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SURVEY MISSION ON PACKAGING

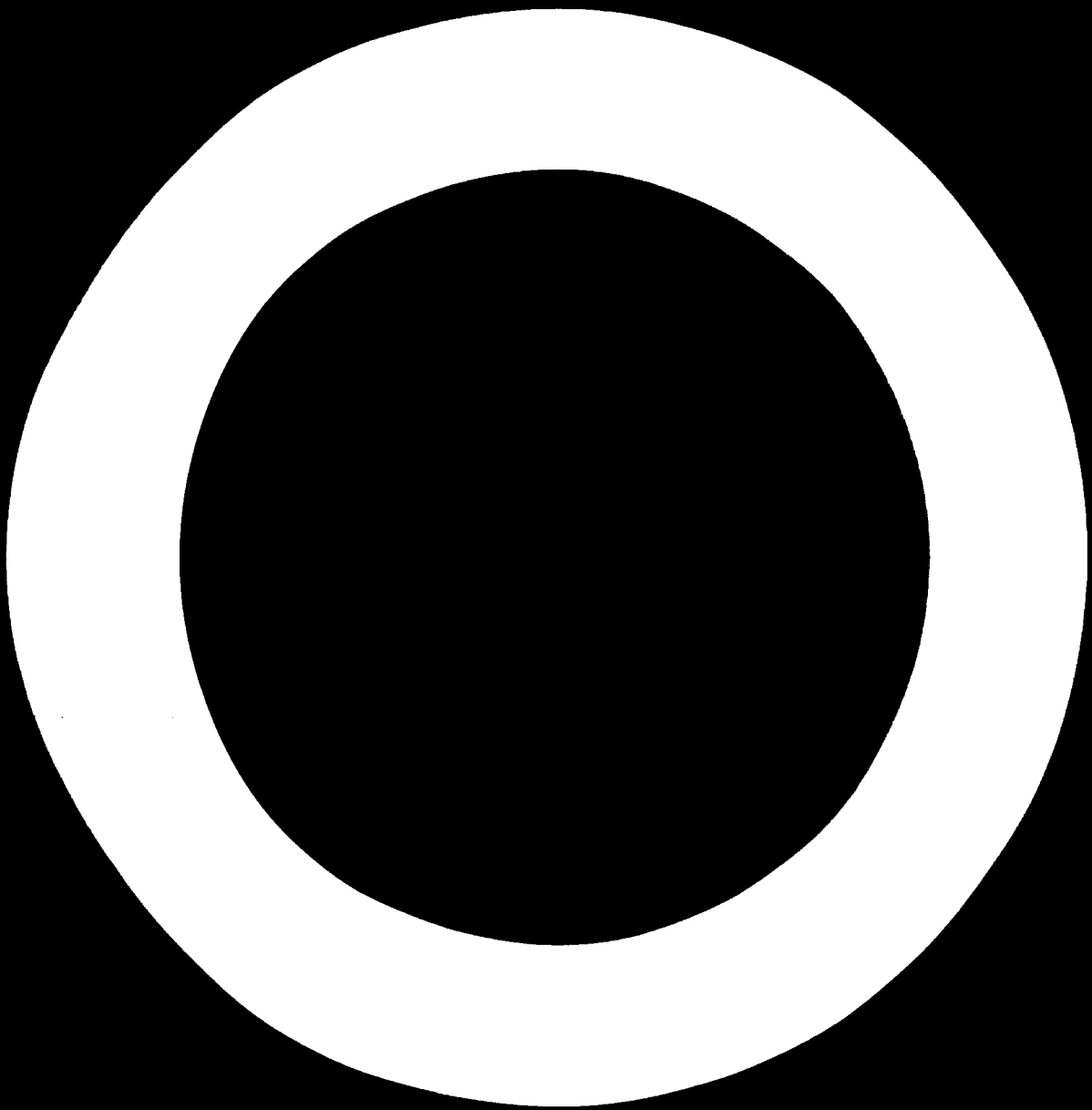
IS/JAM/74/008

/JAMAICA

TERMINAL REPORT

Prepared for the Government of Jamaica by the
United Nations Industrial Development Organization,
executing agency for the
United Nations Development Programme

United Nations Industrial Development Organization



United Nations Development Programme

SURVEY MISSION ON PACKAGING

IS/JAM/74/008

JAMAICA

Project findings and recommendations

Prepared for the Government of Jamaica
by the United Nations Industrial Development Organization,
executing agency for the United Nations Development Programme

Based on the work of Aleksander Soltan, consultant on the development of the packaging industry

United Nations Industrial Development Organization
Vienna, 1975

Explanatory notes

A comma (,) is used to distinguish thousands and millions.

During the period of the mission, the value of the Jamaican dollar ($J) in relation to the United States dollar ($US) was $US 1 = $J 0.909.

The following abbreviations are used in this report:

CARICOM	Caribbean Community Secretariat (formerly CARIFTA: Caribbean Free Trade Association)
GNP	Gross national product
JBS	Jamaican Bureau of Standards
JIDC	Jamaica Industrial Development Corporation
JMA	Jamaica Manufacturers Association
JNEC	Jamaican National Export Corporation
JPA	Jamaican Packaging Association
R and D	Research and development
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization

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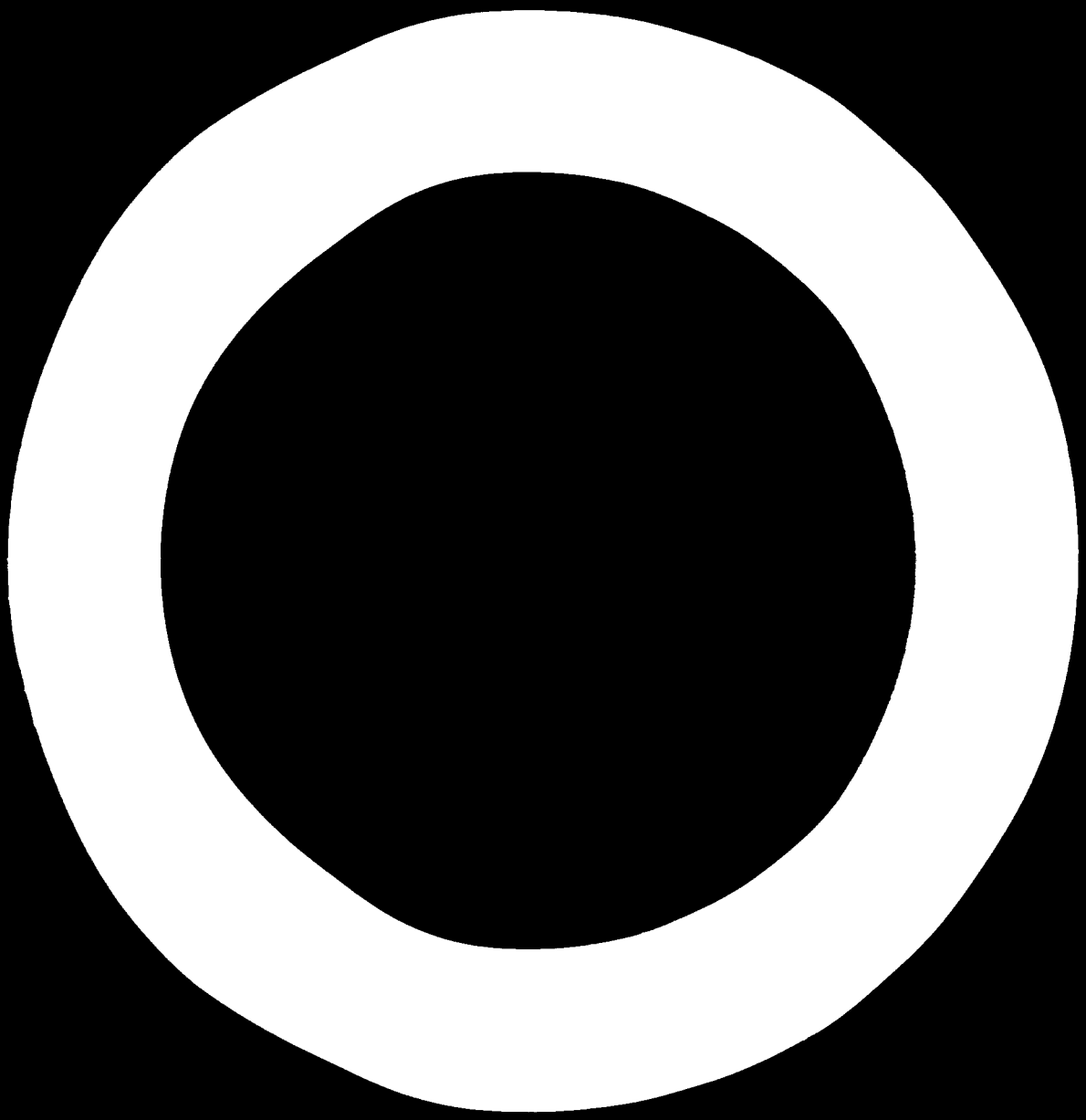


