



**TOGETHER**  
*for a sustainable future*

## OCCASION

This publication has been made available to the public on the occasion of the 50<sup>th</sup> anniversary of the United Nations Industrial Development Organisation.



**TOGETHER**  
*for a sustainable future*

## DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

## FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

## CONTACT

Please contact [publications@unido.org](mailto:publications@unido.org) for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at [www.unido.org](http://www.unido.org)



DO2940



United Nations Industrial Development Organization

Distr.  
LIMITED

ID/WG.104/8  
29 September 1971

ORIGINAL: ENGLISH

Expert Group Meeting on Packaging  
Vienna, Austria, 20 - 22 October 1971

ESTABLISHING A NATIONAL PACKAGING INSTITUTION  
IN PLANNED-ECONOMY COUNTRIES

by

Bohdan Czerniawski  
Polish Packaging Centre  
Poland

1/ The views and opinions expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO. This document has been reproduced without formal editing.

id.71-7670

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.

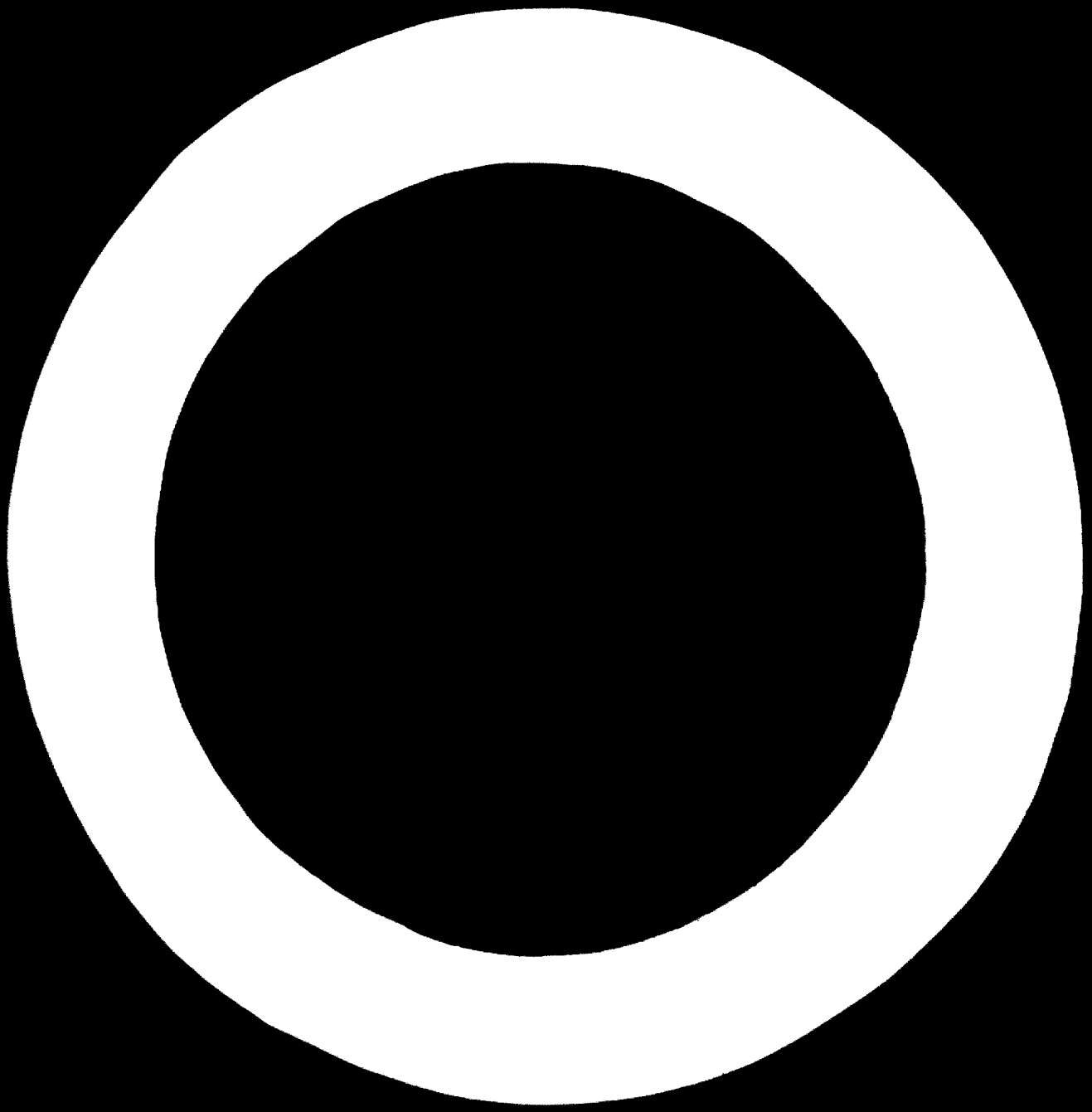
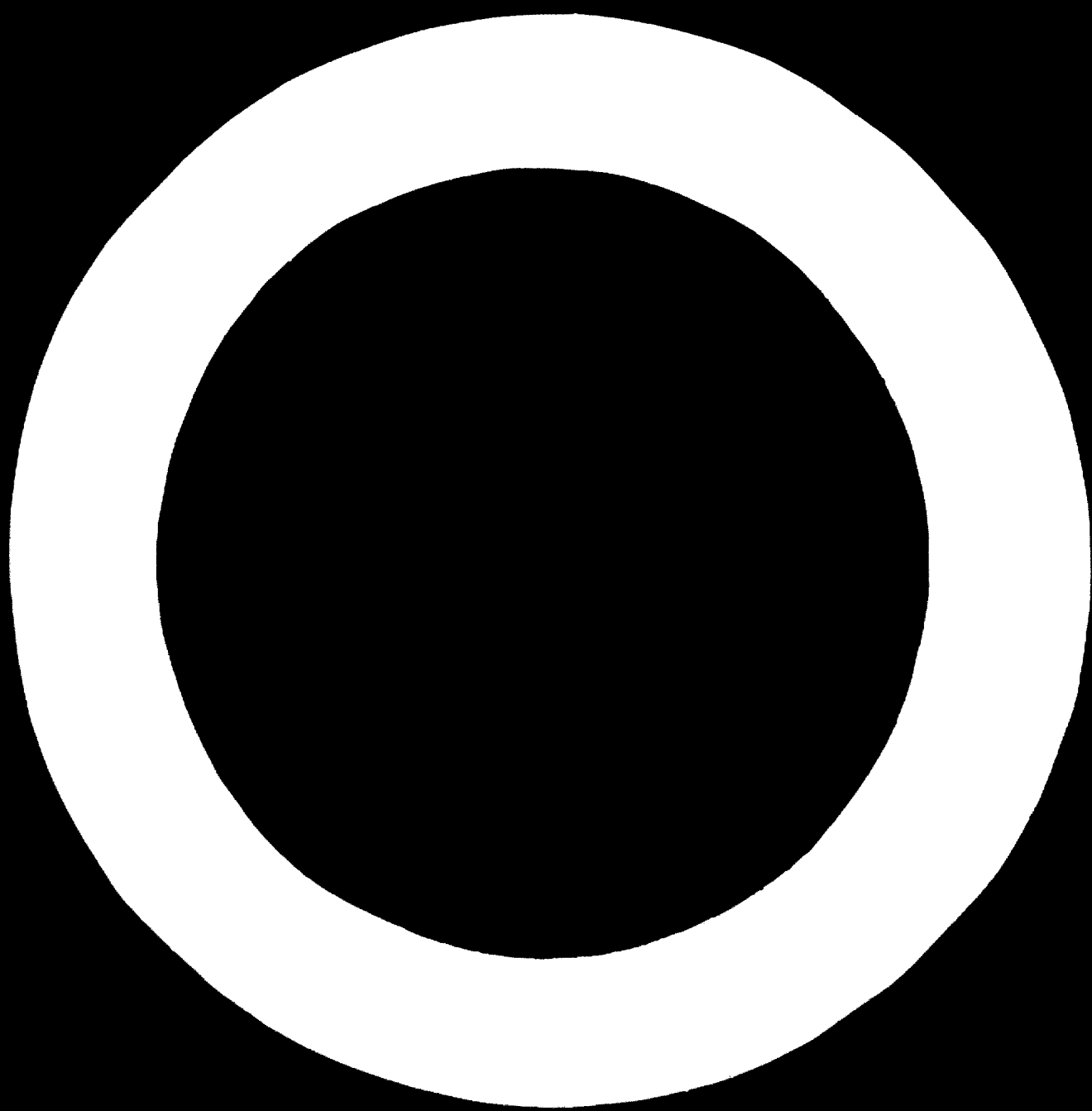


TABLE OF CONTENTS

Chapter 1	Purpose of establishing packaging centres in centrally planned - economy countries	Page 5
Chapter 2	Organization of production and Polish institutions involved in packaging problems	Page 7
Chapter 3	Organization and functioning of the Polish Packaging Centre	Page 10
Chapter 4	Planning and economic activities	Page 11
Chapter 5	Research activities	Page 13
Chapter 6	Standardization activities	Page 16
Chapter 7	Training, information and documentation, promotion	Page 17
Chapter 8	Development trends for some activities of a central packaging institution	Page 18
Chapter 9	Function of the branch packaging institutions	Page 19
Chapter 10	Evaluation of the organization of packaging research facilities	Page 21
Appendix	Fig. I Organisational diagram of the Polish Packaging Centre	Page 23



