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ASSISTANCE TO PACKAGING CENTRE

EP/TUR/81/013

TURKEY.

Technical report: Training in packaging\*

Prepared for the Government of Turkey  
by the United Nations Industrial Development Organization,  
acting as Executing Agency for the  
United Nations Development Programme

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I. ABSTRACT

A. Title and number of the Project

The title of the project is "Assistance to Packaging Centre". Its number is DP/TUR/81/013. It commenced in 1983.

B. Objective and duration of the activity:

The objective of the activity was to train the national staff in the development of a programme of training in packaging and to design specific training courses in packaging to be conducted in the local language.

The activity commenced on the 16th February 1986 and concluded on the 30th May 1986.

C. Main conclusions and recommendations

Turkey's industry and export trade need specialised training in packaging. The courses must cover the why and how of packaging. Packaging testing and evaluation must be presented as aids in achieving cost reduction. The courses should be held in major industry concentrations. Promotional agencies connected with export promotion, industrial training, small industry development, etc., should be requested to collaborate and sponsor courses. The information support and technical staff should be strengthened. A strong publicity campaign should be undertaken to popularise the Centre. The Packaging Centre should be given an identity to facilitate the right response from industry. In view of the magnitude of the work to be undertaken a substantial expansion of the Centre and its possible conversion into an autonomous body within the TSE should be given consideration.

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### III. INTRODUCTION

#### A. Background

##### i) The Turkish Standards Institution (TSE)

The TSE was set up in 1954 within the body of the Union of the Chambers of Commerce, Chambers of Industry and Commodity Exchanges. It became a Statutory Body on the 18th November, 1980 by the Statute number 132 passed by the Grand National Assembly. By the Statute the TSE is an autonomous public institution subject to private law.

The head quarters and laboratories of the TSE are located in Ankara, the capital. The TSE has two large regional offices in Istanbul and Izmir, the main industrial centres and eighteen other small representative offices at other industrial locations.

The Organisational Chart of the TSE appears at Annexure I.

The Secretary-General appointed by the Board of Directors administers the Services of the TSE. Eleven departments function under the Secretary General, one of which is the Department of Laboratories and Quality Control. The laboratory connected with packaging is one of the laboratories under this department.

The Standards Preparatory Groups set up by the TSE, as the name implies, draw up Standards on the allocated subjects. There are nineteen Preparatory Groups. There is no such Group on packaging but the subject comes under the Special Standards Preparatory Group and through a Sub-Committee appointed by this Group. Standards on packaging are prepared by the Sub-Committee, based on a work programme, and submitted for the consideration and clearance of the Special Standards Preparatory Group. All the Standards cleared by the nineteen Groups require to be approved by the Technical Board set up by the TSE to become the national Standards.

##### ii) The Packaging Laboratory:

All the activities related to packaging taken up by the TSE are centralised in the Packaging Laboratory. The first UNDP aided project to set up the



laboratory commenced in 1977 and concluded in 1982. The second project, the current one, commenced in 1983 and is in the process of implementation.

By May 1986, the laboratories are modestly equipped to meet the needs of the industry and some additional testing equipment are to be received. The manpower has been trained through successive fellowships and with the help of visiting experts.

The Organisational Chart of the packaging laboratory appears in Annexure II. It indicates its intended activities. It is to be observed that in keeping with its expanded activities and programmes the packaging laboratory has been designated, as reflected in the Chart in February 1986 as "PACKAGING RESEARCH, DEVELOPMENT AND TESTING CENTRE".

Over the years the staff strength of this laboratory has been increased. The total staff strength is 12, of whom 10 are technical positions and 2 are support staff. As of May 1986 4 of the ten positions of technical staff are vacant.

The staff chart appears in Annexure III.

iii) The Project Activity:

The overall activity of the Project (Ref. DP/TUR/81) is to further equip the laboratory and industrial personnel in the application of packaging technology.

The sub-activity is the designing and initiating of training programmes for local staff and technical personnel from industry.

The "Training" activity commenced on 16 February 1986 and concluded on 30 May 1986.

iv) Objectives of Training activity

- a) General: It was expected that training programmes will be designed and initiated, for training local staff and technical personnel from industry. An overall training programme with model training courses from each discipline that will enable the Centre Staff to

continue this work in the future was to be provided.

- b) **Specific:** (i) Assisting the local counterpart personnel in adapting existing visually aided courses in packaging and in the use of certain test equipment, (ii) With the assistance of other visiting consultants prepare courses based on the principles enunciated by them, (iii) Co-operate with the Head of the Laboratory in developing specific courses.

v) Fulfilment of objectives:

Both the 'General' and 'Specific' objectives were fulfilled. In addition the counterpart staff were trained in developing visually aided courses in the Turkish language and environment. As the visit of the other consultants could not be synchronised, training programmes were designed to cover the respective areas. Towards the end of the activity period training programmes were conducted by the Consultant utilising the counter part staff also as faculty. In the absence of visually aided courses, which have not yet been obtained and, of the other consultants, the requirements were improvised by developing the aids and through problem identification using the local staff. The slide copying equipment was commissioned. Copies of slides and technical notes were provided. Information sources, to help in developing course material, were identified and contacts established to utilise these till the Centre's own library can be equipped hopefully by February 1987. A training blue print and specific courses have been designed. The process of locating local faculty from industry has been initiated. To help decide on proper orientation to industry problems, a national survey through questionnaire has been commenced. The concept of 'hands-on' training in the laboratory to industry personnel has been incorporated in the Centre's programmes. Special promotional literature on the development activities of the Centre has been developed and a suggestion made for its nationwide circulation. In brief the Centre has been equipped to carry on, on its own, the training activity in the years to come.

IV. RECOMMENDATIONS

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1. A distinct identity for the Packaging Centre needed:

The Turkish Standards Institution has nurtured the subject of packaging development, indeed a laudable progressive effort. It has set up the packaging laboratory and has enlarged its scope of activities so as to cover all promotional efforts needed to upgrade and modernise packaging in Turkey. For the efforts to succeed on a measure acceptable, the focal point for development, the Packaging Centre in this case, must have its distinct identity. Discussions with industry representatives reveal the confusion as the "Image" presented to them or perceived by them is of the "Standardisation" aspect, naturally, as all the communication are of the Standards Institution. While internally this seems to have been felt, leading to a further modification in the nomenclature of the laboratory as "Packaging Research Development and Testing Centre" the outside world can not perceive this so long as the Centre's identity is not discernible in the communications on the subject issued by the Turkish Standards Institution. Further even the enlarged description of the Centre does not bring out the significant role of the Centre in training information dissemination and the most obvious work it will have to undertake, in the near future, of entrepreneurial guidance to bring in modern technology into Turkey.

It is considered desirable, as an immediate measure, to designate the Centre as the "National Packaging Centre" and reflect it in all the communications as may be issued from the Turkish Standards Institution related to the subject of packaging. The package is the face the product shows to the outside world. It is this face that would generate a favourable association and a desirable connotation to promote consumption. The measure suggested will help in this direction and promote the use of the services of training, consultancy and development.

A matter worthy of deeper consideration will be the conversion of this National Packaging Centre into an autonomous agency under the Turkish Standards Institution and its substantial expansion considering the magnitude of the activity and which is as important as the subject of standardisation itself for Turkey's economic development.

2. Creating awareness of Packaging Centre

The industry, trade, and agriculture related agencies need to be familiarised with the Centre and its promotional activities. Discussions with representatives of the industry and trade reveal a lack of comprehension of either or both. A prestigious illustrative colour brochure providing information on the Centre should be prepared and periodically mailed to the potential users of the services. The basic information that should go into such a brochure has been developed and made available to the Centre. Image building demands repetitive reminders. As the training programmes get advertised in the national dailies the extent of mailing of the promotional literature can be minimised. To begin with at least the estimated 10.000 large industries, the agricultural co-operatives and all the departments of the Government should be covered by such promotional campaign.

3. Nearness of Access to Facilities:

Programmes of training and development are bound to raise the expectations in the industry that it is possible to use the technology of packaging for their benefit such as in cost reduction, value improvement, loss minimisation, etc. This leads to the demand for easy access to the expertise and equipment in industry concentrations. It will therefore be desirable to contemplate laboratory and advisory units of the Centre at major industry centres such as Istanbul and Izmir which between them account for about 62% of the large

industry of Turkey. These units should have a senior technical staff member and supported by transport simulation laboratories. These units can help promote also the activities of training and consultancy services.

4. Continuation of Training Activity:

Good training programmes generate the demand for testing and consultancy services, as they enlighten the participants on the possibilities and expose to the industry the expertise available with the Packaging Centre. There should therefore be a commitment to Training as an integral part of the functions of the Centre and there should be continuous attempt at the development of this activity. The technical staff strength at the senior level which is at the level of 4 persons only is too meagre to achieve any significant success. Excluding the head of laboratory, if there can atleast be six persons at the next level it would be possible to organise 12 effective programmes a year to reach about 5% of the effective industries by 1989-90. The message can then spread faster within the rest of the industrial units.

5. Faculty Support - External:

Industry oriented training programmes can be successful only with the involvement of the senior industry experts on the faculty. 20-40% of the faculty could be from within the Packaging Centre and between 60-80% from the industry. This will also bring the senior industry representatives within constant touch of the Centre's activity and result in their becoming the clients themselves for the other services of the Centre.

6. Collaboration with other agencies:

The manpower available at the Centre should be put to effective use. The minimum number of self sponsored programmes proposed would help the

Centre to reach the critical areas requiring attention. This effort should be supplemented by getting other agencies involved in the training activity. These agencies could sponsor and, the Packaging Centre could implement, training programmes on packaging on a nationwide basis. This will provide certain amount of flexibility in the use of technical man-power of the Centre and at the same time bring the Centre in contact with different facets of industrial activity and trade. The agencies considered most important from this view point are:

*Small Industry Development Organisation - KUSGET.*

- for reaching the Small Industry

*Export Promotion Research Centre - IGEME*

- for reaching the export trade

*Industrial Training and Development Centre - SEGEM*

- for reaching a cross section of industry

*Chambers of Industry such as for Pharmaceuticals*

- for reaching select groups of industry.

7. Export Promotion and related organisations:

The programmes of the Centre should lay stress on Export promotion and the training programmes must bring out the right amount of emphasis on this aspect. The relationship between packaging and freight costs, containerisation, port handling, containerisation and the benefits that can flow to the exporters through modernisation of packaging should be conveyed to the trade through specialists in the institute and the trade. Currently the linkage of the Packaging Centre with Shipping, Airline, Rail Transport, Container Lines, and Insurance Agencies is rather weak. A special orientation at least by 2 of



the division heads who will be faculty in the Training Programme in these areas and the development of adequate documentation are considered essential and that too rather urgently. The development of adequate slides in Ports (Airport, container ports, Berths, Sea port warehouses, Rail heads) on various aspects of the problem associated have to be developed. A permanent arrangement has to be got approved by the Security Agencies to permit photography in these locations by authorised persons of the Packaging Centre.

#### 8. Survey of Industrial Practices

The senior staff of the Packaging Centre require adequate exposure to various industries of critical importance to Turkey's exports and industrial development. While discussions on problems of industry at the training programmes will progressively strengthen the insight of the Centre to industrial practices in so far as packaging is concerned, it is necessary to prepare some primary data back-up for the programme, from significant units. Special mention is made of Pharmaceuticals, Soaps and Detergents, Flexible Packaging in Food industry, Readywear-Textile and Leather, Marine Products, Textile, Transport Packages for Fruits and Vegetable (fresh and dried), Cosmetics and Chemicals.

A questionnaire has been developed for nationwide mailing to elicit current packaging problems of industry as an additional aid which should be put to use.

#### 9. Internal faculty - Redeployment of current positions

In the current organisational chart there is one position of head of division of training. This position is vacant as of May 86. It will be

better to think of utilising each of the 4 heads of divisions as faculty with the dual function of training and consultancy. The routine work of testing can be carried out by the next level staff below the heads of Divisions. This would provide the Centre with 4 faculty positions and help in taking up on a modest scale at least 4 programmes in 1986-87. By marginally strengthening this level by 2 more from 86-87 and training the new incumbents the Centre can hope to conveniently handle by itself 12 programmes a year. Thus the head of Training Division proposed to be filled in could be given the added responsibility of a testing division which can be carved out of the existing set up. The line of possibilities is given in Annex IV. (Proposed Organisational Chart).

10. Internal faculty development

The credibility of the Packaging Centre is synonymous with the credibility of its faculty. Training, while it provides an opportunity to exhibit the expertise to establish the credibility, it can also expose the undesirable shortcomings. To sharpen and update the expertise within, the training personnel must be exposed to a) industrial developments related to packaging within and b) Overseas developments. While (a) can be achieved by one week orientation studies in the selected industry, (b) requires visits to international packaging exhibitions usually of 5 day duration at least. To begin with the exhibitions in Europe could be made use of and the possibilities of using the exhibitions at Japan and USA explored further from cost point of view. Such visits to exhibitions can also be followed by a report to be published by the Centre on the relevant technologies and can be released to the Turkish industry at a price.

A very useful aid for faculty development is the deputation of at least one Senior Staff member to each of the major international conferences in packaging every year.

The important conferences are organised by:

- (i) IAPRI (International Association of Packaging Research Institutes), UK,
- (ii) School of Packaging, Michigan State University, East Lansing, USA,
- (iii) Institute of Packaging, UK, (iv) World Packaging Organisation, Paris,
- (v) Asian Packaging Federation, Australia.

The Packaging Centre could consider membership of IAPRI.

#### 11. Visual aids development

The Centre can develop visually aided courses, even for sale within, using the Turkish background. To achieve this the Centre should develop at least 20 slides for every hourly session of each of the courses to be organised in the next three years.

#### 12. Training in Photography

The Centre has already a camera and slide duplicating facility and both these have been commissioned. It will be necessary to train all the division heads in the art of photography so that they can produce acceptable levels of quality pictures. For each person a one week orientation training by a specialist locally available, for two hours a day, over a week is considered adequate. Training can be in black and white photography as only the settings have to be mastered. This will be the most economic but surest way to develop one's own slide collection for training. No doubt this will be equally useful in consultancy assignments as well, as shooting at factory locations will be demanded.

#### 13. Development of training Materials - Library as a Resource Centre

The availability of current books and periodicals is a must to help

the faculty in developing adequate course materials and preparation of data for conducting the sessions. Books and periodicals selection and acquisition is a long drawn process. A three year budget has therefore preposed. For 1986 June - 1989 May - an allocation of US Dollar 2000 for Books and US Dollar 2000 for periodicals is proposed to acquire about 500 titles (some may be 2 or 3 volumes) and 70 Journals, annually, by 88-89. Thereafter an annual budget of USD 6000 for books and USD 8000 for periodicals may be maintained. This will be in addition to local arrangements with other information centres for access to Books and Periodicals on Packaging. Some of the films of the British council related to packaging as may be required often can be bought from them, from the provision for books.

14. Use of Other information sources in Ankara

An initial survey has revealed that library/information centres within Ankara in Turkey can supplement the information facilities to be provided at the Packaging Centre. In the decreasing order of importance are:

- I. TURDOK, The Documentation Centre of TUBITAK.
- II. Middle East Technical University (METU)
- III. British Council Library
- IV. American Library.

Of these TURDOK has "on-line" information system with access to most of the important technical data bases in the world. It has also the facility for obtaining copies of articles of all the abstracts at a low cost.

METU has books and periodicals on packaging. The British Council can lend educational films from their library in Ankara. There are eleven films, two of which are in Turkish. It has also 'on line' system which can be used for obtaining information from data bases. Other films can be borrowed from London with 3 months' notice.

The American Library has Reference works on packaging. A comprehensive survey and working arrangement for obtaining packaging related information has to be organised. This supplemented by the initial budget allocation proposed can bring the Packaging Centre on par with most other Packaging Institutes in the world and help in developing good background material for training courses.

15. Administrative Staff Position to be Created

The promotional work associated with training involves a substantial amount of stenographic and typing work associated with mailing lists, lecture notes, correspondence. The use of word processors and storage of technical notes on Floppies will reduce the quantum of repetitive typing. It will also help updating without much of additional work current notes by the faculty. Likewise the mailing list can also be computerised. In spite of these, there is a need for creating one more stenographic position to develop the initial material and to take on the constantly increasing workload arising from new programmes.

16. Mailing list to be Computerised

There is an urgent need to develop and to update annually an industry wise mailing list. No such authentic listing is available currently. A draft

letter for all the Chambers in Turkey has been provided to Centre for issue to collect their classified lists. An all Turkey, industrywise lists will then have to be compiled. Priority may be given to industry groups related to Packaging, Food, Food exports, Cosmetics, Pharmaceuticals, Textiles and Readywear, Leather goods, Eletronics, Metal products and Chemicals These lists can be stored in Floppies in such a way, they can be printed on pressure sensitive labels, suitable for addressing, obtainable in a reel-form. The listing can also indicate location so that recalling of the entries by location can also be facilitated. This will be economical compared to producing such a list and addressing envelopes for mailing for each programme.

17. Choice of locations for training courses

At least till the foreseeable future, say till 1989, the setting-up of, even if favourably decided upon, packaging testing facilities in the industry concentrations, which are away from Ankara, which will be in operation is considered remote. But then it is also equally difficult to expect the industry to support training actively in an area as neglected as packaging by sending their personnel at a cost, especially middle management, to Ankara which, from organisational point of view, will be convenient for conducting training courses. As the objective is to reach out to the industry and to give them the taste of the advantages in paying attention to packaging it is necessary, even at a cost, to conduct the programmes in at least 12 of the industrial locations in the country. The major locations may have more programmes in number. By arranging sponsorship from chambers of industry and other agencies listed in para 6 of the recommendations the lesser industrial centres out of the 12 or even outside the 12 may be covered. The 12 centres are listed in Annexure XXIIIA.

18. Funding of Programmes - Fee and Contributions:

Non-profit institutions are not charitable institutions and hence the cost of training should be recovered. For self sponsored programmes the direct cost may be recovered as fee for participation. The direct cost initially and, after three years, the direct costs and overhead expenses, may be recovered from organisations sponsoring training.

For recovering the heavy over-head cost one more avenue should be explored. The government's FIVE YEAR DEVELOPMENT PLAN has contemplated special allocations concerning development strategies. In so far as they relate to packaging technology upgradation as an aid to overall technology development, skill development and marketing in agriculture, food industries, small industry, export promotion, the Packaging Centre should seek financial support from the Government of Turkey. The relevant extracts of the Plan document appears in Annexure VI. In as much as, as may be seen from the extracts, the Government is even considering setting up such institutions, there is a strong case for institutions like the Packaging Centre for seeking a modest scale of assistance for promotional programmes which are part of the nation building effort.

