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DEVELOPMENT OF THE PRODUCTION OF PACKAGING FOR EXPORT GOODS  
DP/CHI/87/005  
REPUBLIC OF CHILE

Technical report: Advice on Study of Packaging Demands  
and on the Structural and Operational Organization  
of the Packaging Centre at INTEC-Chile\*

Prepared for the Government of Chile  
by the United Nations Industrial Development Organization,  
acting as executing agency for the United Nations Development Programme

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\* This document has not been edited.

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## A - FINDINGS AND RECOMMENDATIONS

### FINDINGS

1. There is no evidence that any institution knows the current status of the Packaging Market or the Packaging Consumption in Chile.
2. The studies conducted by the Packaging Group, mainly the "Diagnóstico del Sector Productor de Envases y Embalajes para la Exportación", were very useful in order to become acquainted with the most important problems in the Packaging Area.
3. According to the private sector (some packaging industries) this study can clarify doubts concerning Packaging Consumption in Chile, as well serve as a base point for future investment in Chile.
4. Concerning the New Packaging Market Study, The Packaging Group, together with professionals from other areas of INIEC, can prepare and perform the Data Collection, leaving to an expert to organize and conduct the final analysis, together with the INTEC group.
5. During the mission of the expert, two projects were proposed to CORFO. One was related to the Consumption of Packaging for Fruit and Vegetables (Fresh and Processed). This also can serve as an initial part of the study "The Chilean Packaging Industry".
6. The Packaging Center, in reality, as mentioned by most of the experts of the UNDP/UNIDO Project, is a small Packaging Group working mainly on specific projects, in order to obtain self fundings according to the rules of INTEC.
7. Despite the fact mentioned in the item 6, this Group is doing a very good job, bringing other technicians from different areas of INTEC, performing tests for the private sector, publishing a News Letter, conducting some research projects mainly for the Government Institution, and Packaging Center at INTEC.
8. The UNDP/UNIDO Project, according to the expert, was the starting point, in order to revive the possibility of consolidating the Packaging Centre at INTEC. Without this project it seems that a Packaging Group would be smaller and more limited.
9. A very positive aspect is that the Packaging Group, due to INTEC circumstances, is accustomed to working on a commercial basis. The problem is that it does not yet have enough

Investment and programming to consolidate it into a profitable way.

10. The Packaging Group at INTEC showed an excellent disposition, interaction and willingness to get it consolidated. On the other hand, there are not enough staff in the Group, nor sufficient infrastructure to attend the demand of the Packaging and Food Industries in Chile.
11. The Documentation and Information availability of INTEC Library in the Packaging Area is not sufficient. Only a few magazines and books are available. This material is not enough to update either the Technical Staff or the Packaging Industry.
12. The "Self-Financing" situation of INTEC and consequently of the Packaging Group is one of the critical points of this project.
13. Discussing this subject with people from the packaging industry that have a strong involvement with the Packaging Center of INTEC, it became very clear that the Packaging Center will not be consolidated if there is not a defined program with investment from ODEPLAN/CORFO/INTEC, on the one hand and the United Nations (UNDP/UNIDO) and the Private Sector on the other.

This is also the opinion of the expert that had shown in this report the CETEA experience with the participation of the above three mentioned parts.

14. The General Direction of INTEC, based on a special study of the existing areas of the Institute, found that concerning the future investments, the Packaging Area is considered as second priority.

Based on the expert experience, this was also the opinion of the General Direction of ITAL which could not visualize what were the needs of the Packaging area.

After 3-4 years of work, CETEA has shown ITAL that this was a wrong approach and today, the most profitable Area of the Institute is CETEA, used as an example for other areas. It is the expert opinion that in INTEC-CHILE, the same situation exists.

15. During the mission period, INTEC together with the Technical Committee of the Packaging Center, decided to create a Provisional Advisory Board and to recommence the Associative Model of INTEC on May-June of 1990.

16. There was an interest in the continuation of the Project by United Nations, CORFO, INTEC and mainly from some packaging companies which had followed this project since 1978.

