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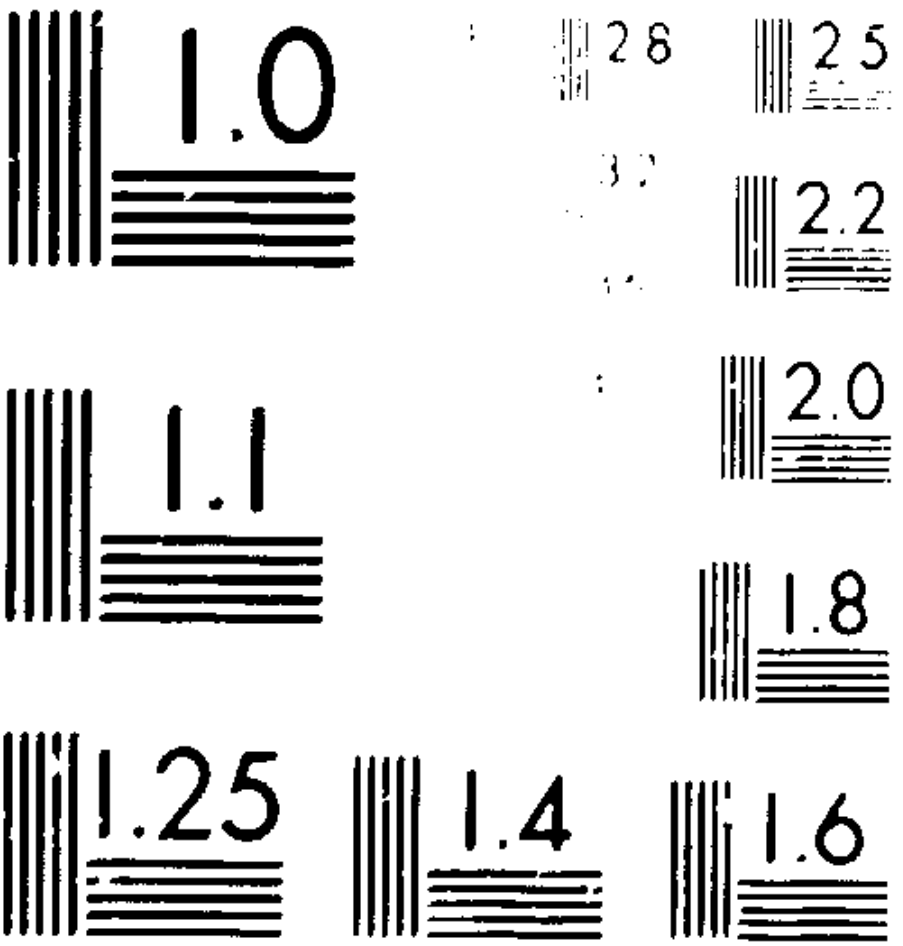
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DEVELOPMENT OF FOOD INDUSTRIES IN IRAQ

Country Paper

presented by the Government of Iraq

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INTRODUCTION:

The subject of assured food supplies is one of the most important matters that occupies the mind of the leaders of the developing countries with a total population of 70 per cent of the world's inhabitants.

It is not intended here to elaborate on the food deficiency problem in developing countries, and also on the constant difficulties facing them in provision of minimum food requirements for their nations because this problem is very evident and has the deepest consideration of all concerned. This can be observed from the many meetings, seminars, and conferences already held in 1980 to discuss strategies for food production.

A ministerial meeting for developing countries was held in Belgrade in July 1980 to discuss the food problem in developing countries and to find means to overcome this problem. In September 1980, a meeting was held in Kuala Lumpur, Malaysia, to discuss food technology in developing countries and possibilities for its development. Also in September 1980, the Food and Agriculture Organization of the United Nations (FAO) held its twelfth regional conference in Athens to discuss the problems of malnutrition and hunger in many countries of the world. The discussion of the sixteenth conference of FAO for Latin American countries which was held at Havana in September 1980, concentrated on the same subject. Furthermore, the Arab Economic Conference which was held in November 1980 and attended by Arabic countries discussed among other topics the subject of assured stocks of food.

Besides such meetings, conferences and seminars at international and regional levels, many other specialized meetings also were held to discuss various branches of nutrition such as sugar, oil, dairy products, cereals and canned foods.

The present international attempts at increasing food production have two directions: the first includes developing countries that are trying to meet their national food requirements by developing their production; however, they are faced with huge technical and financial constraints. A study prepared by FAO that included 64 countries out of 119 developing countries shows that if the population increases in these countries at its present average (2 per cent) and the world food production continues at its present level, the countries studied will need quantities of food at the value of 43 milliard (billion) dollars in 1985. The study also shows

that it is not expected that these countries will be able to pay the value of the food needed for their nations by their financial resources. Neither is possible for developed countries to contribute such an amount of money as a gift to these developing countries.

The second direction concerns the developed countries where there is an average of 2.9 per cent annual increase in food production, while the annual population increase is 1 per cent. Furthermore, there is a central control on the nature and quality of production according to national needs and export requirements.

The desirability of holding this meeting at ministerial level was suggested to UNIDO by the Republic of Iraq with the purpose of studying the experience gained by Iraq in developing food and agro-industries, and of exchanging experiences and know-how with the countries attending the meeting in the belief that the achievements of science and technology should be available to all countries in order to serve their goals of economic independence and improving the conditions of their nation.