CHAPTER 1

PURPOSE OF ESTABLISHING PACKAGING CENTRES  
IN CENTRALLY PLANNED - ECONOMY COUNTRIES

In planned-economy countries including Poland there are in principle no separate packaging industries. The production of packaging media is entrusted to various industries depending upon the materials from which packaging is made. The production of packages or packaging materials covers in the majority of cases only a part of the activities of a manufacturing enterprise, the exception here being the factories of sheet metal packaging and some glassworks. Also, there is a growing tendency for packaging to be made by their users and this is not only the case when the packaging system itself determines the location of the production of packaging.

Such a case may well be exemplified by the production of plastics bottles by the works of foodstuffs and chemical household industries. All those branches of national economy whose functions include the manufacture and distribution of goods are interested in the increase of the production of packaging and packaging materials. The increasing quantitative and qualitative needs for packaging and a wide range of the various factors which determine these needs, call for an integrated concept of packaging problems as far as both their manufacture and application are concerned.

Although Poland does not belong to the leading countries in the field of packaging, the problem of the development of suitable packaging is considered, particularly in recent times, to be one of the more important tasks of national economy.

These tasks refer not only to quantitative increase but also to the technical and economic progress which governs the optimisation of packaging being currently in use. An illustration of the plans for quantitative and qualitative changes in packaging now being used in Poland is provided by the rates of increase for individual types of packaging as (per value).

Type of packaging	Rate of increase for 1975 - 1970	Structure 1970 - 1975	
1. Metal packaging	133	18.0	20.6
2. Glass packaging	141	12.4	10.9
3. Plastics packaging	275	9.2	15.7
4. Wooden packaging	116	13.3	9.7
5. Paper packaging	152	39.1	37.3
6. Textile packaging	117	6.8	5.1
7. Closures	109	1.2	0.8

The absence of a separate packaging industry on the one hand and the importance of the problem resulting from the necessity of ensuring the required number and quality of packaging media for the rapidly increasing production of consumer goods and the dynamic world progress and continuous evolution in materials and packaging designs and systems necessitate the coordination on a national scale of all the steps taken to ensure the correct expansion of this important field of national economy. Such a coordination, based on the long-term forecasts of social needs and the associated forecasts in the expansion of industry, commerce, services, communications and culture, would provide favourable conditions for the uniform and proportional increase in the production of packaging materials, ready made packs and auxiliary materials and for the use of packaging in the various branches of national economy. The efficiency of this coordination activity is dependent first of all upon the availability of suitable research facilities. In centrally planned economy countries the coordinating activity refers to the general development of packaging techniques and is implemented mainly by packaging research institutions subordinated to various state owned institutions. In the majority of these countries there are packaging centres, such as the Polish Packaging Centre, Warsaw; the Institute of Transportation and Storage, Prague; the Institute of Packaging and Material Handling, Budapest; the Central Packaging Institute, Dresden. In addition to the above there are industrial institutes and laboratories engaged in the problems of the manufacture and use of specific types of packaging.



CHAPTER 2

ORGANIZATION OF PRODUCTION AND POLISH INSTITUTIONS  
INVOLVED IN PACKAGING PROBLEMS

As the importance of packaging to national economy increases a necessity arises for changing the location of packaging factories and thus the organization of the packaging industry with the view to satisfying quantitative needs and qualitative requirements.

Currently, there are in Poland two somewhat contrasting concepts for the increase of packaging production, namely:

- decentralization, i.e. to entrust the manufacture of packaging media with their users,
- centralization, i.e. the establishment of large factories to manufacture packaging.

The first concept is justified by the need for minimizing the transport of empty packaging, and the second one by profitability and the need for providing a basis for a rapid and rational expansion of the packaging field. The adopted programme provides for the implementation of a mixed concept in the near future.

1. To entrust the manufacture of packaging to their users. This refers first of all to such industries as chemical, foodstuffs and light, and is possible only in technically and economically justified cases.  
A too rigid enforcement of the principle of locating the manufacture of packaging with their users may cause the capacity of machinery and plant to be not fully utilised.
2. Establishment of large factories to manufacture packaging.  
The production volume of such large factories allows for profitability, introduction of modern technique, technology and organization, and for suitable extension of research facilities. It is also expected to redesign some industrial branches with the view to establishing combines, associations of packaging manufacturers or specialised enterprises to exercise an integral control over the extension of a given type of packaging.