#### RECOMMENDATIONS

1. Presentation of a new Project entitled "Consolidation of the Packaging Center of "INTEC" for 1991 - 93 with the tripartite participation of:
  - 1.1. Government of Chile ODEPLAN/CORFO/INTEC
  - 1.2. UNDP/UNIDO
  - 1.3. Private Sector through the Association of Packaging Related Industries to the Packaging Center.
2. Establishment of an Internal Program in order to disseminate the activities and services already available, as well as the consolidation Program of the Packaging Center.
3. Organize a strategy at INTEC in order to keep for a short period of time (until the end of 1990) the Packaging Group with the participation of technicians from other areas while a Packaging Program is approved.
4. Establishment of an Advisory Board for the Packaging Center with the participation of the packaging related companies. Based on the Brazilian experience, it is proposed to invite CORFO to participate on this Board from the beginning.
5. Organize at INTEC a group of technicians to perform the marketing study, "The Chilean Packaging Industry". After the collection of the information following the structure presented in this report, to contract a specialized expert, such as Mr. Graham Wallis from "Data Mark Consultores Ltda." to perform the final analysis together with the technical group.
6. According to the possibilities, start an integration program with other Packaging Institutions or Institutions working in the Packaging Area as the IAPRI members.
7. Start the organization of a small Documentation and Information material for the packaging area in the INTEC Library in order to update the technical staff as well to serve the Packaging and Food Industry in Chile.
8. Concentrate the efforts (service to the industries) into the paper, board, carton, plastic and transport and distribution areas and gradually expand it to the metal and glass packaging areas.

9. With an establishment of a Program to Consolidate the Packaging Center of INTEC, gradually organize the main services in the following items:

9.1. Research Project

9.2. Analysis

9.3. Trouble Shooting Problems

9.4. Training

9.5. Publications

9.6. Events

9.7. Round Tables

9.8. Packaging specification

9.9. Meeting point between different types of industries

9.10. Establishment of Standards

10. Based on the expert's experience of the last 10 years in the establishment of Packaging Centers in Latin America and Caribbean, it is very important that INTEC decides what is expected from the Packaging Group.

If no investment and special program is prepared, INTEC should continue to work in the Packaging Area in the way that it is today, i.e., on a limited basis.

If INTEC decides to consolidate the Packaging Center, as recommended by the expert, and considers Packaging as an important area for the Institute, a special program as presented in Item 11 is recommended.

11. Recommended Program for the Consolidation of the Packaging Center at INTEC.

11.1. Establishment of a Provisional Advisory Board with the participation of the Companies Associated with the Packaging Center.

11.2. Establishment of the Associative Model of the Packaging Center of INTEC via contracts with the private companies.

- 11.3. When the Model achieves approximately 30 Members, create an Advisory Board with the participation of CORFO, INTEC, PACKAGING CENTER and 6 MEMBERS from the Private sector.
- 11.4. Reorganize the Packaging Group with 5-6 persons from INTEC and present a special program to CORFO in order to start the Consolidation of the Packaging Center immediately.
- 11.5. Start a strategy program as mentioned in item 2, in order to disseminate the Packaging Center as well as to bring the companies to the Center.
- 11.6. Organize an International Program 1991 - 1993 for the Consolidation of the Packaging Center (Expert Training/Equipment and Bibliographical material).
- 11.7. Organize a Governmental Program in 1991 - 1992 for the Consolidation of the Packaging Center.



## **B. INTRODUCTION AND JOB DESCRIPTION**

1. In June 1977, once the survey on "Packaging for Chilean processed food" was finished, the Production Promotion Corporation (CORFO) realized the need for a specialized body in packaging, and due to this fact supported the creation of a Centre of this nature which started its operations in 1978, under the direction of INTEC-CHILE.
2. At the initial stage, a great impulse was given to the training in this field of Chilean technicians and professionals, in order to be able to have from the very beginning a highly qualified group of people, and to be able to count at a later stage on the adequate means and physical infrastructure to develop at the high level a technical activity.
3. The initial phase of organization and equipping was finished. Currently the Centre is carrying out, on a permanent basis, applied research work under the patronage of national and international bodies, and provides upon the request of private and public sector enterprises.
4. With regard to its structure, besides CORFO representatives from the private sector involved in packaging and who actively participate in financing, orientation and activities are associated with the Institute.
5. The aims of the Centre are to keep informed, to carry out research and development and to provide consultancy services in packaging to its associates as well as to third parties, leaving open the possibility for new members to join.

### **JOB DESCRIPTION**

6. The expert was assigned to the Packaging Centre of the Institute for Technological Research (INTEC-CHILE) reporting to and acting in consultation with the local office of UNDP during the mission in Santiago. The expert carried out the mission working in close co-operation with national counterparts assigned to the project. Specifically he was expected to:
  - 6.1. Get acquainted with the structure, operating conditions and services of the Packaging Centre, as well as to understand the objectives of the project as a whole and the general purpose of his mission.
  - 6.2. Analyse the terms of reference, methodology and results of the qualitative study of national packaging offers and demands which was carried out in Chile by the Packaging Centre in 1987 under the title "Diagnosis of the Producing Sector of Retail and Transport Packages for

Exports".