19. Training Courses - Faculty, participants, subjects etc.

The twin objectives that will be served by training courses are (i) the industry and trade will be able to appreciate the role of packaging and (ii) utilise the laboratory facilities and expertise of the Institute. The subject coverage and course contents should be comprehensive instead of merely relating to testing procedures and significance of testing.

An overall programme developed appears in Annexure:XXIII. The target groups to be aimed at is given in Annexure XX. The personnel to be trained is given in Annexure XXI. The faculty support to be drawn from external sources is given in Annexure XIII. The Agencies to be involved who could sponsor the programmes is given in Annexure XXXI. The possible locations are elaborated in para 15. The direct cost components are outlined in Annexure XXVII. The fee structure recommended appears in Annexure XXVIII.

20. In-Laboratory Training:

Hands-on training in the laboratory of R and D and Q.C personnel from industry is another way of extending the training. Here the heads of division can promote and implement such training, half of which would be on theory (including standards, methods, significance) and the other half on actual practice. These could be of 2 week duration per subject like paper testing, plastic testing, permeability testing etc. The fee could be on the basis of fee for consultancy related to time of the Senior Staff and in the range of TL 100.000 per week of 5 days.

21. In-Plant training

Most large enterprises require orientation programmes for middle management so that each profit centre within the enterprise is able to understand the impact of packaging decisions on the company's total profitability. These programmes are tailor-made for each enterprise using case-studies of products/packages of these enterprises. A two days orientation visits by the faculty of the centre to design the programme and the actual programme varying in duration from 3-5 days can be contemplated. The participants



here will be from all the disciplines including costing, marketing, etc. of the enterprise. These programmes again can be based on a fee structure similar to Consultancy projects. This type of programme may be contemplated once high confidence levels are reached within the internal faculty of the Centre perhaps by 1988-89.

22. Handicrafts sector - search for sponsors

During the period of the mission it was not possible to identify and hold discussions with the agency responsible for promoting Turkey's handicrafts sector. It does appear as though the Ministry of Tourism is concerned with this. The products covered range from carpet, glass articles, metalware, earthen and stone articles, wooden articles, to low-cost jewellery made of different materials. There is a need though for developing packages, especially for exports, of selected items from each group, a project which may be got sponsored and financed by the Ministry and then presenting these through seminars in the particular handicraft centres. This may lead to contract packaging facilities being set up in handicraft concentrations.

23. Standardisation of Packaging raw materials

The Packaging Centre will be in an unenviable position of having to face a critical, user industry audience for (i) for most of the major packaging raw materials there is no Turkish Standard - e.g. Mild Steel Plate, Paper and Paper board, species of Timber to be used for Packaging Cases, Plastics permitted for food contact applications, Aluminium foils, Plastics Strapping. (and most of these materials are produced by Governmental enterprises). (ii) a large number of food products for which the packaging requirements are specific leaving no room for modification in keeping with changes.

This needs to be taken note of by the Turkish Standards Institution.

24. Physical arrangement for training at Ankara Headquarters

Two reasonably sized class rooms have been provided already. One of them has a dais, podium and a blackboard. The chairs are of laminated wood with an attached writing desk. Some chairs are of seat size 30 cms and some 45 cms. The flooring is Vinyl tiled. The following additional facilities are required to be provided:

- (1) 2 screens for the slide projection and overhead projections in each room,
- (2) 2 Electrical connections for the slide projection and overhead projection equipment in each room,
- (3) 2 Slide projectors one in each room - type Kodak caroussel,
- (4) 2 stands for slide projector and overhead projector in each room,
- (5) A 16 mm film projector complete with stand and speaker,
- (6) A second level curtain for darkening the rooms for slide and film projection,
- (7) A cold water dispenser,
- (8) A tea-counter with some seating arrangement (this can be in the empty hall which needs to be connected from the main passage),
- (9) Adequate toilet facilities in the second floor level for gents and at first floor level for ladies. (About 15-20 of each sex may be involved when one training room is operated),
- (10) Adequate ash trays,
- (11) Clean dining section in the cafeteria for luncheons.

Further it may be desirable to provide cushioned chairs and writing tables as long hours are involved. This can be done at least in one room.

25. Additional fitments for camera

Certain additional fitments for close up photography will have to be provided for the camera already available to facilitate making slides of small packages.

26. Choice of Venue at locations outside Ankara

For training courses the Centre may promote Ankara, as observed earlier, may be as one of and not the only centre. Care will have to be taken in the choice of the venue with particular reference to the facilities it offers.

The following factors should be considered:

- (i) Convenience of location,
- (ii) Comfort levels - of seating, size, conditioning,
- (iii) Lunch and refreshment quality and service (timeliness),
- (iv) General acceptability by industry for conventions,
- (v) Facility for operating audio-visual equipment,
- (vi) Continuous supply - uninterrupted-of Power,
- (vii) Cost in relation to convenience.

27. Translation of technical notes

It is possible as indicated to the Centre to obtain technical notes on packaging from the International Trade Centre, Geneva. Lecture notes of training courses attended by the staff of the Centre during the fellowship training have since been added to the library. More can be obtained during future participation in programmes outside Turkey. It will be useful to have these professionally translated so that they can become almost ready made materials for training courses. It is strongly felt that special

arrangement may be made for such translations to facilitate the work of the faculty, the faculty resources themselves being too meagre.

28. Looking ahead

If the development plans get implemented as proposed it should be naturally expected that there will be a demand generated for people with paper qualifications in packaging. It is possible that the Packaging Centre will be considering in three years' time a more intensive programme of 3 months full time or one year part time, for developing technologists, the successful ones being given a certificate/diploma. A symposium may be held by 1988 Dec. to assess the situation.

There will also be a demand, as the utility of such technologists get established, for graduates in packaging. By 1990 the Packaging Centre should review the situation to decide whether it should undertake such an educational programme by itself or leave it to the universities. The dilemma will result from the fact that universities will be far too ill equipped to handle a worthwhile educational programme.

Training and consultancy, it will be seen, go together. Arrangements will have to be made with prospective clientele, to utilise the consultancy projects as case-studies for training, to enhance the value of training programme.

In general it would be worthwhile to undertake a survey of packaging - materials, demand, supply, gaps, technology, etc. - in Turkey and formulate a development plan and strategy for development as part of the national plan.

V. REPORT ON THE MISSION-ACTIVITIES AND OUTPUT

Main duties of the job description

The main duties covered by the mission were:

General: Developing an overall training programme with model training courses from each discipline that will enable the Centre Staff to continue the work in the future.

Specific: Assisting the local counterpart personnel in adapting existing visually aided courses in packaging technology and in the use of certain test equipment.

With the co-operation of the visiting Consultants in transit packaging and food packaging evaluation, preparing courses based on the principal points made by those consultants to their counterparts.

Co-operating with the Head of the Laboratory in developing specific courses required for the Institute's training activity.

It was also expected that the expert would run training courses during the period to demonstrate training techniques.

Objective of the activity

The overall objective was to train the national counterpart in developing and conducting training programmes for laboratory and industrial personnel in the application of packaging technology.

Ultimately, this is expected to assist the industry in Turkey to improve the standards of packaging.

Substance of the activity

The development of training programmes requires the ability to understand and interpret significant problem areas that impede the growth of packaging in terms of packaging technology. The assessment of training needs of the nation in keeping with its programmes of development would lead to the development of training activity in a need based manner. The successful implementation of the programmes so developed, based on the above, requires the resources of faculty, finance, man power and information. The national staff required to be assisted and guided in all the above areas so that they are able to pursue the activity on their own.

Activities undertaken

The programme of activities undertaken may be broadly classified under the following categories:

- 1) Evaluation of the Organisational strength
- 2) Assessment of the status of packaging in Turkey
- 3) Review of the State's Plans
- 4) Evaluation of the needs of agriculture
- 5) Assessment of the needs of industrial sector
- 6) Identification of industry's critical problems
- 7) Export promotion needs
- 8) Review of the status of Small industry
- 9) Assessment of the needs of the handicrafts sector
- 10) Assessment of training resources
  - a) Faculty,
  - b) Course materials/technical notes,
  - c) audio-visual aids,
  - d) information support or data base,

- e) publicity and public relations,
- f) administrative support.
- 11) Training Programme development
- 12) Training course design
- 13) Training cost and fee structure assessment
- 14) Training locations
- 15) Training implementation and evaluation

Results of the activities

In all the above activities one or more of the national counterpart staff were involved. The results of the activities are summarised in the following paragraphs.

1. Organisational strength: The Turkish Standards Institution (TSE) is a strong and powerful institution. Its sprawling complex in Ankara, is quite impressive and generates even in the casual visitor a picture of strength and confidence. Its dominant theme is standardisation of practically everything from fresh fruits and vegetables to electronics. Its role is to standardise and promote standardisation. As packaging is becoming the greater problem in ensuring the products' integrity, the packaging laboratory forms part of the activities of TSE, but only a part.

The head of the packaging laboratory ranks the sixth in the total hierarchy of the set-up (Annexure I). The manpower of 12 (increased to 13 as from 26 apr., 86) employed in the packaging laboratory represents a little less than 4% of the total at the TSE. The investment on the packaging laboratory may reach a sizeable proportion of the total when the current Project is fully commissioned. The almost one million dollar set-up of the

packaging part of the TSE has most of the basic requirements for implementing packaging standardisation activity in Turkey.

The packaging laboratory has been renamed as the Packaging Research, Development and Testing Centre during the period of the mission in February, 1986. The new organisational chart includes among others the activities of training, consultancy and information (Annexure II).

The location of the Centre at Ankara, the capital city probably resulted from the fact of the principal laboratories of the TSE and its headquarters having been established there by 1977 when the packaging part of the laboratories were segregated to develop the subject further at that time.

The staff, through small in number, are devoted, well qualified, and come from different disciplines, though chemistry is the dominant aspect. Fortunately there has been no exodus of the trained staff from the Centre to the industry so far. Even though there are 10 technical positions as per the approved staff strength (Annexure III) four (4) of these are vacant. One of the vacant positions is of the head of training section. Two other vacancies are also of heads of section on food and distribution packaging.

2. Status of packaging in Turkey: Turkey's industrial development is of recent origins. Packaging which is perceived as the last operation in the production line is the most neglected in most developing countries and Turkey is no exception. In the overall analysis both in terms of exports and domestic consumption, the consumer articles have alone used packaging to any significant extent in Turkey.

Neither a survey of the types of packaging produced and/or used has been carried out nor the value of packaging assessed. Statistical data



available relate more to the basic raw materials which may be used for packaging production but no detailed break-up is available. However, many basic packaging materials are produced such as paper and paperboard, tinplate, glass, plastics, aluminium, etc. Few of the basic materials like jute (hessian), plastics like linear low density polyethylene, Bi-axially oriented poly propylene film, etc. are imported. But there is no organisation which is aware of what are all being imported.

Most of the raw materials like plastic granules, tinplate, paper, are produced by governmental enterprises. There is no evidence of application development activity associated with packaging even by the large material producers in the modern field of plastics.

An analysis of the composition of the GNP estimated for 1984 and the general levels of packaging costs on different sectors seem to place the extent of packaging in the GNP at 258 Billion TL at the minimum (in 1984) or approximately 1.2% of the GNP (One US Dollar: 280 TL as of 31.12.1983) This gives a fair idea of the commitment to packaging in Turkey. Emphasis on value addition in agriculture will push up this figure for which there is potential. Indications are that if the Five Year Plan's projections come true, the share and extent of packaging in Turkey will grow. A broad picture of the packaging part of the GNP appears in Annexure V.

It is believed that there are more than 500 packaging industry units (as of 1984) and the Export Promotion Research Centre (IGEME) of the Government of Turkey is reported to be attempting a compilation of the industry units as of 1986, May. The earlier such compilation was done by the Packaging Centre in 1984.

It is also understood that one of the regular staff members of the IGENE is a packaging specialist whose activities include advising exporters on packaging problems.

Training programmes on exports organised by the Industrial Training and Development Centre (SEGEN) also of the Government of Turkey include the subject of packaging. This organisation has a marketing specialist who has undergone a short course on packaging in Netherlands.

Seminars and symposia on packaging are organised also by universities, the latest one being the Bolge University's Engineering Faculties at IZMIR during 5-7 May 1986.

Packaging related exhibitions are promoted by private organisations and may be participated in by the TSE, as was the case in the Food and Packaging Exhibition held in Istanbul in March 1986.

The Packaging Centre has organised a few symposia on packaging but training programmes are yet to be commenced by the Centre.

The problems of the packaging industry are discussed elsewhere.

3. States' Plans: It was considered necessary to study the intended strategies and plans for development of Turkey, in the absence of any previous study on the needs of training in packaging. Some interesting features were observed in the Five Year Development Plan (85-89) indicating that (1) there is a strong urge to improve packaging for agriculture (2) that industrial development would be the spring-board for a big leap forward (3) technology development would be given first priority (4) small industry would be assisted through government support. The extracts from the Plan document appear in Annexure VI.

The special emphasis on export promotion and industrial production are discussed separately under these headings.

The State Plans give the necessary support for undertaking training as a significant activity in achieving the planned objective.

4. Agriculture: The Country's agricultural production in 1984 comprised:

Vegetable products	59%
Animal Products	33%
Forestry Products	7%
Water Products	1%

The value of vegetable products produced was estimated at 2008 Bil. TL (one US Dollar = 280 TL as on 31.12.83) of which cereals constituted 31% and fruits and vegetables 33%. Exports are by and large of fruits and vegetables. There are co-operatives of farmers involved in processing and marketing of produce. So far the attempts at value adding in produce have been limited but the movement has taken roots. Processing and packaging in consumer packages and brand marketing for domestic and exports would help greatly in value addition to aid the farmer improve his economic lot. Of special interest in this segment are dried fruits and nuts.

In the case of water products - including marine products the processing and packaging technology are fairly modern.

The detailed break-up of agricultural production appears in Annexure VII.

It is observed that there is excessive use of timber, using forest wood, for packaging fresh fruits and vegetables through alternatives are available.

5. Industry: The manufacturing industry of Turkey has grown in variety and size in the last decade. The consumer product industries, which use packaging to a significant extent, are growing steadily. The electronics industry is receiving a special attention.

The industrial map of Turkey reveals that between Istanbul and the central part of the Turkey on the Asian side the bulk of the industrial units are concentrated. Thus the Western part of the Asian side dominates the industrial scene. (About 75% of all large units). The Government plans to encourage industrialisation of the eastern part which is likely to be slow, for the markets are in the west. Istanbul and its environs alone account for half of the total large units of Turkey. By 1985 there were an estimated 10.000 large units in Turkey.

The composition of 'large' and 'small' units is detailed in Annexure VIII.

contd - 30

The industrial production pattern as published in 1965, reveals that more than 60% of the production is of items where packaging has a significant role to play. The most dominant items in this group are:

Food and beverages	18%
Textiles	12%
Chemicals	9%
Metal products	4%

specific details of the composition of industrial production appears in Annexure IX.

The share of the large units in the total industrial production is about 86%.

The spread or dispersal of industry in Turkey has also followed the general pattern of industrial growth in most of the developing countries, the larger cities having greater industry concentration. The 12 industry concentrations with reference to large units are:

Istanbul and Kocaeli	4866
İzmir Manisa and Aydın	1127
Denizli	129
Bursa and Balıkesir	542
Eskişehir	122
Zonguldak	105
Konya	156
Ankara	636
Adana	233

Kayseri	110
Samsun	111
Gaziantep	149
Rest of Turkey	1408
TOTAL for Turkey	9693

Between them these 12 centres share 85% of the total large units in Turkey. The rest of the centres have less than 100 units at any one centre.

The details of the industrywise grouping in these centres are given in Annexure X.

The packaging industry units are estimated to number about 500 and are included in the above. There again the pattern of distribution is similar.

The Industrial Training and Development Centre (SEGEM) organises training for industry on various aspects.

6. Assessment of industry's critical problems: An attempt was made to make a quick assessment of the cause of poor packaging standards to help in designing of courses. In-depth discussions with industry representatives and industrial visits were undertaken. Later the Centre will continue this activity through mailed questionnaires developed for the purpose and obtain responses from as many significant units as possible. This quick survey covered packaging material producers, significant users, package converters and ports.

The survey revealed that the following are of significance:

- a) the quality of packaging raw materials produced are not consistent  
e.g. tinplate, paper,

- b) there is no national standard for most varieties of packaging paper and board,
- c) where standards exist there is no certification adopted by the primary producers like tin plate,
- d) where standards have not been developed the material manufacturer has not been keen to take up standardisation,
- e) there is lack of understanding of the quality needs of the package users on the part of converters,
- f) the three segments - material manufacturer, converter and user - do not get together to discuss and solve the quality problems,
- g) segments of the packaging industry, due to their own inter-se competitive interest do not get together for collective promotional effort to upgrade quality,
- h) while the range of materials available in Turkey is limited, imports become expensive due to taxation,
- i) in respect of many materials the number of suppliers is limited leading to a somewhat monopolistic situation where motivation to change is limited,
- j) most users do not demand quality nor do they have the facility to develop or verify quality of packaging,
- k) the handful of users who demand quality cannot obtain it as the majority are not bothered.

But all the units welcome training programmes proposed to be conducted by the Centre and feel that it would help towards healthier understanding and co-operation.

7. Export Promotion: Turkey is a major exporter of food items and textiles. In 1984, it was estimated that 58.5% of the total exports would have been accounted for by these two groups of items. Their mutual share is equal. Significantly more than 51% of the exports are directed to the Common market countries of Europe, other west European nations and the USA.

Specific details appear in Annexure XI.

The national Plan lays stress on value-added exports. The items considered significant from packaging point of view, in which the annual growth rate has been proposed between 7.7 to 37.1% are the following:

Vegetable products

Water Products

Slaughter house products

Processed Fruits and vegetables

Milling products

Ready wear

Foot wear

Pharmaceuticals

Glass and glassware

Metal goods

Electronic goods

The quantum and growth rate are listed in Annexure XII.

Special studies on exports and assistance to exporters on their problems are handled by the Export Promotion Research Centre (IGEMZ).



8. Small units: The development programmes relating to the Small Scale sector are handled by the Small Industry Development Organisation (KUSGET). There are an estimated 200.000 small units in Turkey. Their share in the total industrial production as observed earlier is small. But there is a commitment on the part of the Government to help establish and strengthen this sector.

Limited studies reveal that packaging in this sector is weak and any improvement would help in improving the marketing opportunities for this sector. However it may be necessary for the KUSGET to be involved if any large scale assistance in packaging has to be extended to this sector.

