

**ARAB REPUBLIC
OF EGYPT**



**INVESTMENT
AND
FREE ZONES
AUTHORITY**

Sectoral Survey 2

**THE PRODUCTION AND PROCESSING OF EGYPTIAN,
LIVESTOCK, POULTRY, AND FISH PRODUCTS**

1982

CONTENTS

Preface	ix
Introduction	xi
Three Reports on the Egyptian Food Sector	xiv
1. EXECUTIVE SUMMARY	1
Red Meat and Dairy Products	2
The Ministry of Agriculture Strategic Plan 2 Joint-Venture Opportunities in Livestock Production 4 Sheep and Goats 5 Joint-Venture Opportunities in Meat Processing 5 Joint-Venture Opportunities in Milk Processing 6	
Poultry Products	7
Poultry Meat Production 8 Egg Production 9 Joint-Venture Opportunities in Poultry 10	
Rabbit Farms and Prepared Livestock and Poultry Feeds	11
Fish Products	12
2. OVERVIEW OF EGYPTIAN AGRICULTURE	15
Small Landowners	17
Crop Production 17 Animal Production 18	
Large Landowners	20
Fish Production	22

3.	THE PRODUCTION, PROCESSING, AND DISTRIBUTION OF RED MEAT AND DAIRY PRODUCTS	23
	Introduction	23
	Livestock Population and Products	28
	Cattle and Water Buffalo	34
	Meat and Milk Production 36 The Ministry of Agriculture Strategic Plan 42 Joint-Venture Opportunities 51	
	Sheep and Goats	56
	Meat and Milk Production 57 Joint- Venture Opportunities 57 The Ministry of Agriculture Strategic Plan 57	
	The Processing and Distribution of Red Meat	59
	Joint-Venture Opportunities 65	
	The Processing and Distribution of Dairy Products	68
	Joint-Venture Opportunities 75	
4.	THE PRODUCTION, PROCESSING, AND DISTRIBUTION OF POULTRY PRODUCTS	79
	Introduction	79
	Poultry Meat Production	82
	The Ministry of Agriculture Strategic Plan 89	
	Egg Production	92
	The Ministry of Agriculture Strategic Plan 97	
	Joint-Venture Opportunities	100

5.	RABBIT FARMS AND PREPARED LIVESTOCK AND POULTRY FEEDS	111
	Rabbit Farms	111
	Prepared Livestock and Poultry Feeds	114
	Livestock Feed 114	
	Milk Replacers 116	
	Poultry Feed 117	
6.	THE PRODUCTION, PROCESSING, AND DISTRIBUTION OF FISH PRODUCTS	119
	The Production and Consumption of Fish in Egypt	119
	Fish Production and Joint-Venture Opportunities	124
	Aquaculture and Joint-Venture Opportunities	129
	The Ismailia Fish-Farming Company 131	
	Aquatic International, Inc. 132	
	Government Fish-Farm Projects 132	
	Highly Intensive Aquaculture 132	
	Other Fish-Farm Projects 133	
	Development of Lake Bardaweil 134	
	Fish Distribution and Joint-Venture Opportunities	135
	Fish Processing	137
7.	A REVIEW OF POTENTIAL INVESTMENT OPPORTUNITIES	139
	Profile 1: Large Integrated Dairy Project	143
	Profile 2: Small Dairy Project	145
	Profile 3: Milk-Processing Plant	146
	Profile 4: Automatic Slaughtering Plant	148
	Profile 5: Processing and Packing of Imported Frozen Meat	150

Profile 6:	Integrated Finishing Lot	152
Profile 7:	Meat Canning	154
Profile 8:	Breeders for Broiler Chicks	156
Profile 9:	Layer Chicks	157
Profile 10:	Automatic Slaughterhouse for Poultry	158
Profile 11:	Retail Outlets for Prepared Chicken	160
Profile 12:	Integrated Poultry Project	161
Profile 13:	Fish Farm	163
Profile 14:	Lake Bardaweil	165
Profile 15:	Retail Outlets for Prepared Fish	166
Profile 16:	Mobile Retail Fish Stores	167