SUMMARY

The packaging industry in Jamaica is at an early stage of development. According to rough estimates, the value of the packaging media manufactured locally in 1974 was $J 30 million, or 1.5 per cent of the gross national product (GNP). Most of the raw materials necessary for package production are imported. In addition, substantial quantities of ready-made packs have to be purchased from abroad to cover the growing demand for packaging media. Nevertheless, the negative balance of payments forces the Government to put heavy restrictions on imported commodities.

The absence of a separate packaging industrial branch on the one hand and the dynamic development of raw materials and techniques on the other necessitate the co-ordination of packaging activities on a national scale, based on long-term forecasts of social needs, and the expansion of such sectors of the economy as industry, commerce, communications and services. This co-ordination would result in the creation of favourable conditions for the uniform and proportional development of the production of packaging media, and in the provision to package manufacturers and users of independent expertise, based on research work and up-to-date information on new achievements in the industry elsewhere.

With some notable exceptions, very little quality control and testing are carried out by the package manufacturers and users. The growing importance of standardization in home and foreign trade, however, points to the need to introduce and to apply national and international packaging standards.

In view of the present economic situation and the relatively small local market, coupled with an often inadequate quality of packaging materials and containers, the need is urgent for the establishment of an over-all development policy for the packaging industry in Jamaica, and for strengthening quality requirements for packaging media. These goals can be achieved (a) through the establishment of a packaging research and testing section with the status of an independent packaging laboratory at the Jamaica Bureau of Standards (JBS), and (b) through the establishment of a packaging co-ordination and development department at the Productivity Centre of the Jamaica Industrial Development Corporation (JIDC).

The Goverment of Jamaica is considering the possibility of establishing aluminium smelting facilities, in co-operation with other countries. It is

anticipated that the production of aluminium will start in 1979. In view of this fact and of the difficulties being experienced in the supply of packaging materials, it is recommended that a feasibility study be carried out on the establishment of a pilot plant for the production of aluminium packaging and canning for selected food (e.g. fish) products. The study should also be related to the Government's programme of agro-industrial development.

The limited development of the package manufacturing industry in Jamaica, resulting from the small size of the local market, the lack of indigenous raw materials, the rising world prices of packaging materials and the shortage of foreign exchange, indicates a need to search for long-range solutions. One would appear to be the establishment, within the framework of the Caribbean Community Secretariat (CARICOM), of international co-operation and specialization among the Caribbean countries in the production of packaging media. Many of the countries of this region have similar problems regarding the development of a packaging industry, and without co-operation, based on production specialization and joint ventures, they will not be able to withstand the increasing requirements for high-quality, low-price packaging. The establishment of a regional packaging institute which would act as a catalyst and programmer in such a co-operation should therefore be considered.

INTRODUCTION

Project background

The growth and diversification of industrial production continuously genrate new requirements in packing techniques and packaging materials.

The growing role of packaging in improving export potential has also been recognized and appreciated by many countries. At the same time, packaging itself is a developing industry. Traditional and modern solutions must be carefully adapted to the specific conditions and changing needs in a given country.

Since the packaging industry is still at a very early stage of development in Jamaica, the Government, aware of a growing need, requested the United Nations Industrial Development Organization (UNIDO), as executing agency for the United Nations Development Programme (UNDP), to make a survey of the general situation in the packaging industry, through consultation with industries and institutions responsible for packaging media manufacture, promotion and research.

Specifically, the survey would:

(a) Identify the country's opportunities for development of its own packaging industry;

(b) Determine, with the assistance of representatives of the country, targets for future UNIDO teohnical assistance in packaging.

The short-term objectives of the project were to prepare the grounds for:

(a) The establishment of a packaging research and testing department at the Jamaican Bureau of Standards (JBS);

(b) The setting up of a packaging co-ordination and development department at the Productivity Centre, JIDC;

(c) The carrying out of a feasibility study on a pilot plant for the production of aluminium packaging and canning for food products.

The long-term objectives were:

(a) To establish permanent activities in the country, aiming at co-ordination, promotion and development of package production and application, according to the requirements of the industry and trade;

(b) To initiate regional co-operation in the packaging industry within the CARICOM area and to set up a regional packaging institute.

Achievement of these objectives would help to: promote exports; reduce food losses due to improper transportation and storage; protect the environment; and improve the standard of living in the country.

In accordance with the request of the Government of Jamaica, UNIDO appointed a packaging expert to advise the Government on the development of the national packaging industry.

The expert, who served in Jamaica from 4 to 23 August 1975, worked out recommendations for further action to be taken by the Government of Jamaica concerning the development of the packaging industry (chapter II) and formulated projects for future UNIDO assistance in the field (annexes II-V). The JBS was selected as the local counterpart to the mission, the responsible officers being the Head of the Raw Materials Department, the Head of the Food Department, and the Senior Officer of the Food Department.

Packaging in the national economy: some general comments

Packaging in developing countries can be considered in relation to the level of industrial growth attained. In some countries the main need is for adequate protection packaging for raw materials or semi-products being transported to foreign markets. In other, more developed countries, packaging needs are more diversified, the main problems being concerned with the introduction of retail packaging, modernization of packaging processes, and the development of designs that will stand up to international competition.