CONCISE INFORMATION ABOUT IRAQ:

According to statistical data in 1977, the population of Iraq was 12.1 million, of which 4.3 million inhabited the rural areas. The total area of the country is 43.8 million hectares out of which 12 million hectares is cultivable, 27 percent of the total area. But the area of land cultivated for the time being is 5.75 million hectares. This cultivated area could be classified according to methods of irrigation as follows:

Type of irrigation	Area - million hectares	Percentage of total Cultivated area (%)
Rain fed	2.75	47.8
Surface irrigation	1.75	30.4
Pumping and others	1.25	21.8
TOTAL	5.75	100.0

Before the Land Reform Law of 1958 was introduced, 27 per cent of the landowners occupied 86 per cent of the agricultural land. The remaining 73 per cent of the landowners utilized only 14 per cent of the total land.

The eighth regional conference of the Arab Baath Socialist Party, held in February 1974, indicated a strategy for agricultural sector with the following broad objectives:

- To achieve final land reform in Iraqi rural areas in order to eliminate landlordism and semi-landlord relations;
- To extend the socialist sector in its three forms: State farms, collective farms, and co-operative farms in order to make this sector a leading and developed sector;
- To co-ordinate between agriculture and industry in order to provide most of raw materials needed by the local industry;
- To eliminate all forms of exploitation found in rural areas, especially those related to commercial activities, by giving the responsibilities of marketing and agricultural loans to the social sector;
- To terminate all tribal social relations, customs, and ancient beliefs in rural areas, to spread social culture among the farmers;
- To strengthen the role of women in agriculture development and to free them from exploitation and subjection;
- To develop the economic, social, cultural and health conditions of rural areas, in order to abolish the differences between the rural areas and cities.

As a result of applying the laws of land reform, the total land confiscated until 1978 reached 3 million hectares, which included all agricultural properties subject to confiscation. All these lands were then distributed or lent to about 400 thousand farmer-families.

Also many economic and social relations in rural areas were changed in accordance with the decisions of the Eighth State Conference of the Arab Baath Socialist Party as indicated in the following pages.

DEVELOPMENT OF AGRICULTURAL CO-OPERATIVES AND STATE FARMS:

The first agricultural co-operative was established in 1946, but the co-operative activities remained stagnant for a long time until the revolution of 17 July 1968, after which progress was very fast. The number of agriculture co-operatives reached 831 in 1971, 1,935 in 1978 and 2,337 in 1979. The number of their membership was increased from 126,000 in 1971 to 331,000 in 1978 and to 361,000 in 1979. Also, the area of land allocated to their activities was increased from 1.69 million hectares in 1971 to 5.7 hectares in 1978. The total of 1,721 local agriculture co-operatives were joined into 242 joint co-operatives by 1978.

The number of collective farms increased from six in 1972 to 77 in 1979, and the area allocated for their activities increased from 6,000 hectares in 1972 to about 180,000 hectares in 1979.

The state farms also saw a great deal of progress. They numbered five covering an area of 49,000 hectares in 1968, but their number increased to 41 and their area to 195,000 hectares in 1978.

State farms: These are farms owned by the state and cultivated by agricultural workers paid on a monthly basis.

Co-operative farms: These are farms that are established according to internationally recognized regulations of co-operatives.

Collective farms: These are farms which are formed by combining the lands of farmers to be cultivated collectively, and the profit will be shared according to work performed.

DEVELOPMENT OF AGRICULTURAL POSITION:

The investment budget allocated to agricultural sector increased from US$100 million in 1970/1971 to US$637 million in 1974/1975, sevenfold increase; but the average expenditure for the period was about 66 per cent, then an increase occurred in the expenditure for 1976-1980 of 80 per cent.

The total allocations for 1980 reached US$1,500 million. The above-mentioned amounts are a good indication of large increases in the investments of the agricultural sector, and an improvement in the performance level. But all these did not match the targetted objectives. However, during 1970-1978 the national agricultural product increased from US$530 million in 1970 to US$1,550 million in 1978 (current prices), an increase of about 300 per cent. Also the per capita share of agricultural income in rural areas increased from US$123 in 1970 to US$354 in 1978 (current prices), an increase of 287.8 per cent.

The agricultural loans lent to farmers by the Agricultural Co-operative Bank, a government-owned bank, increased from US$6 million in 1970 to US$63 million in 1978. The total loan which was lent to agricultural co-operatives from this amount reached US$5 million in 1970 and US$41 million in 1978; the total capital of the bank is about US$300 million.

Between 1974 and 1980, the number of scientists and agriculture engineers in the agricultural sector increased from 1,486 to 6,305. The total number of technicians increased from 376 in 1974 to 9,458 in 1980. Besides this, the total expenditure allocated to research and improvement in agriculture increased from US$22 million in 1974 to US$150 million in 1980. This means that the number of researchers was increased fourfold and the number of technicians twenty-five times, and the allocations for research and improvement 6.6 times from 1974 to 1980.

A great deal of progress occurred in the consumption of fertilizers, hence the amounts consumed increased from 58,000 tons in 1970 to 231,000 tons in 1978, representing an increase of 393 per cent.

Similar progress happened in the use of machinery, hence the share of agricultural machines and implements increased from 31 per cent in 1968 to 69 per cent in 1978. Accordingly, the role of the social sector in agricultural operations increased. The number of tractors in this sector was 1,522 tractors out of a total of 9,763 in 1968, however, it increased to 5,076 tractors in 1978 from a total of 22,100; representing an increase of 285 per cent. As for harvesting machines, their number increased from 283 in 1968 to 2,279 in 1978, representing an increase of 805 per cent.

The local manufacture of Antar tractors increased from 1,200 tractors in 1972 to 4,000 tractors in 1977 with 60-80 horsepower.

Also, 20 machine-renting and repair stations were established all over the country to serve farmers with prices lower than the cost.

