[illegible]
Camera (3)		700	700	–
Handling Equipment		3,000	—	3,000
TOTAL		1,51,300	1,21,700	[illegible]

PACKAGING TESTING & DEVELOPMENT SECTION

NAME OF EQUIPMENT	POSSIBLE MANUFACTURER(S)	ESTIMATED PRICE IN U.S.DOLLARS	IMPORT	INDIGENOUS
Air-conditioning apparatus (Constant humidity & temp.)	Keiser, W.G.	16,400	10,400	6,000
Humidity Cabinet (PIRA)	Lab.Thermal Eqmt.Ltd., Greenfield, UK.	1,600	1,600	—
Drying Oven		300	—	300
Electronic Tensile and compression tester	L & W	16,400	18,400	—
		36,700	[illegible]	[illegible]

Annex II Contd.

Material Testing & Devpt.Section (Contd..)

NAME OF EQUIPMENT	POSSIBLE MANUFACTURER(S)	ESTIMATED PRICE IN U.S.DOLLARS	IMPORT	INDIGENOUS
		B/F 36,700	30,400	6,300
Stiffness device on above	L & W	600	600	—
4-point Loading stiffness Tester	B & K	2,300	2,300	--
Gm.Sq.m.Scale		200	200	—
Densometer		300	300	—
Rubber Resistance Tester		800	800	—
Gas Pressure Tester for Glass Bottles.		1,200	1,200	--
Hydrostatic Pressure Tester for Glass Bottles		4,000	4,000	--
Dynamic stiffness tester	Lhomargy Fr.	1,200	1,200	—
Taber stiffness tester	T.M.I.	1,700	1,700	—
Bursting strength tester	Mennberg Zw.	2,300	2,300	—
Tear Tester Elmendorff	Mennberg Zw.	1,700	1,700	--
Corrugated medium tester	Liberty Engg.Co.,Illinois, U.S.A.	7,500	7,500	—
PIRA creaser & board stiffness tester	Headland, Borthmouth, U.K.	800	800	—
PIRA carton board creaser	Headland, Borthmough, U.K.	300	300	--
Paperstrip cutting devices	Various	100	100	—
Tape adhesion tester	Strohlein, W.G.	2,300	2,300	—
Glue spreading machine (for tape tester)	Strohlein, W.G.	300	300	—
		64,500	58,200	6,300

Annex II

Material Testing & Devpt. Section (Contd.)

NAME OF EQUIPMENT	POSSIBLE MANUFACTURER(S)		ESTIMATED PRICE IN U.S. DOLLARS	IMPORT	INDIGENOUS
Puncture Tester (Beech)	Several	B/F	64,500 1,700	58,200 1,700	6,300 —
Sample cutting press concora liner	Indigenous		300		300
Devices for ring crush test (short column)	Several		1,200	1,200	—
Cup Tests (3)	Build from drawings		100	1	100
Static friction tester	Davenport, U.K.		900	900	—
Dynamic friction tester	U.K.		900	900	—
pH meter			200	—	200
Analytical balance (200 g. capacity c.i. mg sensitivity)			700	700	—
Equipment for Cl^-, SO_4^- and S^-	Lovibund, U.K.		100	100	—
Thickness gauge continuous	U.K.		900	900	—
Thickness gauge	Johansson		1000	1,000	—
TOTAL			73,400	66,000	7,000

Annex XII Contd.

RESEARCH SECTION

NAME OF EQUIPMENT	POSSIBLE MANUFACTURER(S)	ESTIMATED PRICE IN U.S.DOLLARS	IMPORT	INDIGENOUS
RECORDING APPARATUS				
Flat bed recorder	Philips	1,200	1,200	—
2-channel flat bed recorder	Varian	2,000	2,000	—
X - Y recorder	Hewlitt Packard	2,300	2,300	—
UV recorder	SE Laboratories	800	800	—
ELECTRONIC APPARATUS				
Universal measuring bridge	Hottinger	1,500	1,500	—
Stroboscope	Philips	1,200	1,200	—
2-channel oscilloscope with photographic equipment	Hewlitt Packard	3,500	3,500	—
Potentrometer	Jarthly	600	600	—
OPTICAL APPARATUS				
Universal microscope	Wild	600	—	600
Binocular microscope	Wild	700	—	700
Workshop (co-ordinates) Microscope.		500	500	—
MOISTURE MEASUREMENT				
3-psychrometers (moisture measurement)	Thiess.a.s.o.	500	500	—
3-hygroscopes	Thiess, Lambrecht	500	500	—
CALCULATING MACHINE				
Electronic calculating machine	Canola, Friden, etc.	1,400	1,400	—
EAC construction set		500	500	—
Oxygen Analyser		500	500	—
TOTAL		18,300	17,000	1,300

Annex II Contd.