The integration is meant here as referring to both research work and production specialization and application of technical progress to practice.

The first step in implementing this idea was to establish last year the Combine of Light Metal Packaging in Kraków.

All the packaging problems are co-ordinated in Poland by the Government's Plenipotentiary for Packaging. He heads the Council for Packaging Management whose activities are attended by the representatives of the industrial branches interested in the manufacture and use of packaging.

In order to solve more important problems the Council sets up specialized sections, this being exemplified by section to deal with the problems of industrial design. The members of this section include prominent specialists on the design of packaging.

The basic functions of the Governmental Plenipotentiary include the evolvment of expansion programmes for packaging and to move motions in matters concerned with the manufacture and improvement of the quality of packaging for the present and future needs of this country's economy.

Key problems are presented by the Plenipotentiary for discussion and consideration during the sittings of the Council for Packaging Management.

The Plenipotentiary supervises the activities of the Packaging Centre established in Warsaw in 1958.

The functions of the Packaging Centre are interbranch and include:

- planning and economic research
- research and testing
- standardization
- training, information and documentation, and promotion

The organizational structure and detailed scope of activities of the Polish Packaging Centre are discussed in the latter part of the article. Here, stress is laid only on the fact that the very wide range of the activities of this centre is governed by the intention to maintain an

initiating role in the optimum development of the packaging field in Poland.

In addition to the Polish Packaging Centre, the problems of packaging are dealt with by many institutions located within the manufacturers and users' framework. Their location determines the scope of the jobs undertaken by them and, consequently, they are restricted to the problems associated with the manufacture of packaging from a given material, or the application of packaging to a specific group of goods.

CHAPTER 3

ORGANIZATION AND FUNCTIONING OF THE POLISH PACKAGING CENTRE

The basic function of the Polish Packaging Centre covers the problems associated with planning and programming the development of the packaging industry in Poland; handling the packaging being used currently; co-ordinating and performing research activities; co-ordinating standardization; elaborating basic standards; and providing technical and economic information and training activities.

A Technical and Research Council has been set up in the Packaging Centre to advise on research problems. One of the functions of this Council is to accept the programme for research activities and to adopt reports on their implementation.

The organisation chart of the Polish Packaging Centre is shown in Fig. 1. <sup>1/</sup>

---

<sup>1/</sup> Fig. 1 is shown at the end of the report.

CHAPTER 4

PLANNING AND ECONOMIC ACTIVITIES

All the sections of the Packaging Centre participate in the elaboration of the programme for the development of the packaging field for a long-term period. This programme covers the basic quantities and percentages for the increase in production and use of packaging media.

Also, the programme may include stipulations for the changes considered indispensable in the organisation of the industries making packaging materials and containers, and for the extension of research facilities necessary when implementing the objectives included in the programme.

The programme is presented for consideration to the government and approved as a government act, having been discussed with the manufacturers and users of packaging materials and packaging, and having been accepted by the Council for Packaging Management.

The basic activity of the Department for Packaging Planning and Handling is to elaborate an integrated balance for packaging materials and packaging. This balance is evolved based on partial balances referring to one industry branch only and prepared by the manufacturers of packaging materials and packaging.

The purpose of the integrated balance is to compare the supply figures proposed in partial balances with the current and justified needs of users and, next, to provide a basis for:

- setting the tasks for individual industries as far as new productions and purchases of some types of packaging are concerned,
- introducing substitutes aiming at higher technical and economic profitability,
- determining the quantities of packaging materials and containers to be imported.

The integrated balance is presented for acceptance to the Council for Packaging Management.

The profitability of the production and application of packaging is analysed by the Department of Economic Research. These analyses provide usually a basis for manufacturers to start new productions and are also made use of in evolving expansion programmes and integrated balances. Recently, the scope of activities of this team has been expanded to include that on forecasting the production of materials, packages and packaging systems.

CHAPTER 5

RESEARCH ACTIVITIES

These activities are undertaken in the Department for retail and transport packaging research. In addition to inter branch activities a great deal of work has been done in determining the applicability of materials and ready made packs for specific products. This resulted from current needs and insufficient expansion of industrial and works research laboratories. Research activities are currently undertaken in two main directions:

1. Work on determining the magnitude of mechanical and climatic hazards affecting packaging and packaged goods during transportation, on developing methods for reproducing these hazards in laboratory conditions, evolving test methods, and developing methods of protecting against hazards that may occur in transport,
2. Work on determining the applicability of materials to mechanised production of packaging and to packing processes, developing test methods for the above purpose, and laying down the requirements that would ensure the continuous operation of machines without loss of material. Mechanical and climatic hazards affecting handling of packaging and packaged goods are studied in various means of transport (car, railway, ship).