- 6.3. Elaborate, propose and discuss the terms of reference for a quantitative "Study on the Demands of Packaging Materials and Packages for Chilean Products in the Short and Medium term".
- 6.4. Co-operate in the definition of the methodology for the above new study including its practical execution control and processing of the data which will be received from the export packaging manufacturer and user industries.
- 6.5. Give information and advice on the international packaging tendencies which will have to be taken into consideration, together with extrapolation techniques, within the methodology of the proposed study in order to secure the highest probability of the concluded values of the study on the demands of packaging materials and packages for Chilean export products in the short and medium-term.
- 6.6. Orient INIEC-Chile concerning the international packaging situation in order to concentrate the efforts of the institution on new work and projects.
- 6.7. Transfer the experience obtained at CETEA concerning orientation, infrastructure, administrative model and activities as well as the capacity available at CETEA to be used by INTEC - Chile.
- 6.8. The consultant will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.
- 6.9. The period of the mission was originally planned for 20 days (including travel time/completion of report).

C. ACTIVITIES - CONDUCTION OF THE MISSION

7. During the mission a series of activities was conducted in order to achieve the Job Description, and are presented according to the importance and not in a chronological order.

The Packaging Center of INTEC

8. The UNDP/UNIDO Project in INTEC could have better results, if in the beginning it was decided to have the Packaging Center of INTEC as an Area of the Institute with more freedom and priority.

9. In the Project Document it was assumed that the Packaging Center already exists, while in reality what exists is the Packaging Group with three (3) persons trying to create the Packaging Center.
10. For the expert this was a very familiar situation, due to the Brazilian experience at CETEA/ITAL with many close situations. In order to show and assist INTEC - Chile in the creation of the Packaging Center, the creation of CETEA was presented step by step.
11. In 1969 ITAL was created, and within ITAL, The Packaging Section.
12. From 1971 to 1972, ITAL received the first Packaging Expert in this area Mr. John Salisbury working with two engineers and two technicians in order to establish the first contacts of SEMB/ITAL in the packaging area. A few pieces of equipment in plastic, metal and paper board were purchased or built. The Seminars and Courses were conducted. SEMB/ITAL started to get in to the Packaging Area in Brasil.
13. From 1973 to 1980 the SEMB Group of ITAL grew up. Laboratory and tests were expanded. At the end of 1980 the Packaging and Food Companies in Brasil got to know the SEMB Group of ITAL that had 5 engineers and 2 technicians.
14. This was the first critical period concerning the decisions. The Group had two options to follow:
  - 14.1. The group would remain as an internal support area of ITAL and would not attend to the demand of the Brazilian Market, or
  - 14.2. The group would expand in order to create the Packaging Center - CETEA and consequently to assist the Brazilian Market needs.
15. In 1981, The Brazilian Federal Government, the Government of the State of São Paulo and the United Nations (UNDP/UNIDO) agreed to the creation of CETEA within ITAL through the Project BRA/82/030, with the total budget of US\$2.200.000,00.
16. From 1982 to 1986 the Project was implemented with a great effort in building construction, purchase of equipment and training of technical staff. At the end of 1982 the Government of the State of São Paulo authorized the contracting of 10 Researchers, 14 technicians and 6 workers for CETEA. This was one of the most important items for the success of the Project.
17. This period was the most important in CETEA's life, because most of the efforts were concentrated on training the technical staff. The output required in the Project as

services to the private sector was small in order to facilitate the capacitation of the group.

18. At the beginning of 1983 ITAL changed the General Director and complicated considerably the future of the project. The new Director of ITAL did not support the Project the way he should have done and conflicts were constant.
19. CETEA was forced to stay under the Engineering Division of ITAL with very little freedom, not in accordance with the objectives of the UNIDO/UNDP Project.
20. Fortunately the expert on this occasion was the Project and CETEA Coordinator and he did not accept this situation. From 1983 until 1986, a strong battle between CETEA and ITAL was conducted with a final acceptance by ITAL concerning CETEA's objectives.
21. At the end of 1986 the Project finished and CETEA proposed the continuation phase with a modern concept and new administrative approach. This idea was introduced and well accepted by the Private Companies. UNIDO/UNDP also gave great support to this idea that had as a main objective the integration between CETEA and the private sector.
22. Finally, ITAL changed its position and in August 1988 the new project was approved with the creation of 3 different parts.
  - 22.1. Advisory Board
  - 22.2. UNIDO/UNDP Project BRA/88/017 - Consolidation of CETEA within ITAL
  - 22.3. Associative Model of CETEA
23. The Project today is very successful and considered by the Government of the State of São Paulo and the Private Sector as a Model to be used in other institutions.
24. This basic history about the creation of CETEA was presented in order to establish a parallel in this analysis of the Packaging Center of INTEC.
25. Based on the analysis of a series of Documents presented in ANNEX 3 concerning the development of the Packaging Center of INTEC, the expert came to the following conclusions.
  - 25.1. The situation of the Packaging Center of INTEC in certain way was close to that at CETEA - ITAL.
  - 25.2. The Food and Packaging related companies in Chile have special needs in research, development and technical assistance. The Packaging Center of INTEC as far as experts know, is the only available institution in Chile working in this area.