RETAIL PACKAGING, TESTING & DEVPT. SECTION

NAME OF EQUIPMENT	POSSIBLE MANUFACTURER(S)	ESTIMATED PRICE IN U.S. DOLLARS	IMPORT	INDIGENOUS
Laboratory Heat-seal apparatus	Modified Sentinel PIMA	4,000	4,000	--
Apparatus for measurement of its permeability of films		2,300	2,300	—
Water vapour permeability tester		1,400	1,400	—
Electro-magnetic cross table	B.S. or Drewings	900	900	—
Vibrating table for ret-il packg.	B.S.	3,500	3,500	—
Vacuum packaging apparatus	Krome & Grube Co.	2,100	2,100	—
Auriculo Cabine.	Lab. Industrial Equipment, Greenfield, U.S.	1,400	1,400	—
Gas chromatograph & integrator	Beckers Neth. Hewlett Packard Ltd. Perkin Elmer. UK	2,300	2,300	—
Drying stove	Memmert or Imp.	300		300
Freeze Box		500		500
Refrigerator		400		400
2-point temperature bridge	Pechel Neth.	300	300	—
Temperature meter		400		400
Heater, Stirrer, Shaker, Hot air blowers, Homogeniser, Centrifuge, Glass-ware & apparatus.		14,200	9,200	5,000
TOTAL		34,000	27,400	6,600

Annex II Page 4.