In view of the high cost of measuring apparatus, field tests are carried out in direct co-operation with other institutions concerned, both in this country and abroad (for example, co-operation with the Institute of Packaging, Czechoslovakia). The results of these tests are made use of in developing those laboratory test methods which to a maximum degree would reproduce the hazards occurring in practice. Thus, the data obtained, permit the behaviour of packaging to be predicted in practice, and also the basis to be provided for rational packaging design.

The introduction of packaging machines of increasingly higher output requires packaging materials to be adapted ~~for~~ **processing on these** machines. The inadaptability of a given material to definite conditions may incur considerable losses in materials.

Since such was the case and there were no laboratories to deal with this problem, the Polish Packaging Centre felt compelled to undertake respective studies particularly on the materials being made in this country.

The respective work includes:

- analysing the operation of packaging machines in the individual stages of the packaging process,
- determining the properties of critical importance to a given machine or material,
- selecting and developing methods for testing these properties,
- determining those values of given properties at which there are no disturbances in processing materials,
- suggesting the modification of material or a machine.

Generally speaking, one of the basic objectives of the above activities is to establish criteria for evaluating the quality and applicability of packaging materials and containers, these comprising test methods and technical specifications. After experience has been gained in the use of these methods, appropriate national standards are prepared.

One of the methods of application of test results are the activities of the Commission for Export Packaging established by the Polish Packaging Centre. One of the functions of this commission is to work out instructions that would provide a basis for designing transport packaging. 15 instructions have been issued until now to be strictly followed by the enterprises producing various goods for export. These instructions lay down the guidelines for designing the basic groups of transport packaging, the methods for protecting metal articles against corrosion, for protecting against mechanical hazards, for fixing, etc.



Currently, more than 30% of research work is being done against payment by direct orders of industry.

The target intention is for this percentage to account for 50% of the total amount of the technical services rendered by the Packaging Centre.

The remaining work is financed from the central budget in view of their interbranch and developmental nature. The basic activity of the Department for Evaluation and Appraisal is to evaluate the quality of packaging currently in use. This action is conducted by the initiative and order of either packaging manufacturers or users, most frequently when the production of a new packaging is undertaken or one type of packaging is replaced by another. The evaluation may be carried out with the view to checking for standard conformity or for comparative purposes.

Also, the same department evaluates packaging for more important groups of goods qualified for being awarded the quality mark. Such an evaluation is based on establishing that proper materials have been selected, correct design has been developed, and correct inscriptions have been applied; and on evaluating other features depending on the type of packaging, among them being such as tightness of the closure, ease of application, etc.

CHAPTER 6

STANDARDIZATION ACTIVITIES

The Section for Standardization of the Polish Packaging Centre is of an interbranch character. The activities of the Section for Standardization are:

- to organize, co-ordinate and supervise the activities of industrial standardization centres by establishing the guidelines for standardization programmes, analysing and evaluating these programmes and developing the national standardization programme in the field of packaging,
- to elaborate drafts of some basic standards on testing methods for packaging materials and containers, dimensional series, classification and nomenclature; the above work is to a marked degree based on the research work concluded by other Departments,
- evaluating the draft standards drawn up by standardization sections, in different industrial branches,
- evaluating the drafts of international standardization documents.

The drafts of standardization programmes and standards are initially adjusted by being circulated for comments among the industrial and research centres concerned.

Standard draft proposals are finally adjusted by standardization commissions of both industrial branches and the Polish Packaging Centre. The adjusted draft proposals are presented by the relevant standardisation commission for approval by the Polish Standards Committee. The members of standardisation commissions are the representatives of the Polish Standards Committee, and of the packaging research centres, manufacturers and users.

CHAPTER 7

TRAINING, INFORMATION AND DOCUMENTATION, PROMOTION

The basic activities of the Information and Documentation Section is to issue a review of literature six times a year, each issue covering about 400 entries.

This review is prepared based on the classification developed by the European Packaging Federation.

The Information and Documentation Section is also responsible for drawing up training programmes in packaging.

Well-established and continuous training activities involve one and a half years' correspondence courses conducted jointly with the Polish Economic Society. The necessary condition for attending such a course is a secondary-school certificate; although a number of the persons attending the course are university graduates. The course is of a general character and refers to all packaging problems. Until now, about 700 persons have attended 5 such courses. One of the methods of training involves symposia on the definite types of packaging and packaging systems, attended by both national and foreign specialists.

**Also,** the Information Section organizes exhibitions to be held usually during specialistic symposia for the purpose of showing national achievements in comparison with international ones.

Another training method involves specialised lectures delivered in higher educational establishments by the Polish Packaging Centre's employees on the technology of packaging materials and containers and on packaging techniques.