As for plant protection activities, they expanded to an area of 0.5 million hectares in 1968; however, the scope of activities was extended to 3 million hectares in 1980. Also there are 60 agricultural airplanes that perform pest control and fertilization operations. As a result of plant protection activities, the economical benefits increased from US$36 million in 1973 to US$100 million in 1980.

A great deal of progress took place in cold and frozen storage; the capacity was increased from 1,000 tons in 1970 to 170,000 tons in 1980. For the first time, the country owns 300 cold storage and freezing cars with a per transport capacity of 5-20 tons.

During 1968-1979, the storage capacity of cereals was increased 4.2 times and accordingly the percentage of stationary storage capacity compared to total consumption estimations of cereals was increased from 6.7 per cent in 1968 to 17.3 per cent in 1979. Furthermore, the Government is implementing cereal storage projects that after completion will provide ten times more stationary storage capacity than in 1968.

The local cereal milling capacity increased from 1,910 tons/day in 1970 to 3,644 tons/day in 1975, and 5,644 tons/day in 1980. The share of the state sector was 40 per cent in 1975 and represents 52 per cent at present. This capacity satisfies the flour needs of the country.

WATER RESOURCES OF IRAQ:

Dating back thousands of years, Iraq has depended on the water of the Tigris and Euphrates and their many tributaries: Diyala, Lesser Zab, Greater Zab and Izaim for its water requirements. The amount of water flowing in them is about 79.4 milliard cubic metres. About 70 per cent of river basins are outside the borders of the country and the remaining water amounting to about 24 milliard cubic metres, originates within the borders of the country.

Due to an expected increase in the use of water within the borders of Iran, Syria and Turkey, the amount of available water in the country will be about 50 milliard cubic metres in the future.

The amount of present water needs is estimated at about 44 milliard cubic metres for the demand from municipalities, industry, energy production, fishing, and agriculture. The demand will increase to 72 milliard cubic metres in the year 2000.

The first irrigation department was established in 1918 and its duties were to collect information about river discharges and expected water levels at the time of floods. There was no plan for integrated irrigation and drainage projects for agriculture, but all projects were limited to irrigation facilities without drainage. Therefore, salinity spread to large areas and became one of the most eminent difficulties facing the Government in central and southern parts of the country. This situation is the main reason that retards agricultural production. This resulted from unscientific cultivation of land during the past hundreds of years, without taking into consideration proper usage of water and drainage facilities. Now, the elimination of salinity requires an expenditure of milliards of dollars for land reclamation and integrated irrigation and drainage networks. The reclamation of one hectare of land costs about US$8,000-10,000.

Previous Governments followed a policy of emphasizing water storage projects, and achieved storage capacities of about 97 milliard cubic metres.

After the 17 July 1968 Revolution, the Ministry of Irrigation aimed in its plan to control water resources of the country by dams, reservoirs, energy production, improvement of irrigation systems, and establishment of drainage networks. This plan depended on short and long-term scientific planning for water resources and land. The first stage of a general scheme for water and land development was started in 1975, and the second stage in 1977, to be completed in 1981.

Since 1970, the Ministry of Irrigation had started the execution of many large projects; some are completed and others are under construction or will be executed during the coming ten years. The most important of these projects are:

- Himreen dam on Diyala river with a storage capacity of 3.95 milliard cubic metres. The dam is expected to be completed this year.
- Haditha dam on Euphrates river, now under construction, with a storage capacity of 6.4 milliard cubic metres. It will be completed in 1985.

- Tharthar channels, one with a length of 37 kilometres was completed in 1976, and the other is under construction, to be completed in 1984.
- Main drainage channel between Euphrates and Tigris from Baghdad to Basrah river, with a total length of 535 kilometres, now under construction.
- Kirkuk irrigation project: under construction. It was divided in three stages, the first will be completed in 1982, the second and third during the 1986-1990 five-year plan. This project will irrigate 300,000 hectares of land.
- Mosul dam on Tigris river: The final designs of it are complete. The dam is expected to be completed in 1985, and its storage capacity will be 11.11 milliard cubic metres.
- Bakhma dam on Greater Zab river which is at the stage of study and design preparation. Its total storage capacity is about 17 milliard cubic metres.
- Fatha dam on Tigris river, which is at the stage of study, will have a storage capacity of 23.3 milliard cubic metres.
- Dohuk dam which is under construction, will have a storage capacity of 52 million cubic metres and will irrigate an area of 4,000 hectares. It is expected to be completed in 1983.
- Ishaki main channel, with a length of 42 kilometres that takes its water from Tigris river, was completed in 1979.

Besides all these large irrigation and drainage projects there are other small irrigation, drainage, and small dams already completed in various parts of the country.

The amount of electric energy obtained from already completed storage projects or those which will be completed is more than 3,500 megawatts.

The achievements in irrigation, drainage, and land reclamation are considered still not enough, hence, further efforts will be spent in those fields which are considered as fundamental factors in the development of agriculture and the production of food for the nation and the maintenance of food supplies for the Arab states and other developing countries.

MARKETING OF AGRICULTURAL PRODUCTS:

The status of marketing in Iraq before the 17 July 1968 Revolution was similar to many other developing countries. It could be summarized as follows:

- o Presence of many middle-men in marketing operations;
- o Great variations in prices due to supply and demand;
- o Neglect of marketing services by middle-men such as classification grading and packing;
- o The absence of the Government's role in control, direction and financing.

