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Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

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16001

DP/ID/SER.A/794
22 December 1986
ENGLISH

ESTABLISHMENT OF THE ARAB REGIONAL PACKAGING CENTRE

DP|RAB|83|020|11-70

Technical report: Survey on food packaging*

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

Based on the work of Iván Varsányi,
consultant in food packaging

Backstopping officer: J. Belo, Agro-based Industries Branch

United Nations Industrial Development Organization
Vienna

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V.86-63448

SUMMARY

Document: DP/ID/SER.A/ 794 22 December 1985 V.86-63448

Nature: Restricted

Title: Survey on Food Packaging

Author: Mr. Iván Varsányi

Length: 41 pages

Type of Document: Technical report

Scope: Within the project DP|RAB|83|020 "Establishment of the Arab Regional Packaging Centre" to assist AIDO (the Arab Industial Development Organization) to carry out a project with the aim of establishing an Arab Regional Packaging Centre (ARPAC).

Contents: Within the framework of the above project, to carry out a survey on packaging industry and techniques used for food packaging in Syria, and to prepare a final report to determine the fields where technical assistance could be provided.

Conclusions: Improvement of the food industry is one of the main targets in the Syrian national plans. To achieve this it is necessary to increase the quantity and quality of processed food, and to use suitable packaging materials and techniques, as well as to increase the level of quality control and to improve the maintenance. The number of qualified engineers, technicians and skilled workers should be increased in the food and packaging sectors.

I. ABSTRACT

A. Title and number of the project

The title of the project is Establishment of the Arab Regional Packaging Centre and its number is DP/RAB/83/020/11-70/31.7.E. The duration of the project is three years, it started on 1983.

B. Objective and duration of the activity

Technical assistance in the framework of the Arab Regional Packaging Centre Project, to survey on packaging industry and techniques used for food packaging in Syria and to prepare a final report to determine fields where technical assistance could be provided within the framework of the ARPAC Project.
The activity started on 10 of November 1985, with a duration of one month.

C. List of abbraviations

Arab Industrial Development Organization (AIDO), ARPAC (Arab Regional Packaging Centre), GOFI (General Organization for Food Industry), IMEC (Institut Marocain de l'Emballage et du Conditionnement), Pe (polyethylene), Ppr (polypropylene), Pst (polystirene), PVC (polyvinyl chloride), UNIDO (United Nations Industrial Development Organization), UNDP (United Nations Development Programme).

D. List of key words

Bag-in-box system, corrugated cardboard, development, laminated materials, maintenance, multi-layer materials, one-way packaging, paper, plastic, polyester, polyethylene, quality control, polypropylen, polystirene, polyvinyl chloride, seminar, shrinking packages, testing, throw-away packaging, training.

E. Main conclusions and recommendations

The development of food packaging, harmonizing with the improvment of food industry is one of the main targets in the Syrian national plans. It should therefore be the most important duty to keep the quantity and quality of harvested agricultural products using

the appropriate technologies for food processing, storing and packaging.

To achieve the target mentioned above, it is necessary to increase the quantity and quality of processed food, and to use suitable packaging materials and techniques. It is also important, parallel with these works for the development of packed food production, to increase the level of quality control and to improve the maintenance. It is also recommended to increase the number of the qualified engineers, technicians and skilled workers both in the food and packaging sectors.

The problems raise an issue to establish an Arab Regional Food Research, Development and Training Centre with the assistance of the United Nations Industrial Development Organization (UNIDO) in the frame of a project of the United Nations Development Programme (UNDP).

II. CONTENTS

III. INTRODUCTION

A. Background

The Arab Industrial Development Organization (AIDO) in its capacity as an implementing agency for the Arab Governments and UNIDO as an executing agency for UNDP, carried out a project with the aim to establish an Arab Regional Packaging Centre (ARPAC), extending and up-grading of some important capacities in the Moroccan Packaging Institute (Institut Marocain de l'Emballage et du Conditionnement-IMEC).

Provision of expertise in sectorial fields of packaging technology, economics and design according to the needs of specific countries within the Arab region is considered as important project issue.

In the framework of the project a number of activities have been already taken up during the last two years, like seminars, study tours, identifications of technical assistance and promotional missions aiming at strengthening communication network between the ARPAC and the member countries.

This report is one of the works in the frame of UNIDO Project DP/RAB/83, to survey on food packaging in Syrian Arab Republic and to give recommendations for further development.

B. Official arrangements

The expert entered the field on 12 November 1986 after being briefed in UNIDO, Vienna by Mr J. BELO Agro-Industries Branch IOD and Mr L. LEITE, Personnel Recruitment Services.

In Casablanca the mission activities started on 13 November with the visit to Institut Marocain de l'Emballage et du Conditionnement (IMEC) and through briefing on the ARPAC activities given by Ms A. TAZI, Administrative Assistant.

The expert arrived to Damascus on 16 November and visited to UNDP Office on the next day. The programme of the mission was discussed on 18 November with Mr M.N. Kurbe, Technical Director of General Organization for Food Industry, belonging to Ministry of Industry. Mr Kurbe organized the programme visits to factories,

discussions with Mr Ali Trabulsi, Minister of Industry, with Mr Aied Al Amir, General Director of General Organization for Food Industry.

The expert carried out his activities according to the mission programme, visited to 10 factories, roughly 65% of the country industrial potential by value, travelling approx. 1300 km during the 10 working days. The conclusions and recommendations were discussed with the authorities of General Organization for Food Industry and with Mr Olav Svennevik, Resident Representative of UNDP. The expert left for Casablanca on 28 November.