9. Handicrafts: Turkish handicrafts are of great variety and artistic skills. Some promotional measures in this sector are being taken apparently by the Ministry of Tourism of the Government of Turkey. Studies in the market indicate that there is a dire need for packaging concepts to enter this sector. Limitations of time did not permit of a detailed study or establishment of contact with the promotional agency for this sector but the matter is worth pursuing.

10. (a) Faculty resources: The implementation of training courses would call for the services of a few experts in each and every subject taken up. The Packaging Centre has one position of a Deputy Director-Training. The heads of the other sections of the laboratories could supplement, taking the total of the Centre's faculty to four in addition to the Director of the Centre. It has been agreed that the job responsibilities of the Deputy Directors could be re-aligned to cover training and consultancy. In that event all the four Deputy Directors could be involved in training. This rearrangement would reduce the number of new positions to be created to

the minimum. With the addition of two more positions of Deputy Directors - taking the total to six - it may be possible to operate at least one course every month by 1988-89.

In addition, industry faculty, to the extent of 60-80% of the total faculty in each course, will also be desirable in the first few years of the training activity. Annexure XIII lists the areas of industry from which the faculty support would have to be obtained. A questionnaire has been designed for issue to the industry to develop a Panel of faculty from the industry in a large number of subjects.

Further, in the next two or three years the internal faculty will have to be developed and their expertise strengthened. Interaction with the industry on problem solving and exposure to current industrial technologies and practices of Turkey in packaging manufacture and use, are quite essential to design course content of relevance. Industrial visits were organised and using structured questionnaires the staff were initiated into this aspect. Packaging and user industries were covered in this effort. This process will be continued by the Centre till a sufficient level of understanding is developed in the faculty.

Further, as observed during industrial visits, the industry sought information on the contemporary systems and their merits. Evidently the faculty of the Centre would be forced to learn of the developments overseas if they and as a result the Centre have to acquire the credibility as "specialists". Besides obtaining such information and developing the data it was obvious that the faculty of the Centre would have to study the developments abroad on a regular basis. International exhibitions offer the most important opportunities for such development.

The studies also provided some insight into the way the training course should be oriented. The emphasis in industry is on cost reduction. Packaging would have to be presented as aiding in this area. Specification development and laboratory testing would have to be presented as pre-requisites for achieving success in this approach.

A matter for concern is that most of the people met were not aware of the role of the Centre and the extent of its services and facilities. Even those who knew the TSE did not know about the Packaging Centre and of its developmental role.

10. (b) Course material/Technical notes: Training programmes require the development of adequate background materials a) for use by the faculty and b) to be given to the participants. The development of an 'outline' which could be used by the faculty and the details, which may be given as 'technical notes' was then taken up for a number of subjects with each of the three internal faculty members of the Centre. To help develop these in future, specimen of about 75 technical notes/outline were provided to the Centre. The listing appears in Annexure XIV. Sixteen broad subject groups were covered by the notes provided. A linkage with the International Trade Centre (ITC, UNCTAD/GATT) was also established and their 'notes' have since started flowing in.

The training in development of such notes covered the courses on  
corrugated board:

Quality improvement

Packaging for exports

designed for implementation within the next year.

The translation of technical notes currently available in English, into Turkish may have to be taken up by the Centre using expert outside help. As the available staff is too meagre, a special measure of this nature is considered urgent as this would give almost ready made notes to the participants at the courses.

10. (c) Audio-visual aids: The mission started on the belief that visually aided courses would be available at the Centre. However they have yet to be procured. It was therefore considered desirable to produce these on a course to course basis.

As a first step the slide-copying equipment at the Centre was commissioned using outside professional help. Trial copies of slides were made of some slides. About 250 slides on a range of topics were made available by the expert to the Centre for copying. Fairly satisfactory copies have been produced and they now comprise the slide collection of the Centre.

Development of slides for each course was then contemplated. A beginning was then made with a course on 'packaging for exports' planned in May 36. Two of the counterparts were utilised for the purpose. This brought up the need for some orientation in photography for the staff of the Centre. A one week part-time training was considered adequate but essential. It was agreed that local scenario in slides would enhance the value of the training course.

Overhead transparencies were then attempted so that each session in a training course utilised either overhead transparency or slide or both. Methods other than copying from typed text have been elaborated to the Centre in volving

**Manuscript**

Type setting (or use of multiple type face of an IBM or similar machine)

Enlarged Print

Filling

Reduction Print

Depending upon the time availability these refinements would be attempted by the Centre.

The 'outline' notes could get converted as transparencies selectively from part of the notes prepared for a few courses.

It was also considered necessary to obtain films on packaging to upgrade the quality of the programmes. Again using the programme on 'Packaging for Exports' as the starting point a request has been made to the Insurance Company of North America (INA) for a film on packaging for exports by sea (Towards Better World Trade) and another to the Indian Institute of Packaging for a film on testing of transport packages (Packaging for Progress). The local centre of the British Council Library was contacted and a set of films~~is~~ relevant for the courses on exports, plastics, paper, printing, etc. Arrangements for the loan of the films have been made. The list of the films appears in Annexure XV. It is also proposed to obtain more films from their library in England which may require a three month advance preparation.

10. (d) Information Support: The TSE has a library, strong in its collection of Standards. Very few references on packaging are available. The Packaging Centre has plans to develop its own library. It has adequate space and necessary furniture for the library.

~~is~~ available in Ankara located, considered

The references currently available are woefully inadequate. The available literature is detailed in Annexure XVI.

The 'technical notes' provided have since been indexed and classified and can be retrieved for future references.

A programme has to be undertaken urgently for the acquisition of more literature to satisfy the need for a) faculty development and b) course material development.

A list of 21 periodicals has been drawn up for Priority I acquisition. (Annexure XVII) Another exhaustive list of periodicals has also been drawn up for Priority II acquisition. (Annexure XVIII). The second list could be obtained over the next 2 years. The choice would depend upon the funds made available.

A comprehensive list of basic minimum books required was also drawn up for immediate acquisition, Annexure IXX.

As the needs of the Centre are rather pressing in view of the Course materials to be developed, a survey was also made of information centres in Ankara. The results were encouraging:

- 1) Middle East Technical University: This has a wide range of books on basic materials like plastics, metals, etc., packaging science and technology, material handling, etc. It has also a large number of useful periodicals, some related to various aspects of packaging. The Centre will prepare a catalogue of these and organise photocopies of whatever references are available.

ii) **TURDOK:** This documentation centre of the national scientific research organisation (TUBITAK) has "on-line" information system with linkage to data - bases outside Turkey. Photo copies are also organised by TURDOK of articles located. The charges for these are only on cost basis. Specimen information was also obtained to demonstrate the potential for its use by the Centre. The use of this institution would prove economical for the Centre and useful for its information search.

iii) **British Council Library:** This has a good collection of films as referred earlier and also arrangements for obtaining information 'on-line' through England. Copies of articles could also be had through this library.

iv) **American Library:** It has a good collection of reference books on packaging materials and related disciplines.

All these sources can help the Centre till its own library is fully operational. It will be a good idea if the collections proposed at the Centre supplement the resources available in Ankara.

10. (e) Publicity and Public Relation: In order to project the Packaging Centre as a specialist institution a special promotional literature was attempted. Such a promotion would be necessary to generate the right responses from the trade for the training courses. The Centre should be popularised and its expertise recognised. Later when the training programmes themselves are advertised in the media the image could be built-up further. Till then the need for a mail campaign to promote the Centre is considered necessary.

The literature developed was typed and the photocopies used during the industrial visit. Even this was appreciated by the industry. However, a prestigious printed folder may have to be developed for mailing at least to all the major industries, export houses, governmental agencies and all the government departments.

Currently the publicity and public relation activities for the Centre are being handled by the concerned department of the TSS. As the size of promotional effort required for the Centre is substantial it may be necessary to contemplate a suitable, staff position for the purpose at the Centre.

10. (f) Administration: The Packaging Centre has two training halls. The furniture and furnishing need improvement. As the courses will be for about 8 hours at a stretch the chairs should be comfortable. Cushioned chairs would be better than the wooden ones provided. The rooms should have dark curtains to facilitate audio-visual presentation. The provision of writing tables would facilitate a comfort condition. Each room requires to be provided with a slide projector, overhead projector, and a 16 mm film projector in keeping with the growth of the activity. Two screens and 2 electrical connections are also required in each room and a control provided near the podium for the speaker to operate the entire system.

There is one room adjoining the training hall which could be suitably modified as a tea-lounge and a counter provided. For lunch service only the main canteen can be used but a segregated section could be contemplated.

Adequate toilet facilities has to be provided at the floor level of training halls. They are observed to be inadequate.



A cold-water dispenser also will be necessary when the halls are used for training.

The Secretarial work connected with the programme would be quite substantial for which the Centre is not equipped. One more full time secretarial assistance may be able to cope up with the demand.

There is no mailing list of potential user industry/trade. Industry wise and region wise listing would have to be attempted. A letter to all the Chambers of Commerce and Industries is being issued to collect, for compilation, current lists of their constituents. The lists could be got computerised on the form and size of an address label. Retrieval for mailing the course folders could use pressure sensitive labels which could be directly transferred to envelopes. While minimising secretarial time this would also facilitate periodical updating and prove to be efficient. The target groups for mailing lists is given in Annexure XX.

11. Training Programmes: Taking into account the strength of the faculty and their background an attempt was made to design a programme of training for the next financial year - June 86 - May 87. In deciding on these the training needs was assessed based on:

- a) the experience of the Centre in problem solving consultancy,
- b) feed-back from work on testing of samples of packaging materials for industry,
- c) feed-back from work on packaging standards,
- d) the staff's own assessment based on their interaction with industry over the years,
- e) discussion with promotional institutions related to industry in Turkey.

The courses were designed for middle management personnel in industry and trade in various disciplines as in Annexure XXI.

The above approach was made in view of a formal assessment of needs having not been made earlier. However, the counterpart staff were provided with an understanding of the various stages in the development and implementation of training courses. The listing appears in Annexure XXII.

Arising from the analysis made a Development Plan for Training emerged as per Annexure XXIII.

12. Training Courses developed: As a result of the discussions with the Export Promotion Research Centre (IGEME) a training course was developed on Packaging for Exports to be held at Izmir during 20-21 May 1985 dealing with textiles and food items. The gist of the programme appears in Annexure XXIV.

For the next financial year June 86 - May 87 four training courses were designed:

- 1) Corrugated Board in Packaging, October 1986,
- 2) Quality Improvement and Packaging, December 1986,
- 3) Developments in Plastics Packaging, March 1987,
- 4) Packaging Principles and Developments - for Food, Pharma and Cosmetics Industry, May 1987..

The details are given in Annexure XXV.

A comprehensive set of documents, viz,

- a) promotional folder,
- b) advertisement,

c) programme content and schedule,

d) out-line notes indicating the detailed coverage of subjects was developed for the course on "corrugated Board in Packaging" and used as a model. (Annexure XXVI A).

Similarly another set of documents was also produced for the course on "Quality Improvement and Packaging" (Annexure XXVI B) covering:

a) Course content and schedule,

b) Outline notes indicating extent of coverage of each subject.

The course content and schedule for the remaining two courses planned were also developed as per Annexure XXVI C on "Developments in Plastics Packaging" and Annexure XXVI D on "Packaging Principles and Developments".

13. Training cost and fee: The likely components of training cost -direct cost- were considered. The listing appears in Annexure XXVII. The fee charged by similar institutions for training courses were also analysed. The possible fee structure for the courses to be organised by the Centre is given in Annexure XXVIII.

Programmes of 'hands-on' training in laboratory could be charged on the basis of consultancy fee.

The question of overheads cost being met by Government as a part of national programme of training and technology development merited attention. The Centre could pursue this possibility as the Programme is in keeping with the spirit of the national Plans.

14. Training locations: The centres where the training courses should be held were evaluated. The location-wise industry set-up was developed

and analysed. It was evident that in the initial stages the courses should be offered at major industry concentrations. The following 12 locations suggested themselves:

- |              |               |
|--------------|---------------|
| 1. Istanbul  | 2. Izmir      |
| 3. Ankara    | 4. Bursa      |
| 5. Adana     | 6. Konya      |
| 7. Gaziantep | 8. Denizli    |
| 9. Eskişehir | 10. Samsun    |
| 11. Kayseri  | 12. Zonguldak |

If all these centres are covered in the next three years the later programme could take into account the structure of industrial spread by 88-89.

15. Training implementation and evaluation: The various components of the work involved were analysed. In keeping with the staffing pattern and possible marginal enlargement of technical staff compliment and secretarial assistance, the time involvement for implementation of courses was estimated. The bar-chart in Annexure IXXX details the components and time schedules.

A proforma for evaluation of the courses on the last day of the course was also developed as at Annexure XXX which would provide an immediate feed-back.

## VI. CONCLUSIONS

1. The Turkish Standards Institution has taken a progressive step to promote packaging in Turkey in setting up a packaging laboratory and enlarging its scope to become by February 1986, the "Packaging Research, Development and Testing Centre".

This Centre has been entrusted with the responsibilities to promote the status of packaging-including of consulting and advisory services to industry, dissemination of information and training industry and trade personnel, not merely in the implementation of Standards but also to generate awareness and better understanding of packaging technology, as well as the need for improved packaging. The stress is, rightly, not merely on Standards but on packaging technology development.

The country is vast. The industry is diverse. There is stress on value added produce marketing. There is emphasis on consumer products exports to the developed world. The quality of packaging having remained poor the responsibilities on the Centre are immense. To do minimum justice, even to its current responsibilities, the size of the Centre would have to be expanded several times - manpower wise. It has also to reach out to the industry and in the process, sooner rather than later, set up infrastructure facilities for testing and advisory services in one or two industry concentrations. Training programmes will generate the awareness and the resultant demand for such an infrastructure would be too intense be ignored.

The Centre would also have to possess specialisation not merely in testing but in packaging materials, and packaging of products. In the next stage it has to acquire specialisation in packaging machinery and package design.

It will be expected to guide the entrepreneur on appropriate packaging technology that could be brought in to benefit the industry. As its expertise develops it will assume the responsibility to advise the Government on the measures - policy measures- industrial, fiscal, technology development - which would be conducive to the growth of packaging.

It may no longer, once the training of industry commences seriously, remain merely a testing Centre but will become a techno-economic and commercial specialist organisation to serve the country in its path to progress.

It may have about 25 senior specialists in as many sections of specialisation at its headquarters and one or two regional facilities.

To provide the Centre with the identity it requires, to be the spokesman for packaging in Turkey it could be aptly named as the 'National Packaging Centre'. Just as standardisation needs to be promoted by a "Standards" institution, packaging technology would be expected to be promoted by a "Packaging" institution. The means of communications is as important as the message itself.

This identity is not currently discernible to the Trade in Turkey. It sees more of the overshadowing image of Standards rather than the promotional body of packaging. But this strength of the parent body of Turkish Standards Institution could be and should be used to project the off spring-the National Packaging Centre as a specialist promotional body.

Further its treatment as part of a laboratory set-up, as at present may have to undergo a change -a change in the status of the Centre as a body with a special identity of its own but still managed and continued to be nurtured by the parent body. Perhaps a Board of Directors appointed by TSE would manage the affairs of such a set-up. Surely there is enough management understanding to give physical shape to this concept.

2. Especially for training, in the context of the lack of appreciation of the subject in Turkey, it will be necessary to take the courses to the industry in at least the twelve large centres.

Later the facilities may have to be set up at least at the largest centre around Istanbul.

3. There are many organisations trying to get involved in packaging. This is not conducive to the image of the Centre. The Centre should encourage collaborative ventures and assume the role of the prime-mover so that all measures are concentrated and properly directed. Especially the promotional agencies of the Government should be motivated to sponsor programme of training as well as development of packaging.

4. The enlargement of the size of the Centre may in the initial years require financial support. The Government of Turkey could be approached on a programme to programme basis for supplementing the income from fee for services which may cover direct cost. The justification lies in the fact that the national Plan itself envisages encouragement of activities identical to that proposed by the Centre in the field of technology development, training, assistance to Small Industry etc. This avenue should be explored so that overheads are not by the Government and infrastructure put to greater use.

5. The Centre should take the initiative to develop an educational programme from 1990, which may lead to a Post-Graduate Diploma in Packaging. This initiative would also help attention being focussed on the Centre and when implemented ensure a status to the subject in the national scenario.

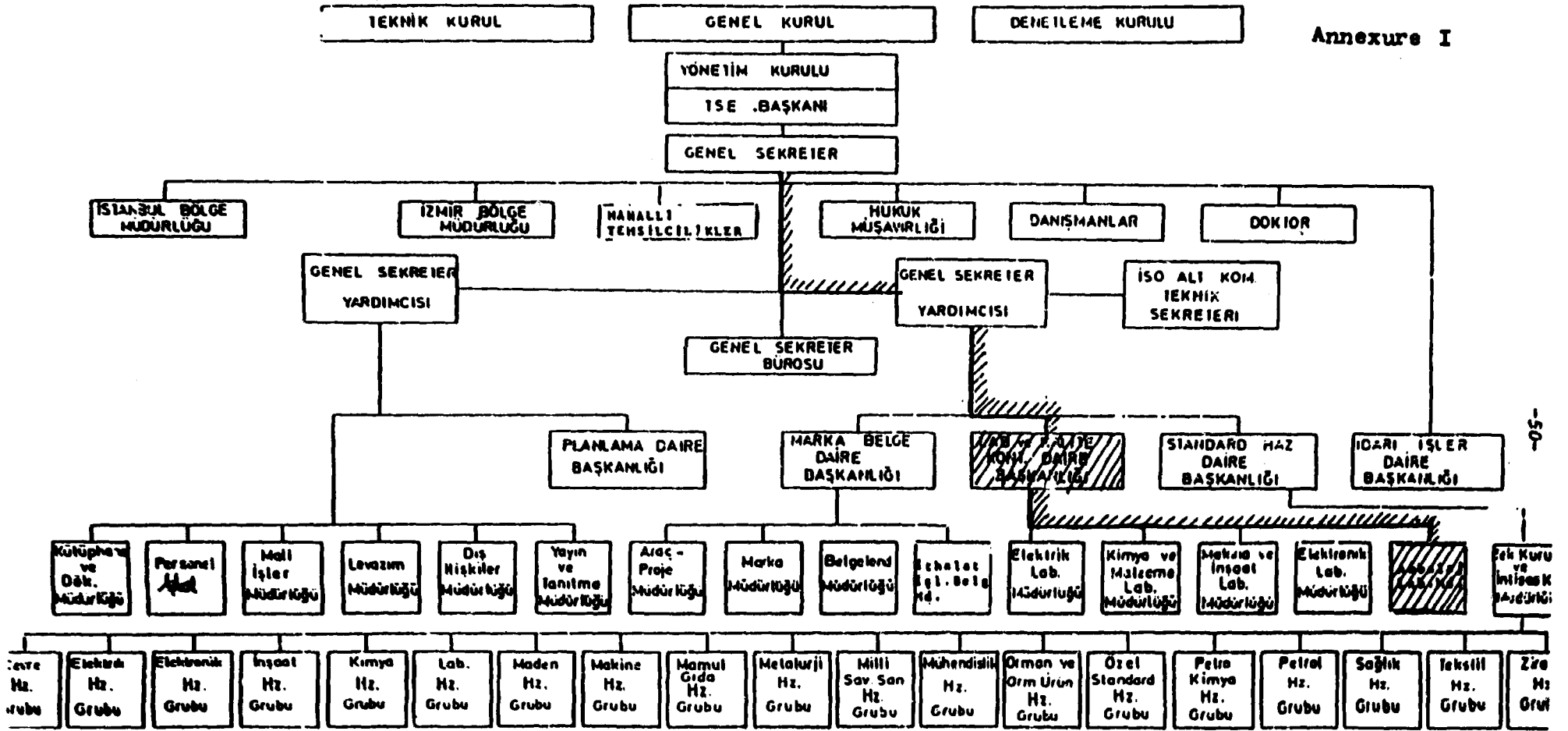
**VII. ACKNOWLEDGEMENT**

The expert deeply appreciates the excellent support he received from the counterpart Annexure XXXII and other staff of the Packaging Centre but for whose sincerity and spirit of co-operation it would not have been possible to complete the mission satisfactorily. The assistance extended by the management of the TSE and the guidance given by the UNDP officials in Ankara rendered the task easier and pleasant. The numerous individuals gladly helped with their views and valuable information (listed in Annexure XXXIII) deserve a special word of gratitude.