Before the Revolution, this situation was the main obstacle to making radical changes in redistribution of land property, provision of social justice and good agricultural marketing to help the farmers benefit from agriculture reform law and the many achievements of agricultural revolution, so as not to leave the producers at the mercy of middle-men and an unbalanced situation in supply and demand. To eliminate this condition, the Government applied some fundamental policies for marketing which were concentrated on the following points:

- o Rearrangement of marketing practices, and alleviation or abolishment of marketing charges which were taken from farmers.
- o Application of a pricing policy agreed upon by central committee, by which the prices of agricultural products are limited, taking into consideration the necessity to cover production costs and have some surplus for accumulation of capital for development in agriculture and provide a suitable profit for farmers.
- o Setting limits for consumer prices at levels which are in harmony with people's budgets.
- o Developing marketing practices and introducing new services to create more benefits such as: grading, packing, storage and transportation.
- o Lending loans to farmers with low interest, to encourage them to improve production methods, and to raise productivity means.

In order to achieve these aims, the Government took some measures, the most eminent of which were:

- Establishment of specialized marketing enterprises such as Cereals Marketing Organization and Agricultural Marketing Organization for marketing all agricultural products of the social, co-operative and private sectors.
- Establishment of many industrial projects to produce wrapping and packing materials.
- Building many wholesale markets that cover all agricultural regions and supplying them with modern implements for weighing, grading, wrapping and packing with ordinary cold and frozen storage.

At present, cereal marketing is under complete control for imports or purchasing from farmers by prices fixed by the Government. The Agricultural Marketing Organization took the responsibility for all agricultural products, except cereals, through 62 wholesale markets of fruits and vegetables besides many slaughter houses.

The role of mediator was abolished and the Agricultural Marketing Organization is performing the duties of regulation, supervision, provision of containers, weighing balances and preparation of contracts for selling and buying. It charges 2-3 per cent interest for these services.

As a result of this policy, the quantities of marketed agricultural products by the Agricultural Marketing Organization increased as indicated below:

Year	Vegetables (tons)	Fruits (tons)	Poultry (tons)	Beef (tons)	Table Eggs (million)
1972	335	60	3	-	341
1975	663	89	19	-	604
1980	1,500	500	147	243	1,756

The above data shows the prominent role of the Agricultural Marketing Organization in the marketing of farm products. Already, it began to establish large wholesale markets that contain storage, grading, wrapping and packing facilities for this purpose.

INFRASTRUCTURE:

In order to produce packing materials, the Government established two factories for the production of plastic boxes, each with a capacity of 16-20 kilogram. The present annual production for both factories is 3.5 million plastic boxes which could be raised to 6 million boxes annually in the future.

Last year, a large project was completed for the production of polyethylene and polypropylene sacks with a capacity of 50 million sacks per year of 50 kilogram capacity per sack, to pack agricultural products and foods.

Knowing the prominent importance of fundamental structures in development of agriculture, the Government started a plan to collect small village inhabitants in large villages, hence hundreds of modern villages containing 66,000 houses were built up to 1980. Also, a plan of rural electrification was implemented and by mid-1980, a total of 2,240 villages were supplied with electricity. This includes all villages which have 40 houses or more with inhabitants forming 65 per cent of rural population. Moreover, another plan aims at the electrification of 2,260 villages by 1982 that contain less than 40 houses.

Drinking water was also supplied to 65 per cent of the country's villages.

One of the most prominent achievements in rural areas is the illiteracy campaign which was launched by the Government to teach 2.212 million illiterate persons in a period of three years which ends in 1981, and for this purpose, a budget of US$225 million was allocated.

The results of the campaign are very good; it is hoped that the country will be rid of illiteracy at the end of 1981 and will be one of the few developing countries that have eliminated illiteracy. At the same time, the law of compulsory education for the elementary level was enforced in 1979 and for this purpose, 44,000 classes were built and 40,000 teachers prepared. Furthermore, education in Iraq is free of charge at all levels and a free meal is also provided daily to elementary students.

The Government is giving the provision of health facilities in rural areas the most emphasis through thousands of medical cadres, both local and from Arab and friendly countries due to the shortage of cadres at present. It is very rare to find a large village without a health centre and all medical treatment is free of charge in Iraq.

Also, the Government enforced five years ago, the law of free health insurance in rural areas through national health centres.

With regard to veterinary services, there are 18 hospitals, 343 veterinary service centres, and 18 veterinary extension centres with 1,400 cadres to provide veterinary services in rural areas including 400 veterinary surgeons.

After completion of the national microwave network all over the country and connecting it directly to satellites for international communications, the Government directed its efforts towards the connection of rural areas with cities by telephone lines, specially large agricultural production districts, and started to execute a large programme for this purpose which is expected to be completed in 1985.

Transportation is considered as a backbone for providing various services to rural areas and conveying agricultural products to local markets. Therefore, the Government executed an ambitious plan to improve land and river transportation. For the first time after a long period of neglect, both rivers of Tigris and Euphrates are utilized as a cheap means of transportation for various goods and agricultural products. For this purpose a fleet of vessels with a shipping capacity of 250,000 tons was put into operation. Furthermore, it is planned to increase this capacity to 6.5 million tons by 1985. In addition, the railway transportation capacity will be increased by improving the present permanence of railways, also by extending new railways, as a result of which the railway transportation capacity will be increased from 16.75 million tons in 1980 to 24.3 million tons in 1985.

The Revolutionary Government realized that the successful achievement of its plans in the rural areas would depend mainly on the support of farmers who are the main beneficiaries of social changes. Therefore, it enacted a law to form the General Union of Farmers Societies and another law to establish agriculture co-operatives. In 1977, as a result of social and political progress, these two institutions were combined to form the General Union of Farmers and Co-operative Societies which aids the Government in raising the economic and social conditions of the farmers, as well as protecting their benefits and rights. For this purpose, the Government established the Social Security Fund in order to give a pension to old farmers upon reaching retirement age, similar to the Labour Social Security Fund. This is to maintain their good living standard during old age.