TABLES AND EXHIBITS

Table 2-1	Distribution of Land Ownership in Egypt, 1977	16
Figure 3-1	Egyptian Consumption, Production, and Imports of Red Meat and Dairy Products, 1972 and 1980	25
Table 3-1	Breakdown of Consumption of Meat and Dairy Products in Egypt, 1980	27
Table 3-2	Value of Farm Production of Livestock Food Products in Egypt, 1980	29
Table 3-3	Egyptian Livestock Population and Numbers Slaughtered: Selected Years, 1974-1981	31
Table 3-4	Red Meat Production, Imports, and Consumption in Egypt, 1979-1981	33

Table 3-5	Number of Cattle and Water Buffalo/ Milk and Meat Production, Compared to Egyptian Population, 1972 and 1980	35
Figure 3-2	Percentage of Male and Female Water Buffalo in Egypt for Various Age Categories, 1970	39
Table 3-6	Number and Average Weight of Cattle and Water Buffalo Killed, By Category, at Official Egyptian Slaughterhouses, January 1- August 31, 1980	41
Table 3-7	Egyptian Per Capita Production and Consumption of Cattle and Water Buffalo Meat and Milk, 1980 and 2000	43
Table 3-8	Projected Annual Production of Cattle and Water Buffalo Meat and Milk Through 2000, Based on the Egyptian Ministry of Agriculture's Strategic Plan	51
Table 3-9	Estimated Number of Livestock Slaughtered in Egypt by Local Butchers and Official Abattoirs, 1979	60
Table 3-10	Egyptian Output of Conserved Meat Products, 1973-1979	64
Table 3-11	Egyptian Imports of Canned Meat, 1973-1981	65
Table 3-12	Production of Milk and Dairy Products in Egypt, 1976-1980	70
Figure 3-3	Egyptian Imports of Selected Dairy Products, 1973-1981	73
Figure 4-1	Egyptian Poultry Meat Production, Imports, and Consumption: Selected Years, 1974-2000	83

Figure 4-2	Egyptian Per Capita Consumption of Poultry Meat: Selected Years, 1974-2000	85
Table 4-1	Egyptian Poultry Meat Production as Projected by Ministry of Agriculture by Type of Poultry Producer, 1980-2000	88
Figure 4-3	Egyptian Egg Production, Imports, and Consumption: Selected Years, 1974-2000	93
Figure 4-4	Egyptian Per Capita Consumption of Eggs: Selected Years, 1974-2000	95
Table 4-2	Egyptian Village and Commercial Egg Production as Projected by the Ministry of Agriculture, 1980-2000	98
Table 4-3	Estimated Broiler-Slaughtering Capacity in Egypt, 1981	103
Table 5-1	Rabbit Farms (Multiple Projects)	112
Figure 6-1	The Production and Consumption of Fish in Egypt, 1976-1981	121
Table 6-1	Estimated 1980 Fish Catch in Egypt by Source, Suggested Potential of Principal Sources, and Approximate Ministry of Agriculture Goals for the Year 2000	125
Table 7-1	Joint-Venture Possibilities Discussed in Report on Production and Processing of Livestock, Poultry, and Fish Products in Egypt	140

A GUIDE TO DOING BUSINESS IN EGYPT
follows page 167 of this report.

PREFACE

This report is one of a series published by the General Authority for Investment and Free Zones and designed specifically to promote the participation of U.S. companies in investment projects in Egypt.

Funded by the U.S. Agency for International Development (U.S. AID) and prepared by the Chase World Advisory Group of Chase Trade Information Corporation, these reports focus on sectors of the Egyptian economy which offer the foreign investor specific investment opportunities in significant areas of the Egyptian economy ranging from pharmaceuticals; the processing and distribution of food crops; and the production and processing of livestock, poultry, and fish products; to construction materials, components, and systems; and electrical and electronic machinery.

There are ten reports in all. This second report, on the production and processing of livestock, poultry, and fish products, was prepared under the direction of Dr. Ray S. Kelley, Jr., of Chase Trade Information Corporation.

INTRODUCTION

The Egyptian demand for meat, egg, and dairy products substantially exceeds supply. In 1981, close to \$4 billion was spent by Egyptians for 4 million MT (metric tons)* of animal products, an estimated 35 percent of which was imported. If there were no government controls on local red meat sales and imports by government agencies were not limited, consumption probably would be much higher.