WORKSHOP

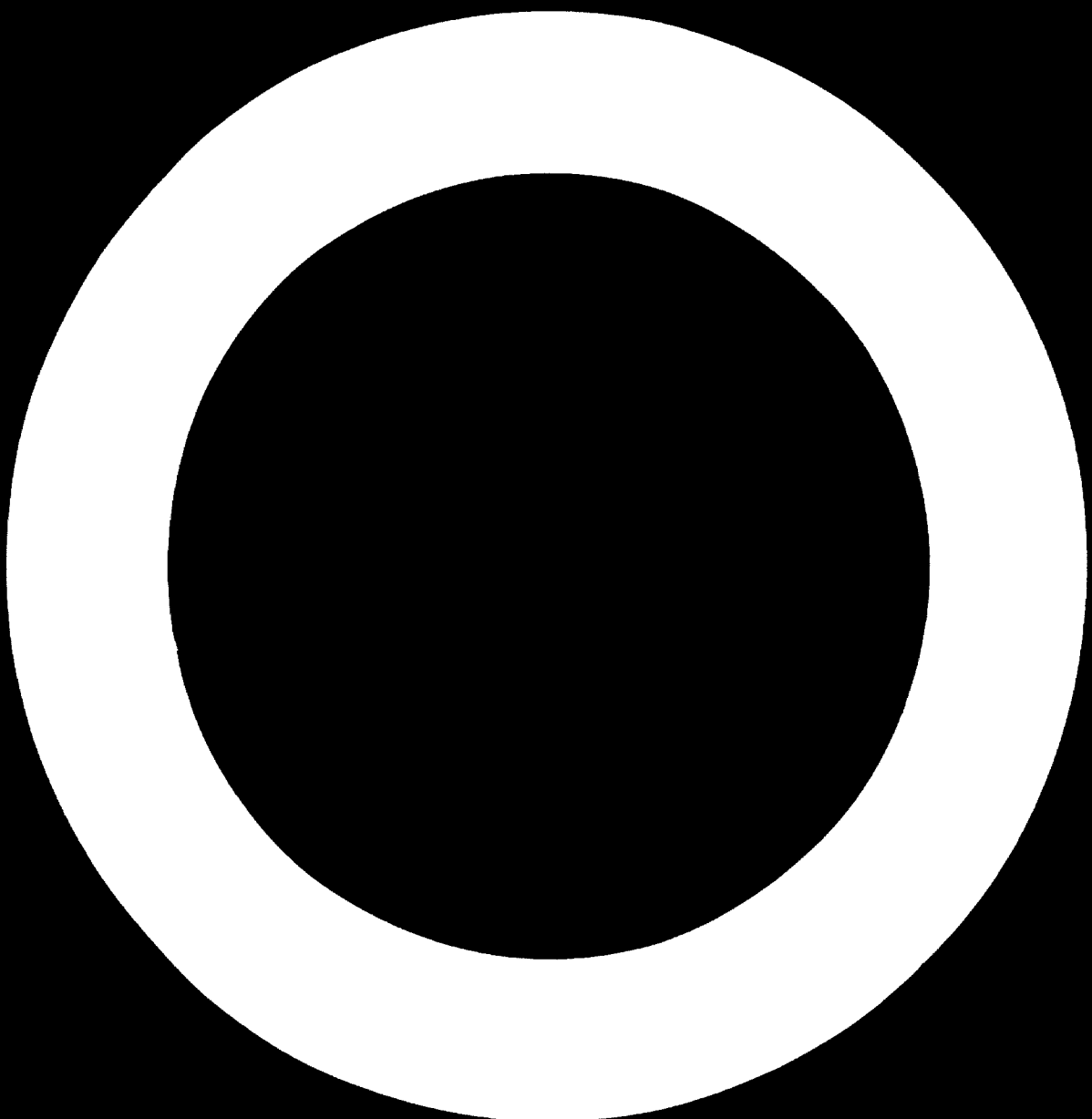
NAME OF EQUIPMENT	POSSIBLE MANUFACTURER(S)	ESTIMATED PRICE (In U.S.DOLLARS)	IMPORT	INDIGENOUS
Centre Lathe (cabinet type, 153 mm centre, 360 mm swing with 610 mm between centres)				
+ chucks, face plate, 4-way indicating turret, tool, holders, etc.		2,000	—	2,000
Pillar Drill (330 mm square table 7/8 capacity mild steel)				
+ Charts drills vices, etc.		400	—	400
Band Saw (for metal and other materials)				
510 mm throat 203 mm depth under guide 794 mm square table		1,400	—	1,400
Treadle Guillotine (for 1.6 mm steel 1219 mm capacity)		400	—	400
Milling Machine (table size 1200 mm x 254 mm.) + vices, heads, cutters, tools, chucks.		4,000	—	4,000
Power Saw - 153 mm capacity		400	—	400
Electric Hand Drill - 2 speed 0-13 mm capacity.		100	—	100
Double Ended Grinding Machine (204 mm wheel)		100	—	100
Gas welding and brazing equipment		200	—	200
		9,000		9,000

Annex II Contd

Workshop (contd.)