DEVELOPMENT OF FOOD INDUSTRIES:

There are two schools of thought for developing food industries. The first believes in promoting agriculture and providing surplus of agricultural crops prior to establishing food industries projects which should absorb this surplus.

Such a trend is followed in the developed capitalistic world for developing food projects, since development of agriculture took a very long time before food industries projects were established. The rationale of this school is the availability of raw materials, full capacity operations and high economic return.

The development of agriculture and producing a surplus of agricultural crops takes a long time, especially in the developing countries which lack the resources for a fast agricultural development; this means that new food projects should not be established before such a surplus is reached.

The second school believes in promoting agriculture and agro-industries at the same time and parallel to each other where food industries projects are established on the sites in which natural and material requirements are available to develop agricultural crops which are used as a raw material for the production.

Such a method is followed in sugar, vegetable oils, vegetables and fruits canning, wine, starch, sugar syrup, tomato concentrates projects, etc.

Where it is possible, agriculture should be started alongside the establishment of the industrial project. The advantages of this trend is that the state development of agriculture and agro-industry is done at the same time and this has a high socio-economic return.

However, it happens that progress is not even in both agriculture and industry due to either ill-planning or delayed execution which results either in the establishment of the industrial projects with one or more years delay in their commissioning because of shortages in raw materials or production of raw materials and the industrial project is not ready yet to consume them.

Nevertheless, and in spite of the above shortcomings, the experience of the Socialist countries and our experience proved that this trend is preferable.

A plan for developing industry in general and especially food industry was laid down by both the Ministry of Industry and Minerals and the Industrial Development Centre for Arab States (IDCAS), in view or a field survey made for this purpose on the food sector, taking into account the position of manpower, raw materials (available or to be made available) importation and consumption.

Both the Ministry of Planning and the Ministry of Industry and Minerals carried out the necessary techno-feasibility studies of the new industrial projects executed in the country which were all the work of Iraqi specialists.

A special organization called the State Organization for Industrial Design and Construction was established within the framework of the Ministry of Industry and Minerals to prepare studies, designs, tender documents, contracts for civil engineering works, supervise erection, commissioning and training of technical personnel and finally hand the new project to one of the productive state organizations concerned with the food industry. The State Organization for Food Industries also takes the responsibility of commissioning of the new projects.

From the above, it can be seen that there are separate organizations for planning and execution on the one hand and others for administration and operation and this is to allow for better performance by each organization. Co-operation and co-ordination between these organizations are maintained through the Ministry of Industry and Minerals.

In view of the above, a number of projects were executed. These projects comprised the following industries: sugar, vegetable oils, dairy, canning, date, soft and alcoholic drinks, grains, baby food, cigarettes, etc. Detailed studies of the above projects are already available in order to visualize the country's experience in this respect.

In the field of sugar industry, production capacities increased from 1,000 to 5,000 tons per day beetroot in the period 1970-1980.

A cane-sugar factory was constructed with a capacity of 5,000 tons per day. The sugar refining capacity has also increased from 100 to 1,480 tons per day in the same period.

A project for liquid sugar, the first of its type in the world, was also constructed to produce liquid sugar from dates, the capacity of which is 30,000 tons per year of liquid sugar.

Other projects were also constructed like those for the baker's yeast, and single cell protein from molasses and animal fodder grains from beetroot residue and molasses. In addition to that, the use of bagasse sugar-cane residue in the paper industry.

However, and in spite of this increase in capacities, the capacities depending on local raw materials were still unable to meet more than 25 per cent of local demand for sugar in 1980. They still suffer from shortages in beetroot for the existing factories. The rest of the white sugar needed for local consumption is maintained through refining imported raw sugar.

Per capita consumption of sugar in Iraq was around 32 kilograms in 1979 and this figure is much above similar figures for the surrounding countries.

In the field of vegetable oils, production was increased, through the years 1970-1980, from 61,000 to 18,000 tons, consequently, per capita consumption was increased from 6.5 to 12.5 kilograms; that is production was increased by 300 per cent. This increase was maintained through the extension of the two factories already existing in Baghdad, and the construction of two new projects: one in the southern part of Iraq and the other in the west.

The vegetable oil industry is one of the few industries already existing in the country since the forties. It is characterized by developed and assorted products. However, development of oil seeds production is far inferior to its consumption, such a shortage is compensated through imports. All studies indicate that consumption should increase in 1990 to 240,000 tons; therefore, per capita consumption should increase to 14 kilograms. For this reason, the associated bodies are planning to create new capacities to cover such an increase.

As for the dairy industry, which started in Iraq during the last two decades with a small plant with a capacity of 20 tons per day of raw milk donated by the United Nations Children's Fund (UNICEF), actual development only started in 1970, when the number of factories increased from one factory with a capacity of 20 tons per day to 11 factories with total capacity of about 1,000 tons per day. Thus, production capacity has increased 50 times.

The number of raw milk collection centres has also increased from four, with a total capacity of 105 tons per day, to 41, with a total capacity of 1,030 tons per day; the increase is 10 times more than before

In addition to that, seven ranches specialized in buffalo breeding were established to supply dairy industries with approximately 110 tons of raw milk daily. With the materialization of these projects, the per-capita consumption of the dairy products of the socialistic sector has increased from 3,750 kilogram per year to 20 kilogram per year. Of course, there are other sources of dairy products coming from the private sector, home production and imports.

Products of dairy industries in Iraq include sterilized milk packed in bottles or tetra packs, butter, cheese, yoghurt, ice cream, etc.