# TSE ORGANİZASYON ŞEMASI

Annexure I



( TRANSLATION OF RELEVANT PORTIONS)

TSE ORGANİZASYON ŞEMASI - TSE ORGANISATIONAL CHART

GENEL KURUL - GENERAL ASSEMBLY

YÖNETİM KURULU - BOARD OF DIRECTORS

TSE BAŞKANI - TSE PRESIDENT

GENEL SEKRETER - SECRETARY GENERAL

GENEL SEKRETER YARDIMCISI - ASSISTANT SECRETARY GENERAL (TECHNICAL)

LABORATUVARLAR VE KALİTE - HEAD OF LABORATORIES AND QUALITY CONTROL

KONTROL DAİRESİ BAŞKANI

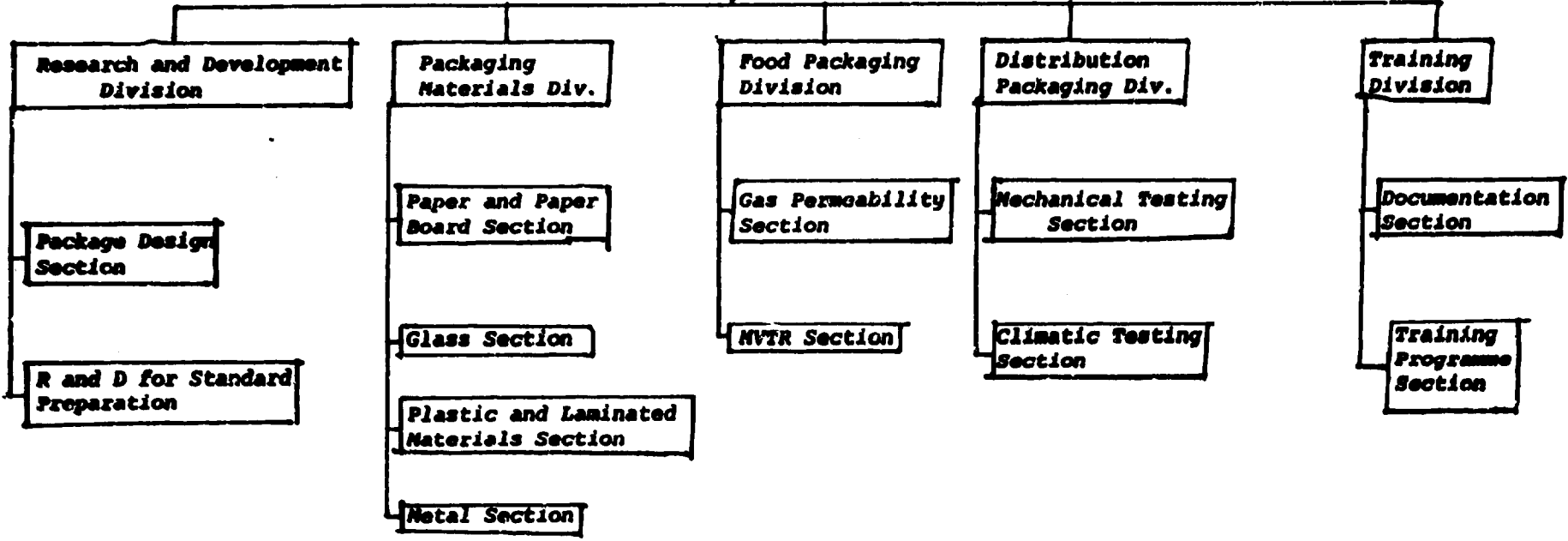
AMDALAJ LABORATUVARI - DIRECTOR, PACKAGING LABORATORY

(THIS LABORATORY IS KNOWN AS PACKAGING RESEARCH, AND DEVELOPMENT AND TESTING CENTRE AS FROM FEB.86)

**ORGANISATIONAL CHART**  
**Packaging Research Development and Testing Centre**

**DIRECTOR**

**SECRETARIATE**



R and D Dev. activities are currently carried out by other Dns.

**STAFFING PATTERN**

**PACKAGING RESEARCH, DEVELOPMENT AND TESTING CENTRE  
TURKISH STANDARDS INSTITUTION**

	Number Approved		ACTUAL FILLED POSITION			
	Upto Apr.	May	1 Feb.	1 Mar	1 Apr.	1 May
Head of Laboratory/Dir.	1	1	1	1	1	1
<b>Distribution Packaging</b>						
Deputy Director	1	1	X	X	X	X
Engineer	1	1	1	1	1	1
Technician	1	1	X	X	X	X
<b>Material Testing</b>						
Dy Director	1	1	1	1	1	1
Chemist	1	1	1	1	1	1
<b>Food Packaging</b>						
Dy Director	1	1	X	X	X	X
Chemical Engineer	1	1	1	1	1	1
<b>Training</b>						
Dy Director	1	1	X	X	X	X
Documentation Personnel	1	1	1	1	1	1
Support Staff	2	3	2	2	2	3
	12	13	8	8	8	8

NOTE: One more support staff provided from 24 April 1986, increasing it to 3 and the total to 13.

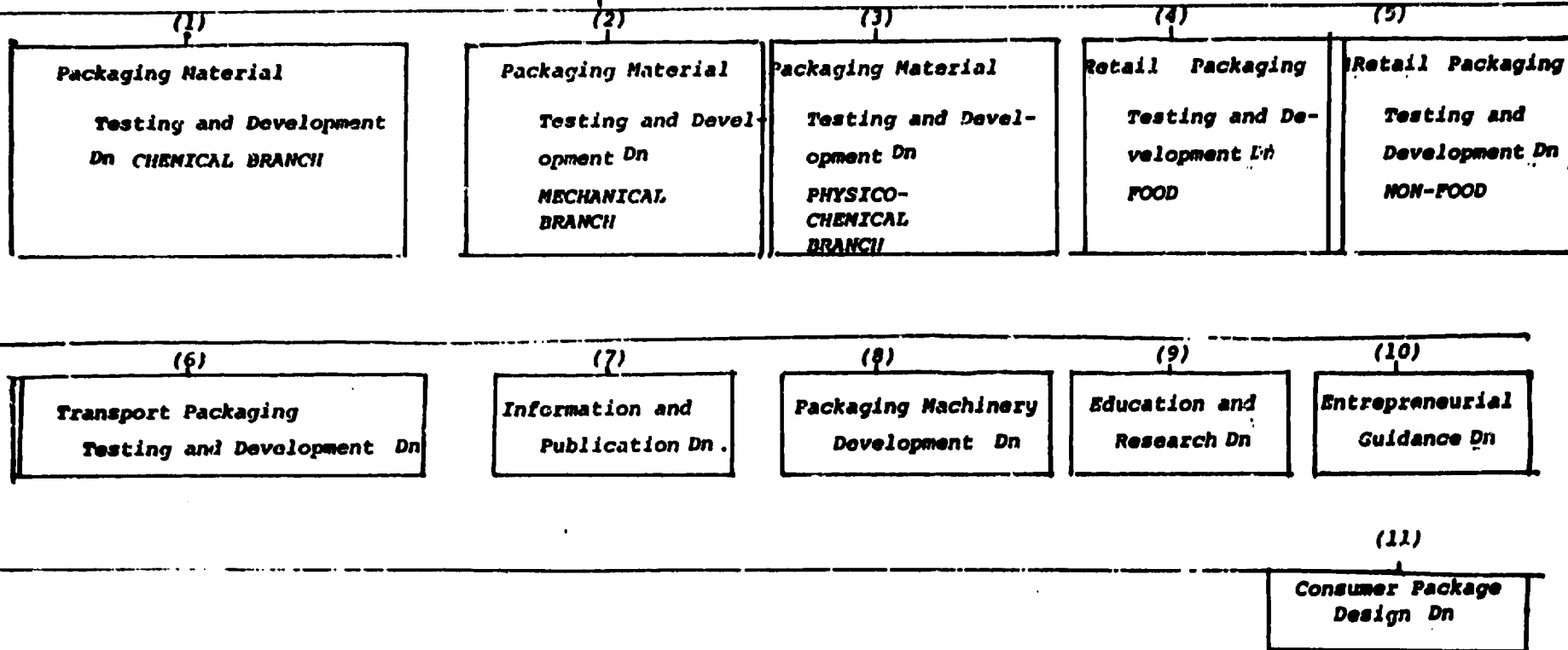
National Packaging Control

Annexure IV

(A revised structure - Incorporating Possible Growth Areas)

Director

Secretariato



NOTE: (1) 6 to 11 are growth areas

(2) 1 to 7 are currently discharged by existing divisions

(3) The heads of divisions will be consultants cum trainers who may help in long term educational programmes as faculty

(4) Next stage of growth will be by material specialisation Divisions. Plastics/Paper/Metals/Glass.

## POSSIBLE SHARE OF PACKAGING IN RELATION TO

G.N.P. OF TURKEY - 1984

(1983 PRICES - IN BILLION TL)

<u>I T E M</u>	<u>VALUE (BIL. TL)</u>	<u>POSSIBLE % OF PACKAGING</u>	<u>VALUE OF PACKAGING (BIL TL)</u>
<b>1. AGRICULTURAL PRODUCTION</b>			
PLANT PRODUCE	2008	1	20
ANIMAL HUSBANDRY	1129	0.1	.2
FORESTRY	245	-	-
FISHING	46	1	0.4
<b>TOTAL</b>	<b>3428</b>		<b>22.4</b>
<b>2. INDUSTRY</b>			
i) MINING	419	-	-
ii) MANUFACTURING			
A. CONSUMER GOODS	4348	5	217
B. INTERMEDIATE GOODS	3884	0.5	19
C. INVESTMENT GOODS	1273	-	-
iii) ENERGY	475	-	-
<b>TOTAL<sup>(2)</sup></b>	<b>10399</b>		<b>236</b>
<b>3. SERVICES</b>			
	7929	-	-
<b>TOTAL GROSS PRODUCTION</b>	<b>21756</b>	-	<b>258.4</b> <b>(1.2%)</b>

SOURCE: FIFTH FIVE YEAR DEVELOPMENT PLAN 1985-89.

(As per the Statistical Yearbook of Turkey  
1985 the Item 1 and 2.ii have reached the level indicated).

**SIGNIFICANT FEATURES OF TURKEY'S FIVE YEAR  
PLAN (1985-89)**

The National Plan of Turkey focusses attention on the measures necessary for economic and technical development. The more important features having a bearing on packaging technology in general and training in packaging technology in particular are listed below:

Industry

- (i) Para 205: Manufacturing industry will be the most important sector of development. The first priority will be given to the development of technological level.
- (ii) Para 211: The use of modern quality control techniques will be encouraged providing support to quality control organisation and training units the establishment of which is envisaged.

Agriculture

- (iii) Para 238 (14): Emphasis will be placed on quality improvement, standardisation and packaging of agricultural products handling as a whole the relationship between agricultural and agriculture based industry along a chain from production to marketing.

Small Industry

- (iv) Para 670: .... priority will be given to measures designed to provide financial and technical support intended to help the sector (Small Scale Industry, Artisan and Tradesman) boosting its production potential and in marketing its products both at home and abroad.
- (v) Para 676: A training system will be developed in Small-Scale-Industrial Estates combining both extended technical training and on-the-job training.
- (vi) Para 69 (Basic Targets and Strategy): Consultative and technical assistance will be put into use in order to help artisans and Small Scale Industrialists on such subjects like provision of information, project design, marketing, etc.

**AGRICULTURAL PRODUCTION**  
**(ESTIMATES)**  
**TURKEY 1984**  
**(At 1983 prices)**

<u>ITEM</u>	<u>Value</u> <u>(Bil. TL)</u>
<b>Vegetable Products</b>	
Cereals 629 (31%)	
Pulses 74(4%)	
Tuber Crops and oil seeds 410 (20%)	
Fruits 534(27%)	
Vegetables 115(6%)	
Side-Products <u>246(12%)</u>	2008
<b>Animal Products</b>	1129
<b>Forestry Products</b>	245
<b>Water Products</b>	<u>46</u>
<b>TOTAL</b>	<u>3428</u>

**SOURCE: FIFTH FIVE YEAR DEVELOPMENT PLAN**  
**1985-89 (pp. 59-60).**

**TURKEY'S INDUSTRIAL SCENE**  
(**'Large' and 'Small' Units**)

The industry in Turkey is divided into 'large' and 'small'. Until 1983 industries employing 10 persons or more was treated as 'large' industry and those with less than 10 as 'small' industry. As per the statistical compilations of the Government the number of 'large' industries were 8710 in 1980 and the 'small' industries were 1.77.159. The number of large industries increased to 9693 by 1982.

From 1983 there has been a change in the classification as a result of which industries with an employment of 25 or more persons would be designated as 'large' and those with less than 25 as 'small'. The actual numbers of 1983 are expected to be published by early May 1986.

It is believed that by 1985 the large Industries would number 10.000 and the small industries 200.000.

The pattern has been such that the western half of Turkey is industrialised with the western border areas on the Asian part of Turkey having about 70% of the large industries with Istanbul area alone accounting for 50% of the industries.

There are 16 industrial locations in which the number of large industrial units exceed 100.

Even though the number of large units in 1980 were about 4.6% of the total units, they accounted for 86% of the total industrial production (2236 Bil. TL out of 2598 Bil. TL.)



Industrial Production - Turkey

(1980 - At Current Prices) (Bil. TL)

<u>Product Group</u>	<u>Value</u>	
A. Food	413	
Beverage	39	
Tobacco and Tobacco Manufacture	74	
Textiles	302	
Apparels	41	
Fur-Leather Industry	10	
Footwear	17	
Industrial Chemical	133	
Other Chemical	101	
Petroleum Products	42	
Plastics	47	
Plastic Products	39	
Pottery, China, Earthen ware	11	
Glass products	15	
Metal Products	112	
Electrical Machinery, etc.	96	
Other machinery	128	
Instruments	1	
	<u>1621</u>	(A)
B. Wood and Cork products	50	
Furniture	17	
Paper and paper products	48	
Printing and allied	29	
	<u>144</u>	(B)
C. Petroleum, Iron and Steel, Other metal, transport equipment, NES	833	(C)
D. Total Industry	2598	(A)+(B)+(C)

SOURCE: PP. 254-5- Statistical Year Book of Turkey - 1985 -

MAJOR INDUSTRIAL CENTRES OF TURKEY

Annexure X

(BY BROAD INDUSTRY GROUPS)

NUMBER OF INDUSTRIES : EMPLOYING 10 OR MORE PERSONS

INDUSTRIAL CENTRE	FOOD BEVERAGE TOBACCO	TEXTILE APPAREL LEATHER	WOOD PRODUCT	PAPER PAPER PRODUCTS PAINTING	CHEMICALS PETROLEUM RUBBER PLASTIC	NON METALLIC MINERAL PRODUCT	BASIC METAL INDUSTRIES	METAL PRODUCTS MACHINERY EQUIPMENT	OTHER INDUSTRIES	TOTAL
1) ISTANBUL	471	1101	107	246	738	153	298	1400	82	4596
2) KOCAELI	41	23	15	12	54	16	43	64	2	270
3) IZMIR	216	146	39	29	72	35	28	264	11	840
4) MANISA	34	46	2	1	5	68	3	21	-	180
5) AYDIN	36	39	-	2	4	7	3	16	-	107
6) DENIZLI	21	35	6	4	9	7	27	18	1	128
7) BURSA	75	192	11	6	36	14	13	89	1	437
8) BALIKESIR	51	14	4	1	13	5	2	15	-	105
9) ESKISEHIR	41	7	12	3	2	13	6	38	-	122
10) ZONGULDAK	40	-	8	3	1	14	30	9	-	105
11) KONYA	65	5	4	6	7	9	11	49	-	156
12) ANKARA	246	25	29	43	35	45	21	189	3	636
13) ADANA	59	69	14	10	18	18	5	39	1	233
14) KAYSERI	27	21	1	2	2	-	9	48	-	110
15) SAMSUN	55	7	6	-	13	10	9	11	-	111
16) GAZIANTEP	42	45	2	4	34	3	5	14	-	149
TOTAL OF ABOVE CENTRES	1520	1775	260	372	1043	417	513	2284	101	8285
(REMAINING IN) REST OF TURKEY	636	189	111	19	83	207	25	135	3	1408
TOTAL FOR TURKEY	2156	1964	371	391	1126	624	538	2419	104	9693

NOTES : CENTRES HAVING MORE THAN 100 INDUSTRY UNITS ONLY SELECTED.  
ARRANGEMENT WEST TO EAST AND NEAR BY CENTRES SEQUENCED  
(GROUPS ARE 1&2, 3,4&5, 7&8)

SOURCE: ANNUAL MANUFACTURING INDUSTRY  
STATISTICS (PRELIMINARY RESULTS) 1982  
STATE INSTITUTE OF STATISTICS ANKARA

TURKEY'S EXPORTS  
Composition and Direction  
1984 (ESTIMATES)

TOTAL EXPORTS:

7133 mil. US \$  
(2,608,331 mil. TL)

Significant Export Products:

Food Products (Excl. live animals)	1682 mil. USD
Beverages, Tobacco, Tobacco Manufactures	221 mil. USD
Textiles	1004 mil. USD
Clothing	1267 mil. USD
Total of above items	4174 mil. USD (58.5%)

Significant Markets

Common Market Countries of Europe	2731 mil. USD
Other Western European Countries	603 mil. USD
USA	368 mil. USD
Total of above group	3702 mil. USD (51.9%)

SOURCE: STATISTICAL YEAR BOOK OF TURKEY 1985. pp. 359-362 and pp. 354.  
State Institute of Statistics

EXPORT PRODUCTS EMPHASISED IN FIVE YEAR PLANPROJECTIONS

(1985 - 89) (At 1983 prices)

(Items where packaging has a critical role)

<u>Item</u>	<u>Value (Mil. \$)</u>		<u>Mean Annual % increase</u>
	<u>1984</u>	<u>1989</u>	
Vegetable Products	645	1104	11.3
Water Products	22	57	20.6
Slaughterhouse products	201	616	25.0
Processed Fruit and Vegetables	253	429	11.1
Milling Products	89	180	15.0
Readywear - Textile Garment	650	1573	19.3
- Leather garment	258	418	10.1
Footwear	12	25	14.3
Pharmaceuticals	12	23	13.5
Glass and Glassware	110	160	7.7
Metal goods	109	275	20.2
Electronic	6	31	37.1

SOURCE: FIFTH FIVE YEAR DEVELOPMENT PLAN - 1986-89, pp. 17-18.