The natural tendency of a developing country is to establish its own packaging industry and thus become less dependent on imports. Such a policy is not justified in all cases, however, and the right decision can be taken only after a thorough study of the quantitative and qualitative industrial growth of the country, the availability of local raw materials, home and foreign trade, and government licensing and taxation policies etc. In addition, the choice of technology and the output of machines should be carefully considered since in some cases the installed plants use less than one third of their nominal capacity.

The accumulated experience of the industrialized countries indicate that the function and importance of packaging in the national economy increase in accordance with socio-economical development. This increase is marked by advances in production, distribution systems and the consumption of goods. Thus, expansion in goods production should mean corresponding expansion in the production of packaging materials and ready-made packs.

With regard to packaging development, the ability of a country to carry out research activities and to adopt foreign technologies depends on the actual level of the country's industrialization. In order to determine this level, the magnitude of packaging media consumption in relation to the most synthetic indicator, which is gross national product (GNP) calculated per capita, must be ascertained. In this way, the optimal size of the packaging media consumption in a given country, from the viewpoint of actual needs, possibilities and national economic level achieved, can be defined. There is a similar correlation between total expenditure on R and D in a national economy and that spent on R and D in the field of packaging.

According to the statistics for 1974, the GNP per capita in Jamaica in that year equalled $J 865.7. Total expenditure on R and D in the national economy in 1973 amounted to $J 11,320,657 (0.76 per cent of the GNP), while expenditure on R and D in packaging was estimated at a level of $J 28,000. No statistics were available to show the annual value of per capita consumption of packaging media in Jamaica. Rough estimates made by the expert during his mission, however, point to a figure of about $J 15.

From these figures, and using the empiric model structures mentioned before, it can be seen that Jamaica falls into the group of countries which could already afford a centrally located research and development packaging laboratory and which could spend annually for R and D in packaging 1.2 per cent of the total expenditure for R and D, or some $J 95,000, without detriment to the national budget and as justified by the actual level of the economy. These figures should be considered merely as the level of expenditure which might be regarded as real and optimal from the viewpoint of the potential and actual needs of the national economy.

I. FINDINGS OF THE MISSION

The annual value of the packaging media in Jamaica, according to the expert's rough estimates, exceeds $J 30 million, which is 1.5 per cent of the GNP. The packaging industry is represented by over 30 companies. West Indies Pulp and Paper Limited, the Metal Box Company, and West Indies Glass Company Limited have the biggest turnover.

The main packaging media manufactured locally are: paper sacks; folding carton boxes; corrugated fibreboard cases; glass bottles and jars; tinplate cans; metal drums; crown corks; polyethylene film; pouches; bags; heavy-duty sacks (plain and woven); blow-moulded bottles; expandable polystyrene trays; wooden boxes and crates; and jute sacks. This production only partially covers local demands; the rest is imported. Most raw materials for package manufacture have to be imported.

The quality of manufactured packaging media varies considerably, due to lack of national packaging standards, insufficient quality control and a general absence of testing facilities. Another drawback is the long breaks which occur in the supply of packaging media to the users: these cause considerable constraint in the production and distribution of goods.

It is in the interest of the national economy that the packaging industry develop in proportion to the needs of other industrial branches and keep pace with technical progress in the field of packaging. However, the existing limitations, caused by the lack of local raw materials, the rising prices of imported raw materials, the small local market and the shortage of foreign exchange, make it difficult to keep production costs at a competitive level.

The users of packaging are paying too little attention to the broader application of semi-automatic packaging systems (especially in fresh and processed foods), the importance of which is underlined not only by increased production rates but by hygiene requirements.

Knowledege of packaging technology and economics among the users is insufficient. This has a negative effect on the choice of adequate packaging media and techniques, the formulation of technical specifications for manufacturers and the assessment of the quality of packaging media deliveries.

Promotional activities in the field of packaging started with the establishment of the Jamaican Packaging Association (JPA) in 1973. This Association has many important tasks. Among them:

(a) To provide a forum for the exchange of opinions and discussions between package manufacturers, users and consumers;

(b) To organize training programmes, seminars and contests in the field of packaging;

(c) To develop the public's awareness regarding the role of packaging in modern society;

(d) To defend the packaging industry against unjustified attacks from the mass media regarding increases in product cost due to packaging;

(e) To act as an advisory body to other institutions dealing with packaging.

In addition, the Jamaica Manufacturers Association (JMA) has formed a special section - Printing, Packaging and Paper Products Group - which represents the interests of package manufacturers.

Some testing and evaluation work is carried out in the laboratories of the JBS, but it is of a sporadic character and has limited scope.

II. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

In the course of his mission the expert visited a number of packaging institutions and held discussions with representatives of government ministries, packaging manufacturers' associations and package users. These visits and discussions, in addition to other information accumulated by the expert, led to the formulation of a number of conclusions regarding the possible development of the packaging industry in Jamaica:

(a) The national economy can absorb the cost of establishing more complex packaging facilities and services to be used for the benefit of industry and trade. With its per capita GNP of $J 865.7 and per capita packaging consumption of some $J 15, Jamaica should possess:

(i) A centrally located applied research and testing packaging laboratory, which would evaluate particularly the effect of mechanical and climatic hazards on packaging materials and ready-made packs; assess the quality of construction and functional features of packages for both home and export markets; and prepare technical specifications for packaging standards;

(ii) A packaging co-ordination and policy-making authority which would define the basic production and research tasks to be carried out in the country; formulate guidelines and programmes for the development of the packaging industry; carry out techno-economic studies on selected problems concerned with package production and use; and initiate promotional activities in the field of packaging.

(b) The JPA and the Printing, Packaging and Paper Products Group of the JMA have a vital role to play in organizing training programmes, promoting packaging through exhibitions and contests, and informing the general public of the importance of packaging and its implications in environmental protection;

(c) In view of the existing economic situation - marked by the lack of local raw materials, tight supplies and rising prices of imported packaging materials, the limited size of the local market and a shortage of foreign exchange - special attention should be given to forecasting and programming for the packaging industry. The possibility of using the country's vast deposits of bauxite ore as a future source of aluminium packaging have to be studied;

(d) New markets for locally manufactured packaging media, as well as new means of utilizing local materials such as dried banana leaves, bagasse, or bamboo as packaging materials, could be found through co-operation among the Caribbean countries in the field of packaging.

Recommendations

The following recommendations are made with a view to establishing a packaging infrastructure in Jamaica that will provide the country with the means of developing and programming its own packaging industry. They include proposals regarding the utilisation of natural resources and the development of regional co-operation in the field of packaging.

1. In order to upgrade quality and economize on packaging in Jamaica, appropriate standards should be worked out, precisely defining the physical, chemical and functional properties of packaging materials and ready-made packages, in conformity with international regulations. To achieve this goal, it is suggested that a packaging research and testing department be established at the JBS with the assistance of UNIDO. (See annex II.)