Although the caloric and protein intake of the average Egyptian is above minimum requirements, animal protein represents a small percentage of the national diet--probably about 15-25 percent of the total protein consumed. As per capita income increases, animal protein will be increasingly in demand. The government hopes that by the year 2000, as the country's population increases over 60 percent to about 70 million persons, per capita animal protein consumption can be increased by at least 50 percent.

To achieve this goal, Egypt either must increase local production of animal and dairy products or face huge

* A metric ton is 1,000 kilograms, or about 2,205 pounds. Unless otherwise specified, the term "ton" refers to a metric ton (MT) throughout this report.

foreign exchange drains from rapidly increasing imports. Imports already have increased substantially. The value of imported animal products which, in 1973, was less than \$20 million, in 1981 is expected to amount to at least \$600 million. A recent USDA report projects that 1981 imports of these animal products will be nearly \$900 million.* In any event, unless local production expands, the value of animal product imports could reach several billion dollars annually by the end of this century. A rapid and sustained growth of Egyptian meat and dairy products is therefore a major element of the government's food security program. Goals have been established to make Egypt nearly self-sufficient in animal products by the year 2000, and programs have been proposed for achieving these goals.

In 1980, Egyptian farmers and fishermen produced:

- o 600,000 MT of meat, including fish
- o 1.9 billion liters of milk
- o 2.1 billion eggs

The farm value of these products was an estimated L.E. 1.3 billion.

* J. Parker and J. Coyle, Urbanization and Agricultural Policy in Egypt, U.S. Department of Agriculture, Washington, D.C., September 1981.

Achievement of the per capita consumption and self-sufficiency goals of the government plan will require the following annual production levels by the year 2000:

- o 2.1 million tons of meat (3.5 times 1980 production)
- o 5 billion liters of milk (2.6 times 1980 production)
- o 8.3 billion eggs (4 times 1980 production)

Although the Egyptian government is placing substantial emphasis upon the development of the animal products industries, it is expected that private industry will play the dominant role in the implementation of this development.

From the point of view of immediate or near-term investment opportunities, the animal and dairy products sector is one of the most exciting and dynamic in Egypt. Egyptian entrepreneurs are actively seeking foreign partners to provide the management and technology required to implement a wide range of projects in these areas:

- o integrated poultry operations for the production of broilers and eggs
- o fish farms
- o dairy farms

- o finishing lots and slaughterhouses
- o meat and milk processing
- o storage and distribution systems
- o outlets for convenience foods

Three Reports on the Egyptian Food Sector

Food security continues to have the highest priority in Egyptian development plans. Although it accounts for 25 percent of gross domestic product and employs close to half of the country's labor force, domestic agriculture has been unable to satisfy the rapidly increasing consumption of food by the Egyptian people and their visitors. As a result, food imports are using progressively greater amounts of Egypt's foreign exchange earnings. In 1980, food imports amounted to \$3.4 billion, exceeding the total foreign exchange revenues from oil exports and Suez Canal tolls and services. The comparable import figure for 1981 is expected to be \$4.5 billion and, by the mid-1980s, food imports are likely to exceed \$7 billion at current prices.

Because of its importance, the Egyptian food sector has received special attention in the Investment Authority's Private Sector Feasibility Study program. To identify opportunities for U.S. businessmen to introduce their management and technological know-how into Egypt

through profitable joint ventures with local entrepreneurs, three in-depth analyses have been undertaken.

This report, The Production and Processing of Egyptian Livestock, Poultry, and Fish Products, examines opportunities for joint ventures related to the production, processing, and distribution of animal protein--meat, fish, poultry, eggs, and dairy products.

Another report, The Processing and Distribution of Egyptian Food Crops, examines opportunities for joint-venture investments in the packaging, processing, and distribution of food field crops, fruits, and vegetables.

The third report, Integrated Agribusiness in Egypt, looks into longer-term opportunities for the establishment and implementation of agro-industrial complexes through the development or reclamation of new lands and the utilization of these lands as the basis for vertically integrated production, packaging, processing, and distribution projects.

Opportunities for Investment

A variety of business opportunities is described in each of these three reports on the Egyptian food sector. Some of these opportunities require relatively small investments and are suitable for the small or medium U.S.

business. Others, requiring investments in the tens of millions of dollars, are more suitable for the larger U.S. multinational corporation. Still others, less clearly defined at this point, are of such magnitude in scope and financial requirements that they may require consortiums of U.S. and Egyptian corporations to pool their specialized knowledge and financial resources in the planning, organization, and implementation of projects. In such cases, substantial Egyptian and U.S. government support and encouragement may be required.