25.3. In order to grow from a Packaging Group (few persons and limited facilities) to a better organized way (Packaging Center inside INTEC), is it necessary to establish some priorities and make some decisions. As demonstrated in CETEA's case, the Packaging Group has today two options.

- 1) INTEC stays with the Packaging Area called "Packaging Center", with the same system, bringing the Private Sector as members of the Programme. By doing this, it is the opinion of the expert that INTEC will continue to serve the Packaging and Food Industries in a limited way. No Center will be formed and the probability is that the service will not have enough strength to develop a more organized and efficient group.
- 2) The Packaging Group of INTEC organizes a Program, more or less similar to CETEA with the participation of the:
  - . Government of Chile
  - . UNDP/UNIDO
  - . Private Sector

With this Program, the Packaging Center will be consolidated in a period of 2-3 years, with a total staff of 10 - 15 persons and a special training program and new equipment. Following this pattern, it is possible to achieve in a short period an efficient and profitable group serving very well the needs of the country.

#### The Chilean Packaging Industry

26. This report presents a methodology suggested for the Marketing Study of the Packaging Industry in Chile for the internal and export market.
27. The following proposition is based in the practical studies conducted in the UNIDO Project in Mexico (IMAI/LANFI) in the UNIDO Project in Brasil (CETEA) and in the Marketing Studies in the Packaging Area conducted by Data Mark Consultores Ltda in Brasil in 1985, 1987, 1988 and 1990.
28. In addition, the suggested OUTLINE is presented i.e., the list of contents that is the base of the project and the scheme to be followed to obtain the necessary information. This list of content is based on the last Market Research given by Data Mark, The Brazilian Packaging Edition, 4th Edition - 1989 to INTEC-CHILE.

**29. THE PACKAGING MARKET STUDY**

**20.1. INTRODUCTION**

**29.2. SUMMARY OF FINDINGS AND CONCLUSIONS**

**29.3. ECONOMIC OVERVIEW AND PROSPECTS**

**Section 1: PLASTIC PACKAGING**

**1.1. Introduction**

**1.2. Low Density Polyethylene (LPDE)**

**1.3. High Density Polyethylene (HDPE)**

**1.4. Polystyrene (PS)**

**1.5. Polyvinyl Chloride (PVC)**

**1.6. Polypropylene (PP)**

**1.7. Polyester (PET)**

**1.8. Polyamide (PA)**

**1.9. Polycarbonate (PC)**

**Section 2: PAPER BASED PACKAGING**

**2.1. Introduction**

**2.2. Multiwall sacks**

**2.3. Other paper packaging**

**Section 3: FIBERBOARD PACKAGING**

**3.1. Introduction**

**3.2. Corrugated cases**

**Section 4: PAPERBOARD PACKAGING**

**4.1. Introduction**

**4.2. Folding cartons and rigid boxes**

\*,

**Section 5: FLEXIBLE PACKAGING**

5.1. Introduction

5.2. Laminates and coextrudates

**Section 6: METAL PACKAGING**

6.1. Introduction

6.2. Aluminium packaging

6.3. Tin plate, black plate and steel

**Section 7: GLASS PACKAGING**

7.1. Introduction

7.2. Glass bottles and jars

**30. THE END USE MARKETS**

It is very important to emphasize the needs of an evaluation of the following products in order to be complemented or adapted to the market situation in Chile.

**FOOD PRODUCTS**

Aguardiente

Baby food

Baking powder

Beer

Biscuits

Boiled sweets

Bread & cakes

Breakfast cereals

Butter

Cake mix

Canned fish

Canned sardines

Canned tuna fish

Canned fruit & vegetables

Canned/bottled fruit

Canned/bottle vegetables

Canned meat products

Canned/bottled pate

Canned meat

Canned pork

Canned sausages

Canned tongue

Caramelized milk

Carbonated soft drinks

Cashew nuts  
Cheese  
Cheese spread  
Emmental/gruyere cheese  
Gorgonzola cheese  
Gouda cheese  
Grated chesse  
Fresh cheese  
Muzzarella cheese  
Parmesan cheese  
Prato cheese  
Processed cheese  
Provolone cheese  
Ricotta cheese  
Sliced cheese  
Steppe cheese  
Other cheese  
Chewing gum  
Chocolate  
Chocolate spread  
Coconut milk  
Coffee  
Ground coffee  
Instant coffee  
Vacuum packed coffee  
Condensed & evaporated milk  
Condensed milk  
Evaporated milk  
Condiments & Seasonings  
Condiments  
Monosodium glutamate  
Seasonings  
Spices  
Corn flour  
Corn meal  
Corned beef  
Cream  
Pasteurized cream  
Sterilized cream  
Easter eggs  
Eggs  
Fermented milk  
Flour  
Fresh fruit & vegetables  
Frozen fish  
Frozen foods  
Fruit juice  
Bottled fruit juice  
Frozen concentraded juice  
Ready to drink juice  
Glucose  
Grated coconut  
Honey & Jams  
Honey  
Jam