2. The development of the manufacturing industries and the distribution of commodities create a demand for more and better packaging materials, machines and know-how. On the other hand, it is necessary to keep the costs of packaging at an economically acceptable level. To deal with this problem, long-range policies and programmes of packaging development, correlated with the development of other economic sectors, should be worked out in Jamaica and co-ordinated at the national level. It is therefore recommended setting up at this stage a packaging co-ordination and development department at the Productivity Centre of the JIDC. The department, which would have the status of a national packaging authority, should:

(a) Formulate a long-range programme of packaging development, based on an assessment of local quantitative and qualitative demands for packaging materials and machines and on foreign market requirements;

(b) Co-ordinate the implementation of the programme with the relevant government ministries and other responsible institutions;

(c) Advise the Government on licensing, customs, taxation and pricing policies with regard to investments, imports and local production and on the supply of packaging media;

(d) Compile and analyse statistical data related to the packaging industry;

(e) Carry out techno-economic studies on selected subjects relating to the application of new packaging systems;

(f) Promote packaging activities in the country through the initiation of seminars, congresses and other forms of exchange of information and transfer of knowledge; and periodic exhibitions and contests for the best package of the year;

(g) Initiate training activities in the field of packaging;

(h) Represent the packaging interests of Jamaica abroad and develop co-operation with packaging institutions in other countries and with international packaging organizations.

These activities should be carried out in close co-operation with the JPA, the main functions of which are the programming and implementation of training and promotion in this field. The establishment of such a body needs thorough preparatory work and subsequent assistance and advice during the first stage of its functioning. UNIDO might provide assistance in this area under its SIS programme. (See annex III.)

3. The establishment of an aluminium smelting plant, based on the utilization of local deposits of bauxite ore is planned as a joint venture between Jamaica and other countries and it is expected that ingots of this metal will be available by 1980. On the other hand, the Government's new development plan puts emphasis on the development of the agro-industries. It is therefore recommended carrying out at this stage, perhaps with the assistance of UNIDO, a feasibility study on the establishment in Jamaica of a pilot plant for the manufacture of aluminium packaging and canning for selected processed food products. The study would cover selection of the appropriate food products, packaging systems and manufacturing technology, and an assessment of the necessary investments and financial implications. (See annex IV.)

4. As a long-range solution to the problems of its manufacturing industry, Jamaica should co-operate closely with other CARICOM countries in the development of packaging production and research. (See annex V.)

Annex I

SUMMARIES OF DISCUSSIONS WITH THE REPRESENTATIVES OF CENTRAL INSTITUTIONS AND WITH PACKAGE MANUFACTURERS AND USERS

Jamaican Bureau of Standards (JBS)

Standardization is one of the most important instruments used in upgrading and ensuring the quality of manufactured commodities. Every standard should be based on well defined specifications that describe the physical, chemical and performance properties of a product. For this purpose, JBS has a well-equipped laboratory. It carries out standardization work in such diverse areas such as metrology, weights and measures, metallurgy, food, microbiology, chemistry, mechanical inspection, building materials, non-metallic materials and electrical/electronic components.

The JBS grants licences for the use of its official standard mark, "JBS". The standard mark is a symbolic warranty applied to products that have been manufactured in conformity with Jamaican Standard Specifications. It helps manufacturers and users to reduce inspection costs and the number of rejects, and to increase the sales volume of, and confidence in, locally manufactured goods.

One of the drawbacks of JBS activities is the lack of facilities for testing packaging materials and ready-made packs. This prevents the preparation of packaging standards and makes it difficult for industry and commerce to evaluate the quality of packaging media. The JBS is, nonetheless, the most developed national standardisation body in the Caribbean.

Jamaican National Export Corporation (JNEC)

Inferior quality packaging is one of the stumbling blocks in the development of exports and is often the reason for importers' complaints which result in high damage guarantee costs. The standardisation of packaging would contribute substantially to a reduction of losses in exports and to an increase in the competitiveness of Jamaican goods in overseas markets. It is essential that an integrated packaging service be established in Jamaica, which would take into account production, application, investment policies, planning and standardisation, and act as an instrument for the improvement of packaging

expertise. Realizing the importance of packaging in the national economy, JNEC initiated the establishment of the JPA and was a member of that Association's steering committee.

Jamaican Packaging Association (JPA)

The JPA was established in 1973 following a visit from the Secretary General of the World Packaging Organization, who promoted the idea. Its membership comprises representatives of the package manufacturers and users, of trading and transport companies, of consumers, unions and of the Government.

One of the urgent requirements in the field of packaging is the establishment of a packaging laboratory which would help package manufacturers and users to solve packaging problems. The importance of introducing systematic training activities, and permanent information and documentation services to collect and disseminate news and data on the latest developments in packaging technology and economics elsewhere, is also appreciated.

The JPA provides a forum for the exchange of information and discussions between individuals, organizations and enterprises. It is also instrumental in identifying the needs and requirements of the public. There is much to be done with regard to the protection of the environment, the recycling of waste, the reuse of packages and the stimulation of public awareness concerning the role of packaging in today's society.

Jamaica Manufacturers' Association, Plastic Group

Plastics should play a greater role in the field of packaging in Jamaica than they do at present. One of the obstacles is insufficient awareness on the part of the package users of the advantages plastics represent and of their application possibilities. There is a general lack of adequate information and consultancy services on new packaging materials and technologies. In addition, the market requirements are not sufficiently identified. An integrated approach to the problems of packaging is obviously necessary. Future trends in packaging techniques and supplies should be studied in the context of the Jamaican economic situation. Adequate testing facilities to define the quality and compatibility of packaging materials and containers should be established.

Ministries of Marketing and Commerce, of Industry, Tourism and Foreign Trade, and the JNEC

The lack of packaging standards is leading to considerable losses in exports and making it difficult for importers of packaging media to formulate appropriate technical specifications to correspond with local machines and technology.

The increasing demand for packaging points to the need for the establishment of integrated research and testing activities to support this industry and its end users. Investment and taxation policies in package production and imports should be based on the actual demand for packaging, on an assessment of the existing production capacities, and on actual trends in packaging technology.

Productivity Centre of the JIDC

Expansion in the local package manufacturing industry depends on the availability of raw materials and an increase in demand for modern packaging materials and containers. The possibility of local production and use of aluminium packaging should be studied in the light of the Luana aluminium smelter project.

There should be a central source of guidelines regarding the most appropriate uses of packaging materials and constructions for given products or groups of products. The guidelines would be based on the potential of local industry, foreign markets requirement and development trends. Strong facilities for applied research and testing in packaging should also be established in order to provide package manufacturers and users with independent expertise and to adapt foreign developments to local conditions. Problems such as package production potential, profitability of packages, and optimization of package construction and function should be given priority over sales promotion efforts.

National Planning Agency of the Prime Minister's Office

Recent difficulties in world economics have prompted a re-examination of the role of packaging and of the concept of its development in relation to industrialisation in general. There is a need to define a general strategy of packaging development in Jamaica and to direct this development, taking into consideration the limited financial, material and energy resources available. The establishment of centrally placed packaging co-ordination and development unit, which could act as a national authority in this field, is being considered.

Package manufacturers

The shortage of raw materials, and their increasing prices, is being widely felt. This situation has a detrimental effect on package production costs and on the productivity of enterprises.

While considerable assistance is rendered by foreign machine suppliers in installing and putting into operation manufacturing lines, problems occur in choosing the right packaging material for a particular machine and in keeping the running parameters at a pre-set level.

Quality testing facilities are urgently needed in Jamaica to enable evaluating of raw materials and constructions to be made.