**FACULTY SUPPORT**

**- WHERE TO DRAW FROM**

**PRIMARILY FROM INDUSTRY, NAMELY**  
**MATERIAL TECHNOLOGISTS FROM**  
**PAPER, PLASTIC, GLASS, METAL INDUSTRIES**  
**PRODUCT DEVELOPMENT SPECIALISTS**  
**FROM ABOVE INDUSTRIES**  
**PRODUCTION, R and D, Q.C. AND MARKETING EXECUTIVES**  
**FROM PACKAGE MANUFACTURERS**  
**PACKAGE DESIGN EXECUTIVES FROM**  
**PACKAGE MANUFACTURERS**  
**PACKAGE BUYERS, R and D, EXECUTIVES,**  
**MARKETING EXPERTS FROM USER INDUSTRIES**  
**ESPECIALLY IN CONSUMER PRODUCT INDUSTRIES**

**SUPPORTED BY FACULTY FROM**  
**PACKAGING CENTRE**  
**TECHNOLOGY UNIVERSITY**  
**INSPECTING AND CONTROL AGENCIES**

**AND IN COURSE OF TIME FROM**  
**THE PARTICIPANTS IN EARLIER PROGRAMMES**

Technical notes (Books, monographs, notes)  
provided to the Packaging Centre  
(photocopied) to assist in Course material development

**I. Metals Packaging:**

Aluminium In Packaging (monograph 1lp) pp.72  
Tinplate in Packaging (monograph, 1lp) pp, 88  
Technical File on Metal Packaging (ITC.Geneve), pp. 118  
Technical File on Use of Metal Cans (ITC, Geneve), pp.6  
Metal Containers for Packaging, pp. 6  
Recent Developments in Metal Containers and Alternatives, pp. 10  
Rigid containers, pp. 8  
Aluminium Foil - Manufacture, Properties and Applications, pp. 6  
Physico - Chemical Properties of Foil, pp. 8

**II. Glass Packaging**

Glass Container in Packaging (Monograph - 1lp), pp. 100  
Glass Containers - Bottles and Vials, pp. 13  
Quality Control of Glass containers, pp. 4

**III. Regenerated Cellulose Film.**

Regenerated Cellulose film, pp. 6

**IV. Paper and Board Packaging**

Formation of paper, pp. 5  
Paper - its manufacture and properties, pp. 1  
A chart of test results on kraft paper in three Indian Mills pp. 1  
Multiwall paper Bags, pp. 6

**V. Corrugated Board Packaging**

Technical Notes on the Use of Corrugated Board Boxes  
(ITC, Geneve), pp. 46  
Corrugated Board - Outline, pp. 8  
Box styles and Economics, pp. 6  
Costing and Estimating for corrugated box industry, pp. 4

**VI. Plastics Packaging**

Low Density Polyethylene, pp. 16  
Linear Low Density Polyethylene pp. 6  
High Density Polyethylene, pp. 11  
High Molecular HDPE, pp. 3  
Polypropylene, pp. 28  
Biaxially Oriented, Polypropylene pp. 3  
Biaxially Oriented, Polypropylene pp. 7  
Polystyrene, pp. 11  
Nylon-6 film, pp. 13  
Polyester Film, pp. 9  
PVC, pp. 13  
PVDC Coating pp. 5  
New Co-extruded thermo plastic films, pp. 8  
Shrink packaging, pp. 4  
Stretch wrapping, pp. 7

- Skin packaging, pp. 5
- Blister Packaging, pp. 4
- Formed Tubular Net Packaging, pp. 2
- Plastic Corrugated Board, pp. 6
- Future of Polyester Film on the wake of BOPP, pp. 3
- Comparison of Coating Processes, pp. 4
- Testing of Plastic Containers, pp. 7

#### VII. Wood and Plywood packaging

- Wood as a Packaging Material in the Developing Countries (UNIDO), pp. 111
- Technical Notes on the use of Wooden Packaging (ITC-Geneve), pp. 20
- Wooden Containers, pp. 21
- Seasoning of Timber for Packing Cases, pp. 14
- Plywood for Packaging pp. 8
- Plywood and Panel Products, pp. 7
- Testing of Wooden Containers, pp. 4

#### VIII. Textiles Packaging

- Textiles for bulk packaging, pp. 17
- Materials for bulk packaging, pp. 14

#### IX. Ancillary Materials

- Cushioning
- Prevention of Shock damage to articles by various means, pp. 7
- Cushioning materials and their applications, pp. 23
- Labels and labelling, pp. 14
- Seals and closures, pp. 9
- Cold seal adhesives for flexible packaging, pp. 29
- Paraffin Wax - Its uses, applications and Developments, pp. 25

#### X. Product Packaging

- Food Products - Processed and Dehydrated, pp. 10
- Milk and Milk Products, pp. 8
- Biscuits, Bread and Confectionery, pp. 10
- Fruits and Vegetables, pp. 13
- Agricultural Produce, pp. 9
- Pharmaceutical Products - Sterilisation, pp. 25
- Cosmetics, pp. 8
- Chemicals, paints, pp. 8
- Pesticides, pp. 11
- Explosives, pp. 8
- Light Engineering Goods, pp. 4
- Heavy Engineering Goods, pp. 8

#### XI. Speciality Packaging

- Aerosols, pp. 20
- Systems Packaging, pp. 11
- Shrink Packaging, pp. 4
- Strip Packaging, pp. 7
- Blister Packaging (see Plastics Packaging)
- Stretch wrapping ( -do- )
- Blister Packaging machinery, pp. 7

**XII. Export Packaging**

- Packaging for exports, pp. 5
- Role of Marketing Research in Export Packaging, pp. 11
- Export Packaging, pp. 3

**XIII. Printing and Reproduction of Art-work**

- Preparation and Reproduction of Art work, pp. 7

**XIV. Unitisation, Palletisation and Containerisation**

- Containerisation pp. 3
- Containerisation-Some aspects, pp. 11

**XV. Testing and Quality Control**

- Test methods and Testing, pp. 6
- Testing and Evaluation of Transport Packages, pp. 15
- Quality Control - General Functioning and Need - outline, pp. 2
- Fixing Performance standards for packaging, pp. 7
- Steps in development of Packaging materials specifications, pp. 7

**XVI. General Principles**

- Product Design, pp. 5
- Packaging and the Product - Interface (outline), pp. 2
- Container as a means of protection, pp. 12
- Physical characteristics of the product, pp. 10
- Compatibility of the product with the package, pp. 8
- Package components, pp. 4
- Packaging Cost - The total cost concept, pp. 4
- Basic concepts in Standardisation, pp. 9



EDUCATIONAL FILMS RELATED TO PACKAGING  
AND AVAILABLE IN ANKARA  
(WITH BRITISH COUNCIL LIBRARY AND CAN  
BE LOANED TO THE PACKAGING CENTRE )

- 1- STRENGTH GRADING OF TIMBER - A 10 (English- 17,5 min)
- 2- ALL THE YEAR ROUND-AGRICULTURE-POST HARVEST-CONTROLLED  
ATMOSPHERE STORAGE- A.12 (ENG. 17 min)
- 3- PAPER - E. 11 (TURKISH - 17 min )
- 4- ENGINEERING AND TECHNOLOGY  
- TECHNOLOGY STUDIES- PART 7. PROPERTIES OF PLASTICS-K.01  
(ENGLISH 25 min)
- 5- LIVING TOMORROW - 252  
NEW TECHNOLOGY-WATERCRESS PACKER- E.10(ENG, 14 min)
- 6- FREIGHT LINER IN ACTION-K 35 (TURKISH-7 min)
- 7- LIVING TOMORROW - 245- K 46(ENG, 14 min)  
INK JET PRINTING
- 8- FREIGHT LINER AND MARITIME TRADE - K 54 (ENG. 27 min)
- 9- ROBOTS IN INDUSTRY - K 55 (ENG 30 min.)
- 10-FOOD PRESERVATION - N 02 (ENG, 16 min)
- 11-LIVING TOMORROW - LASERS - R.30 (ENG. 14 min)
- 12-OVER HEAD PROJECTOR - I.06(ENG-25 min)
- 13-VISUAL AIDS - I.07 (ENG, 22 min)

**INFORMATION/REFERENCE MATERIAL AT TSE  
(RELATED TO PACKAGING)**

**I. MAIN LIBRARY OF TSE**

- (1) **STANDARDS FROM DIFFERENT COUNTRIES**
- (2) **HAND BOOKS**
  - A. **METALS**
  - B. **GLASS**
- (3) **PERIODICALS**

"Forum" - Published by ITC Geneva, which occasionally carries articles on Packaging
- (4) **TRADE DIRECTORIES**

FEW FROM 73-74 ONWARDS - None Current

**II. SECTIONAL LIBRARY OF PACKAGING CENTRE**

- (1) **Standards -**

Of ASTM; B.S.; ISI
- (2) **BOOKS**
  - 18 - in English
  - 8 - in Turkish
- (3) **Periodicals 7 - in English**
- (4) **Trade Directories**

One - Packaging Directory  
carrying App. 480 sources in Turkey.

## PERIODICALS RECOMMENDED

## PRIORITY. 1.

- 1- ADHESIVES AGE (Monthly)  
Communication Channels, Inc.  
6255 Barfield, Road, Atlanta  
Georgia 30328, USA  
\$ 35.00
- 2- BOXBOARD CONTAINERS (Monthly)  
Maclean Hunter  
300 W. Adams Street, Chicago  
Illinois, 12 60606  
\$ 16.00
- 3- CONTAINERISATION INTERNATIONAL (Monthly)  
National Magazine Co. Limited  
National Magazine House, 72 Broadwick Street  
London, W1N 2EP, U K  
£56.00
- 4- CONVERTER (Monthly)  
Embankment Press Limited  
Ground Floor, Post Room, 35 Perrymount Road  
Haywards Heath, RH 16 3DH, U K  
£ 22.50
- 5- FOOD PACKAGING (Monthly)  
Elsevier Science Publishers  
P. O. Box 211, 1000 AE Amsterdam, Netherlands  
Dutch Guilder 680.00
- 6- FOLDING CARTON INDUSTRY (Monthly)  
Binsted Publications, Honover House  
77 Chiddesden Road, Besinstoka, Hampshire RG21 3EY, U K  
£ 14.00

- 7- FROZEN FOODS (Quarterly)  
Retail Journals Ltd., Queensway House, 2 Queensway  
Redhill Surrey, RE1 1QS, England, U K  
\$ 45.00
- 8- GLASS INDUSTRY (Monthly)  
Ashlee Pub. Co. Inc., GPO Box 2343  
New York, N Y 10116, USA  
\$ 35.00
- 9- HANDLING AND SHIPPING MANAGEMENT (Monthly)  
Penton/INC, P : Box 95759, Cleveland, Ohio 44101, USA  
\$ 50.000
- 10-INTERNATIONAL PACKAGING ABSTRACTS (Monthly)  
Pergamon Journals, Pergamon Press Inc.  
Maxwell House, Fairview Park, Elmsford, New York 10523, USA  
\$ 350.00
- 11-MODERN PLASTICS INTERNATIONAL (Monthly)  
Mc Graw-Hill Publications, Overseas Corpn.  
14 Avenue, D' Cuchy, 1006 Lausanne, Switzerland  
S. Fr. 150.00
- 12-PACKAGING DIGEST (USA) (Monthly)  
Delta Publication, 400 N Michigan Avenue  
Chicago, IL 60611  
\$ 75.00
- 13-PACKAGING INDIA (Quarterly)  
Indian Institute of Packaging, E-2, MIDC Area  
Chakala, P B No. 9432, Andheri (E), Bombay 400093
- 14-PACKAGING NEWS (UK) (Monthly)  
Maclean Hunter, 76 Oxford Street  
London, WIN OHH, U K
- 15-PACKAGING UPDATE (Monthly)  
Indian Institute of Packaging, E-2, MIDC Area  
Chakala, P B No. 9432, Andheri (E), Bombay 400 093 INDIA

- 16- PAPERBOARD PACKAGING (Monthly)  
Magazine for Industry Inc.  
1, East First Street, Duluth  
Minnesota 55802, USA  
\$ 25.00
- 17- PAPER FILM AND FOIL CONVERTER (Monthly)  
Maclean Hunter Publications  
300 West Adams Street, Room 500,  
Chicago, Illinois 60606  
\$ 40.00
- 18- PLASTISS AND RUBBER INTERNATIONAL (Monthly)  
Plastics and Rubber Institute, 11 Hobart Place  
London SW 1W OHL  
Comp.
- 19- PLASTICS IN RETAIL PACKAGING (Monthly)  
Elsevier International Bulletins  
Mayfield House, 256 Banbury Road  
Oxford OX 2 7 DE, England, U K  
\$ 125.00
- 20- TAPPI (Monthly)  
Technical Association of the Pulp and Paper Industry  
TAPPI Inc., 15 Technology Park South  
Norcross, Ga 30092  
\$ 40.00
- 21- TIN INTERNATIONAL (Monthly)  
Tin Publications Ltd., 7 High Road, London W42 NE  
Comp.

## PERIODICALS RECOMMENDED

Annexure XVIII

## PRIORITY.2

ANNALS OF LIBRARY SCIENCE AND DOCUMENTATION  
INSDOC, Sales Section, Hillside Road  
New Delhi 110 012  
Rs. 40.00

A P O NEWS (Monthly)  
Asian Productivity Organization  
4-14 Akasaka, 8 Chome, Minato-KU  
Tokyo 107, Japan.  
Comp.

A P P I T A (Every 2 months)  
Technical Association of the Australian and New Zealand  
Pulp and Paper Industry  
Clunies Ross House, 191 Royal Parade, Parkville  
Victoria 3052, Australia  
Aus. \$ 33.00

WORLDWIDE PRINTER (Monthly)  
North American Pub. Co.  
401 N, Broad St., Philadelphia, PA 19108  
Comp.

AUSTRALIAN PACKAGING (Monthly)  
Business Press International P Ltd  
3-13 Queen Street, Chippendale, Sydney 2008  
Australia  
Aus. \$ 50.00

CANADIAN PACKAGING (Monthly)  
Maclean Hunter  
Maclean Hunter Bldg., 777 B2y Street  
Toronto, Ont. M51N 1A7, Canada  
\$ 54.00

CANADIAN PLASTICS (Monthly)  
Southam Business Publications  
1450 Don Mills Road, Don Mills  
Ont. M3B 2X7, CANADA  
\$ 65.00

CONTAINER NEWS (Monthly)  
Communication Channels Inc., 2685 Banfield Road  
Atlanta, Georgia 30328, USA  
\$ 29.00

CURRENT PACKAGING ABSTRACTS (Monthly)  
Rutgers- State University of New Jersey  
Gottsoho Packaging Information Centre  
Packaging Science and Engineering, Busch Campus  
P O Box 909 Piscataway, New Jersey 08854, USA  
\$ 105.00

DRUG AND COSMETIC INDUSTRY (Monthly)  
H B J Publication  
P O Box 6150, Duluth, Minnesota 55806, USA  
\$ 45.00

ECONOMIST (Weekly)  
International Subscription Service  
The Economist Newspaper Limited  
P O Box 120, 23 a St. Jame's Street  
London SW1A 1HP, UK  
£ 57.00

EMBALLAGE ET CONDITIONNEMENT (French)  
Prendre Contact avec le departement  
Documentation/Publication de L'I.M.E.C.  
Comp.

EMBALLAGE DIGEST - (Monthly) (french)  
Societe Europeenene de Presse et d'Edition  
142 rue d'Aguesseau, F-92100  
BOULOGNE, FRANCE  
Comp.

ENVIROFACTS  
Packaging Council of Australia  
370 St. Kilda Road, Melbourne 3004  
Comp.

F D A CONSUMER (Monthly)  
Superintendent of Documents U.S. Govt. Printing Office  
Washington, D C 20402  
\$ 23.75

FOOD ENGINEERING INTERNATIONAL (Monthly)  
Chilton Way, Radnor, Pennsylvania 19089, USA  
\$ 55.00

FOOD FLAVOURINGS INGREDIENTS PROCESSING PACKAGING (Monthly)  
Circulation Dept., WFP House, 33/35 Bowling Green Lane  
London EC1R 0DA, SW  
SW FR 266

FOOD MANUFACTURING NEWS (Bi-monthly)  
GPO Box 606, Sydney, NSW 2001  
Comp.

FOOD TECHNOLOGY (Monthly)  
Institute of Food Technologists  
221 N Lasalle Street, Suite 2120, Chicago  
Illinois, 60601, USA  
\$ 45.00



GLASS+EUROPEAN GLASS DIRECTORY (Monthly)

Fuel End Metallurgical Journals Ltd., Queensway House, 2 Queensway  
Redhill Surrey, RH1 1QS, England, U K

£ 57.50

GLASS INTERNATIONAL (Monthly)

Fuel End Metallurgical Journals Ltd., Queensway House, 2 Queensway  
Redhill Surrey, RH1 1QS, England, U K

£ 39.00

GLASS INDUOG (Quarterly)

All India Glass Mfrs. Federation

812, New Delhi House, 27 Barakhamba Road, New Delhi 110 001

Comp.