By the time this ministerial meeting is held, the Ministry of Industry and Minerals will have completed the erection of the first project of its type in the region for the production of baby milk. The cost of this project, which will produce 25 million tins of half kilogram weight capacity is US$30 million.

Although the Government has exerted tremendous efforts in the development of the dairy industry, in our opinion however, these efforts cannot be considered more than a start, since the total quantity covered by the public sector is only 20 kilogram per year which is still too far from the set target and there is a lot of raw milk produced in the country which is still out of reach of the dairy industry.

The achievement of Iraq in the field of milk production, collection and processing development, represented by the specialized ranches of buffalo breeding, raw milk collection centres, refrigerated transporting trucks, regional distribution of dairy industries in the country, is at the disposal of friendly countries to study and use since it is a good trend for a developing country to follow.

The canning industry was also established at the beginning of the sixties with a small factory in Kerbala city with a capacity of 2,000 tons per year of finished products. This industry developed and the number of factories increased to six with a total capacity of 124,000 tons per year of different canned vegetables, jams, fruit juices, baby food, tomato concentrate, dried onion, vinegar and pickles, date syrup, etc.

These factories were supplemented by complementary units for the production of metallic containers as well as other projects established in other parts of the country for the production of packing and packaging materials, glass jars and bottles, cardboard containers, and a training centre within the State Enterprise for Canning for the training of the personnel needed by canning industry.

In order to give an idea of the support given to this industry by the Government, it is enough to point to the total capital invested in this industry over the period 1970-1980, which amounted to US$40 million as compared to only US$2 million invested in this industry up to 1970. The number of employees also increased from 229 to 2,500 in the period 1968-1980.

Iraq is considered the biggest date-producing country in the world. Out of 85.5 million palm date trees in the world, 22 million trees are in Iraq, the production of which is 350,000 tons per year of dates compared with 2.2 million tons world production.

In spite of the fact that Iraq is controlling 80 per cent of the world date trade, big quantities of them still remained unsold which has had a bad impact on date producers and price fluctuations in foreign markets. In order to make use of this resource which is characterized by its high content of sugar - 50-60 percent of the weight - a market survey was made for the export potential for future years; also investigation of the industries which could be economically established using dates as a raw material. In view of these studies, projects for the production of liquid sugar, protein, alcohol, vinegar were established. Some of the projects have already been commissioned while the rest will be completed this year.

The quantities of dates needed for these projects are in the range of 100,000 tons per year and it is expected that the products will replace counter products which used to be imported.

Besides these projects, there are other studies concerning other industries for the production of citric acid, glucose and fructose, dried sugar, etc.

For better utilization of dates and the protection of the trees, the Government established a date research centre which is equipped with up-to-date laboratories, instruments and a pilot plant. In order to contribute its experience to the development of palm tree plantations and the use of

their products, Iraq took the initiative of being a host country to the Regional Centre for Dates and Palm Trees, which was sponsored by the Food and Agricultural Organization (FAO), to give assistance to the countries of the region in this field.

The soft and alcoholic drinks industries occupy a significant place in food industries. That is because of the hot climate and the need for refreshing drinks. The soft drinks industry started at the end of the forties with one factory having a capacity of a few thousand boxes per year.

By 1960, the number of factories increased to 12, and total production capacities reached 10 million boxes per year. In 1970, production was boosted to 30 million boxes per year, and it continued to increase until it became 50 million boxes by 1980. The share of socialistic sector in this production is approximately 75 per cent.

A grape concentrate project with a capacity of 1,500 tons per year, was established to provide the raw material for some soft drinks industries. A project for mineral water, which is the first of its type in the country, will start its production in the middle of next year. The capacity of this project is 21 million litres per year.

Aside from that, it was planned to execute projects by 1985 which should increase capacities of the socialist sector by an amount of 30 boxes of soft drinks per year.

As far as beer industry is concerned, this industry started in the beginning of the forties with a capacity of one million litres per year. It grew slowly until 1970 when capacity became 7.5 million litres, however, it greatly expanded during the last ten years and total capacities became 100 million litres per year, distributed amongst five factories; three of which belong to the public sector, one to the mixed sector and one to the private sector.

The production capacity of the beer industry is expected to reach 112 million litres per year at the end of 1981 and possibly be increased to 150 million litres per year by 1985 by providing existing factories with new equipment.

This increase in production capacities was accompanied by the production of malt from local barley, the annual production of which is 10,000 tons. Any shortage is compensated by imports.

As far as the alcoholic drinks industry is concerned, this industry was known in the country since ages, and it is used to depend on grapes and dates as raw materials, but it was a primitive industry until the year 1945, when a new and a modern industrial project was established, and after a short period another factory was established. After that, the demand for this type of alcoholic drink and both types of pure and denatured alcohol, remained steady; that is, in the range of 2.5 million litres until 1970, then it shot up rapidly to reach 10 million litres in 1980.

This industry remained entirely a private sector enterprise until a new and modern socialistic sector project for the production of absolute alcohol - 96.4 per cent pure and denatured, with a capacity of 2.2 million litres per year - was established. All alcohol produced in the country comes from dates. The wine industry, in its turn, is also an old industry; however, it depended principally on domestic production.

In the forties, two private sector factories with a capacity of six million litres were established, but their technology was relatively retarded until a new and modern public sector project of a capacity of one million litres per year was established in 1979. It is noted that the wine consumption in Iraq is still limited.

Achievements in the field of the soft drinks and alcoholic drinks industry would certainly achieve self sufficiency, especially with respect to soft drinks and beer for which the demand is growing yearly, and this complies with the country policy in developing non-alcoholic or low-content alcohol drinks production.