In Casablanca, the draft Technical Report was finalized and submitted to UNDP in Rabat. The expert was debriefed on 8 December and returned to Budapest on 9 December 1986.

C. Objectives of the activity

The objective of the activity being reported on, is identical with the duties stipulated in the job description. The counterpart institution of the expert was the General Organization for Food Industry. The expert worked with the authorities nominated, they gave informations about the problems of food industry, including packaging, they organized visits to factories to collect experiences about the present situation of food production and food packaging, regarding to the quality control, the maintenance and training necessity. They prepared tables to show the main lines of development for the specification of technico-economic problems, and for the analysing the supply of food and foodshifts.

On the base of informations and impressions received during the visit to food canning, dairy, vegetable oil, biscuits, water and carbonated beverages factories, the recommendations were prepared and discussed with the authorities of the General Organization for Food Industry. The expert also took the notes and the remarks into the consideration to finalize his report about the development of the Syrian food and packaging industries. The ad hoc advise has been given during the visits to the factories, to help for immediat problems.

The original objectives of the activites of the expert were not revised and the target were attained.

IV. RECOMMENDATIONS

A. Food production

a) Common problems

1. Prepare a feasibility study to develop and intensify the production in the agricultural sector for raw materials of food industry regarding to the demands of food processing technologies.

2. Elaborate the strategy of food industry development regarding to the demands of domestic and world market.

3. Establish a meat industry of the country to satisfy the demands of domestic consumption.

4. Establish an Arab Regional Food Research, Development and Training Centre - in the first step - to develop the food processing technologies; to reduce the industrial losses in energies and materials; to elaborate new methods for quality control; to develop maintenance; to organize courses, seminars and other forms of training; and to establish an information network for the dissemination of latest achievement of food science and technology.

The second step is to establish national centres to intensify the food industrial development in each countries.

b) Specific problems

1. Determine the shelf-life of food products using up-to-date objective methods with special regard to packaging, storing and transportation.

2. Develop the quality control of the raw materials, the semi-products and the end products, including the hygenic aspects of productions and the storage.

3. Develop the quantity and the quality of tomato purée, preserved fruits and vegetables, mineral water, peanuts, alcoholic beverages, dried onion, including packaging for increasing the export potential of Syria.

4. Increase the quantity of vegetable oil and dairy products according to the demands of domestic market.

B. Food packaging

a) Packaging technology

1. Develop the domestic packaging material production, first of all in the glass industry, to solve the problems of packaging regarding to the demands of the canning and the dairy industries.

2. Investigate and systematically test the packages used by the food industry according to Syrian standards and international norms to develop the quality of packaging.

3. Develop the personal and family size packages, using one-way plastic packages (i.e. polyvinyl chloride bottle for edible oil packaging in 250 cm^3 unit ; polystirene box with plastic coated lid for fat and ghee in 250 g, 500 g units ; low density polyethylene pouch for pasturized milk in 1000 cm^3 unit ; polyethylene coated polyamide pouch for sausage in 250 g unit).

4. Extend the packaging of soft drinks and carbonated beverages using throw-away polypropylene or polyester bottles in 300 cm^3 units.

5. Investigate the possibilities to use multi-layer packaging materials, in adequate packaging systems for liquid food products (soft drinks, milk, cocoa, etc...).

6. Investigate the possibilities to initiate the bag-in-box packaging system for liquids, with special regard to the requirements of modern catering systems.

7. Investigate the possibilities to build up aseptic packaging lines for liquid food products.

8. Harmonize the production of packages with the production of foodstuffs, connecting to the package forming equipment to the production lines - as far as possible - to reduce the "air transportation" in the empty packages.

9. Organize the collection and the reusage of empty packages, forming five main groups for glasses, papers, metals, plastics and others.

10. Use the individual and objective capacity of Arab Regional Packaging Centre (ARPAC) in Casablanca (Morocco) for packaging design, for quality control of packaging material, for investigation of consumer and transport packages, etc, and for training.

b) Packaging materials and containers

i. Glasses

1. Reduce the weight of glass bottles, forming thinner body, bottom and neck parts.

2. Develop the quality of glass bottles, producing the bottles with same wall thickness.

3. Develop the production for wide-mouth milk bottle in the glass industry.

4. Launch the production of glass jars for the canning industry.

ii. Metals

1. Use the appropriate sealing technique for body formation of tin cans.

2. Protect against the corrosion the inside and the outside of cans, using appropriate varnishes.

3. Use hermetic sealing for tin cans and boxes.

4. Investigate the possibilities of metal cap production (e.g. Twist-off system) for glass bottles and jars closing,including the gasket elements, too.

iii. Plastics

1. Develop the blow moulding capacity of plastic industry for foil and bottle production in industrial scale, according to the demand of food industry.

2. Extend the confectioning capacity of packaging industry for bag and pouch production, including the extention of printing capacity for information (figures and text needed) of consumers.

3. Start the non-corrosive plastic ribbon production for bala and box fixing in the transport packages.

4. Develop the thermoforming capacity for one-way plastic packages (e.g for tomato purée packaging in PVC tray and in personal size).

iv. Papers

1. Improve the quality of corrugated cardboard for transport packaging.

2. Prepare a feasibility study to investigate the technico-economic reality of a paper factory on hay base.

v. Laminated materials

1. Prepare a feasibility study to survey on technico-economic reality of laminated material production of imported raw material base:for aluminium + plastic (for lid foil and for dried product packaging, etc); cellophane + low density polyethylene (for vaccuum packed cheeses and meat products, etc); polyamide + polyethylene (for olive, etc); paper + plastic (for spices,etc), regarding to the demands of up-to-date food packaging.