Training programmes for plant personnel would also be of great help to package manufacturers.

Assistance in assessing the potential market for new packaging systems and in providing package users with adequate information on the advances made in packaging technology is required.

One method of cutting the costs of manufactured packs would be to drastically reduce package (especially metal cans and glass bottles) sizes.

The future of the Jamaican package manufacturing industry and the prospects for its development should be studied by competent authorities in consultation with the JMA and recommendations should be formulated in order that necessary changes may be anticipated and planned.

A centralized information and documentation service to collect and disseminate information regarding new achievements in packaging should be established as soon as possible.

Package users

A growing conflict between the cost of locally manufactured packaging media and the competitive price of the packed product is resulting in increasing demands for the importation of ready-made packs.

Users are often faced with long breaks in packaging supplies and this has a serious effect on the production and distribution of goods.

The quality of the locally supplied packaging media is uneven and is the cause of complaints from foreign buyers. Not having the possibility of verifying the quality of the packaging materials or containers, the users are dependent on the manufacturers and their good will. This situation should be radically changed, and one way to do so is through the establishment of a centrally located packaging research and testing laboratory.

A permanent consulting service should be established in Jamaica in the immediate future to deal with such matters as choice of adequate packaging systems; quality requirements in relation to a given product and its market; availability of packaging media; and the comparative analyses of different packaging systems. Information and documentation services should also be available.

Annex II

SUGGESTED PROJECT FOR UNIDO ASSISTANCE: ESTABLISHMENT OF A PACKAGING RESEARCH AND TESTING DEPARTMENT AT THE JAMAICAN BUREAU OF STANDARDS

Government contribution: $J 400,000 UNDP contribution: $US 321,000

Background and justification

The development and application of modern packaging techniques requires thorough assessment of the physical and chemical properties of packaging materials and ready-made containers. Package manufacturers have to check the quality of incoming materials as well as end products. Package users should be able to control the delivered materials and containers in keeping with the technical specifications formulated according to the requirements of the particular product to be packed.

One of the important instruments for improving package quality and adapting it to the changing demands of the buyers and consumers of the packed products is standardization. Packaging standards are based on precise technical specifications.

The availability of extensive testing facilities is prerequisite to fulfilling the above mentioned requirements, but individual companies in developing countries in most cases cannot afford the necessary expenses. Centralized packaging research and development laboratories could, however, be established to provide the manufacturers and users with the adequate technical and consulting services.

The progress of the Jamaican packaging industry depends, inter alia, on the availability of research and testing facilities. At present, there are no packaging standards in the country. The existing standards for food and other products do not contain specific requirements for packaging, defining their quality and performance. As a result, the locally manufactured goods are less competitive on the foreign markets and lose their value because of inadequate protection against mechanical and climatic hazards during transportation and storage.

The planned intensive development of the agro-industries in Jamaica provides new tasks for the packaging industry, both quantitatively and qualitatively. This, in return, creates an urgent demand for national packaging standards to be formulated in conformity with international regulations.

The application of modern packaging materials and packing systems in Jamaica requires the assistance of a well-equipped packaging research and testing laboratory. Such a laboratory should be centrally located and serve both manufacturers and users.

Institutional framework

From the viewpoint of the present economic situation and administrative structure, the Jamaican Bureau of Standards (JBS) is best prepared for undertaking the functions of such a laboratory and should have the responsibility for carrying out the project.

The JBS is a statutory body, established in 1968 by the Standards Act to promote higher standards for processes, practices and manufactured goods. It aims to help the manufacturer and user to standardize quality and formulate technical specifications. The Bureau has so far published over 200 standards and another 110 are completed. Two types of standards are developed by JBS: compulsory (for food, labelling and life-protecting commodities) and voluntary.

The main activities of the Bureau are concerned with: developing original standards for use in Jamaica; modifying, for local use, selected foreign standards; and publishing overseas standards.

The JBS is divided into seven departments: engineering; specifications; chemistry, microbiology and agricultural commodities; raw materials; foods; metrology; and administration. Each department has a specialized laboratory at its disposal. The research staff consists of 39 graduates and 23 technicians and auxiliary staff.

It is recommended establishing the new packaging research and testing department within the framework of the JBS, with the following staff:

- Head (senior standard scientific officer; graduate)
- Research officers (2, graduates)
- Technicians (3)
- Laboratory assistants (2)
- Laboratory attendants (3)
- Office assistant

Provisions for follow-up

The law under which the JBS is established and the support it receives from the authorities are considered to be adequate for implementation of the project from the legal point of view. The long-term staffing and financing of the packaging research and development department are assured by the Government. No additional UNDP assistance is envisaged as yet.

Objectives of the project

The long-range objectives of the project are:

(a) To guide and assist the packaging industry by establishing standards for materials and manufacturing methods of packaging;

(b) To support quality control measures by using adequate material and applying proper techniques of packaging;

(c) To ensure that goods get to the consumer sound and intact in adequate packaging;

(d) To increase the competitive superiority and promote the marketability of domestic products in the international market by helping to preserve their quality and enabling them to be shipped to distant places in adequate packaging.

The immediate objective of the project is to establish a packaging research and testing department at the JBS and to ensure its operation so as to meet domestic and export requirements.

Work plan

Description of project activities

The following preparatory activities will be undertaken by the Government, at Kingston, in order to ensure the implementation of the project:

Activity	Starting date	Duration (months)
Initiation of civil engineering works necessary to adapt existing premises to the requirements of a packaging laboratory	1 September 1976	12
Provision of indigenous equipment	1 January 1977	8
Provision of additional personnel to the JBS	To be completed by September 1977	

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

Activity	Starting date	Duration (months)
Preparation of the work programme for the department	1 September 1976	4
Procurement, delivery, installation and setting up of the testing equipment	1 September 1977	12
Training of counterpart personnel abroad	1 January 1977	24
Arrival of the project manager	1 September 1977	25
Initiation of first packaging standards preparation work	1 April 1977	5
Studies on methods of testing packaging materials and elaborating their technical specifications	1 January 1977	12
Arrival of material testing expert	1 January 1978	6
Identification of areas requiring improvement of packaging standards and the establishment of priorities	1 July 1977	6
Studies on methods of testing retail packages and elaborating their technical specifications	1 March 1977	12
Arrival of retail packaging testing and design expert	1 September 1978	6
Studies on methods of testing transport packages and elaborating their technical specifications	1 September 1978	12
Arrival of transport packaging testing and design expert	1 January 1979	6
Progress in the formulation of standards for selected subjects	Continuation	
Full-scale functioning of standards-making activity	1 September 1979	continuation
Active participation in international packaging standardisation activities	1 September 1979	continuation
Testing services to the industry	1 September 1979	continuation

Full responsibility will be turned over to the Jamaican personnel at the end of September 1979, the termination date of the project.