The expansion in soft drinks and alcoholic drinks production is accompanied with a similar expansion in the production of packing and packaging materials. Projects for the production of colourless and coloured bottles, crown corks, plastic boxes were established all of which belong to the public sector.

As far as tobacco and tobacco processing is concerned, the tobacco plantation was introduced to Iraq nearly 400 years ago, however, cigarette production continued to be manual until 1926, when the first factory was established. Tobacco production and processing has developed rapidly since the end of the sixties, when Virginian tobacco species were planted and projects for sacking tobacco and industrial fermentation and filters production were established.

As a result of this development and improvement, the quantities of processed tobacco were increased from 9,000 tons in 1974 to 21,000 tons in 1979 and the country became an importer of certain species of tobacco for making certain blends after it was an exporter of some of its production. Production also increased from 27 million gross in 1970 to 75 million in 1979. It was also planned to establish a big cigarette factory in Baghdad to replace the existing factory. This factory will contain modern production lines with capacities of 80 million gross per year.

Among the other agro-industries which were developed throughout the past ten years is the poultry industry. Poultry production in the past depended on peasants families. The first attempt to mechanize poultry produced was carried out in 1905 when a small project with a capacity of 500-600 chickens was established. Afterwards, many projects with larger capacities were established by the private sector and the Ministry of Agriculture. However, capacities remained small, that is, they did not exceed 10,000 chickens. Table eggs, however, were not commercially produced until the beginning of the seventies. In 1965, the state-owned poultry enterprise was established. It took the responsibility of developing this vital sector by starting a number of huge projects for the production of eggs and meat chicken. The period from 1970-1980 showed a tremendous increase in production figures, when egg production in the public sector increased from 30 million eggs in 1971 to 900 eggs in 1980, and it will reach 1,460 million eggs at the end of 1982. With regard to meat chicken, production has increased from 1,5 million chickens in 1970 to 20 million in 1980 and it will reach 58 million chickens in 1982 within the public sector.

With this regard, the co-operative sector is still weak. Its production did not exceed 11 million meat chickens and one million table eggs in 1978.

However, it started to play a major role in the production of eggs and chicken, it does not incline to the production of eggs because of the high cost of production and the low selling prices which are fixed by the state. Egg production - both mechanical and domestic - in this sector, does not exceed 15 per cent of the total production of the country. As for meat chicken, due to the subsidies provided by the state to this

sector, its development could be noted throughout the past years and production reached 40 million chickens in 1980 and it is expected that this sector should meet the country's needs for chicken in the two years coming, and thus, importation will stop. Poultry industry in Iraq is considered a complementary industry where it goes from hen production and hatching to farms, butcheries and fodder factories.

The country's production of eggs provide 80 of the 118 eggs per year that at present form the per capita consumption. The rest is met by imports. The national development plan for 1981-1985 stated that the per capita consumption should be increased to 150 eggs per year and this figure in our opinion is too ambitious if compared with this stage of development.

With regard to per capita consumption from meat chicken, the figure is approximately six kilograms, which is mostly covered from local production. It will shoot to 10 kilograms in the next five years. It will also be covered by local production.

Fishing industry, in its turn, is also backed by the Government. This is due to the fact that Iraq owns vast internal water areas which are estimated at 1,035,000 hectares, although it is not a marine state because its share of the Arabian Gulf does not exceed 100 kilometres. But this potential was ignored in the past, whether in internal waters or sea waters.

Aside from the primitive means and the non-scientific methods followed in this field, fishing was controlled by the private sector until 1972. Per capita consumption of freshwater fish was 2.16 kilograms per year in the period 1965-1972 and 0.3 kilogram per year of sea fish. The average production of freshwater fish was 20,000 tons and sea fish 2,250 tons. The first state-owned fishing company was established in 1972, which took the responsibility of building a modern fishing fleet for catching sea fish and contracting cold stores, transport freezer cars. Additionally, during the same period, a joint enterprise with the Soviet Union was established for catching sea fish, in which Iraq owns 51 per cent of the shares. In the last two years, joint enterprises for catching sea fish were established with Somalia and Democratic Yemen as well as fish farms in the internal waters.

As a result of these efforts, the average quantities of sea fish caught increased from 3,250 tons to 16,100 tons compared with the period preceding 1972, however, the average fish production in the internal waters decreased to 18,000 due to bad fishing practices and delayed new projects in this field. Moreover, it was planned to increase freshwater and sea fish catches to 83,250 tons in 1985. Thus, the per capita consumption should increase from 3 kilogram in 1979 to 5.5 kilogram in 1985, apart from the quantities produced by the above-mentioned joint enterpris

We expressed above, in brief, the position in food industries the efforts exerted to develop this sector in order to give a clear picture of the volume of projects executed in this sector. We should point out the amount of investments already expended on food projects which reached US$170-200 million per year during the period 1970-1980.

DEVELOPMENT OF AN AGRICULTURE AND AGRO-INDUSTRY PRODUCTION INFRASTRUCTURE:

The establishment of agriculture and agro-industry projects was accompanied by harmonious work to provide the infrastructure for such a development so as the production would be economical, taking into consideration the use of all sources of materials available in the country.

Accordingly, the chemical fertilizer industry - both nitrogenous, phosphate and compound - was created and the first project for urea production was started in 1971 with a capacity of 50,000 tons per year. In 1976, this project was extended to double its capacity nearly eight times and to produce 420,000 tons per year.

An investment was made in a similar project with a capacity of one million tons per year in 1979. The state organizations concerned carried out technical and economical feasibility studies for a new project for the production of nitrogen fertilizers also with a capacity of one million tons, and it is expected that the project will be executed during the national development plan for 1981-1985.