C. Equipment

1. Improve the control of the automatic filling and bottling machines for constant quantity of filled product according to the standards and norms.

2. Reduce the hand-works in the factories for developing the capacity of production lines, ensuring the parameters of technologies and improving the hygenic state of products.

3. Increase the number of equipment in which the operations of package forming, filling and closing are in one machine-unit.

4. Extend the appl cation of shrinking packages for unit formation both in consumer and transport packaging.

D. Storage

1. Develop the controlled atmospheric storage of agricultural product to reduce the post-harvest losses.

2. Improve the controlled temperature storage of food industrial half products.

3. Develop the equipment of storage rooms for suitable storage of packed products, for the organized distribution.

E. Maintenance

1. Organize the systematic and periodic maintening works, ensuring of the whole capacity of machines, equipment and lines in the factories.

2. Set-up maintening teams for the quick and effective reparation of machines in the factories.

3. Ensure the spare parts and accessories for the maintenance of different machines, equipment and lines.

F. Quality control

1. Develop the quality control activities in fhe factories to ensure the parameters standardized of food products, packed foods, and packaging materials,containers, respectively.

2. Develop the instrumentation of laboratories according to the demands of national and international standards.

3. Control the accuracy of instruments and its reproducibility regularly.

4. Develop the hygenic state of factories including storage rooms and placesaccording to the microbiologic tests' results.

5. Survey the standards of sampling places, sampling times and number of samples and comparing them with the international norms and if is is necessary to elaborate new standards regarding to the relevant methods of mathematical statistic.

6. Control the quality changes of food products systematicly during the storage, regarding to the shelf-life declared for healthy and safety food.

G. Training

1. Improve the knowledge of engineers, technicians in the field of food science and polymer science which are basic to modern food packaging techniques.

2. Full-time education in food science and its application in food technology, including packaging up to first degree (B. Sc.) level (three - four year's training at University level abroad).

3. Full-time education at post-graduate level (M. Sc. and Ph. D.). It seems to be a realistic possibility that would appeal

to polymer or food science graduates ccnsidering a second degree at M. Sc. level for two to four years.

4. Join to two years international correspondence course in packaging technology with special reference to the problems of food packaging in Syria.

5. Elaborate training programmes on the subject of food packaging investigations and tests for industrial personnel who have the responsibility for the packaging and for the quality control of packaging material.

6. Organize international symposiums and seminars periodically for three - five days, inviting excellent scientists and industrial specialists as speakers both from Syrian and foreign countries.

7. Improve and if it is necessary reorganize the information network on the field of food science and technology, including packaging.

V. ACTIVITES AND OUTPUTS

A. Main duties

The main duties of the job description and the objectives of the activity being reported on are as follows :

1. Study the concerned ways of improving the food packaging production.

2. Determine the technical problems of industry (production, product adaptation, quality control, training and maintenance).

3. Find ways to improve industrial plants.

4. Specify technico-economic problems.

5. Analyse supply of food products.

B. Technical activities

The technical activities arranged according to the job description (Annex 1) and request of the counterpart institution, who organized the visits to factories and arranged the discussions with the authorities.

1. Improvment of food packaging production

At present time packaging industy does not exist in Syria. The data of Annexes 2 and 3 help to learn and understand the situation in the field of food packaging. It may be stated that the glass industry is the branch of the industry which has possibilities to increase the ratio of packed food, since it uses home made raw materials. It is therefore recommended to extend the assortment of goods and to launch the glass jar production for processed foods, and glass bottles production in traditional form for milk bottling.

The metal boxes and cans are import goods from Cyprus and Greece in ready-to-fill form and plate form. The can forming sealing technology is not suitable in the Syrian factories because the porosity of seals is high andthere are no protection against the corrosion and heavy metal penetration into the packed food, respectively.

The production of the paper industry is low, and it is not sufficient to satisfy domestic market demands. The quality of corrugated cardboard is not steady and the quantity is not sufficient for transport packaging of food products inside the country.

The different polymers are importing from foreign countries. The packaging material and container production belongs partly to the private sector and it is in small scalle. Hard currency is needed to increase the quantity of plastic packed

foods because the raw materials are from import. Likewise the plastic coated papers and cellophanes are imported goods, too.

Summarizing the facts it can be stated that the glass industry has the potential in present time to increase the quantity of the processed packed food, but it is necessary to extend the variety of products what needs capital for investment.

2. Technical problems of industry

The packaging problem is connected very close to the food production, because the packaging is the last phase of the food processing. It is the basic interest of Syria to develop the technical level of food production including the quantity and quality of packed goods. Therefore it is very recommended to survey on situation at present and determine the investment priorities in future.

The level of production is less than sufficient. The capacity of lines does not exist according to the possibilities because no storage capacity in the factories for the semi products.Therefore the capacity of production is absolute theoretic which are listed in Annex 4. The shortage of electric power also gives problems for the continuous and controlled production.

In the laboratories of the factories they do not use sampling programme for quality control tests. It was the impression of expert that the quality control is not very important because the food production does not satisfy the demands of domestic market in the quantity. It involves, the hygenic state of production and the microbiologic state of processed food are not well controlled by laboratories of factories and by governmental authorities. The insufficient quality and quantity of packed food is never complained by the consumers.