The functions of the Information and Documentation Section also involve keeping a library which comprises about 5,000 books and 140 technical publications.

Every two years, the Section sets up the national contest "Golden Chestnut" to award prizes for the best packaging introduced during that time for use in general practice. The important functions of the Polish Packaging Centre include consultations rendered to the representatives of industrial trade and research sections.

CHAPTER 8

DEVELOPMENT TRENDS FOR SOME ACTIVITIES OF A CENTRAL

PACKAGING INSTITUTION

An important place among the activities of the Polish Packaging Centre will be occupied in the near future by forecasting the production of packaging materials, containers and packaging systems. This forecasting activity includes long-term forecasts on the production of such amounts of packaging materials and packaging as to fulfill the adopted economic objectives. These forecasts include the technical progress in such fields for example as transport and packaging systems that should be developed in this country.

Another important function of the Polish Packaging Centre, whose scope is to be much increased in the near future, is to co-ordinate research and testing application activities, carried out elsewhere in the country. This co-ordination covers all the research work involved in the manufacture and application of packaging, the subjects associated with manufacture, modification, use and methods of testing of packaging materials in industrial institutes and works laboratories.

This co-ordinating activity involves completing research programmes for packaging manufactured locally, analysing these programmes, and suggesting subjects to be included in the programmes for individual establishments, and being indispensable for the integrated expansion in the field of packaging. A possibility is contemplated to finance in the future the respective research work by the intermediary of the Polish Packaging Centre.

It is expected that in the near future the research programme of the Polish Packaging Centre will provide almost exclusively for inter-branch problems, thus supplementing the national research programme.

The above problems involve the selection of the criteria for evaluating the quality of packaging materials and containers, these including test methods and technical requirements.

CHAPTER 9

FUNCTION OF THE BRANCH PACKAGING INSTITUTIONS

Packaging research and design units are established both at the manufacturers and users of packaging materials and containers.

This situation arises from the fact that a separate packaging industry is non-existent and that in view of the shortage of some packaging materials, manufacturers should pay more attention to modification and testing the performance properties of the packaging media.

Research facilities engaged in studying packaging problems, though existing in basic fields, may not be considered sufficient to cover all needs.

The need for extending research facilities refers first of all to the industries manufacturing packaging materials (for example chemical industry producing plastics). As far as plastics manufacturers are concerned, packaging problems are usually solved by branch institutes and laboratories.

Separate packaging research units have been set up only in the metal and glass packaging industries.

The Laboratory for Metal Packaging evaluates the applicability of sheet metal with various cores, passivating and lacquer coatings to the manufacture of cans for specific uses. Also the functions of this laboratory include the development of methods for testing various cans.

The basic functions of the Packaging Research Centre set up in the glass industry is to design packaging.

Following the opinion of the Polish Packaging Centre the basic functions of the units set up at the manufacturers' should include work on adapting packaging materials to the demands made by the industries employing packaging, both from the viewpoint of protecting the product being packaged, and to those of modern packaging systems. This stipulation, also providing for widening the range of packaging materials is being

gradually implemented among other things by the co-ordination of research work initiated by the Polish Packaging Centre.

As far as research and design units at the users of packaging are concerned, they have been set up as the sections of the institutes of such branches of the food industry as meat, concentrates and fruit and vegetables; of the chemical industry as pharmaceuticals and household chemistry, and also of the light industry.

These are centres employing from a few to over a dozen employees. Their basic functions include work on determining the applicability of various packaging for specific purposes. Also, some of these units such as those of the chemical and light industries, conduct design work.

The organization of these institutions is adapted to the tasks to be made, which usually conform to local needs.

To provide an example, one of the well-established packaging laboratories is the pharmaceutical laboratory comprising a design section, prototype section, model section, test section, technical information section, and a pattern display section. This laboratory employs both research and design engineers. The majority of the work on the design of retail packaging, with particular attention being drawn to their appearance, is being done by art units. As far as the design of transport packaging is concerned, specialised units have been set up only for cardboard packaging and, to some extent, for wooden packaging. No specialised unit has yet been set up to deal with the design of non-typical packaging for heavy machinery, although the absence of such a unit is keenly felt.

CHAPTER 10

EVALUATION OF THE ORGANIZATION OF PACKAGING  
RESEARCH FACILITIES

The Polish Packaging Centre was set up at a time, when the packaging industry was at its very early stage of development. When being established, the Packaging Centre was the only one of its kind in Poland to deal with packaging problems. Hence, this Centre dealt for a long time with the subjects characteristic of a central institution in addition to those of a very specific character, such as packaging testing and design. As specialised institutions were set up on the initiative and with the co-operation of the Polish Packaging Centre to deal with specific packaging problems, some activities of the Centre were gradually taken over and extended by these institutions. On the other hand, the Polish Packaging Centre was to deal to an ever increasing degree with establishing development trends for packaging, to co-ordinate economic and research activities and, also, to conduct interbranch research and standardisation work.