Ice cream  
Lard  
Margarine  
Hard margarine  
Industrial margarine  
Low fat margarine  
Soft margarine  
Mayonnaise  
Meat products  
Bacon  
Boneless beef  
Cooked beef  
Ham  
Ham 2nd quality  
Hamburgers  
Lingulça sausages  
Marcella sausages  
Mortadela sausages  
Pork fillet  
Pork sausages  
Salami  
Hot dog sausages  
Sausages  
Pate  
Other meat products  
Milk  
Flavored milk  
Pasteurized milk  
UHT milk  
Milk powder  
Baby milk  
Skinned milk  
Drinking chocolate  
Milk powder  
Mineral water  
Orange juice  
Packet soups  
Palm hearts  
Panettone  
Pasta  
Peanut butter  
Peppermint drops  
Poultry  
Powdered cereals  
Powdered desserts  
Powdered drinks  
Powdered drinks swt  
Powdered drinks unswt  
Pulses  
Rice  
Salt  
Snacks  
Soya compound & meat  
Soya compound  
Soya meal

Spirits  
Aperitifs  
Brandy  
Gin  
Liqueurs  
Rum  
Vermouth  
Vodka  
Whisky  
Stock cubes  
Sugar  
Sugar preserves  
Sweeteners  
Tea bags  
Tomato products  
Tomato extract  
Tomato ketchup  
Tomato puree  
Tomato sauce  
Vegetable fat  
Vegetable oil  
Vinegar  
Wine  
Wine coolers  
Yoghurt & desserts  
Desserts  
Petit swisse  
Yoghurt

With the outline of the study adapted to the Chile situation, the following actions are suggested:

### 31. SEARCH OF AVAILABE INFORMATION

The search of the available information will be done, basically in two areas:

- 1- Governmental Institutions or Agencies
- 2- The Private Sector Institutions

Based on the information obtained by the expert during this mission, the following institutions are recommended:

#### GOVERNMENTAL INSTITUTIONS

- . "Instituto Nacional de Estadísticas"
- . "Dirección de Estadísticas y Precios (ex-ODEPA)"
- . "Banco Central - Depto. de Comercio Exterior"
- . "ODEPLAN/CORFO/INTEC"
- . "Sociedade de Fomento Fabril"
- . "Pro Chile"

## PRIVATE SECTOR INSTITUTIONS

- . "Asociación Exportadores de Frutas
- . "Federación de Productores de Frutas" - FEDFRUTA
- . "Asociación de Exportadores de Productos Manufacturados Non Tradicionales" - ASEXMA
- . "Asociación de Fabricantes de Conservas" - ASFACO
- . "Sociedad Nacional de Agricultura" - SNA
- . "Asociación de la Madera" - ASIMAD
- . "Asociación Chilena de Consumidores" - ACHICO
- . "Asociación de Exportadores y Embotelladores de vino de Chile"
- . "Asociación de Impresores de Chile" - ASIMPRES
- . "Asociación de Industria Metalurgica y Metal Mecanica" - ASIMET
- . "Asociación de Industriales Químicos" - ASIQUIM
- . "Asociación Técnica de la Celulosa y Papel de Chile" - ATCP

## 32. ORGANIZATION OF THE AVAILABLE INFORMATION

Based on the outline proposed for this Marketing Study, organize tables and figures with the available information following basically the outline of the study. This activity will give a better idea concerning to the needs of the interviews.

## 33. INTERVIEW OF PRODUCERS/IMPORTS OF PACKAGING MATERIALS

Utilizing the basic outline of the study, identify for each packaging material the following items.

- 33.1. The principal applications
- 33.2. The total market (value trans/US\$)
- 33.3. The major manufacturers (% of each in the market)
- 33.4. Raw material supply:
  - 32.4.1. Nominal capacity
  - 32.4.2. Production
  - 32.4.3. Imports
  - 32.4.4. Exports
  - 32.4.5. Apparent Consumption
- 33.5. Main Converters
- 33.6. End Use Markets
- 33.7. Trends in Demand

## 34. COLLECTING DATA FROM THE END USE MARKET

Before going to the practical interview with the food manufacturers, it is very important to identify what are the products produced by each company, what size and type of

packaging and packaging material are used, and so forth.

Utilize as much as possible the information in the items 1, 2 and 3.

Another very simple mechanism is to collect these data from the market in Chile through an intensive visit to Supermarket, Shops and Food Distributors, in order to get this information.

Occasionally, may be products purchased in order to identify the packaging materials used.

### 35. INTERVIEW OF FOOD COMPANIES

With the information available in items 1, 2, 3 and that obtained in the market, organize for each product/company a special table/chart as presented below as complete as possible. It is important to emphasize this item, because starting the interview with the food companies knowing at least this products is a very positive factor in this study. The companies will consider the work more seriously and will cooperate better.