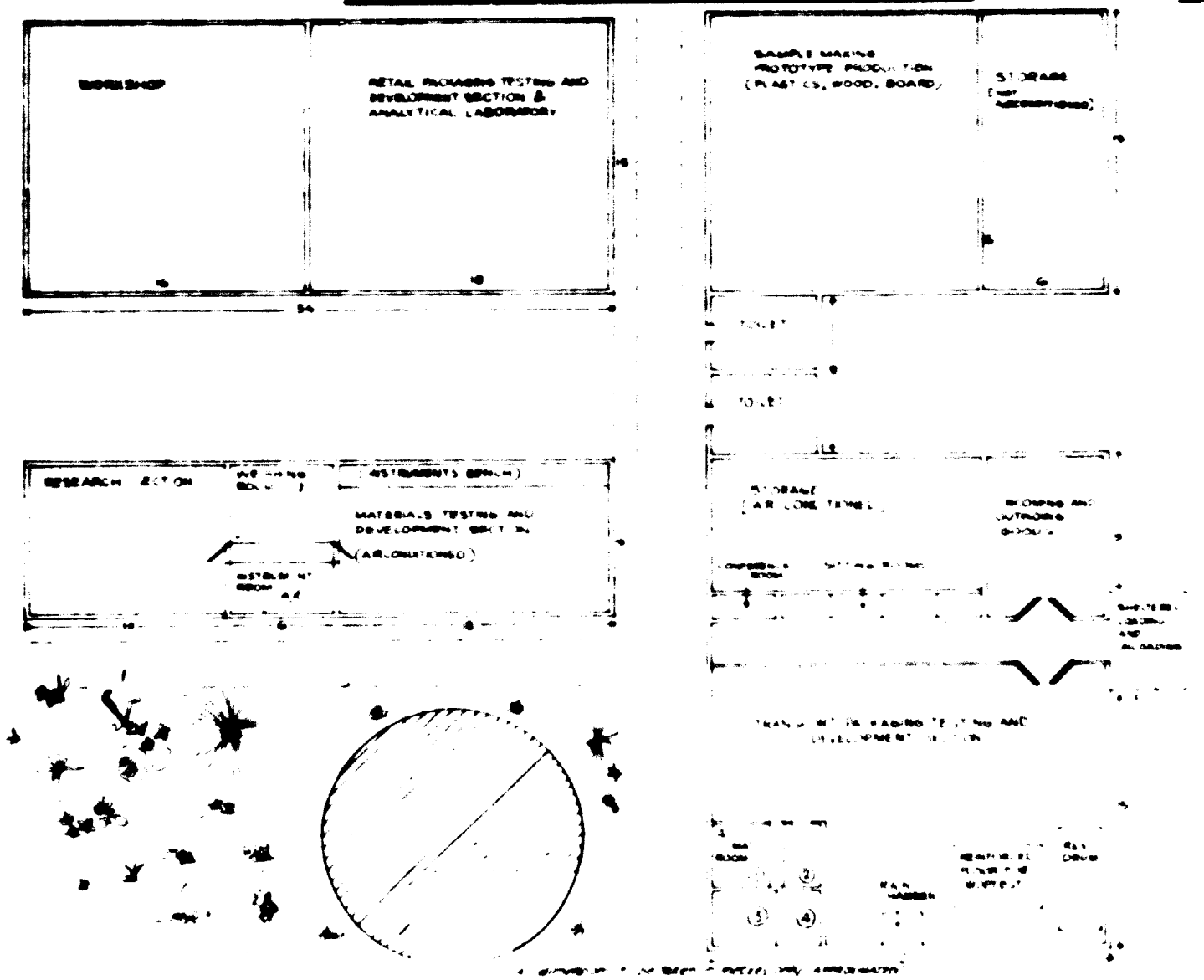
NAME OF THE EQUIPMENT	POSSIBLE MANUFACTURER(S)	ESTIMATED PRICE In U.S. DOLLARS	IMPORT	INDIGENOUS
Micrometers 6-25 mm)	M/F	4,000		4,00
25-50)		10	-	10
50-75)				
75-100)				
Vernier height gauge 0-210 mm		1	—	1
Vernier calipers 0-250 mm)				
Knurling tool)		1	-	1
Miscellaneous gauges, calipers, plates, etc.		1	--	1
Radial arm saw (bench type)		3	--	3
Bench saw		40	—	40
Bench drill - 13 mm capacity, 153 mm throat.		1	--	1
Bench grinder		1	—	1
Hand tools		3	—	3
PHOTO & REPRODUCTION UNIT				
Dark room equipment		1,1	8	300
Camera high precision		800	500	—
Library Equipment				
Xerox graphic equipment		17,300	17,300	—
Books		19,300	17,300	2,000
Division Equipment				
Package Design & Evaluation Equmt.		3,500	3,500	—
4-channel tape recorder		3	6	--
		53,3	40,000	13,0