The maintenance is not sufficient for the continuous and the good production. It causes from two sources : shortage of spare parts,

and lack of skilled workers. A lot of product and imported packaging material are wasting because the unsifficient maintenance.
The improvment of the maintenance it is one of the corner stone of the development of quantity and quality of industrial production.

The lack of raw material and semi product storage capacity gives problems for using the capacity invested in the factories. The lack of storage capacity also achieve losses in the quantity and quality of final products.

The pleage of industrial development is the education and the training. It would be very important to learn and apply the international practice achieved for the management. The permanent staff of engineers, technicians and skill workers could ensure the development in the factories. It also was the impression of the expert that the technical staffs of the factories have not knowledge about the latest achievement of their field, because they do not read international technical literature and they do not have any experiences from foreign countries.

Summarizing the expriences received it can be state that the problems of food industry, including the packaging derive from four main sources as the follows : the unsufficient temporary storage of raw material and semi products; the unsufficient maintenance, quality control, knowledge and practice. To develop the production of the food industry it would be necessary first of all use the capacity invested, clearing away individual and objective difficulties.

3. Improvement of industrial plants

The improvment of industrial plants needs investitions from two sides. One is the individual knowledge, to accept the latest achievemnt of techniques, technologies and methods, and to have practice for application them in the situation given. The second is the economic side, to buy and install the appropriate equipment

to promote and develop the quantity and quality of processed and packed foods. It is the part of the governmental policy to determine the priorities of development regarding to the financial problems of food industry including packaging. National specialists and international experts could be determine the strategy of improvment both in agricultural and industrial sectors for the healthy and safety food and for the export market.

4. Technico-economic problems

Syria is not self-sufficient in processed foods (Annex 5), but it has potential to increase the fruit and vegetable production. It is also fact that the dominant part of agriculture including the animal husbandry is in private hands and the intensity and the quality of the production is not sufficient. It results from the fact that many small farms are in the country using a lot of animal power (cattle, horse, mule, donkey) as energy source and wood-plough in partly for cultivation. Since the country is short of agricultural and meat products therefore it is the most important to intensify the production in the agricultural sector and to increase the quality of harvested products harmonizing with the demands of food industry.

It is also stated that organized animal husbandry does not exist in the country, since this sector is mainly in private hands as mentioned above. The meat products are very important part of nutrition, therefore to establish the meat industry would be very interest of Syria, what also gives possibility to decrease the quantity of goods imported.

Summarizing the facts, the first step would be to ensure the supply of food industry with sufficient quality and quantity of agricultural products. The next step would be to use appropriate technologies for food processing with special regard to the biological value keeping of processed food. To achieve this target , it is necessary to modernize the technologic lines including the packaging, as far as possible to reduce the hand-works in the process control

and develop the automatization for the continuous, good level of production.

Syria has not industry for machine production because the lack of raw materials. It means that the industry needs high amount of import for development and intensification of production both in the agricultural and industrial sectors, including the packaging branch, too. It is doubtless that the improvment of the quantity and quality of processed and packed foods it is basic interest of the country.

5. Supply of food products

The Annex 5 gives information about the supply of food products. It can be stated that Syria is not self-sufficient in most foods consumed and the increasing population (approx 0.3% per year) needs a higher food production.

The plant origin agricultural products, fruits and vegetables are in sufficient quantity to consume in fresh and/or preserved form. The identification of production offers the realistic opportunity increase the quantity of processed food and the appropriate quality of processed products to sell on the foreign markets. Specially the tomato likes be very useful for that purpose.

The fruits would be processed in juice form first of all the apple and the apricote. The soft drinks, on natural base, and with high dietetic fibre content, have good markets in the developed countries.

The olive processed and preserved by different receipts and technologies would also be very promizing product of Syria. The peanut is an other product for delicacy and the processed packed goods have increasing market, too.

Plant origin agricultural product is the biscuit which would be exported with suitable shelf-life and appropriate packaging in the future.

The dominant quantity of agricultural products are cultivated in the South-West part of the country, therefore it should be the centre of the food processing industry.

Since meat industry does not exist in Syria therefore it would be very urgent to establish and organize the animal busbandry with special regard to the milk production, because 50% of bottled milk is processed from imported milk powder. Poultry industry also does not exist in the country, therefore to co-ordinate the production with the developing plans of food industry would be very recommended.

Summarizing the fact it may be stated that the dominant part of the plant and animal origin raw material production is in the hand of the private sector. The developed food industry needs good quality and sufficient quantity of raw materials. The organization and co-ordination of the agro-industrial production would be very urgent for the well balanced nutrition of the population and for the national economy (Annex 6).

C. Recommendations for further actions

Syria is not self-sufficient in most foods consummed. To increase the food production of the country and thus reduce foreign outlais is basic interest for the states. One of the ways to reduce the food import of the country is the development and the wide spread use of appropriate food processing and food packaging.

The development of food industry involves the following : increase the appropriate quantity and quality of agricultural products ; development of technologies currently used ; reduce the hand-ccntrol in processing lines, increasing the automatization ; development of quality control activities ; upgrade the level of technical knowledges by training.

The co-ordination of food processing and food packaging should be achieved the import reduction, and the higher income on national level.Therefore the development of food packaging has to be the one of the main targets of the country.

The development of packaging needs the followes : increasing the quantity of packaging materials and containers ; development of packaging techniques ; greater varieties of packaging items; development of quality control activities in the packaging materials and containers ; improvment of design with special reference to economic aspects.

Considering objectives and tasks of the food industry it may be expected that the importance of packaging will increase in the nearest future regarding to the demand of the world market. It would therefore be most important to follow the development of foreign countries in the field of food processing and technology in order to increase food export.