Description of UNDP inputs

International staff	Starting date	Duration (months)
Project manager	1 September 1977	24
Expert in testing and evaluating packaging materials	1 January 1978	6
Expert in testing and designing retail packaging	1 September 1978	6
Expert in testing and designing transport packages	1 January 1979	6
Short-term consultants	1 January 1977	6

No subcontracts are foreseen for this project. Provision for training, in Europe, should be made as follows:

Training course	Starting date	Duration (months)
Packaging materials testing and development	1 October 1977	3
Retail packaging testing and development	1 April 1978	3
Transport packaging testing and development	1 October 1978	3
Organization and management of packaging laboratory	1 January 1977	2
Packaging standardization: concepts, methods and implementation (study tour of a team of the JBS managerial staff to several European countries)	1 May 1978	5

The following supplies and equipment should be provided by UNDP. All equipment will be installed in the premises of the JBS according to the delivery schedule.

Item	Quantity	Approximate cost (in US dollars)
Packaging materials testing		
Tensile strength testers	2	Available at JBS
Bursting strength tester	1	1,400
Precision testing instrument "Instron"	1	7,000
Accessories to "Instron" to test packaging materials	several	2,000

Item	Quantity	Approximate cost (in US dollars)
Tearing strength testers	2	1,800
Folding endurance tester	1	2,000
Puncture strength tester	1	1,800
Stiffness tester	1	1,200
Flat crash and ring stiffness tester	1	1,000
Paper porosity meter	1	500
Friction tester	1	1,000
Abrasion tester	1	Available at JBS
Liquids penetration	2	1,500
Plastics and lacquer coatings porosity meter	1	1,000
Melting point block	1	Available at JBS
Wood moisture meter	1	700
Wood deformation meter	1	300
Densometer, gurley type	1	600
Tin stripper		
Non-destructive coating thickness tester, "Dermitron"	1	1,000
Electronic tin coating analyser "Stannomatic"	1	Available at JBS
Atomic absorption/atomic emission spectrophotometer		Available at JBS
Ultravoilet spectrophotometer	1	Available at JBS
Infra-red spectrophotometer	1	Available at JBS
Enamel gauge	1	500
Metal hardness tester	1	Available at JBS
Deep drawing tester	1	2,000
Vickers mioroscope for structure and surface hardness of metals	1	Available at JBS
Tinplate impact tester	1	1,200
Tinplate bend tester	1	Available at JBS
Corrosion resistance tester	1	3,500
Lacquer coating hardness tester	1	600
Rubber hardness meter	1	Available at JBS
Tape adhesion tester	1	2,500
Water vapour permeability tester	1	1,500

Item	Quantity	Approximate cost (in US dollars)
Gas permeability tester	1	2,600
Gas chromatograph	1	Available at JBS
Air conditioner	1	10,000
Heatsealer	1	4,000
Spectromic 20 colorimeter	1	Available at JBS
Q-U-V cycle ultraviolet weathering tester	1	Ordered by JBS
Transport packaging testing		
Mechanical drop tester	1	3,500
Incline impact tester	1	To be built locally from drawings
Revolving drum (ø 5m)	1	To be built locally from drawings
Electronic compression tester	1	24,000
Vibration table	1	15,000
Trap-door tester for sacks	1	3,000
Overhead sewing machine for sacks	1	900
Programmable climatic chamber with UV light, salt spray and gas atmosphere attachments - 30° C to +90° C and 0 to 95% RH	1	30,000
Retail packaging tester		
Electro-magnetic drop-table	1	1,000
Small vibrating table	1	3,500
Humidity cabinet	1	1,500
Vacuum packaging apparatus	1	2,500
Glass wall thickness meter	1	1,300
Glass impact strength tester	1	1,300
Bottle profilometer	1	2,000
Bottle crush tester	1	1,000
Bottle gas pressure tester	1	1,400
Hydrostatic pressure tester	1	4,000
Glass strain viewer	1	500
Closure torque tester	1	200
Potentiometer	1	800
Head space sampler	1	400
Seam inspection apparatus	1	2,000
	Total	150,700

Description of government inputs

The Government of Jamaica agrees to assist the JBS in establishing a packaging research and testing department in terms of contributing towards the costs of premises, counterpart personnel and indigenous equipment, as well as by giving long-term support to package standardization activities.

National staff will be assigned as follows:

Post	Starting date
Counterpart to the project manager	1 June 1977
Research officers (3)	1 January 1977
Technicians (3)	1 January 1977
Laboratory assistants (2)	1 January 1977
Laboratory attendants (3)	1 September 1977
Office assistant	1 January 1977

The take-over date will be 30 September 1979.

The following premises and equipment will be supplied by the Government:

Item	Quantity	Delivery time	Approximate cost (in US dollars)
Incline impact tester	1	Before 1 January 1978	3,000
Revolving drum	1	Before 1 January 1978	2,000
Stapling and stitching devices	several	Before 1 January 1978	500
Drying oven	1	Before 1 January 1978	300
Handling equipment	several	Before 1 January 1978	3,000
Sample cutting press	1	Before 1 January 1978	300
Universal microscope	1	Before 1 January 1978	700
Binocular microscope	1	Before 1 January 1977	800
Books	various	Before 1 January 1977	2,000
Other miscellaneous laboratory equipment	various	Before 1 January 1977	2,000
Premises		Ready 1 September 1977	178,910

Budget

Project budget covering UNDP contribution

Code no.	Project component	1977 Man-months	1977 US dollars	1978 Man-months	1978 US dollars	1979 Man-months	1979 US dollars	1980 Man-months	1980 US dollars
10	Project personnel component								
11	Experts								
01	Project manager	4	12,000	12	36,000	9	27,000	25	75,000
02	Expert in packaging material testing			6	18,000			6	18,000
03	Expert in retail packaging testing and design			6	18,000			6	18,000
04	Expert in transport packaging testing and design					6	18,000	6	18,000
05	Consultants	3	9,000	2	6,000	1	3,000	6	18,000
19	Component total	7	21,000	26	78,000	16	48,000	49	147,000
30	Training component								
31	Fellowships								
01	Packaging materials testing and development	3	3,150					3	3,150
02	Retail packaging testing and development			3	3,150			3	3,150
03	Transport packaging testing and development			3	3,150			3	3,150

Code no.	Project component	1977		1978		1979		1980	
		Man-months	US dollars	Man-months	US dollars	Man-months	US dollars	Man-months	US dollars
04	Organization and management of packaging laboratory	2	2,100					2	2,100
05	Packaging standardization concepts, methods and implementation (study tour)	-	-	5	5,250			5	5,250
39	Component total	5	5,250	11	11,550			16	16,800
40	Equipment								
41	Non-expendable equipment		90,000		60,700				150,700
49	Component total		90,000		60,700				150,700
50	Miscellaneous								
51	Reporting costs		500		500		500		1,500
53	Sundry		2,000		2,000		1,000		5,000
59	Component total		2,500		2,500		1,500		6,500
99	Grand total	12	118,750	37	152,750	16	49,500	65	321,000