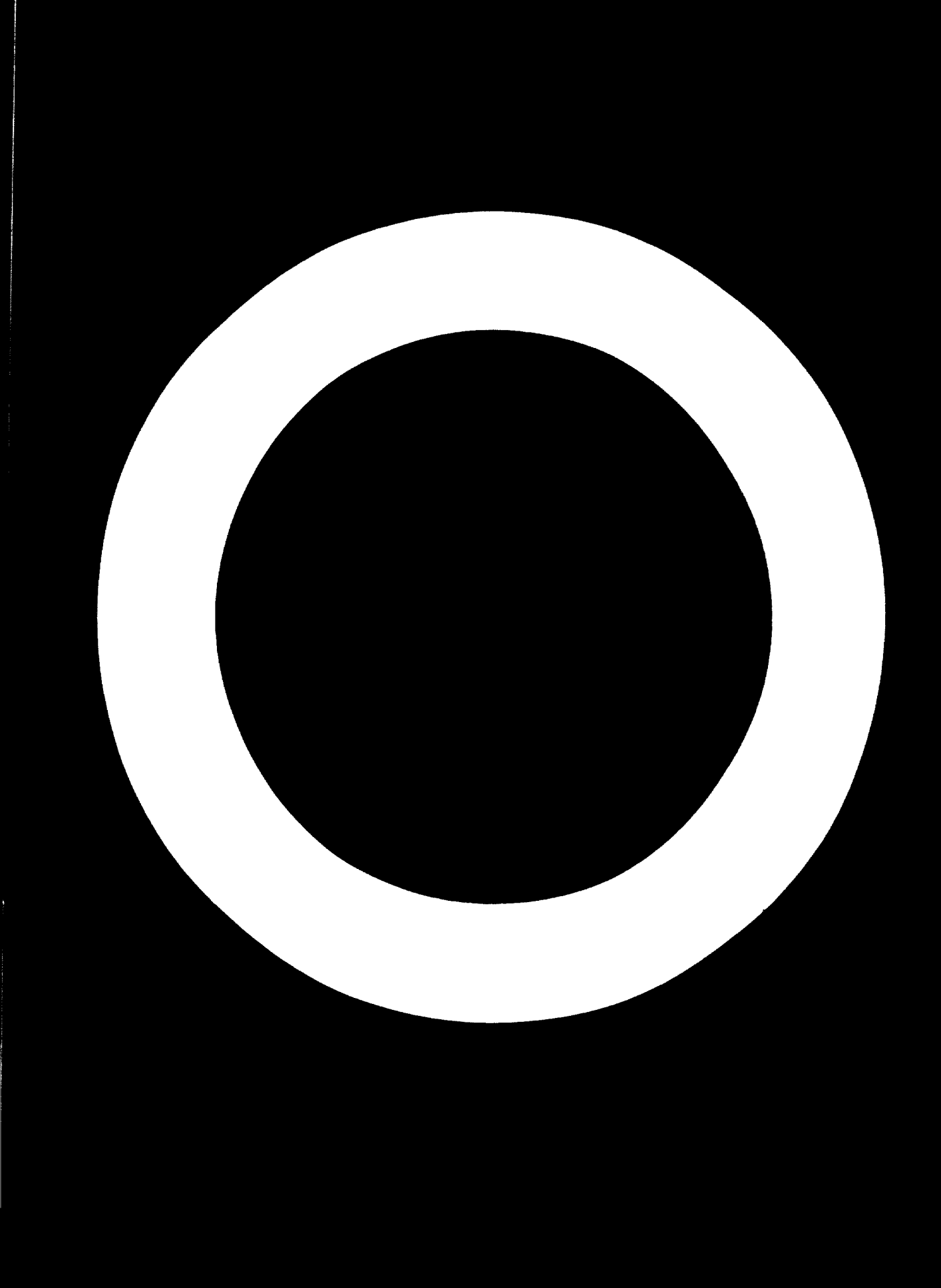
NAME OF EQUIPMENT (contd..	POSSIBLE MANUFACTURER(S)	ESTIMATED PRICE IN U.S. DOLLARS	IMPORT	INDIGENOUS
Training Equipment (contd..)	M/S	93,000	40,000	13,000
Cassett Tape recorder		200	200	—
Film Projector 8 mm		300	300	—
Continuous Slide Projector		200	200	—
Auditorium Equipment		3,000	—	3,000
Office Equipment				
Electric Typewriters (4)		2,300	2,300	—
Other office equipment		5,000	—	5,000
Pick-up Van		3,000	—	3,000
Car		2,000	—	2,000
Office copy machine photographic - heat or ammonia process for 1 to 1 copy of continuous tone material.		600	—	600
Typewriters - 1 with long carriage		2,000	—	2,000
Comptometer		400	—	400
Addressing Machine		3,000	—	3,000
TOTAL		79,000	43,000	36,000



PROPOSED TECHNOLOGICAL DESIGN OF THE RESEARCH & DEVELOPMENT DIVISION

Annex XXI





ANNEX IV

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO

DRAFT JOB DESCRIPTION

For a Project Manager of a Large Scale Project

TITLE Project Manager

DURATION One year with possibility of extension for 2 years

DATE REQUIRED As soon as possible

DUTY STATION

1. Vienna for initial 3 months, to implement duties outlined under paragraphs 2, 3, 4 and 5

2. with possibility of travel within the country

PURPOSE OF PROJECT To manage the implementation of the UNIDO Project

DUTIES The expert will be expected to:

1. Take responsibility for the overall planning, executing and control of the Project, under the supervision of the United Nations Industrial Development Organization (UNIDO) as Participant and Executing Agency, in accordance with the terms of the Project Document to be signed by the Government of UNDP and UNIDO;

2. Assist in the selection of international experts to be assigned to the Project, as well as the Project counterpart personnel and auxiliary staff, and assist in the selection of candidates for Fellowships who normally will be chosen from the counterpart project personnel;

3. Draw up Terms of Reference for a consulting firm to be subcontracted to implement the project;

4. Prepare specifications for equipment and job descriptions for experts for specific assignments as required;

5. Supervise the procurement of equipment;

6. Supervise the work of the team of experts to be provided under the Project and in respect to technical matters, of the counterpart personnel assigned to work in it.

7. Be responsible to UNIDO as the Participant and Executing Agency for all material, equipment and transport, and the local disbursement of any funds furnished to the Project through UNIDO;

8. Determine training standards and supervise the local training of counterpart staff;

9. Report directly to UNIDO on the progress of the Project.

QUALIFICATIONS

Packaging technologist or Industrial Economist with relevant practical experience in managing Packaging Research and Development Works. Familiarity with work in developing countries essential.

LANGUAGE

English

BACKGROUND INFORMATION

As a result of planned industrial development in the country, today produces a variety of commodities which quality-wise compare favourably with those produced by industrialized countries. But when it comes to packaging with a view to delivering these commodities to the ultimate consumer in sound condition, the country lapses behind in international development. While the country has to compete with the industrially developed countries in the export market, it has to match the very high standard of indigenous packaging for exports to a developed country.

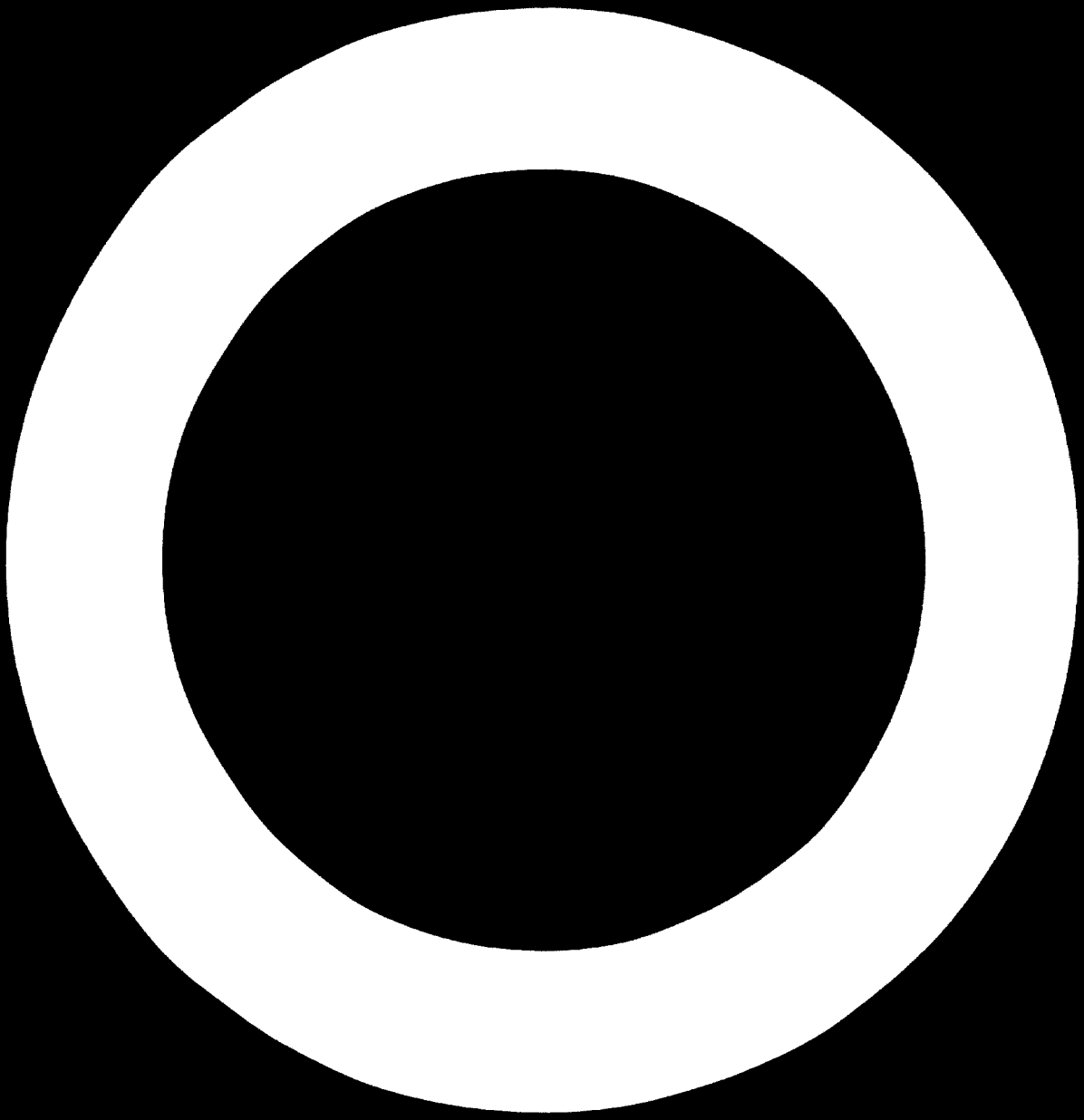
Realizing the important role of packaging, the industries in together with the Government, established the Institute of Packaging in with the objective of improving packaging technology in the country. The Institute was expected to achieve this objective through the offer of technical consultancy services to the industries, applied research on problems of packaging and training industries personnel in the field of packaging.