### 36. IDENTIFICATION OF FOOD PRODUCT MARKET

For each item (food product) listed in the presented outline, identify the following items:

- 4.1. Market development
- 4.2. Market share
- 4.3. Packaging Consumption

### 37. FINAL ANALYSIS

After obtaining the information in items 4.5 and 4.6, it is very important to confirm the figures obtained from the following areas:

1. From the Packaging Materials
2. From the Consultants
3. From the users.

38. In order to perform this final analysis, it is recommended to contract experts with special experience in this type of work, i.e. with the know how in Marketing Study and Packaging Technology.

39. The expert had the experience to work in Mexico with PIRA staff, in Brazil with PIRA and BIS staff and with Mr. Graham Wallis, Director of Data Mark Consultores S/C Ltda.

40. As mentioned to INTEC staff, this study can be done in two basic ways:

- 1- SIMPLE WAY - collecting data only from one year and asking the companies their filling or their projections about the near future. This procedure was done in the first study in Brasil in 1984.
- 2- DETAILED WAY - organize the study in a way to obtain the information at least from the five last years, in order to utilize a special program, as developed by Data Mark in order to predict the future situation.

The participation of INTEC staff in this Marketing Study is also recommended in order to:

- . Get acquainted with the companies and representatives in this area.
- . Disseminate the work of the Packaging Center of INTEC.
- . Understand better the Chilean Packaging Industry.

41. Based on the expert experience, it is recommended that the final analysis should be done by a person with the experience mentioned above.

42. The expert could suggest Mr. Graham Wallis as one possibility. Mr. Wallis authorized me to give to INTEC the last study "The Brazilian Packaging Industry" 4th Edition 1989, to be used privately by the Institution. This document can give a practical idea of the proposed plan of work presented in this report.

#### PRESENTATION ON THE ASSOCIATIVE MODEL OF CETEA WITH THE EXPERIENCE TO BE USED IN THE CONSOLIDATION OF THE PACKAGING CENTER OF INTEC

43. This was the item where the expert worked most in order to transfer all the experience and give advice for the consolidation of the Packaging Center of INTEC.

44. The first presentation on the subject was given on April 19, 1990.

45. The most important presentation was given on April 26, 1990. On this occasion, it was presented to representatives from the Private and Government Sectors.

46. Beside these two presentations this subject was informally presented to:

- . INTEC
- . CORFO
- . UNDP/UNIDO
- . CEPAL
- . ALUSA
- . TECHNICAL BOARD OF THE PACKAGING CENTER

47. During the presentations, all the experience obtained by the expert in the creation of CETEA was passed to INTEC as presented in the item "Packaging Center of INTEC" at the beginning of this Report.
48. These aspects were heavily discussed with INTEC staff working full or part time in the Packaging Center of INTEC (ANNEX III).
49. With this group of ANNEX III, details of the needs of the Packaging Center concerning the DISSIMINATION AND PROPAGANDA of these activities was presented. This aspect was very important in CETEA's experience. Also of great importance is the publication of pamphlets such as:
- 49.1. Pamphlets about the Packaging Center, its activities, services and the Associative Model.
- 49.2. Pamphlets of the analysis conducted by the Packaging Center.
50. The Associative Model is another very important item for the Consolidation of the Packaging Center. The CETEA's experience was discussed in detail as presented on the Contract used in the CETEA Model.

#### COMPLEMENTARY ACTIVITIES OF THE MISSION

- . Revision and assistance in the Project Proposal Documents
51. Due to the expert's experience, INTEC requested cooperation in the analysis and assistance of two important project proposals to be presented by INTEC to CORFO for 1991 - 1992, that are:
- . "Prognostico a Corto y Mediano Plazo del Consumo de Envases y Embalajes para Frutas y Hortalizas de Exportacion".
  - . "Optimizacion del uso de los Envases y Embalajes para Alimentos Processados".

. Analysis of the Packaging Center of INTEC concerning the Laboratory Tests

52. Analysis for packaging and packaging materials is very important for the Consolidation of the Packaging Center. Through the analysis, the Packaging Center gets to know the Packaging and Food Industry, the Packaging Center staff get excellent information about the up to date situation of the quality of the packaging materials and a strong connection is established, i.e., interaction between the Private Sector and INTEC.
53. The total budget (Income) represented by this type of services of the Packaging Center in the last 3 years was:

Year	Value(Pesos)	Value (US\$)
1987	420.000	1.900
1988	700.000	2.800
1989	1.800.000	6.500

54. The fast increase of these figures was mainly due to the U.N. Project that assisted in the dissemination of the Packaging Center Services together with the Packaging Center News Letter and the good work of the staff.
54. Based on these facts, it was requested to organize a list of the main tests conducted by the Packaging Center according to their priorities that is presented in the ANNEX IV.