GOOD PACKAGING (Monthly)

1313 East Julian Street, San Jose

California 95116, USA

\$ 45.00

PAPER-AGE (Monthly)

Business Press Inc., 101 West St.

Hillsdale, New Jersey 07642

Comp.

INDIAN FOOD INDUSTRY (Monthly)

Association of Food Scientists and Technologists (India)

Central Food Technological Research Institute Campus

Mysore 570013

Rs. 100.00

INDIAN FOOD PACKER (Quarterly)

All India Food Preservers' Association (Regd.)

19 Uday Park, New Delhi 110 049

Rs. 60.00

INDIAN PULP AND PAPER  
15, India Exchange Place  
Calcutta 70001  
Comp.

INTERNATIONAL BOTTLER AND PACKER (Monthly)  
Binsted Publication, Hanover House  
77 Cliddesden Road, Basingstoke, Hampshire RG21, 3EY, U K  
£ 19.00

JOURNAL OF CELLULAR PLASTICS (Monthly)  
Technomic Publishing Co. Inc.  
851 New Holland Avenue, Box 3535, Lancaster  
P A 17604 , USA  
\$ 230.00

JOURNAL OF FOOD SCIENCE AND TECHNOLOGY (Bi-monthly)  
Association of Food Scientists and Technologists (India)  
CFTRI Campus, Mysore 570013  
Rs. 102.00

JOURNAL OF MARKETING (Quarterly)  
Advance Management Services  
410 Jolly Bhavan No. 1, P B 11098, New Marine Lines  
Bombay 400 020  
Rs. 570.00

J P I JOURNAL (Japanese) (Monthly)  
Japan Packaging Institute  
Honshu Bldg., 2-5-Chome  
Ginza Higashi. Chuo-Ku, Tokyo, Japan  
Comp.

LEBENSMITTEL TECHNIK (Monthly)  
Rhenania-Fachverlag, Distribution Dept.  
Po Bmoorwe 5, 2000 Hamburg 60, West Germany  
D M 75.00

**KANIPULACE SKLADOVANI DALENI (Russian) (Monthly)**  
Imados Institut Manipulachich, Dopravnich, Obalovycha  
Skladovacie Systemu, U. Micha Iskeho 366, CS - 146 23  
Prague 4, Czechoslovakia

**MATERIAL HANDLING ENGINEERING (Monthly)**  
Penton/IPC Inc., P O Box 95759, Cleveland  
Ohio 44101, USA  
\$ 65.00

**MODERN TRENDS IN PACKAGING AND ALLIED TOPICS**  
Defence Materials and Stores, Research and Development Establishment  
R and D Organisation, Ministry of Defence, Kanpur  
Comp.

**MONTHLY ADDITIONS STANDARDS WORLD OVER (Monthly)**  
Indian Standards Institutions  
Manak Bhavan, 9 Bahadur Shah Zafar Marg  
New Delhi 110 001  
Rs. 300.00

**OPAKOWANE (Packaging) (Polish) (Monthly)**  
Wydo nictwo Czasopism Technicznychnot  
3-5, Czackiego str., WARSAW, Poland

**PACK MARKNADEN SCANDINAVIA (Monthly)**  
Box 601, 25106 Helsingborg  
Besokadressi Landskronavagen 23

**PACK REPORT ( Monthly)**  
Deutscher Fachverlag GmbH, Postfach 2625  
6 Frankfurt 1

PACKAGING REVIEW (Monthly)  
Business Press International Limited  
Grd. Flr., Post Room, 35 Perrymount Road  
Haywards Heath RH, 16 3DH  
£ 35.00

PACKAGING TECHNOLOGY (Monthly)  
Business Publications  
101 West Street, Hillsdale, New Jersey  
N J 07642, 201-664-7525  
\$ 55.00

PACKAGING TODAY  
Packaging Council of Australia  
370 St. Kilda Road, Melbourne 3004  
Comp.

PACKAGING WORLD  
Vijay Pub. Co.  
10/1 Princes St.  
Calcutta 700072  
Comp.

PACKER (Weekly)  
300 West Adams St., Chicago, Illinois 60606  
\$ 65.00

PAKKAINEN (Packaging) (Finnish) (Monthly)  
Suomen Pakkausy distys Y  
Ritarikatu 3ba SF - 00170 Helsinki 17  
Finland

PANORAMA (Monthly)  
Institute of Packaging, Sysonby Lodge, Nottingham Road  
Melton Mowbray, Leics LE 13 0N4  
Comp.

PAPER (Fortnightly)

Benn Publications Limited  
25 New Street Square, London EC 4 A 3JA  
£42.00

PAPER AND PACKAGING BULLETIN (Monthly)

Economist Intelligence Unit Limited  
P O Box 30, 25 Street James's Street, London SW 1 LHG  
£ 153.00

P I R A NEWS (Monthly)

Research Association for the paper and Board, Printing and  
Packaging Industry  
Randalls Road, Leatherhead, Surrey  
KT 22 7 RU, UK  
Comp.

PLASTICS AND RUBBER WEEKLY (Weekly)

Maclaren Publication Ltd., P O Box 109  
Crowdon CR 9 1QH  
£45.00

PLASTICS INDUSTRY NEWS (Monthly)

Institute of Polymer Industry, Inc.  
Central P O Box No. 1176  
Tokyo 100-91  
Comp.

PLASTICS NEWS (Monthly)

All India Plastics Manufacturers Association  
Jehangir Bldg., 3 rd floor, 133 M G Road  
Bombay 400 023  
Comp.

PLASTICS TECHNOLOGY (Monthly)

Bill Publications, Circulation Dept.  
633 Third Ave., New York, N.Y.10017

PLASTICS WORLD (Monthly)  
Subscriptions Dept.  
270 St. Paul Street, Denver Co.  
80206 USA  
\$ 65.00

PNEUMATIC PACKAGING (Quarterly)  
Advertising Dept. of Pneumatic Scale Corpn.  
65 Newport Avenue, Quincy, Massachusetts 02171  
Comp.

POPULAR PLASTICS  
Colour Pub. Pvt. Ltd., 126-A Dhuruvadi  
Off Dr. Nariman Road, Bombay 400 025  
Rs. 105.00

PRINT AND PAPER  
E.A. Sivasubramaniam, 16 Mannor Reddi St.  
T Nagar, Madras 600 017  
Comp.

PRINTING WORLD (Fortnightly)  
Penn Publications Ltd., Sovereign Way  
Tonbridge, Kent TN 9 1RW  
£ 55.00

PAPER AND PAPER CANADA (Monthly)  
Southan Communication Ltd., 1450 Don Mills Road  
Don Mills, Ontario M3B 2N7  
\$ 94.00

QUICK FROZEN FOODS (Quarterly)  
E.W. Williams Publication Co.  
Suite 801, Eighty Avenue  
New York, N.Y. 10011  
\$ 14.00

SHELL POLYMERS (Monthly)

7 Wickham Drive, Hurstpierpoint, Hassocks  
West Sussex, BN 6 9 AP, England, U K  
Comp.

TECHNOLOGY IRELAND (Monthly)

The Institute of Industrial Research and Stds.  
Ballymun Road, Dublin 9  
£ 11.00

UNIDO NEWSLETTER (Monthly)

United Nations Industrial Development Organization  
P O Box 300, A - 1400, Vienna, Austria  
Comp.

WORLD PACKAGING NEWS (Monthly)

World Packaging Organization, Belgrado 2850 - 1209  
Buenos Aires, Argentina  
Comp.

PACKAGING DIGEST (Indian) (Quarterly)

Indian Institute of Packaging, E-2, MIDC Area  
Chakala, T B No. 9432, Andheri (E), Bombay 400 093

**LIST OF BOOKS RECOMMENDED**  
**(TITLES, AUTHORS, PUBLISHERS, DETAILS**  
**GIVEN TO THE CENTRE )**

<u>SUBJECTS</u>	<u>NO OF BOOKS</u>
HISTORY AND MANAGEMENT OF PACKAGING	8
PACKAGING CHARACTERISTICS	8
CORROSION AND ITS PREVENTION	5
PAPER	10
PLASTICS	31
GLASS	4
FOLDING BOARD CARTON	4
ALUMINIUM	3
COATED CARTONS	2
LAMINATIONS AND COATINGS	7
TINPLATE - CONTAINERS	3
CLOSURES	2
CORRUGATED BOARD	2
TIMBER	5
JUTE	1
WOODEN BOXES	5
ADHESIVES	9
MATERIAL HANDLING	1
SEALS	4
LABELS	2
THERMOFORMING	3
AEROSOLS	9
OTHER-RELTATED SUBJECTS	<u>49</u>
	<u>TOTAL 177</u>



**BENEFICIARIES OR TARGET GROUPS FOR TRAINING PROGRAMMES**

**I. ESSENTIAL GROUPS**

**EXPORT INDUSTRY AND TRADE**

**PRINCIPAL USERS OF PACKAGING**

**- CONSUMER AND INDUSTRIAL GOODS PRODUCERS**

**PACKAGING CONVERTERS/SUPPLIERS/PRIMARY MATERIAL PRODUCERS FOR PACKAGING  
AGENCIES INVOLVED IN DISTRIBUTION**

**- TRANSPORT/PORT/INSURANCE**

**GOVERNMENT AGENCIES AND DEPARTMENTS**

**CONNECTED WITH - INDUSTRY**

**FOREIGN TRADE AND EXPORT INSPECTION**

**CONSUMER AFFAIRS**

**FOOD AND HEALTH**

**SMALL INDUSTRY PROMOTION**

**HANDICRAFT DEVELOPMENT**

**RURAL DEVELOPMENT**

**AGRICULTURE**

**DEFENCE SERVICES**

**II. MOST ESSENTIAL GROUPS**

**SMALL INDUSTRY**

**HANDICRAFTS &**

**(& REACHING THESE GROUPS REQUIRES INVOLVEMENT OF PROMOTIONAL AGENCIES)**

**III. RELATED GROUPS**

**R AND D INSTITUTIONS**

**UNIVERSITIES**

**PERSONNEL TO BE TRAINED  
(TARGET AUDIENCE IN TRAINING)**

**PRIMARY GROUP**

**MIDDLE MANAGEMENT IN ORGANISED INDUSTRY UNITS  
- INVOLVED IN**

- MARKETING OF PRODUCTS
- PURCHASE OF PACKAGING
- R AND D
- PRODUCT PLANNING AND DESIGN
- PRODUCT FORMULATION
- Q.C.
- DISTRIBUTION INCLUDING TRANSPORT
- PACKAGE DESIGN INCLUDING GRAPHICS
- MARKETING OF PACKAGING MATERIALS  
(SUPPLIERS)
- DESIGN OF PACKAGES  
(IN SUPPLIER UNITS)
- TECHNICAL ADVISORY PERSONS FROM RAW MATERIAL SUPPLIERS

**SENIOR MANAGEMENT IN SMALL UNITS**

**HANDICRAFTS**

**SECONDARY GROUP**

**FARMERS AND TRADERS IN COMMODITIES\***  
**FARM CO-OPERATIVES**

(REACHING THE SECONDARY GROUP IS DIFFICULT TO ACHIEVE FOR IT INVOLVES COORDINATION AMONG MANY GOVERNMENTAL AGENCIES. ORGANISED TRAINING OF PACKAGING SUPPLIERS WILL LEAD TO PENETRATION OF SUPERIOR PACKAGING TECHNOLOGIES TO THIS SEGMENT IN COURSE OF TIME)

**DEVELOPMENT AND IMPLEMENTATION OF TRAINING PROGRAMMES  
(SELF SPONSORED)**

**Stage I - Assessment of Training Needs**

- (1) Feedback from testing, consultancy, quality certification work
- (2) Structured questionnaire by mail - Package users, package suppliers, exporters.
- (3) In-depth discussions based on structured questionnaire with senior management
- (4) Studies of industrial process, material handling, port operations, transport conditions, warehousing methods and feedback
- (5) Short listing of principal areas.

**Stage II - Assessment of training expertise**

- (1) Evaluation of expertise of senior staff within
- (2) Scrutiny of membership of Committees on Standards
- (3) Structured questionnaire by mail to major package producers, packaging raw material manufacturers, significant users, airlines, ports, Railways
- (4) Short listing of potential speakers subject-wise.

**Stage III - Review of National Priorities**

- (1) Identification of thrust areas, in the national plans of the Government, if any.
- (2) Evaluation of export promotion, import substitution, technology development areas
- (3) Review of special needs of agriculture, small industry, handicrafts sectors
- (4) Short listing of areas requiring attention.

**Stage IV - Decision on Priorities and Development of a Programme for the Next Year.**

- (1) Limited by resources - manpower, faculty and funds
- (2) Based on stage I, II and III.

Stage V - Drawing up a Budget of Income and Expenditure for Next Year

Stage VI - Securing Approvals and Clearances for Programmes and Budget

Stage VII - Preparation of Promotional Brochure for Annual Schedule and  
Nationwide mailing

Stage VIII - Implementation of Programmes. (Components and Time Schedules  
in another annexure)

Stage IX - Review of Utility

Stage X - 2 months after each programme by mail. Refine Programme for future.

DEVELOPMENT PLAN FOR TRAINING  
AND  
SUBJECT COVERAGE

**STAGE I (First Year - one Each Quarter)**

**Distribution Packaging (Emphasis on Exports)**  
- Materials systems developments

**Principles of Packaging -**  
- Emphasis on Packaging cost control

**Packaging Materials**  
- How to choose, specify and use

**Packaging Trends**  
- Current developments abroad of relevance to Turkey

**STAGE II (Second Year - one every two months)**

**PRODUCT PACKAGING (SELECTIVE BASIS e.g. PROCESSED FOOD. PHARMACEUTICAL, ETC.)**  
- PRINCIPLES GOVERNING SELECTION  
- SIGNIFICANT MATERIALS AND THEIR PROPERTIES  
- MODERN DEVELOPMENTS  
- TESTING AND EVALUATION

**PACKAGING MANAGEMENT**  
- ECONOMICS, PRODUCTIVITY, VALUE IMPROVEMENT

**SYSTEMS PACKAGING**  
- VACUUM THERMOFORMING, FFS, ASEPTIC, RETORT POUCH, etc.

**MODERN PACKAGING PROCESSES**  
-

**IN-LABORATORY-TRAINING OF INDUSTRY PERSONNEL**  
- IN LIMITED AREAS OF MATERIAL TESTING

**STAGE III (THIRD YEAR)**

**IN-PLANT TRAINING**  
**AT PACKAGING USER FACTORIES/LOCATIONS**  
- FOR PERSONS DRAWN FROM EACH RELATED AREA LIKE R and D, Q.C.  
PURCHASE, etc.

**NOTE:**

**IN STAGE II AND III THE PROGRAMMES CAN INCLUDE THOSE OF STAGE I AND II AS EXPERIENCE IS GAINED AND DEMAND GENERATED.**

RECOMMENDED LOCATIONS FOR TRAINING-SELF SPONSORED PROGRAMMES

(IN THE DESCENDING ORDER OF IMPORTANCE)

1986 - 1989

<u>S.No.</u>	<u>CENTRE</u>
1.	ISTANBUL
2.	IZMIR
3.	ANKARA
4.	BURSA
5.	ADANA
6.	KONYA
7.	GAZIANTEP
8.	DENIZLI
9.	ESKIŞEHİR
10.	SAMSUN
11.	KAYSERİ
12.	ZONGULDAK

BASIS: On the basis of number of large industries.

Training Programme on Export Packaging  
Part I: Textiles

(A programme conducted in Collaboration)

(Packaging Centre (TSE) and Export Promotion Research Centre (IGEME)

Venue: Izmir            Period: 20 May 1986

0830 Hrs Registration

0900 Hrs Inaugural Session

0930 Hrs Tea and Introductions

0945 Hrs Export Marketing - Considerations Governing Packaging of Textiles

1100 Hrs Choice and Design of Corrugated Board Packages for Textiles

1200 Hrs Lunch

1300 Hrs Primary Packaging of Textiles - Analysis of Quality - Relative Merits

1400 Hrs Tea

1415 Hrs Unitisation/Containerisation by Sea/Air

- Modular Packaging Design

1515 Hrs Journey hazards and Evaluation

In A Laboratory

1600 Hrs Group Discussion on specific Problems

1700 Hrs Close Down

Part II: Fruits, Vegetables and  
Processed Foods

Venue: As earlier            Period: 21 May 1986

0830 Hrs Registration

0900 Hrs Inaugural Session

0930 Hrs Tea and Introductions

0945 Hrs Consumer Packaging and Export Marketing of Food Products

1100 Hrs Flexible Packaging Materials for Food and Their Selection -  
Influence on Shelf-life.

1200 Hrs Lunch

1300 Hrs Transport Packaging In Corrugated Board - Material, Design and  
Quality for 'Sea-Worthy' Packaging

1400 Hrs Tea

1415 Hrs Modular Design for Unitisation/Containerisation

1515 Hrs Evaluation of Transport Packaging Through Simulated Laboratory  
Experiments

1600 Hrs Group Discussions on Specific Problems of Participants

1700 Hrs Valediction

1715 Hrs Close Down

**TRAINING PROGRAMMES PLAN FOR**  
**June 1986 - May 1987**

To be sponsored and implements by the Packaging Centre

Corrugated Board Packaging: Oct. '86

Quality Improvement and Packaging: Dec. '86

Plastics Packaging Developments: Mar. '87

Packaging Principles and Developments

Food, Pharma and Cosmetics Industry : May '87

Venue: Ankara/Istanbul/Izmir

Fee: TL 10000 per participant

inclusive, course material, business lunch and refreshment

Timings: 0900 Hrs - 1700 Hrs

Duration: 2 days

Methodology: Audio Visual-case studies - Group discussion

Faculty: Specialists from Industry in addition to the  
faculty of the Packaging Centre



TRAINING PROGRAMME

CORRUGATED BOARD IN PACKAGING

ANKARA

28-29 OCTOBER 1986

PACKAGING CENTRE  
TURKISH STANDARDS INSTITUTION  
NECATIBEY CADDESİ 112, ANKARA (TR)  
TEL : 341990/292 TLX: 42047 TSE-TR

TSEPACKAGING CENTRETHE TURKISH STANDARDS INSTITUTION AN AUTONOMOUS

body recognised by the government has established a packaging centre to help promote packaging in Turkey, a field which has remained neglected so far.

The centre, set up with the assistance of United Nations at a cost of US \$ one million, has been taking up problem solving consultancy, testing and development, information dissemination and other services to become the nation's nerve centre for packaging development.