Project budget covering Government's counterpart contribution in kind

Code no.	Project component	1977 Man-months	1977 J dollars	1978 Man-months	1978 J dollars	1979 Man-months	1979 J dollars	Total Man-months	Total J dollars
10	Counterpart to project manager	7	6,510	12	11,640	9	9,090	28	27,240
	Research officers(3)	36	20,700	36	21,600	27	16,875	99	59,175
	Technicians (3)	36	15,840	36	16,740	27	13,230	99	45,810
	Laboratory assistants(2)	24	6,720	24	7,200	18	5,760	66	19,680
	Laboratory attendants(3)	12	9,540	36	10,080	27	7,965	75	27,585
	Office assistant	12	4,200	12	4,380	9	3,420	33	12,000
19	Component total	127	63,510	156	71,640	117	56,340	400	191,490
40	Equipment								
41	Non-expendable equipment		14,000						14,000
42	Premises		178,910						178,910
49	Component total		193,501						193,501
50	Miscellaneous								
51	Operation and maintenance of equipment		250		750		500		1,500
53	Sundry		300		700		1,000		2,000
54	Direct costs		2,500		4,000		5,000		11,500
59	Component total		3,050		5,450		6,500		15,000
	Grand total	127	260,061	156	77,090	117	62,840	400	400,000

Annex III

SUGGESTED PROJECT FOR UNIDO ASSISTANCE UNDER ITS SIS PROGRAMME: ESTABLISHMENT OF A PACKAGING CO-ORDINATION AND DEVELOPMENT DEPARTMENT AT THE PRODUCTIVITY CENTRE OF THE JAMAICA INDUSTRIAL DEVELOPMENT CORPORATION

Background information

The growth of the industrial production and exports of any country is closely related to the development of packaging. Packaging is needed for almost all types of products that are distributed to the public or that need protection during transport; it also contributes to making products competitive on the foreign market.

Adequate and functional packaging, as a means of protecting and preserving the product and helping it to retain its quality, is of prime importance. As the national output of goods increases, the demand for packaging materials increases. No manufacturing process can be complete and no sale of the product can be practicable without appropriate packaging. The production and consumption of packaging materials are often taken as an index of the industrial development of a country. For adequate and functional packaging, a variety of packaging materials and techniques is needed. There is also a great need for an intensive study of packaging requirements for the export markets and of the availabiltity of the requisite packaging materials, machinery and equipment for the industries in order to reach the standards required for these markets.

Packaging technology in Jamaica is still in the early stages of development. Whereas considerable progress has been made in the past few years in industrial development, packaging technology has not kept pace.

Packaging and packing standards in the industries of Jamaica need to be improved to the level where products and commodities from Jamaica can effectively compete in world markets against the packaged products of the developed countries. Improvement of these standards will essentially require an upgrading of the basic packaging technology for production of goods for the domestic market. Without an improvement in packaging standards for the home market, it will be difficult to effect better presentation of goods for the export market.

There is a need for economic research in the packaging industries to assess market prospects, costs and location factors. The packaging manufacturer himself needs information about these factors as well as the government policy maker who needs data for programme planning and review.

This research must focus on: competitive conditions and anticipated market growth in important products; cost-factors and cost-reducing methods; minimum size of the economic plant; availability of packaging materials; and optimal machine capacities.

Steps should be taken to set up institutions to support and promote the packaging industry as a whole, and particularly to:

(a) Improve the quality and marketing value of export packaging;

(b) Achieve the fullest utilization of local packaging materials resources and packaging industry capabilities;

(c) Co-ordinate packaging production and imports with the growing demands for packaging materials and containers;

(d) Ensure the constant inflow of packaging knowledge to packers and pack manufacturers.

Conditions that will satisfy the needs of consumers and users and ensure economical production of packaging media in the country should be created.

In the developed market economies, all these requirements and factors are kept in balance through the competition of the local and foreign producers under dynamic market conditions. However, even under such conditions, well-equipped institutions are at work helping the various parties to control, almost every day, the standard and cost of the services with which they are provided.

In order to achieve similar conditions, it is recommended establishing a packaging co-ordination and development department at the Productivity Centre of the JIDC. Specifically, it would:

(a) Formulate a long-range programme of packaging development, based on an assessment of local quantitative and qualitative demands for packaging materials and machines as well as on foreign market requirements;

(b) Co-ordinate the implementation of the programme with government ministries and other responsible organisations;

(c) Advise the Government on the steps necessary to improve the packaging industry as well as on licensing, customs, taxation and pricing policies for investments in, imports of, and local production and supply of packaging media;

(d) Compile and analyse statistical data related to the packaging industry;

(e) Carry out techno-economic studies on projects selected for investment and on the application of packaging systems;

(f) Initiate promotional activities in the field of packaging, in co-operation with the Jamaica Packaging Association, such as: seminars, congresses and other forms of information exchange and transfer of knowledge; and periodic exhibitions and contests to choose the best package of the year;

(g) Represent the packaging interests of Jamaica abroad and develop co-operation with packaging institutions in other countries and with international packaging organizations.

Description of the project

An expert should be assigned to the Jamaica Industrial Development Corporation to advise the Government on establishing the packaging co-ordination and development department at the Productivity Centre. In the first phase (two months) of the project, the expert would:

(a) Assist in drafting terms of reference, scope of activities and staff requirements for the department;

(b) Assist in drafting job specifications for the staff;

(c) Formulate fellowship programmes for the staff;

(d) Advise on principles of co-operation between the department and other organisations in the field of packaging.

In the second phase (five months), after the establishment of the department, the expert would advise and assist the department in carrying out its statutory functions.

Project budget

Components	Duration	Cost (US dollars)
Packaging expert with considerable practical experience in managing a packaging development centre and programming its diversified activities, especially those concerned with co-ordination and promotion	Phase 1: 2 months	6,000
	Phase 2: 5 months	15,000
Fellowships	4 to 8 months	8,400
Total		29,400

Annex IV

SUGGESTED PROJECT FOR UNIDO ASSISTANCE UNDER ITS SIS PROGRAMME: FEASIBILITY STUDY ON THE ESTABLISHMENT OF AN EXPERIMENTAL PILOT PLANT FOR THE MANUFACTURE OF ALUMINIUM PACKAGING AND CANNING FOR SELECTED PROCESSED FOOD PRODUCTS

Background information

Bauxite ore is Jamaica's principal mineral resource. Total bauxite production for the year 1974 was over 15 million tons. There was also an increase in the local processing of bauxite into alumina, which reached 7.2 million tons in the same year.

In view of the fundamental changes that have taken place in the economics of aluminium production, the attention of the Government is focused on the development of new sources of aluminium supply. A joint venture has been proposed by Jamaica, to build together with Trinidad and Guyana two smelters with a capacity of 200,000 tons each. Plans are that the first smelter will begin operations in 1979; the second will be completed by 1981. This means that Jamaica will have at its disposal, in 4-5 years, valuable raw material which due to its outstanding properties is widely used in the packaging industry.

The economic development programme launched by the Government gives priority to the agro-industries. Detailed studies are being undertaken to establish the feasibility of increasing production of processed foods like meat preparations, dairy products, fish, and fish preparations etc. Another development during 1974, which is likely to be of particular significance to the agricultural sector in the future, was the agreement between 46 African, Caribbean and Pacific developing countries (including Jamaica) and nine countries of the European Economic Community (EEC), concerning favourable terms for entry into the EEC of selected agricultural products.

The current difficult situation in the packaging industry in Jamaica is aggravated by a lack of indigenous raw materials. The rising cost of imported packaging materials makes it imperative to explore the possibility of local processing of alumnium into packaging and of increasing the application of aluminium in food canning.