THE MAIN SERVICES TO BE CONDUCTED IN THE CONSOLIDATION OF THE PACKAGING CENTER

56. This aspect was discussed with Mr. Franco Rossi and Mr. Francisco Kiger from INTEC. Today it is not so easy to define all the activities that can be performed by a Packaging Center due to the great diversification of areas and subjects. Based on the expert experience, the most important ones are presented below:
- . Research Projects
  - . Trouble Shooting Problems
  - . Analysis
  - . Training
  - . Publications
  - . Events
  - . Round Tables
  - . Packaging Specification
  - . Elaboration of Standards
  - . Central point between different Industries

. INTERNATIONAL PACKAGING TENDENCIES, DOCUMENTATION AND INFORMATION

57. During the mission a series of informal discussions was held with the Packaging Center Staff in order to inform or to give the expert's point of view concerning the International Packaging Tendency and its adaptation for the Developing Countries such as Chile and Brazil.
58. ANNEX V presents the list of the bibliographical material given during the mission, this also cover part of the item 57.
59. ANNEX VI presents the list of the bibliographical material given to the Packaging Center after the mission.
60. Beside these materials it is important to mention some institutions, documents and list of magazines in order to update the Packaging Center of INTEC. presented in ANNEX XIII.

. PARTICIPATION IN THE TECHNICAL COMMITTEE OF THE PACKAGING CENTER

61. As mentioned before the expert had the opportunity to participate in the meeting of the Technical Committee of the Packaging Center. The most important decision of this meeting was the decision to create the Provisional Advisory Board with 10 to 15 members in a very short time.
60. ANNEX VII presents the addresses of persons met during this mission.



List of Documents concerning the creation of the Packaging Center of INTEC

- . PROGRAMA COOPERACION TECNICA GOBIERNO CHILE/ONUO  
Período 1987 - 91  
Antecedentes necesarios para consideración y análisis de potenciales proyectos de cooperación técnica.
- . Proyecto CHI/87/005/8/01/37 - Desarrollo del Sector Productor de Envases y Embalajes Chilenos para Productos de Exportación.
- . Informe Técnico: Consultoría en producción de envases y embalajes de exportación  
João Belo Febrero 1988
- . Final Draft Report.: Summary of Findings and Recommendations on the Establishment of a Chilean Packaging Center William Blau
- . Informe Técnico: Consultoría en Materiales Flexibles para Embalajes - Ruben J. Hernandez - Octubre 1988
- . Informe Técnico: Consultoría en Envases Metálicos  
Ramon Catalá Noviembre 1989
- . Envase y Embalaje - Boletín Técnico Año 1 no.1

**INTEC STAFF ASSISTING THE PRESENTATION OF THE ASSOCIATIVE MODEL  
OF CETEA**

19/04/90

Coordinator	Francisco Kiger M.
Jefa Laboratorio	Tania Cvitanic
Química Instrumental	Carmen Araneda
Química Analítica	Héctor Wimmer
Procesamiento Alimentos	Alonso Suárez
Microbiología Alimentos	Ellette Obrecht
Laboratorio Envases	Loreto Soto Mayor - Transp. & Acond. B. Medina

**INTEC STAFF WORKING FULL OR PART TIME IN THE PACKAGING CENTER**

<b>Coordinador</b>	<b>1. Francisco Kiger M.</b>
<b>Jefe Laboratorio</b>	<b>2. Tanja Cvitanic</b>
<b>Química Instrumental</b>	<b>3. Carmen Araneda</b>
<b>Química Analítica</b>	<b>4. Héctor Wimmer</b>
<b>Procesamiento Alimentos</b>	<b>5. Benjamín Medina</b> <b>6. Alfonso Suárez</b>
<b>Microbiología Alimentos</b>	<b>7. Ellette Obrecht</b> <b>8. Sara Contreras</b> <b>9. Loreto Soto Mayor</b>
<b>Técnicos Nivel Medio</b>	<b>10. Luis Leiva</b> <b>11. Alido Jimenez</b>

List of the main tests conducted by the Packaging Center according to its Priorities

As requested by Mr. Franco Rossi, the expert based on the available information in Chile and the international experience, the expert selected the main tests that are conducted at INTEC based on the priorities I and II.