As an extension of its services the packaging centre has now planned a major activity to directly assist the industry in a significant way to help speedier growth of the standards of packaging. It has planned a series of training programmes on selected subjects to meet the felt needs of the industry.

The first programme in the series will deal with corrugated board in packaging.

OBJECTIVE

The course aims at providing both the producer of corrugated board/boxes and the user, an in-depth understanding of the quality and cost factors. It would ultimately help both in optimising their cost through proper choice of the materials and containers. Interaction among participants and faculty from industry is expected to lead to practical solutions to actual problems encountered in the day to day operations.

## CONTENTS

The course contents are designed to cover the key elements in the manufacture and use of the package. Use of visuals, samples and discussions are expected to cover the total spectrum. Emphasis will be laid on packaging for exports as well. ( See programme for details)

### GROUP DISCUSSION

A special session is reserved for discussion of problems of participants in the choice and use in field conditions. Exchange of ideas with fellow participants with guidance of the faculty will help develop guidelines for finding solutions.

### FACULTY

The faculty is drawn from senior experts from industry in the respective field. Visiting experts from abroad and senior experts from the Packaging Centre would also be involved.

### PROGRAMME

The non-residential programme will be intensive and run for two full days from 900 Am to 5 00 Pm on both days. Detailed time schedule is annexed.

### PARTICIPANTS

The programme is aimed at senior and middle management in industrial units. Besides package designers, R&D and quality control personnel, those concerned with purchase, marketing, export trade, distribution and transport can also benefit from participation.

**VENUE**

The venue will be the training hall of the Centre in Ankara

**FEE**

A nominal fee of 10.000 TL. per first delegate and 9.000 TL. for every additional delegate from the same organisation will cover tuition fee, course material, lunch and refreshments.

**APPLICATION AND REGISTRATION**

Applications in the form prescribed form may please be sent to

THE PROGRAMME COORDINATOR

**PACKAGING CENTRE**

Turkish Standards Institution, Necatibey Caddesi 112, Ankara  
Tel: 341990 Tlx: 42047 TSE-TR

Registration will be on first-come, first-served basis

CORRUGATED BOARD IN PACKAGING  
PROGRAMME

28-29 October 1986

TUESDAY

09.00	Hrs	Registration
09.30	Hrs	Inauguration
10.00	Hrs	Tea and Introductions
10.30	Hrs	Paper - Its Quality and Influence
12.00	Hrs	Lunch
13.00	Hrs	Flutes-Types, Function and Choice
14.15	Hrs	Board Manufacturing Variables, Quality
15.30	Hrs	Tea
15.45	Hrs	Box - Design Quality, Evaluation
17.00	Hrs	Close Down

WEDNESDAY

09.00	Hrs	Functional and Combination Boards-Their Purpose Types and Choice
10.15	Hrs	Tea
10.30	Hrs	Economics of Box Design-Cost Reduction Measures
12.00	Hrs	Lunch
13.00	Hrs	i) Film Show ii) Performance Evaluation of Boxes
14.15	Hrs	Costing and Pricing of Corrugated Boxes
15.30	Hrs	Tea
15.45	Hrs	Specification Development for Quality Assurance
16.30	Hrs	Group Discussion on Specific Problems.
17.30	Hrs	Valediction

PROGRAMME ON  
" CORRUGATED BOARD IN PACKAGING "

28 - 29 OCTOBER 1986

REGISTRATION FORM

PLEASE REGISTER THE FOLLOWING NOMINEE (S) FOR THE ABOVE  
PROGRAMME

THE FEE<sup>X</sup> OF ..... TL IS PAID BY  
CHEQUE..... DT ..... (ENCLOSED)  
NAME(S) OF THE NOMINEE (S).....  
DESIGNATION(S) .....  
ADDRESS FOR  
CORRESPONDENCE .....  
.....  
.....

TEL :                      TLX :

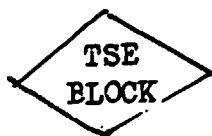
WE MANUFACTURE / USE CORRUGATED BOARD  
WE WOULD LIKE TO DISCUSS THE PROBLEM AS PER  
BRIEF ENCLOSED

SIGNATURE  
NAME  
DESIGNATION  
ORGANISATION

DRAFT ADVERTISEMENT IN NEWS PAPES  
SIZE 2 COLUMNS X 10 CM

TRAINING PROGRAMME  
ON  
CORRUGATED BOARD IN PACKAGING  
ANKARA, 28-29 OCT.1986

- CONTENTS : COSTING-QUALITY SPECIFICATION - BASIC  
MATERIEL QUALITY - PERFORMANCE - EVALUATION -  
ECONOMIC DESIGN OF BOXES
- FACULTY : SPECIALISTS FROM INDUSTRY AND PACKAGING  
CENTRE OF TSE.
- FEE FOR ) : TL 10000 / INCLUSIVE COURSE MATERIAL  
)  
PARTICIPATION ) LUNCH AND REFRESHMENTS. CONCESSIONAL FEE FOR  
ADDITIONAL PARTICIPANTS FROM SAME FIRMS
- METHODOLOGY : AUDIO VISUAL - DISCUSSION ORIENTED
- FOR WHOM : MIDDLE MANAGEMENT IN PACKAGING AND USER  
INDUSTRIES. IDEAL FOR PURCHASE EXECUTIVES.
- FOR FURTHER INFORMATION AND REGISTRATION CONTACT  
PROGRAMME COORDINATOR



PACKAGING CENTRE  
TURKISH STANDARDS INSTITUTION  
112, NECATIBEY CAD. ANKARA  
PHONE 341990 Extn 292 Tlx: 42047 TSE-TR

NOTE : TO BE TYPESET, REDUCED TO 2 Colx 10 cm. BLOCK MADE FOR  
NEWSPAPER.

OUTLINE COVERAGE

Paper :

Kraft Liner- Its quality in terms of  
 moisture resistance, toughness, strength  
 moisture absorption, tensile, burst, stiffness  
 - Its chemical nature -sulphate/chloride.  
 - Relevance of ash content

N.S.S.C. -"chemical fluting" or "fluting medium"  
 Its advantage resulting from process-its  
 quality-strength, elasticity.

Variations - in quality of liners -  
 virgin kraft and recycled papers.

Burst factor variables-moisture absorption variable  
 stiffness variable.

Cost - Per tonne of domestic liner, virgin  
 Per tonne of imported liner, virgin  
 Per tonne of recycled liner,

comparison in terms of Burst factor.

cost - per tonne of fluting medium  
 comparison with recycled liner and domestic kraft.

Need for quality evaluation before use.

- a) Caliper, Cobb, Burst Factor, Tensile Strength.
- b) Chloride and sulphate
- c) Ring Stiffness

Flute Types and Functions:

Three Standard flutes - Their height and number for linear  
 measure.

'E' flute

- -do-

The quality of flutes - Resistance to flat crush  
 - Resistance to top to bottom  
 compression  
 - Cushioning

Choice of flutes

- in relation to products needs-  
 Dense and rigid  
 Dense? and fragile  
 Voluminous and rigid  
 Voluminous and fragile
- Concept of bulk density  
 fragility  
 as meaningful considerations



Combination of flutes - Factors governing decision  
 - Functional quality achieved  
 - Economics of multiple plies  
 - Limits

Cross fluted boards - Significance  
 Parallel flute - Development possibility  
 Relative Economics - Between flutes

### Board Manufacture and Variables, Quality

Methods : Semi Automatic - 2 ply and combining  
 Fully automatic- 3 ply and 5 ply

Materials :-Liner  
 Flute  
 Adhesive  
 -Choice of adhesive in relation to paper, process  
 (Silicate and starch) - water resistance  
 production speeds

Process :-Pre-heating  
 Steam injection  
 Adhesion - first ply to flute  
 second ply to flute  
 Drying- Slitting - Scoring

Printing :-Use of preprinted liners in rolls for automatic and  
 preprinted cut-to-size for semi automatic(3<sup>rd</sup> ply)  
 -Printing of boards - Flexo printer and letter press  
 printer- influence of printing on board quality.

Programmings: Sizes.

Quality Evaluation : Before conversion -  
 a) Cobb, Burst Strength, Puncture Resistance  
 b) Flat Crush Resistance, ECT.

### Box Design, Quality, Evaluation

Process : Scoring, Slotting, Creasing/ Die cutting  
 Joining- stapling, taping, gluing, locking  
 Joining materials -  
 Process Variables.

Dimensions : L/W/D measurements

Styles : Nomenclature , standards

Shape : Ratios- optimum board area consumption

- Setting up : Methods - Stapped flaps,  
Glued flaps,  
Taped flaps.
- Manufacturers' joint : Overlap inside / outside determined by  
product
- Closing : Stapping (Hotmelt gluing)  
Taping
- Strapping : PP/HDPE straps  
Reinforced Rayon Straps  
Sealing / clipping
- Stencilling : for marking  
use of minimum marking
- Quality Evaluation Before Use : Compression Strength  
Visual Inspection

Functional and Combination Boards - Their purpose, types, and choice

- Increasing Strength : To increase weight carrying capacity  
keeping plies constant
- i) use of plastic (PE) sandwiched papers
  - ii) use of yarn/tape reinforced papers  
(cotton, jute, nylon)
  - iii) use of textile laminated paper for outer
- : To increase compression strength
- i) use of metal corner inforcements
  - ii) use of honey comb sandwiched boards
- Improving Appearance : Outer liner of duplex board or pulp board  
Outer liner laminated to plastics
- Offering Functional Quality :
- Use of barrier material or coated inner  
liners- foil/BOFP/PE/
  - Use of grease resistant coatings
  - Use of waterproof coatings-PE/wax  
(internal/external/both)
  - Use of water resistant adhesives  
-PVA or Urea Formaldehyde resins in starch  
adhesives- For special needs-Fruits and  
vegetables.

Economics of Box Design - Cost Reduction Measures

Influence of flutes - paper consumption  
 Influence of number of flutes - board area consumption  
 Influence of shape - box opening and board area consumption  
 Influence of pasted liners for telescopic boxes  
 Comparative evaluation of quality in relation to needs  
 Use of partitions as means of increasing compression strength  
 Use of plates in R.S.C. to avoid design with flaps meeting  
 Use of glued flaps to increase rigidity

Performance Evaluation of Boxes

Fitness for use - main criterion of testing

Drops -

Compression -

Stacking Load -

Vibration -

Impact -

Rain

Dust

Salt Spray-

Fungus Resistance -

Use of comparative testing of alternatives -

Using test results - to quality improve

- to cost reduce

- to value improve

Costing and PricingCost Components

## A- MATERIALS

i) Liner(s)

ii) Fluting

iii) Adhesives

iv) Printing

v) Joining ( staple, glue, tape)

## B- PROCESS

Restriction of Quantity on capacity utilization

## C- RAW MATERIAL and FINISHED GOODS INVENTORY HOLDING

Pricing

A- Quantity Discount

B- Payment Terms

C- Delivery Scheduling ( Inventory )

D- Quality Rating ( at users end )

Specification Development For Quality AssurancePRINCIPAL, STAGE 1

1. Paper to be used for i) Liners  
ii) Fluting
2. Burst factor for above
3. Adhesives to be used
4. Number of plies
5. Type and number of flutes
6. Type of joint
7. Size - Dimensions L, W, and D
8. Style
9. Water proofing requirement
10. Water resistance requirement
11. Printing - colour, location, matter, process
12. Moisture content as received
13. Sulphate and chloride content

## STAGE 11

14. Puncture resistance ( of board )
15. Compression strength ( of box )

## SPECIAL NEEDS

16. Fungicide treatment

SECONDARY

17. Unitization
18. Bundling

## TRAINING PROGRAMME

Annexure XXVI B

## QUALITY IMPROVEMENT AND PACKAGING

## FIRST

1<sup>st</sup> day

- 09 00 Hrs Registration  
09 30 Hrs Inaugural Session  
10 00 Hrs Tea and Introduction  
10 15 Hrs Product - Its Identity With Package - Package Quality  
Criteria  
12 00 Hrs Lunch  
13 00 Hrs Performance Standards - Ultimate Goal of Quality  
Programmes  
14 30 Hrs Tea  
14 45 Hrs Understanding Performance Standards  
a) In Transport Packages  
16 00 b) In Consumer Package  
17 00 Hrs Close Down

2<sup>nd</sup> day

- 09 00 Hrs Quality and Evaluation - Flexible Packaging  
10 30 Hrs Tea  
10 45 Hrs Quality and Evaluation - Paper and board  
12 00 Hrs Lunch  
13 00 Hrs Quality and Evaluation - Transport Packages - Laboratory  
Visit  
14 30 Hrs Tea  
14 45 Hrs Group Discussion  
16 30 Hrs Close Down

## Quality Improvement and Packaging

### Background

- a- Packaging has become an indivisible part of product.
- b- When the consumer buys the goods, most foods cosmetics etc. he identifies the quality of the package with the quality of contents.
- c- There are also products that just can not be sold without the package.
- d- Quality in the modern commercial sense is no more the ideal quality but the acceptable. It is a fine balance between quality needs and cost.
- e- No product remains in its prime condition as when manufactured. Its quality deteriorates. But yet people have to buy the deteriorated quality. In reality they find the product acceptable in relation to the price .
- f- The quality requirements for the same product can vary. e.g. spices sold in bottles in Department Stores and the same spices sold in super markets in flexible pouches.
- g- Likewise the quality of edible nuts exported by Turkey and the quality of edible nuts sold and bought in Europe are different. The former is better in every aspect but the prices are just about 20 -30 %
- h- Very often in most natural products the quality that consumer buys is that of the blends while the product bought by the blender is of unitary grades.  
Again the quality variations are noticeable.
- i- Between two consumer products offered to the buyer the functional or use quality remaining identical the sale is decided by the packaging quality.

- j- In industrial products the finish decides the quality, other functional requirements remaining constant.
- k- In products like automobiles and bicycles it is the styling that communicates the quality-another aspect of packaging.
- l- Quality need not be related to the product but the values it satisfies.

USE VALUE

EXCHANGE VALUE

EMOTIONAL VALUE

COST VALUE

OUTLINE COVERAGEProduct - Its Identity With the Pack

1- Product - Marketing-main purpose of production-successful marketing brings in elements of quantity, time, place and suitability for market.

Quality of product there fore becomes variable to mean fitness for use.

Obviously. When other means of meeting these requirement: fail. pkg is adopted.when pkg is adopted market's(the buyer) first contact is with product is the package.

2- When two products per-se are equal in quality which happens in a competitive situation the package becomes the influencing factor in decision to purchase.

That means the better the quality as conveyed by packaging better for the market.

3- As a result package comes to be identified with contents.

Important-poorer the package-it can ruin the chances of a good quality product.

4- Thus in competitive market situation the quality of pkg. the purpose for which it is used - assumes significance.

5- When suitability for market is envisaged some important factors come in to play

Quantity / pack - from point of view of

cost a buyer can afford at a time.

Size of shelf space available.

Size of Kitchen shelf, for example, in food items.



time - time at which it should be available e.g. fashion goods for seasons-pkg capable of being moved fast-time determines mode of transport-influences type of pkg.

Also involves compulsory inventory-Hence storage life.

Place - brings in the element of distance-brings in consideration of shelf life /storage life.

Also brings in journey - hazards.

Market- This is many faceted

- Consumer : Socio-economic strata or ethnic consideration or age groups or sex
- Shop : Self service-(pack should stand-up and shout)  
Shop keeper assisted sale-(pack can lie down)  
Department store-(Should be prestigious)  
Super market-Size(Shelf space)  
                  -Shape(Shelf placement)  
                  -Colour (depends on lighting)  
                  -Graphics (to catch attention)
- Convenience : Easy to open  
                  Easily noticeable (to cut down on shopping time)  
                  Easy to handle  
                  Easy to carry  
                  Easy to dispense  
                  Easy to reclose
- Law : Meet legal requirement  
                  consumer protection regulations
- Environment - Disposal / re-use / return requirement
- Energy - in production / disposal

## Performance Standards

Products are bought for satisfaction of needs or performance in brief.

These are measured in value terms.

Values Satisfied - EMOTIONAL

EXCHANGE

COST

FUNCTIONAL (USE)

VALUE IS a function of quality  
cost

Value upgradation achieved by increasing quality or reducing costs.  
It is these two considerations that really bring in the large variety  
noticed in pkg the world over

### Examples

1- Consumer packages should retain product quality at the least cost - one way of looking at it.

Consumer pkges should convey goodness-better-quality image  
another way of looking at it.

2- "There are no complaints in our transport packages."

Perhaps it is over performing compared to competition.

Room for cost reduction -

May be if further improved market share can be improved -

Room for quality improvement.

Decisions on performance desired are difficult but will have to be attempted.

A fan should displace air-what it is made of and how it is shaped or powered is not the performance

A film wrapper on a product must prevent moisture transference of x number of units - whether it is of a plastic or metal and how thick it is is not material.

A label on a package provides a message

If you prescribe a paper label you get a paper label.

If you indicate the performance-a readable message you have labels of different materials or suggestions of ink-jet printing, laser printing, etc.

A move from specification of materials characteristics to performance opens up a wide area of alternatives to choose from

Thus ultimately performance should be the guiding principle for development of quality or reduction of cost or both.

Performance Standards in Transport Packages

Possible performance Needs-Examples

A- RESIST MECHANICAL HAZARDS OF "X" LEVELS.

B- RESIST ENVIRONMENTAL HAZARDS OF "Y" INTENSITY.

C- FACILITATE UNITISING ON PALLETS TO BE STORED 2 m HIGH.

USUALLY TRANSPORT PACKS ARE SPECIFIED BY MATERIAL OF CONSTRUCTION.  
REASON-THAT IS HOW IT HAS BEEN DONE IN THE PAST.

OR

IT IS EASY TO CHECK QUALITY OF RECEIPT  
TO UPGRADE PACKAGING

IT IS NECESSARY TO ASSESS PERFORMANCE OBTAINED IN CURRENT PACKAGING

Performance requirements vary with reference to..e.g

A. Handling

- The hazard of drop in manual handling may range from 45 cm to 120 cm-Height is inversely proportional to weight.
- Hazard in same packages palletised and mechanically handled may reduce drop to less than 15 cm of edgewise drop of the pallet.

B. Transport by road-in addition to vibration the shocks due to road conditions.

Transport by rail - less severe in the above respect but shunting impacts can be more severe

C) Resistance to Rain damage may not be necessary in door-to-door containerised cargo movement or full truck loads in covered trucks or in wagons from siding to siding

D) Rolling of packages-Barrels not unitised or heavy boxes upwards of 100 kg not mechanically handled

E) Two or more years of storage in the open at project sites in case of heavy plant and machinery.

The above examples are illustrative of the need for proper inquiry either

- a) to avoid overpackaging or
- b) to minimize chances of under packaging or inadequate packaging.