A giant project for phosphatic exploitation in the western region of the country was also started five years ago to produce 3.4 million tons of phosphate ores per year which in turn should produce 1,7 million tons of phosphorous pentoxide, 1.5 million tons of sulphuric acid, 400,000

tons of phosphoric acid, 250,000 tons of mono-ammonium phosphate, 600,000 tons of tri-superphosphate and 272,000 tons of compounded fertilizers per year and it is expected that these projects will be completed during the first half of 1981. These giant projects should not only meet local demands but also the requirements of other developing countries which is Iraq's objective in facilitating food assurance to the people of these countries.

In 1970-1971, the General Enterprise for Mechanical Industries started commercial production and its production for the agricultural sector includes various agricultural tools in the range of 10,000 per year, 60-80 horsepower tractors with a capacity of 4,000 tractors per year, 7-20 ton capacity trailers in the range of 3,000 trailers per year.

In the field of fodder concentrate production, the first factory with a capacity of 10 tons per hour was established in 1972 and during the last ten years, 16 other factories have been established. Thus, the total production capacities made available to the public sector were 200 tons per hour. Accordingly, fodder concentrate production in this sector was increased from 15,000 tons in 1972 to 650,000 tons in 1979 and it is planned to boost capacities to 278 tons per hour during the next five years. Thus, the available capacities should reach 1.620 million tons by 1985 considering the capacities available to the private sector which are estimated at 370,000 tons per year. During the last ten years, fodder stores with 300,000 tons capacity were established by the socialist sector. Aside from that, the state established two projects, for protein concentrate production from molasses and dates, which have a total capacity of 10,000 tons per year, for blending with other ingredients to make compound poultry fodder.

The capacities available and those which are to be made available during the next five years should meet the country's needs for fodder until 1985. The problem which the country faces now is not to provide production capacities but to provide raw materials essential for fodder concentrate production, since a major part of it is still being imported in spite of the big efforts exerted in this field; and this situation will continue for the next few years.

With the objective of developing irrigation and draining schemes established during the past ten years, five plants for the production of asbestos and plastic tubes and their accessories with total capacities of 62,000 tons per year were established.

In the field of packing and packaging materials, some projects were established within the public sector to produce plastic boxes with capacity of 3.5 million boxes per year; in addition to capacities available to the private sector which are estimated by 0.5 million boxes per year. Within the giant paper factories in Basrah and Misan, there are production lines for carton and egg tray. During the few coming months, an investment will be made in a project to extend the glass factory for the production of bottles and jars. Thus, the production capacity of these items will increase from 13,000 tons to 76,000 tons per year to supply food industries especially the dairy, soft drinks and canning industries with its packing requirements. In addition to that, the production lines existing within the vegetable oil and canning industries for the production of plastic bottles and metallic cans will also be extended.

The state was also concerned with providing personnel at different levels. Aside from the six universities now existing in the country which supply food industries with their requirements of engineers, food specialists, chemists, economists, administrators, etc., and the technical institutes organization with its 19 institutes which provide middle management personnel to those industries, the Ministry of Industry and Minerals is establishing a training centre to provide three-year courses in theory and applied subjects to train skilled labour in different branches of the food industry. A similar project specialized in training labour for the canning industry was also established, before the foregoing project, with the aid of the Food and Agriculture Organization of the United Nations. There are also training units in the oil and sugar industries.

The second Arab Conference for Food Science and Technology, held in Riyadh, Saudi Arabia in 1979 took a resolution regarding the establishment of an Arab college to provide graduate technological engineers in the field of food industries for all Arab countries. The Government of Iraq has already donated the land and building to this college for which the technical and economical feasibility studies have been accomplished and it is hoped that the establishment of this college will materialize early next year.

In the field of scientific research, the specialized centres in the Iraqi Scientific Research Establishment, together with the concerned industries, carried out a number of studies which solved part of the technical and production problems of these industries. The Ministry of Planning recently approved the technical and economical study of the specialized food research centre which will be attached to the State Organization for Food Industry, and fixed the assets necessary for its establishment. This centre will be provided with laboratories and pilot plants for conducting applied research.

As a result of executing a great number of industrial projects during the past ten years, a great deal of experience was developed in the country in the fields of industrial survey, planning, technical and economical feasibility studies, design, construction, training of a group of highly qualified personnel in different specializations, and the country became capable of providing know-how and assistance to other interested developing countries. This does not mean that there is a surplus of experts and technical and economical personnel because the volume of work is still vast and there is still a lot to be done in the field of food industries. Despite of what has been achieved so far, it is still nothing but a sound foundation for qualitative and quantitative development in this field where the revolutionary Government in its first years was concerned with providing food and clothing to the poor and then gradually upgrading their social and economical standard, together with the planned and studied progress in executing the revolution programmes for the happiness of mankind.

Achievement in the field of food industry throughout the past ten years, is considered the first step in a long journey to realize the country's planned strategy. This experience, in spite of its vastness and brightness, is surely like any other experience in the world - accompanied with some defects and shortcomings; and we are pleased to say that these shortcomings have been detected and we should be able to overcome them in the future. This experience, although still young, is put at the disposal of other developing countries to benefit from and to exchange with their experiences to benefit and complement experiences emerging from our belief that science and technology are the products of the experience of mankind at large and not the exclusive property of any nation or people, it should be for all people everywhere. This is what we believe in and strive to realize.

We hope that we have enough experience to put it at the disposal of others and this is the inspiration of our party and revolution ideology which enlightens our thoughts, plans and our relations with others.