To better able to meet the exportation of the food processing and packaging, it would be very useful to upgrade the level of knowledge of the industrial staff. This would give the possibilities to solve the problems of the food and packaging industry in accordance with international standards and norms.

With special reference to international expectations, it would be very efficient to systematically control the quality of final products applying test programmes. This should bring a good reputation both in domestic and export market. It would also help to demonstrate the technological level of food production for the foreign trade companies.

The increase and improvement of the local production of packaging materials and containers would require substantial allocations for package manufacturing and converting machinery in the investment budget of Syria. The development and extension of packaging in the food processing factories is dependent on the importation of suitable packaging lines. The material handling, storage, distribution, transportation would require rationalization through forming of units, palletization and containerization.

The problem of maintenance is very urgent. The systematic and organized maintening activity is the key of continuous production. The machines and equipment, which are out of work, reduce the industrial incomes and decrease the morale in factories, therefore, the importance of maintenance is stressed.

Regarding the necessity of increased food production it is highly recommended to develop the food technologies harmonizing with the packaging techniques. Without co-operation between the food and packaging production including the development of machinery and technologies countable results and profits cannot expected.

VI. CONCLUSIONS

The development of food industry, including packaging is basic interest of Syria. This should be achieved through the introduction of new capacitits, the achievement of higher productivity levels, better utilization of the existing facilities, more efficient use of the raw materials and improvement of the quality of locally manufactured goods.

The development of the food industry, including packaging demands financial concentration but it also needs individual concentration. Therefore, it is highly recommended to establish an Arab Regional Food Research, Development and Training Centre in the first step, and regarding to the national necessity to establish the Syrian food and packaging development and training institute in the next phase.

The Arab Regional Packaging Centre Project offers an excellent opportunity to develop the food packaging in Syria. This institution can help to solve many problems in the fields of developement, design, and quality control.

Summarizing the facts it may be stated that the comprehensive development of the food industry and the food packaging requires the assistance of UNIDO and UNDP, accelerate the intensification and modernization of Syrian food industry.

Packaging industry practically does not exist in Syria. The packaging materials and containers imported constitute the dominant part of packaging supply. The quality of the locally made containers is not sufficient and there are no facilities to improve them.

The analysis of packaging component in the factories visited (Annex 7) indicates that most of packaging containers are imported ready made form (cartons, corrugated fiberboard boxes, coated cellophane, coated aluminium, metal cans and boxes, etc). Package manufacturing plants (paper bags, plastic pouches, bottles and boxes, plastic crates) are converting imported packaging materials (e.g. tin plate) or plastic granulates (e.g. polyethylene, polystirene, polyvinyl chloride).

The quality of imported packaging materials and containers varies according to the possibilities of the import. The losses and damages of packaging materials and processed foods during the filling, storage, and transportation are unsatisfactory due to the inadequate technologies and containers.

There is urgent need for expanding the domestic production of packaging materials, especially glass bottles (milk) and jars (preserved foods), plastic bottles (vegetable oils, soft drinks, etc) and thermoformed items (tomato purée, fat, ghee, etc), plastic pouches (cheese, meats), metal closures (crown corks, caps) and corrugated papers (transportation).

The conclusions formulated above are the results of visits carried out to 10 factories (Annex 8) as well as meetings, discussions with the managerial staff of the General Organization of Food Industry and the data received by the authorities.

To accomplish a mission without appropriate backstopping is impossible. Therefore, I wish to express my deep appreciation to the Ministry of Industry in Syria ; to the UNDP Officials in Rabat and in Syria ; to the IMEC and to the ARPAC authorities in Casablanca ; and to the Agro-Industries Branch of UNIDO in Vienna. The Annex 7 gives the list of contacts who supported the project. Of course the list is not exhaustive in view of all the persons who gave assistance to me but their efforts show in the results of the mission.

VII. A N N E X E S

1. Job description

2. Different packaging material consumption for the packaging of the main food products in 1985 and 1990

3. Imported and home made packaging materiels for the main food products in 1985 and 1990

4. Installed food production capacities

5. The export and import balance of the main products in 1985 and 1990

6. The distribution of main food products between the public and private sectors in 1985 and 1990

7. The programme and the itinerary of the mission

8. List of contacts

UNITED NATIONS

Annex 1

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO

PROJECT IN THE ARAB STATES

15 July 1985

JOB DESCRIPTION

DP/RAB/83/020/11-70/31.7.E

Post title	Consultant in food packaging
Duration	One month
Date required	As soon as possible
Duty station	Casablanca (Morocco) Damaskus (Syria)
Purpose of project	The project's main objectives consist of training of Arab Industrial Engineers and Technicians. Furthermore, technical assistance has been agreed upon within the framework of the ARPAC project.
Duties	The consultant will organize his activities in consultation with the Project Director of ARPAC. He will be specifically expected to:

1. Study with the authorities concerned ways of improving production of food packaging;
2. Determine technical problems met by industry and related to production, product adaptation, quality control, training and maintenance;
3. Find ways to improve industrial plants;
4. Specify technico-economic problems;
5. Analyse supply of food products.

The consultant will also be expected to prepare a final report setting out his findings of the mission and recommendations on further action which might be taken.

. . . . . .

Applications and communications regarding this Job Description should be sent to:

Project Personnel Recruitment Section, Industrial Operations Division
UNIDO, VIENNA INTERNATIONAL CENTRE, P.O. Box 300, Vienna, Austria

V.31-33106

Qualifications

Packaging specialist with a university degree or equivalent experience in the field of food packaging.