Similarly one can evaluate the needs with reference to:

- |                |                  |                          |
|----------------|------------------|--------------------------|
| 1- Drops       | 5- Rolling       | 9- Vulnerability to      |
| 2- Vibration   | 6- Rain          | Microbial or infestation |
| 3- Compression | 7- Salt-spray    | attack                   |
| 4- Impact      | 8- Sand and dust |                          |
|                | exposure         |                          |

And keeping in mind

- a) Storage-Type ambient condition, duration
- b) Unit load (Unitisation)
- c) Handling
- d) Transportation - mode and  
ambient condition
- e) Legal requirements
- f) Inspection
- g) Identification
- h) Environmental protection
- i) Pilfer Resistance
- j) Convenience, etc.

## Performance Requirements of Consumer Packages

Broadly the requirement is classifiable in to 3 parts :

- a) Functional adequacy and compatibility
- b) Merchandising and Marketing
- c) Legal and consumer protection

### Functional Adequacy and Compatibility

- 1- To contain a given quantity of product
- 2- To provide the expected shelf life
- 3- To enable use of contents-opening/closing/reuse/dispense
- 4- Protect from external influences
- 5- Preserve product quality

All the above specified in quantitative terms

### Merchandising and Marketing

- 1) To have the desired appeal to consumers-colour/graphics/gloss /
- 2) To fit in to shelf space
- 3) To be noticeable in the lighting at the shop outlet
- 4) Bulked into convenient number of units
- 5) Display product and self advertise
- 6) In colour combinations that fit in with the class. e.g. in Dept. stores

Legal / Consumer Protections Needs

- 1- To meet the laws governing product e.g. FDA regulation  
Hazardous goods regulations  
Explosives regulations etc.
- 2- To meet labelling requirements to help protect consumer
- 3- To meet marking regulations in case of hazardous goods.
- 4- To meet transport requirements  
e.g. IATA Restricted Articles  
Red Tariff of Railway  
IMCO code for shipping etc.

Quality Evaluation-Flexible Packaging

Flexible Packaging

Films

Foils

Laminates

The range is wide

Quality Classifiable under

- a) Mechanical
- b) Chemical
- c) Permanence
- d) Converting / Use
- e) Optical
- g) General

Mechanical

Tensile Strenght

Strecth

Impact Strength

Tear Strength

Stiff ness

Heat-seal range

Chemical

W V T R

G T R

Resistance to grease  
and Oils



**Permanence**

Maximum Use Temperature

Minimum Use Temperature

Dimensional Changes at High R.H

Flammability

**Converting / Use**

Machine Performance

Printability

Sealing

Heat Shrinkability

**General**

Specific gravity

yield

**Optical**

Clarity

gloss

Quality Evaluation Paper and BoardQuality

Mechanical

Chemical

Optical

Mechanical

Basis Weight

Caliper

Burst Factor

Tensile

MD

CD

Elongation

Breaking Length

Stiffness

Folding Endurance

Chemical

Water absorption

Water resistance

Sulphate content

Chloride content

Ash

pH

Optical

Gloss

Opacity

Brightness

General

Density

Speciality Papers

Sizing

Grease Resistance

Bitumen Content

Ash Content

Wax Content

Fibre Content

Quality Evaluation of Transport Packages

Quality -

- Ability to carry-
- Ability to protect
- Amenability to handling
- Amenability to store
- Fitness for transport
- Meeting the law

Weight Carrying Capacity

- Related to strength - Tensile (e.g. Sacks)
- Stretch (e.g. Paper Sacks)
  - Bursting (e.g. Cor.Box)
  - Bending Stiffness
- (e.g. Wooden box for heavy machinery)

Ability to protect

Related to capacity to

- withstand-Drops (120 cm drop when manually handled)
- Vibration (approx 120 rpm 25mm amplitude  
by rail for one hour for journey of 1000 km)
- Compression (Approximate top load of Bulk  
Density one for a height of 6 meters)
- Impact (equivalent to shunting speeds of 8 km/hr)
- etc.

Amenability to handling

Where manual - - weight limits to be met (50kg head  
had per person)

When forklift- 120 mm clearance and runners spaced to  
facilitate operation

Amenability to store

When palletised - to be modular to pallet dimensions

Where stored in open - to resist weather -Rain  
(110 cft of water spray)

to resist infestation treated  
with preservative AscU for long term

Fitness for Transport

For air -light and modular to IATA pallet dimensions  
for optimising use

For sea -To be sea worthy  
- Resist salt spray  
- etc.

Meeting the law

With regard to material of usage-quarantine requirement

With regard to package type- e.g IMCO code

With regard to laws at destination

- Consumer or. environmental protection

**TRAINING PROGRAMME**  
**Plastics Packaging Developments**

**March 1987**

**1<sup>st</sup> day**

09 00 Hrs Registration  
09 00 Hrs Inauguration  
10 00 Hrs Tea and Introductions  
10 30 Hrs New materials - their merits and applications  
    a) Linear Low Density Polyethylene  
11 30 Hrs b) High Molecular High Density Polyethylene  
12 30 Hrs Lunch  
13 30 Hrs c) PET - Bottles  
14 30 Hrs Tea  
14 45 Hrs d) New Laminates based on Nylon / Polyester / BOPP  
15 45 Hrs e) Ionomers (Surlyn)  
16 45 Hrs Close down

**2<sup>nd</sup> day**

09 00 Hrs f) Multilayer Films - (Co - extrusion)  
10 00 Hrs Tea  
10 45 Hrs g) Metallised Plastic Films and Laminates  
12 00 Hrs Lunch  
13 00 Hrs h) Developments in Printing of Plastics  
14 15 Hrs Tea  
14 30 Hrs Evaluation of Critical Properties of Plastic materials  
16 00 Hrs Group discussions or applications  
17 00 Hrs Close down

**TRAINING PROGRAMME**  
**PACKAGING PRINCIPLES AND DEVELOPEMENTS**  
**(FOR FOOD, PHARMA AND COSMETICS INDUSTRY)**  
**MAY 1987 ISTANBUL**

**FIRST DAY**

08 30	Hrs	REGISTRATION
09 00	Hrs	INAUGURAL SESSION
09 30	Hrs	TEA AND INTRODUCTIONS
09 45	Hrs	PRODUCT / PACKAGE INTERFACE
11 00	Hrs	MODERN FLEXIBLE PACKAGING MATERIALS - THEIR CHOICE AND USE
12 15	Hrs	LUNCH
13 15	Hrs	FACTORS INFLUENCING SHELF LIFE OF PACKAGED GOODS
14 45	Hrs	TEA
15 00	Hrs	PACKAGING AND DISTRIBUTION - PERFORMANCE EVALUATION OF PACKAGES - JOURNEY SIMULATION IN LABORATORY
16 00	Hrs	SHRINK PACKAGING AND STRETCH WRAPPING
17 00	Hrs	CLOSE DOWN

**SECOND DAY**

09 00	Hrs	CORRUGATED BOARD PACKAGING - MATERIALS / DESIGN / CHARACTERISTICS
10 30	Hrs	Tea
10 45	Hrs	LABELS - MATERIALS AND DESIGN- COMMUNICATION THROUGH GRAPHICS
12 00	Hrs	LUNCH
13 00	Hrs	PACKAGING COST CONTROL

14 15 Hrs Tea  
14 30 Hrs FILM ON CONTAINERISATION / EXPORT  
15 00 Hrs GROUP DISCUSSION ON PACKAGING PROBLEMS  
16 15 Hrs VALEDICTION  
16 30 Hrs CONCLUSION



**DIRECT COSTS ON TRAINING**

**PRINTING OF BROCHURES**  
**STATIONERY**  
**COURSE MATERIAL COPIES AND**  
**FOLDER FOR TRAINEES**  
**MAILING OF BROCHURES**  
**ADVERTISEMENT**  
**TELEPHONE/TELEX/TELEGRAMS**  
**HIRE CHARGES FOR VENUE**  
**HIRE CHARGES FOR EQUIPMENT**  
**(PROJECTORS/SCREEN)**  
**REFRESHMENT/LUNCH TO**  
**TRAINEES AND FACULTY**  
**INDUSTRIAL VISIT (TRANSPORT)**  
**HONORARIUM TO GUEST FACULTY**  
**LOCAL TRAVEL**  
**TRANSLATION COST (English to Turkish)**

FEE FOR PARTICIPATION IN TRAINING PROGRAMMES

I. The fee charged by training oriented technical bodies in Ankara is under:  
 SEGEN: (INDUSTRIAL TRAINING AND DEVELOPMENT CENTRE) TL. 20,000/-for 5 day course. Lunch not included. Venue: Own hall, Ankara.

MPH: (NATIONAL PRODUCTIVITY COUNCIL) TL 20.000/- for 5 day course. Lunch included. Venue: Own hall, Ankara.

II. The fee recommended to keep in line, in the initial years for packaging centre's courses. TL 10.000/-for 2 day course. Lunch included. Venue: Own hall, Ankara/ Hotels in IZMIR, ISTANBUL, etc. Period: 1986-87.

TL 15.000/- for 2 day course. Lunch included

Venue: As above

Period: 1987-88, 88-89.

From 1989-90 onwards it should be on cost-recovery basis. Cost over 3 years to be reviewed. Cost details itemised in annexure separately.

III. For sponsored Courses: (Small Industry, Agriculture Co-operatives, Chambers of Commerce) TL 150.000 per 2 day course plus travel cost of packaging Centres' faculty (2 per course) FEE covers only tuition and course materials. All administrative arrangements and cost-incidentals to be met by sponsors. Maximum participants 30. The fee can be reviewed in 1989-90.

**Training Programmes**  
**Components of and Time Schedules for**  
**Work Programme**

<u>Activity</u>	<u>Time (W e e k)</u>										
	1	2	3	4	5	6	7	8	9	10	11
Budget clearance and Admin. arrangements	—										
Manuscript for folder, advertisement text		—									
Advertisement block/artwork			—								
Press Release/Briefing				—							
Printing of folder					—						
Fixing up inauguration/VIP						—					
Prepare Mailing list and Envelopes for mailing							—				
Fixing up guest faculty (4 or 5)								—			
Preparation of lecture notes for own faculty									—		
Preparation of slides/Transparencies										—	
Mail Folders											—
Release advertisement											—
Receive enquiries/nominations - respond											—
Receive and copy notes from guest faculty											—
Programme Industrial/Laboratory Visit											—
Organise audio visual equipment											—
Prepare sets of notes for participants											—
Finalise and print programme											—
Finalise List of participants											—
Conduct programme											—
Obtain reaction level feed back											—
Publicise success of programme through periodicals											—

1. Reviews utility of programme through a letter to the participant 2 months after the programme.
2. Visit to industry to promote participation in programmes in initial years should be arranged in the 5/6 week for which travel arrangements finalised in first week.
3. Travel programme for training courses, held up-country should be finalized in first week

4. Transport arrangement for industrial visit (outside the packaging laboratory) to be finalised in the 5th week
5. For upcountry programmes lunch and refreshment arrangement to be finalized in first week and reconfirmed in the eleventh week.

## PROGRAMME EVALUATION SPECIMEN

## Feed-back From Participants At Training Courses

COURSE TITLE: CORRUGATED BOARD PACKAGING, VENUE: ANKARA

PERIOD: 28-29 OCTOBER 1986

<u>I</u> <u>SESSION</u>	<u>TOPIC</u>	<u>TIME</u> <u>ALLOTTED</u>	<u>RELEVANCE</u> <u>OF SUBJECT</u>	<u>TREATMENT OF</u> <u>SUBJECT</u>		<u>FACULTY</u> <u>PERFORMANCE</u>		
				<u>ADEQUATE</u> <u>INADEQUATE</u>	<u>YES: ✓</u> <u>NO: ✗</u> <u>SOMEWHAT: ○</u>	<u>ADEQUATE/INADEQUATE</u> <u>✓ ✗</u>	<u>EXCELLENT</u> <u>✓</u>	<u>GOOD</u> <u>✗</u>
1	Liner Materials							
2	Fluting and Flutes							
3	Board varieties							
4	Box design and Manuf.							
5	Shape/Style/Economics							
6	Costing of boxes							
7	Quality Evaluation and Testing							
8	Laboratory Visit							
9	Group Discussions							
II	LIST Additional Topics to be covered:							
III	LIST Topics to be Dropped for Future							
IV	Indicate whether Course should be longer/shorter Duration							
V	Name of Participant.							

**AGENCIES TO BE INVOLVED<sup>R</sup>  
IN PROMOTING TRAINING PROGRAMMES**

**ASSOCIATIONS OF INDUSTRY  
CHAMBERS OF COMMERCE  
PRIMARY MATERIALS (FOR PACKAGING) PRODUCERS  
ASSOCIATIONS OF TECHNOLOGISTS  
PRODUCTIVITY COUNCIL  
MANAGEMENT ASSOCIATIONS  
GOVERNMENTAL AGENCIES FOR**

- (1) SMALL INDUSTRY**
- (2) INDUSTRIAL TRAINING**
- (3) EXPORT PROMOTION**
- (4) EXPORT INSPECTION**
- (5) HANDICRAFT DEVELOPMENT**

**R THESE AGENCIES CAN ALSO BE SPONSORING AGENCIES FOR PROGRAMME TO BE IMPLEMENTED  
BY THE CENTRE.**

National Counterpart Staff

(Packaging Research Development and Testing Centre of Turkish Standards

Institution)

Name	Qualification	Discipline	Experience In Packaging as of June 1985
Mrs. Gülden Tarhan	M.S. Masters	Chemical Engineering Industrial Management	11 yrs
Mr. Hasan Salih Acar	B.S.	Chemistry	7 yrs
Mr. Recep Davodi	M.S.	Mechanical Engineering	4 yrs.
Miss Vihel Temur	B.S.	Chemical Engineering	2 yrs.

NOTE: Mrs. Gülden Tarhan is Director of the Centre.

All the four above will be the faculty for training  
programmes as from 1.6.86.

### Individuals Met Who Helped In the Project

#### 1. UNDP Officials

Mr. S.K. Malik, Resident Representative, UNDP  
 Mr. René Tourigny, Programme Development Officer, UNDP  
 Mr. Wolfgang A. Dreusch, Junior Professional Officer, UNIDO

#### 2. Turkish Standard Institution

Mr. Mehmet Yılmaz Arıyörük, President  
 Mr. Necdet Esen, Vice-President  
 Mr. H. Hilmi İsmailoğlu, Genel Sekreter  
 Mr. İbrahim Atıklar, Head of Laboratories and Quality Control Department  
 Mrs. Gülden Tarhan, Director, Packaging Centre (Project Coordinator)

#### 3. KUSGET (Small Industry Development Organisation)

Mrs. Güler Yalım, General Director  
 Mr. Murat Sungur Bursa, General Director

#### 4. İGEME (Export Promotion Research Centre)

Mr. Nedin İbrahim Hakkıoğlu, Secretary General  
 Mr. Ruşen Demirel, Head of TRG and Research  
 Ms. Beratiye Öncü, Expert (Research)

#### 5. SEGEM (Industrial Training and Development Centre - ITDC)

Mr. Yılmaz Ayman, Director General  
 Mr. Mevlüt Doğan, Chemical Engineer  
 Mrs. Uğur Yavuz, Chemist  
 Mrs. Oya Gaycı, Statistician  
 Mrs. Neval Küçükarslan, Marketing Expert

#### 6. National Productivity Centre (Milli Prodüktivite Merkezi)

Ms. Zühal Kutes, Education and Publications Division, Deputy Director

#### 7. Industry, Trade and Other Institutions

Mr. Rafiq Öztürk, Kutsan (Carton Manufacturer) Ostim, Ankara

Manager, İmamoğulları (Utensil Manufacturer), Ostim, Ankara

Mr. Turan Çıldem, President, Ostim, Ankara

(Mrs.) Yıldız Güven, Asst. Marketing Manager, Petkim Petrokimya A.Ş., Ankara

Mr. Melih Aydın, General Manager, Yaşar Dış Ticaret A.Ş., İzmir

Mr. Mustafa Bilgin Erbilin, Food Technologist, -do-

Mr. Ufuk Sıkca, Quality Assurance Manager, Pınar Dairy Products Co.  
 İzmir (Yaşar Group)



- Mr. Şükrü Aygün, Fariş Üzüm İşletmesi, Müdürü (Rasin Factory), İzmir
- Mr. Mehmet Ali Yıldırım, Olmuksa Mukavva Sanayi Tic. A.Ş.  
Kemalpaşa (near İzmir)
- Port Planning Office, İzmir Port Authority
- Mr. Leonordo Sergio, Commercial Director, May Tekstil Sanayi A.Ş.  
Manisa (near İzmir)
- Mr. Kanat Başar } Ambalaj Sanayi ve Ticaret A.Ş., İstanbul  
Mr. Tamer Argan }
- Mr. Türkün Eficinar, İstanbul Port. Turkish Govt. Railway, İstanbul  
(Haydarpaşa)
- Mr. Fatih Durumar } Unilever Ticaret ve Sanayi A.Ş., İstanbul  
Mr. Salim Siper }
- Mr. Fahri Atun, İzmit Mill Manager, SEKA, İzmit
- Mr. Cihat Alkanlı, Commercial Manager, Fruko-Tamek, İstanbul
- Mr. Ergün Bankoğlu, Plant Manager, Elida Kosmetik A.Ş., İstanbul
- Mr. Suat Baycılı, Packaging Development Manager, G and A Baker Ltd., İstanbul
- Mrs. Rengin Kevenk, Director (Q.C. R and D), Eczacıbaşı İlaç Sanayi  
ve Tic. A.Ş., İstanbul
- Mr. Akın Dinçsoy, Production Planning and Services Manager, -do.
- Mr. Mustafa Özak, Fashion Planning Manager, Karat le Ve diğ Satım A.Ş.  
İstanbul (Beyman Group)
- Mr. İbrahim Bağcı, Production Manager, Beyman Konfeksiyon İstanbul  
Dr. O. Tekin Aybaş, Director of Library, METU, Ankara  
Librarian, American Library, Ankara
- Mrs. Zerrin Esensoy, Acting Director, TÜRDOK Documentation Centre of TÜBİTAK, Ankara
- Mr. Uğur Bayman, Director, Plasan A.Ş., Ankara
- Mr. Atilla Ertürk, Commercial Director, Asas Ambalaj Baskı ve Tic. A.Ş.
- Ms. Jennifer Booth, First Secretary (Commercial) Books, Libraries, Information,  
British Council, British Embassy, Ankara

(The list does not include the names of a large number of other officials and scientists of the institutions listed which by no means is intended to undermine the value of their contribution, guidance and assistance).