Although the Institute has been able to make a beginning in advisory services to the industry and train personnel connected with packaging in the industry and trade, there is a great need to expand the Institute's activities related to technical consultancy and applied research in the packaging sector. This can be achieved by providing the Institute with the necessary expert knowledge and laboratory equipment. The Government of requested UNIDO to assist in this undertaking.

The Project includes provision of 27 UN experts of various specialities, 28 fellowships for local staff to be trained abroad, and 60 different instruments and devices for testing and evaluation of packaging materials and containers, to be installed in the new premises provided by the Government.

UNDP contribution amounts to US$ 561,500 while that of the Government totals US$ 1,200,200

In order to ensure the adequate preparation and implementation of the Project, as well as proper utilization of human and financial resources offered by the United Nations, it is considered necessary to appoint a Project Manager who will be responsible to UNDP and UNIDO for the overall planning, execution and co-ordination of the Project.



ANNEX

[illegible] ORGANIZATIONAL CHART OF THE INSTITUTE

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RESEARCH & DEVELOPMENT

DEPUTY DIRECTOR

MATERIAL TSTG. & DEVPT.SECTN.	TRNSPT.TSTG. & DEV.SECTN.	RETAIL PKG.TSTG. & DEVPT.SECTION	ENGG.SECTION	RESEARCH SE[illegible]
Ass.Dir. - 1	Asst.Dir. 1	Asstt.Dir. - 1	Asst Dir -1	Asst[illegible]
Tech.Offr. - 1	Tech.Offr. 4	Tech.Officer 1	Tech.Offr.	Tech.Offr.
Tech.Asst. - 4	Tech.Asst. 1	Tech.Asstt. 2	Tech.Optr. 1	Foreman
Lab.Asstt. - 4	Lab.Asstt 1	Lab.Atstt. - 1	Dr man - 1	Tech.Asst.
Lab.Atstt. - 1	Lab.Atstt.1		Mechanic - 1	Lab.Asstt.
			Tech.Asst.	Lab.Atstt.
			Lab.Asstt.	