The previous practice indicates that it is reasonable to establish central research facilities only when the packaging industry is highly concentrated. Should such a concentration be absent it is difficult to co-ordinate research and manufacture activities and to apply test results in practice. In centrally planned economy countries with a dispersed packaging industry, it is more reasonable to establish a central organisation for co-ordinating purposes and to expand industrial research facilities.

The advantage of a central institution of a co-ordination type lies in that a uniform expansion of the packaging industry may be ensured, as individual economic objectives are being implemented. Another advantage is the independent objective evaluation of and opinion on production, economy and quality of packaging. To return to the organisation of industrial research facilities, it must be pointed out that in the case when there is sufficient production scale of packaging materials and packaging, it is much better to expand research activities of the industries manufacturing packaging materials and containers by including also the problems associated with the practical application of packaging.

Such an arrangement makes it possible to concentrate effort and funds, characteristic of the development of modern science and technique.

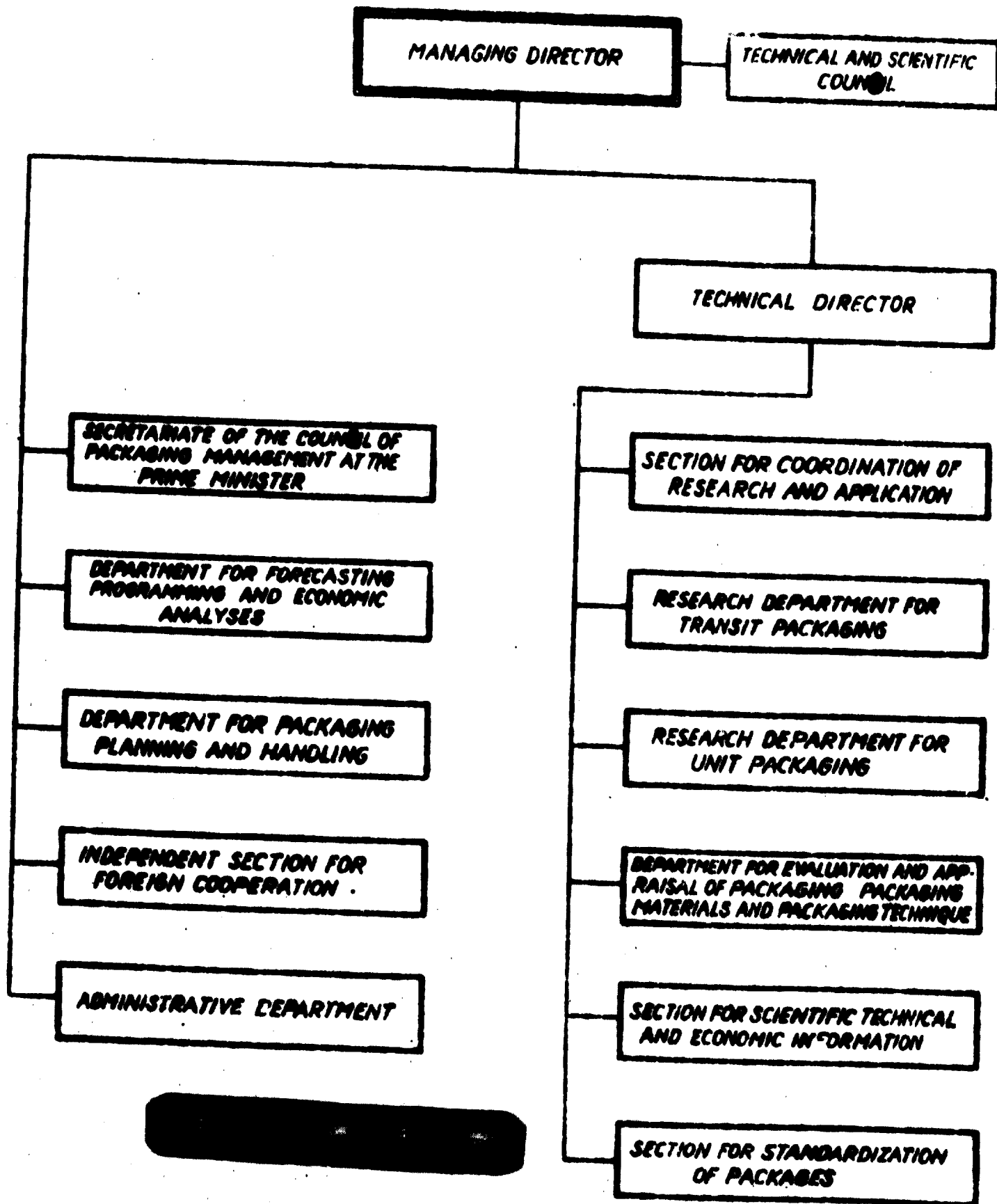
Research facilities should be located not only at the manufacturers but also at the users of packaging.