Language

English (French and/or Arabic an asset)

Background information

The Arab Industrial Development Organization in its capacity as an implementing agency for the Arab Governments and UNIDO as an executing agency for the United Nations Development Programme, are jointly carrying out a project with the aim to establish an Arab Regional Packaging Centre (ARPAC).

For this purpose the Moroccan Packaging Institute (Institut Marrocain de l'Emballage et du Conditionnement - IMEC) is undert. .ng an extension to and up-grading of some important capacities in order to be converted into ARPAC, and other project activities are taking place simultaneously in selected countries of the Arab region.

The financing of the project as a whole is shared by AIDO and UNIDO, with a clear separation of each one's areas by responsibility. However, an integrated workplan was commonly elaborated by AIDO and UNIDO in consultation with the United Nations Development Programme (UNDP) .

Provision of expertise in sectorial fields of packaging technology, economics and design according to the needs of specific countries within the Arab region is considered as important project issue.

Annex 2

DIFFERENT PACKAGING MATERIALS CONSUMPTION FOR THE PACKAGING OF THE MAIN FOOD PRODUCTS IN 1985 AND 1990

Units : 1000 tons
1000 bottles
(glass)

Main products	Production of food		PACKAGING MATERIAL CONSUMPTION															
			Polyvinyl chloride		Polyethylene		Metal		Glass		Other plastics		Carton		Coated paper		Cellophane	
	1985	1990	1985	1990	1985	1990	1985	1990	1985	1990	1985	1990	1985	1990	1985	1990	1985	1990
Cotton-seed oil	39,1	71,9	0,063	1,006	0,065	1,008	2,5	1,5										
Olive oil	66	74,9					4,5	5,2										
Hydrogenized oil	8,5	10,7					0,64	0,8										
Tomato purée	5,8	14,2					0,9	2,2		7,1								
Conserves	10,4	19,3					1,6	1,4		10,-								
Green peas	3,1	6,5					0,5	0,5		3,5								
Sterelized milk	11,5	20,9			0,12	0,70			8,5	4,-	7,3	7,2						
Chees	1,7	3,4					0,1	0,2										
Biscuits	7,9	69,1											0,8	7,-				
Chocolates	0,5	1,-											0,05	0,1				
Candies	37,3	43,3											0,4	0,4	0,7	0,9		
Macaroni	15,3	19,5											0,382	0,487			0,179	0,228
Beer	8,2	11,7							13,120	18,720								

Wine	7,7	10,3							10,266	13,73								
Alcoholic Beverages	1,5	2,3							3,-	4,3								
Carbonated beverages	109,6	144,4							438,4	577,6								
Fruit juices	-	6,8				0,068				10,2								
Peanuts	4,5	10,-															0,005	0,075
Dried onion	1,5	2,9									0,075	0,145						
Bread	1351,2	1648,9									0,033	0,041						
Sugar	105,1	282,7			0,042	0,113												
Total amount			0,063	1,006	0,227	1,889	10,74	11,8	473,286	649,150	7,408	7,386	1,632	7,987	0,7	0,9	0,179	0,228

The table was prepared by the Planning Section of General Organization for Food Industry on 26 November 1986

Annex 3

IMPORTED AND HOME MADE

PACKAGING MATERIALS FOR THE MAIN FOOD PRODUCTS IN 1985 AND 1990

Units : 1000 tons
1000 bottles (glass

Main products	Production		PACKAGING MATERIALS					
			Consumed		Imported		Domestic Production	
	1985	1990	1985	1990	1985	1990	1985	1990
Cotton-seed oil	39,1	71,9	PVC 0,063 Pe 0,065 Metal 2,5	1,006 1,008 1,5	X X X	X X X		
Olive Oil	66,-	74,9	Metal 4,5	5,2	X	X		
Hydrogenized oil	8,5	10,7	Metal 0,64	0,8	X	X		
Tomato purée	5,8	14,2	Metal 0,9	2,2 7,1 Glass	X	X		X
Conserves	10,4	19,3	Metal 1,6	1,4 Glass 10,-	X	X		X
Green peas	3,1	6,5	Metal 0,5	0,5 Glass 3,5	X	X		X
Sterelized milk	11,5	20,9	Glass 8,5 Pe 0,12 Plastic 7,3	4,- 0,70 7,2	 X X	 X X	X	X
Chees	1,7	3,4	Metal 0,1	0,2	X	X		
Biscuits	7,9	69,1	Carton0,8	7,-	X			X
Chocolates	0,15	1,-	Carton0,05	0,1	X			X
Candies	37,3	43,9	Paper 0,7 Carton0,4	0,9 0,4	X X	X		 X
Macaroni	15,3	19,5	Cellophane 0,179 Carton 0,382	0,228 0,487	X X	X		 X
Beer	8,2	11,7	Glass 13,120	18,720			X	X
Wine	7,7	10,3	Glass 10,266	13,73			X	X

Alcoholic beverages	1,5	2,3	Glass 3,-	4,3			X	X
Carbonated beverages	109,5	144,4	Glass 438,4	577,6			X	X
Peanuts	4,5	10,-	Cellophane 0,005	0,075	X	X		
Dried onion	1,5	2,9	Plastic 0,075	0,145	X	X		
Bread	1351,2	1648,9	Plastic 0,033	0,041	X	X		
Sugar	105,1	282,7	Pe 0,042	0,113	X	X		
Fruit juices		6,8		Pe 0,068 Glass 10,2		X X		