**1. FLEXIBLE PACKAGING**

Priority I

- 1.1. Gas permeability
- 1.2. Water vapor permeability
- 1.3. Migration of solvents from the Packaging
- 1.4. Packaging Identification
- 1.5. Heat sealing

Priority II

- 1.1. Thickness
- 1.2. Base weight
- 1.3. Transparency
- 1.4. Dard test
- 1.5. Tear test
- 1.6. Friction Coefficient

**2. CELLULOSIC PACKAGING**

Priority I

- 2.1. Humidity
- 2.2. Base weight
- 2.3. Tear Test
- 2.4. Ring Crush
- 2.5. Flat Crush
- 2.6. Column Crush
- 2.7. Mullen Test
- 2.8. Cobb Test

Priority II

- 2.1. Impact Test
- 2.2. Tabler
- 2.3. Friction coefficient
- 2.4. Gurley

**3. TRANSPORT & DISTRIBUTION**

Priority I

- 3.1. Compression
- 3.2. Vibration

- 3.3. Drop Test
- 3.4. Optimization of the Packaging System
- 3.5. Impact test

#### 4. FOOD PACKAGING

##### Priority I

- 4.1. Water activity
- 4.2. Humidity
- 4.3. Packaging Specification based on the water gain
- 4.4. Analysis of heavy metals such as Sn, Fe and Pb

#### 5. METAL PACKAGING

Due to the small experience of INTEC in this area all items can be considered a Priority II.

##### Priority II

- 1. Visual analysis
- 2. Thickness
- 3. Varnish porosity
- 4. Varnish thickness
- 5. Corrosion test
- 6. Double Seam Examination

#### 6. GLASS PACKAGING

Again, due to the small experience of INTEC in this area, all items can be considered as Priority II.

##### Priority II

- 1- Weight
- 2- Thickness
- 3- Defects evaluation
- 4- Dimensions
- 5- thickness

List of Bibliographical Material given to the Packaging Center of INTEC

1. INFORMATIVO CETEA
  - 1.1. Special Edition December 1988
  - 1.2. Vol. I No.3
  - 1.3. Vol. I No.4
  - 1.4. Vol. I No.5
  - 1.5. Vol. I No.6
  - 1.6. Vol. II No.1
  
2. Manual "Plastic Packaging - Quality Control" - CETEA 1989.
3. Manual "Plastic Packaging - Barrier Properties" - CETEA 1989.
4. Manual "Quality Control of Metal Packages" - CETEA 1985.
5. Manual "Interaction Between Metal Packages and Food Products" - CETEA 1989.
6. Manual "Quality Control of Glass Packaging" - CETEA 1986.
7. Manual "Paper, Carton and Board Packages for Food Products" - CETEA - 1986.
8. Manual on the Packaging of Fresh Fruits and Vegetables - ITC - 1988.
9. Export Packaging Note No. 12 - ITC.
10. Export Packaging Note No. 13 - ITC.
11. Export Packaging Note No. 14 - ITC.
12. Export Packaging Note No. 15 - ITC.
13. Export Packaging Note No. 16 - ITC.
14. Export Packaging Note No. 17 - ITC.
15. Export Packaging Note No. 18 - ITC.
16. Export Packaging Note No. 19 - ITC.
17. Export Packaging Note No. 20 - ITC.
18. Special Report: The Export Package - FUNCEX - BRASIL - 1984.
19. Paper: The Importance of Packaging Graphic Design for Exports - by Johan Selin ITC - 1982.

20. Procedimientos Tecnicos - Envases para la distribución - by Walter Soroka - 1987 - CNNE - Cuba.
21. Paper: Advisory Services In Export Packaging - ITC - 1984.
22. Paper: The role of packaging Export - FUNCEX - Brasil - 1985.
23. Handbook - The International Association of Packaging Research Institutes - IAPRI.
24. GUIA CETEA DE EMBALAGEM - 1988 - CETEA/ITAL - Brasil.

**List of Bibliographical Material sent to the Packaging Center of INTEC after the mission to Chile**

- 1- Paper: Shelf-Life of Food Product - CETEA 198
- 2- Internal Regiment of the CETEA Advisory Board.
- 3- World Packaging Report.



Addresses of the persons met during the mission

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SUMMARY

To be filled by Documents Control

<u>Symbol</u>	<u>Date</u>	<u>Job number</u>
DP/ID/SER.A/1378	24 August 1990	V.90-87293

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To be filled by submitting officer

Project report

Nature:  Terminal  Technical  Evaluation  Departmental study  Other

Circulation:  Restricted  Limited  Limited (SPEC.)

Title: Advice on Study of Packaging Demands on the Structural and Operational Organization of the Packaging Centre at INTEC-Chile

Author: L.F.C. Madi

Backstopping officer: J. Belo *J.F.*  
(for project reports)

Length: 32 pages

Language: English

Summary of content:

The report includes findings and recommendations in connection with a past diagnosis study on the packaging manufacturer sector for exports and the foreseen follow-up quantitative analysis of packaging materials demands in the country as a whole. The constitution and operation system of the present Packaging Group at INTEC-Chile is also analysed, with a view to give it the stability which would be required for a permanent and continuous activity of local technical support to the packaging manufacturer, converter and user industries.

Key words:

Packaging, exports, demands, INTEC-Chile