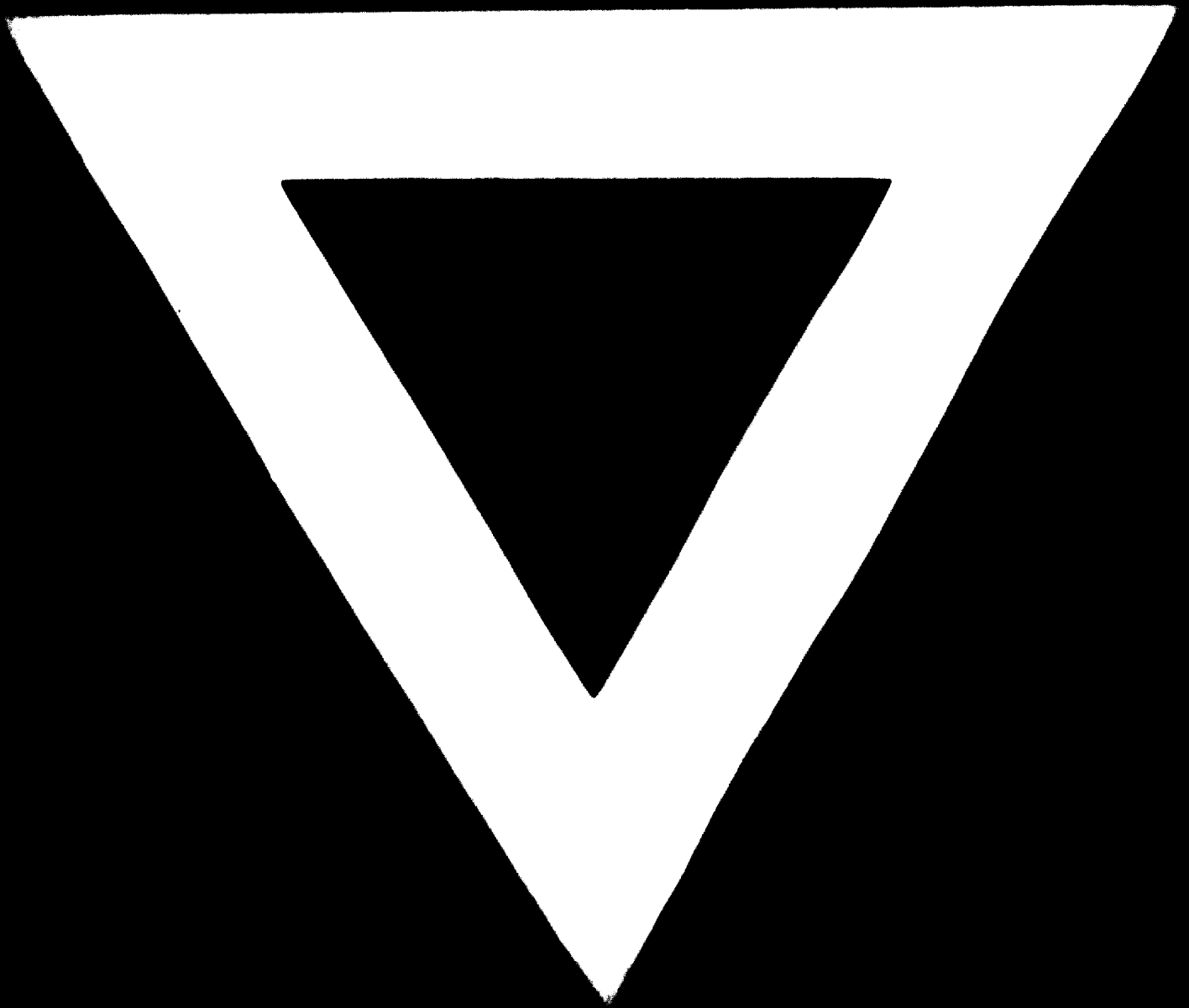
Such is the case in Poland; however, as the current shortage of packaging materials decreases, research facilities are being expanded at the manufacturers of packaging materials.



**APPENDIX**

**ORGANIZATIONAL DIAGRAM  
OF THE  
POLISH PACKAGING CENTRE**





**74.09.12**

*i*