The table was prepared by the Planning Section of General Organization for Food Industry on 26 November 1986

INSTALLED FOOD PRODUCTION CAPACITIES

Annex 4

Factories	Products	Unit	Theoretic capacity per shift	Practical capacity per shift	Number of shifts
Aleppo Co.	Cotton-seed oil	t	28,13	25,375	3
	Soap	t	6,666	6	3
Hama Co.	Cotton-seed oil	t	3,5	3,127	3
Damascus Co	Cotton-seed oil	t	3,265	2,947	3
	Soap	t	6,33	5,7	3
Damascus Co.	Tomato	t	41,650	23,33	3
	Apricot	t	18,00	18,00	3
	Green peas	t	20,00	17,00	3
Dar'a Co.	Tomato	t	123,33	106,83	
	Apricot	t	5,00	5,00	3
	Green peas	t	20,00	14,40	3
Jable Co.	Tomato	t	40,00	37,60	3
	Apricot	t	12,00	8	3
	Green peas	t	7	6	3
Idleb Co.	Tomato	t	36	30	3
	Apricot	t	4,8	4	3
	Green peas	t	12	10,8	3
Hassala Co.	Tomato	t	36	30	3
	Apricot	t	4,8	4	3
	Green peas	t	12	10,8	3
Mariadin Co.	Tomato	t	36	30	3
	Apricot	t	4,8	4	3
	Green peas	t	12	10,8	3
Ghab Co.	Sugarbeet reception	1000 t/year	100	95	3
Mascane Co.	Sugarbeet reception	1000 t/year	300	264	3
Talbalhak Co.	Sugarbeet reception	1000 t/year	320	304	3
Al-Salamieh Co.	Dried onion	t	4,485	4,038	3
Boken Co.	Carbonated beverages	1000L	14,120	14,00	2
	Mineral water	12000L	3,334	2,834	2
Dreikish Co.	Carbonated beverages	1000L	17	14,400	2
	Mineral water	18000L	3,334	2,500	1
Dar'a Co.	Macaroni	t	4,727	4,161	3
Al Chark	Biscuits	t	2,965	2,520	3
	Chocolates	t	2,355	2,110	1
Ghrawi	Biscuits	t	2,960	2,310	3
	Chocolates	t	0,365	0,299	1
Kamelia	Biscuits	t	3,3	2,72	3

Damascus Co.	Milk (sterelized) Cheese	t t	28 1,6	12,6 1,6	3 1
Homs Co.	Milk (sterelized) Cheese	t t	14,400 1,4	10,00 1,333	3 1
Barada Beer	Beer	1000ℓ	18,382	16,272	1
Charc Beer	Beer	1000ℓ	8,320	7,072	3
Al Sweyda	Grape reception	t	120	67	2
Homs	Grape reception	t	200	95,2	2

The table was prepared by the Technical Section of General Organization for Food Industry on 27 November 1986

Annex 5

THE EXPORT AND IMPORT BALANCE OF THE MAIN FOOD PRODUCTS IN 1985 AND 1990

Unit : 1000 tons

Main Products	Production		Export		Import		Domestic Consumption	
	1985	1990	1985	1990	1985	1990	1985	1990
1. Cotton-seed oil	39,1	71			5,2		44,3	71,-
2. Olive oil	66,-	74,9	7,6	1,9			58,4	73,-
3. Hydrogenized oil	8,5	10,7				0,1	8,5	10,8
4. Tomato purée	5,8	14,2	1,2	8,4			4,6	5,8
5. Conserves	10,4	19,3	0,9	7,2			9,5	12,1
6. Green peas	3,1	6,5		1,-			3,1	5,5
7. Sterelized milk	11,5	20,9			7349,-	723,-	745,-	753,9
8. Chees	1,7	3,4			2,5	1,1	4,2	4,5
9. Biscuit	7,9	69,1		53,5			7,9	15,8
10. Chocolates	0,5	1,-		0,3			0,5	0,7
11. Candies	37,3	43,9		2,5	1,7		39,-	41,4
12. Macaroni	15,3	19,5		0,7			15,3	18,5
13. Beer	8,2	11,7			0,5	0,7	8,7	12,4
14. Wine	7,7	10,3			0,9	1,1	8,6	11,3
15. Alccoholic beverages	1,5	2,3			0,6	0,3	2,1	2,6
16. Carbonated beverages	109,6	144,4		8,4	5,3		114,9	136,-
17. Peanuts	4,5	10,-		2,-			4,5	8,-
18. Dried onion	1,5	2,9	1,5	2,9				
19. Bread	1351,2	1648,9					1351,2	1648,9
20. Sugar	105,1	282,7			303,6	160,8	408,7	443,5
21. Fruit juice		6,8		1,7				5,1

The table was prepared by the Planning Section of General Organization for Food Industry on 26 November 1986

Annex 6

THE DISTRIBUTION OF MAIN FOOD PRODUCTS BETWEEN THE PUBLIC AND THE PRIVATE SECTORS IN 1985 AND 1990

Unit : % (percent)

Main products	Public sector		Private sector	
	1985	1990	1985	1990
Cotton-seed oil	100	100	-	-
Olive oil	-	3,2	100	96,8
Hydrolized oil	100	100	-	-
Conserves	95	95	5	5
Dried onion	100	100	-	-
Peanuts	100	100	-	-
Biscuit	90	90	10	10
Chocolates	1	1	99	99
Candies	1	1	99	99
Macaroni	60	90	40	10
Beer	100	100	-	-
Wine	20	40	80	60
Alcooholic beverages	20	40	80	60
Carbonated beverages	5	5	95	95
Bread	75	75	25	25
Sugar	100	100	-	-
Sterelized milk	100	100	-	-
Other dairy products	50	90	50	10