[illegible]

[illegible]	[illegible]	TECH.OFFICER
[illegible]	[illegible]	Tech.Officer-2
		[illegible] - 2

Librarian 1	Publications	Computer [illegible]
Assistants 2	Officer	
	Assistants 3	[illegible] - 1

[illegible]

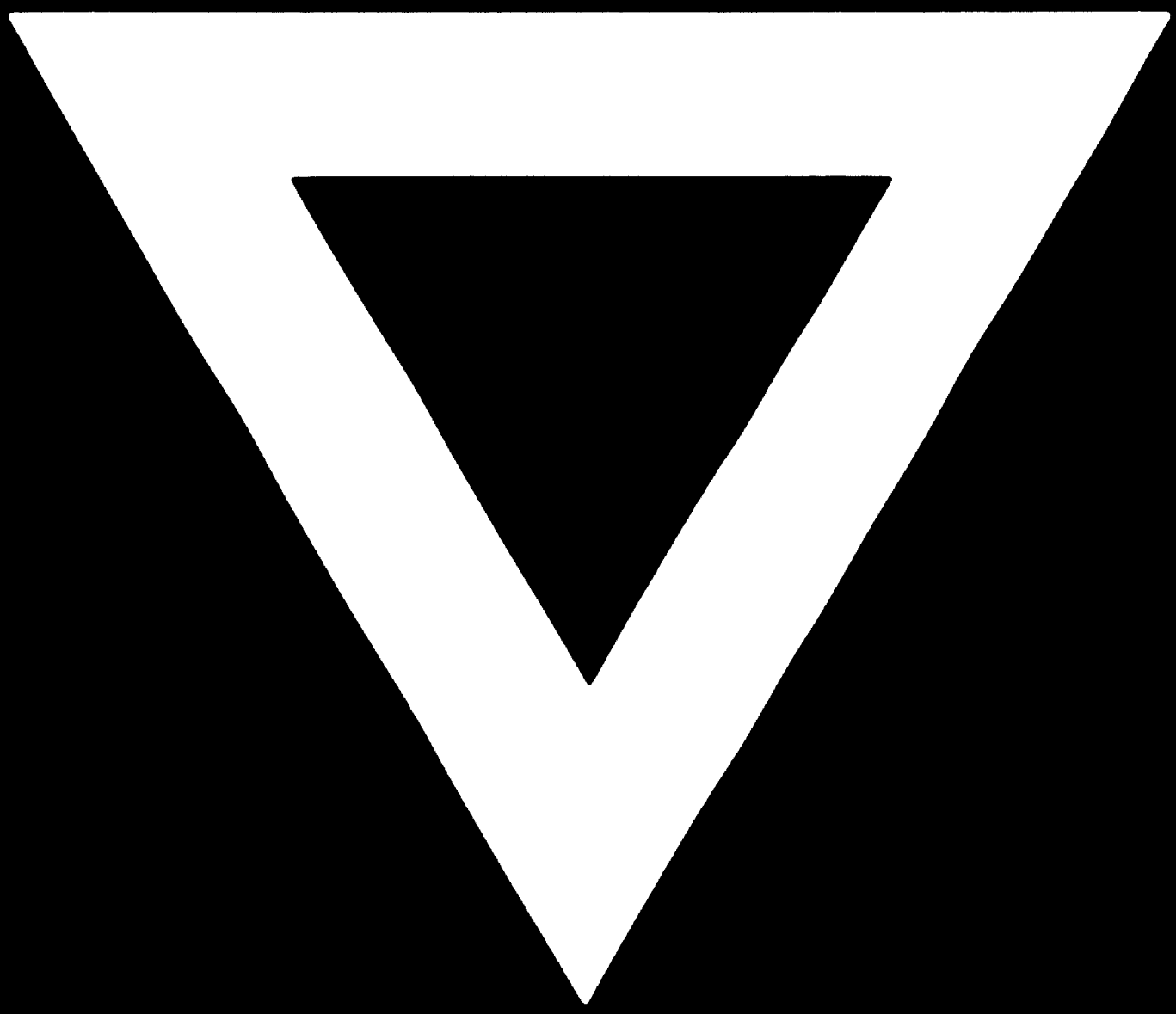
[illegible]

LIBRARY

DEPUTY DIRECTOR
(Industrial Liaison)
(1)

Accounts Officer	- 1
Accountant	- 1
Assistant	- 1
Cashier	- 1

[illegible]	- 1
[illegible]	- 4
[illegible]	- 1
[illegible]	- 1
[illegible]	- 2
Junior Stenographers	- 5
Junior Assistants	- 5
Clerks	- 6
Drivers	- 3
Gardener	- 1
Watchman	- 4
Pump Attendant	- 1



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