UNIDO could give useful support to the Government in preparing its programme for the utilization of future supplies of aluminium by carrying out a feasibility study on the establishment of an experimental pilot plant for the manufacture of aluminium packaging and canning for selected processed food products in Jamaica.

Description of the project

The feasibility study would be implemented by a team of two experts: a specialist in the production of aluminium packaging; and a food technologist. The experts would study the feasibility of the local manufacture of aluminium packaging and the application of aluminium in the canning of processed food products. They would also recommend which types of processed foods should be selected for the purpose. Specifically, the experts would be expected to:

(a) Advise on food products for processing;

(b) Formulate recommendations on processing and packaging technology;

(c) Prepare specifications of the equipment for the initial stage of the production of chosen processed foods;

(d) Advise on the setting up of an aluminium package manufacturing plant;

(e) Recommend aluminium canning lines for selected food products and prepare technical specifications;

(f) Work out recommendations for operation and supply;

(g) Recommend further UNIDO technical assistance in this field, if required.

The experts would be attached to the Jamaica Industrial Development Corporation and would be expected to perform the duties in a period of one month.

Project budget

Components	Duration (months)	Cost (US dollars)
a) Packaging expert with considerable experience in the manufacture of aluminium packaging for food products	1	3,000
b) Food technologists with extensive experience in food processing	$\frac{1}{2}$	3,000
Total		6,000

Annex V

SUGGESTED PROJECT FOR UNIDO ASSISTANCE: ESTABLISHMENT OF A REGIONAL PACKAGING INSTITUTE

Background information

One of the basic conclusions of the packaging survey mission carried out by the expert was that long-range solutions to the problems faced by the local packaging industry could be found by developing closer co-operation and specialization among the Caribbean countries within the CARICOM area in packaging manufacture and research. A shortage of indigenous raw materials, tight supplies and rising prices of imported packaging materials, the small size of the local market, and the shortage of foreign exchange are the main reasons for the current difficult situation of the Jamaican package manufacturing industry, and it can be assumed that these limitations are also common to the other CARICOM member countries.

In order to concentrate efforts towards establishing multilateral co-operation in the production of packaging materials utilizing available natural resources, the adaptation and/or development of suitable technologies, and economizing in the application of packaging media, the establishment of a regional catalizing and programming body is needed. This body would also provide research and testing facilities, which are too expensive for individual countries.

UNIDO could provide technical assistance to the Governments of Guyana, Jamaica and Trinidad in identifying the possibilities of establishing a regional packaging institute and in formulating appropriate recommendations.

Purpose of project

An expert should be sent to the area to determine the conditions, scope and forms of future co-operation among the CARICOM countries in the field of packaging. He would be assigned to the CARICOM headquarters at Georgetown, Guyana and be expected to:

(a) Visit selected countries and identify possible areas of co-operation in the field of packaging;

(b) Study the most suitable forms of and scope for the proposed co-operation;

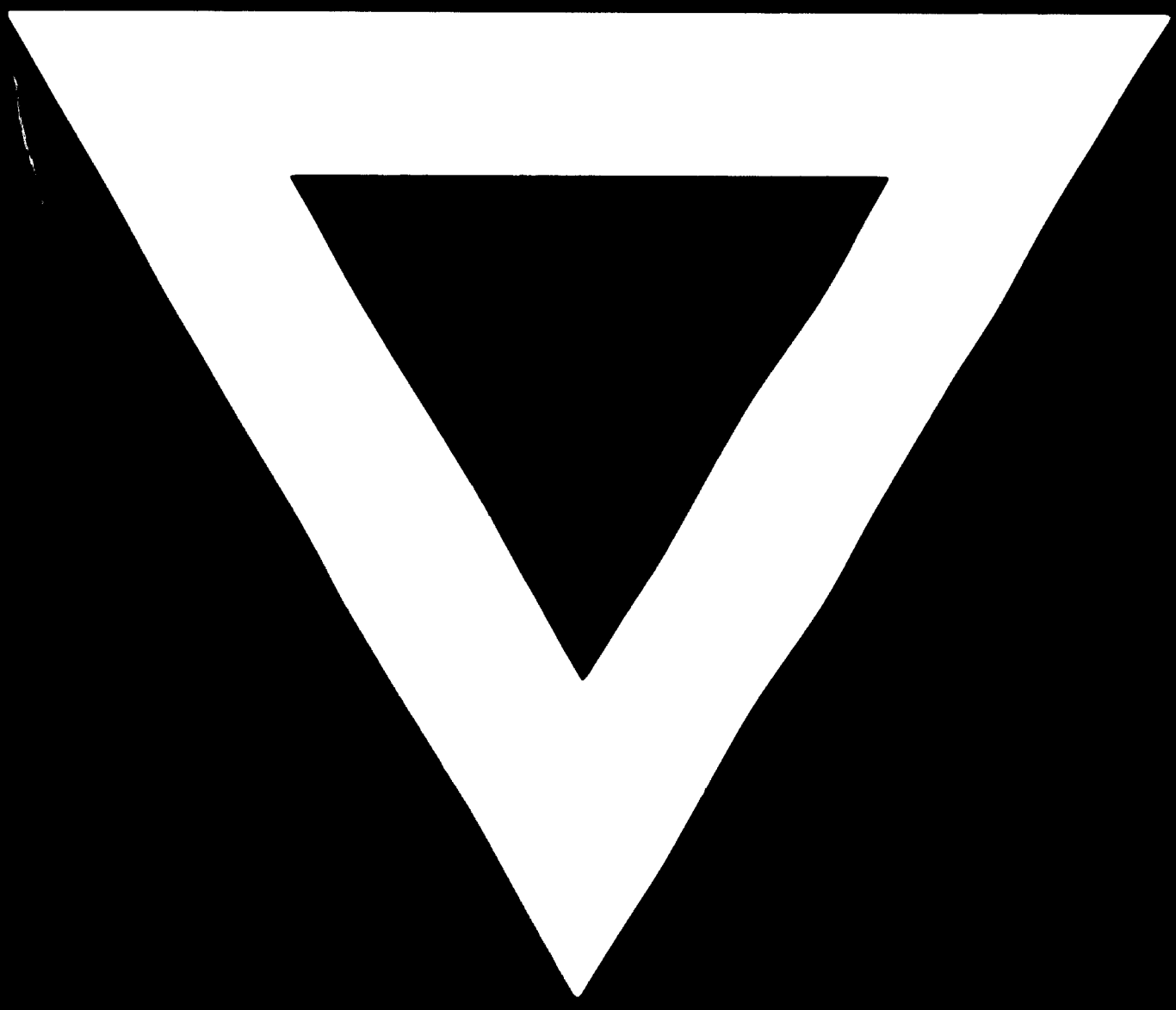
(c) Determine objectives and priorities for co-operative activities;

(d) Recommend location, terms of reference, size, structure, work programme and equipment for the regional packaging institute;

(e) Recommend any further UNIDO technical assistance that might be necessary in establishing and running the institute.

Project components

The expert should be a packaging technologist with ample practical experience in running complex packaging projects and in carrying out co-ordinative work. The mission should take six weeks and cost $US 4,500.



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