The table was prepared by the Planning Section of General Organization for Food Industry on 26 November 1986

Annex 7

THE PROGRAMME AND ITINERARY OF THE MISSION

DATE	ACTIVITY
November 10	- Arrival to Vienna.
11	- Briefing at UNIDO, Vienna.
12	- Arrival to Casablanca.
13	- Briefing at the Arab Regional Packaging Centre (ARPAC).
	- Visit to the Moroccan Institute of Packaging (IMEC), Meeting with Mr A. ZAKI, General Director.
14	- Visit to the UNDP Office in Rabat and preparation for the mission in Syria.
15	- Departure from Casablanca.
16	- Arrival to Damascus.
17	- Visit to the UNDP Office in Damascus.
18	- Visit to the General Organization for Food Industry, Technical Section, setting up preliminary programme of the mission with Mr M.N. Kurbe, Technical Director.
	- Visit to The Modern Conserves and Agricultural Industries (Damascus) and meeting with Mr B.F. Kanafani, General Director.
	- Visit to The Syrian Arab Dairy Product Company in Damascus (Damascus) and meeting with Mr A. Hanash, General Director.
19	- Visit to The Arab Industrial Company for Vegetable Oil and Soap (Damascus), meeting with Mr A.E. Dkak, General Director.
	- Visit to the Damascus Biscuits and Chocolates Company (Damascus), meeting with Mr K.Ibrahim, Production Manager.
20	- Visit to Boken Water Factory (Boken), meeting with Mr A.H. Trabulsi, General Director.

22
- Visit to The Syrian Conserves Company in Dar'a (Dar'a - Mzaireeb), meeting with Mr G. Adnan, Chief Technologist.
- Visit to the Al-Yarmouk Company for Macaroni and Vermicelli Products (Dar'a), meeting with Mr M. Massalme, General Director.

23
- Visit to the Dreikish Water Factory (Dreikish), meeting with Mr H. Mehrer, General Director.
- Visit to the Homs Dairy Products Company (Homs), meeting with Mr G. Al Sahli, Production Manager.

24
- Visit to the General Organization for Food Industry, Technical Section, meeting with Mr M.N. Kurbe, Technical Director, reporting of the visists' achievements,
- Visit to the General Organization for Food Industry, Planning Section, meeting with Mr W. Bashkure, Planning Director.

25
- Visit to the Idleb Company for Conserves and Food Products (Idleb), meeting with Mr. H.N. A. Ahmed, General Director.

26
- Closing visit to the Ministry of Industry, meeting with Mr A. Trabulsi, Minister of Industry.
- Closing visit to the General Organization for Food Industry, meeting with Mr A. Al Amir, General Director, reporting of the mission's achievements.

27
- Farewell visit to the UNDP Office, meeting with Mr O. Svennevik, Resident Representative.
- Farewell visit to the General Organization for Food Industry, Technical Section, meeting with Mr M.N. Kurbe, Technical Director.

	28	- Departure from Damascus.
	29	- Arrival to Casablanca.
December	1 - 5	Preparing Technical Report.
	6	Leaving for Vienna.
	8	Debriefing at UNIDO, Vienna.
	9	Leaving Vienna for Budapest.

Annex 8

LIST OF CONCTACTS

MOROCCO

UNDP Office, Rabat	Mr Shamir CHACRA Assistant Resident Representative
UNDP Arab Regional Packaging Center Project, Casablanca	Ms. As TAZI Administrative Assistant
Moroccan Packaging Institute Casablanca	Mr Ali ZAKI General Director
	Mr A. CHABANI Head of Department

S Y R I A

UNDP Office, Damascus	Mr Olav SVENNEVIK Resident Representative
	Mr Marwan ANHOURY Senior Finance Assistant
	Ms. Nadia YAZIGI Administrative Assistant
	Ms. Nadia KOZAK Programme Assistant
Ministry of Industry, Damascus	Mr Ali TRABULSI Minister of Industry
General Organization for Food Industry, Damascus	Mr Aied Al AMIR General Director Adj
	Mr Mhd. Nael KURBE Technical Director
	Mr Wadie BASHKURE Planning Director
The Modern Conserves and Agricultural Industries, Damascus	Mr Bassam F. KANAFAHI General Director
	Mr Riad AL SAWADI Technical and Production Manager
	Mr Antoine LOUIS Technical Adviser
The Syrian Arab Dairy Product Company in Damascus, Damascus	Mr Abdulkader HANASH General Director
The Arab Industrial Company for Vegetable Oil and Soap, Damascus	Mr Abd Elmajeed DKAK General Director

Damascus Biscuits and Chocolates Company, Damascus	Mr Khalil IBRAHIM Production Manager
Boken Water Factory, Boken	Mr Abdul Hamid TRABULSI General Director
Al-Yarmouk Company for Macaroni and Vermicelli Products, Dar'a	Mr Marwan MASSALIME General Director
The Syrian Conserves Company in Dar'a, Dar'a-Mzaireeb	Mr Ghannan ADNAN Chief Technologist
Dreikish Water Factory, Dreikish	Mr Hassan MEHREZ General Director
Homs Dairy Products Company, Homs	Mr Ghassan AL SAHLI Production Manager
Idleb Company for Conserves and Food Products, Idleb	Mr Hassan Najeeb Al S[illegible]l AHMED General Director