Two types of joint-venture opportunities are discussed in this series of reports--specific and conceptual. The criteria for a specific joint-venture opportunity are:

- o The defining of a specific project that the Egyptian government considers important to national welfare and eligible for approval under Public Law 43
- o The participation of a potential Egyptian partner who desires outside management, technical, or financial assistance on a specified project

U.S. businessmen interested in specific projects will be encouraged to undertake reconnaissance visits to Egypt to meet potential partners and discuss proposed projects

in detail. If sufficient interest is generated, both parties will be further encouraged to undertake the necessary feasibility studies.

The criteria for defining a conceptual joint-venture opportunity are less precise. In this case, although there appears to be a need for the project, joint-venture partners have not been specifically identified. U.S. businessmen interested in these more general opportunities are encouraged to make their interest known. After additional details are developed with the assistance of Egypt's General Authority for Investment and Free Zones, a search for potential Egyptian joint-venture partners can be initiated.

The purpose of each of these sectoral surveys is to identify potential investment opportunities and to encourage U.S. investors to express interest, seek guidance, and initiate investigations. As described in A Guide to Doing Business in Egypt, which is part of this report, the Investment Authority is prepared to provide interested parties with both financial and investigatory assistance.

1. EXECUTIVE SUMMARY

The Egyptian government, which places high priority on the development of locally produced private sources of animal protein, seeks a threefold increase in production by the end of this century. In order to increase the per capita availability of locally produced animal protein by 50 percent by the year 2000, major emphasis is being given to the modernization and expansion of the dairy, poultry, and fish industries.

In 1980, over one-third of the meat and dairy products consumed in Egypt were imported. In order to achieve the production goals set for the year 2000, the country must increase its production of meat by 250 percent, milk by 160 percent, and eggs by 300 percent.

Traditionally, the production of livestock and poultry products in Egypt has been fragmented among some 3 million small farmers. Productivity has been low and marketing channels undeveloped. However, during the last few years, the situation has begun to change. As a result of government support and encouragement and strong demand from the marketplace, modern, large-scale, highly productive, and profitable poultry operations have sprung up in many parts of the country. More recently, there has

been a trend towards the development of a specialized dairy industry and there is as well considerable interest in fish farming in the private sector. As these industries develop, an increasing number of foreign partners will be sought to provide technical and management skills, particularly in supporting industries and processing facilities.

Red Meat and Dairy Products

The consumption of red meat increased by 50 percent between 1972 and 1980. Without government restrictions on local slaughtering and limitations on imports, consumption most likely would have been substantially higher. Similarly, consumption of dairy products has increased some 85 percent during the same period. Since local milk production has increased only marginally since 1972, almost 40 percent of Egyptian milk requirements were imported in 1980, largely in the form of powdered milk or processed dairy products.

The Ministry of Agriculture Strategic Plan

According to a strategic plan developed by the Ministry of Agriculture for the period 1981-2000, the production of red meat and milk are to increase by 90 percent and 159 percent, respectively, by the year 2000. Major emphasis is being placed on improving the

productivity of the small herds that are held by peasant farmers. This is being done through government programs for the treatment of sterility and parasites and the genetic upgrading of herds through artificial insemination with imported semen. The government also hopes to encourage the development of private feedlot operations.

Cattle and water buffalo are the principal source of red meat in Egypt. Traditionally, the male animals are slaughtered young, the live weight of the average water buffalo being only 70 kilograms at the time of slaughter. Only about one-fourth of the half million water buffalo born each year are fattened. The government's goal is to encourage feedlot operations to fatten buffalo to about 500 kilograms prior to slaughter. This would provide an addition of nearly 75,000 MT of red meat per year.

To encourage the expansion of fattening operations, the Ministry proposes to provide feedlot operators with low-cost, soft-term loans of L.E. 1,000 per head and to make milk replacers available for suckling calves so as to release the mother buffalo's milk for human consumption. Primary feeds for the calves' first three months after weaning and concentrated feeds until slaughtering will be made available. A similar program to increase the

fattening of male cattle also is planned.

Joint-Venture Opportunities in Livestock Production

Several joint-venture opportunities to raise cattle for milk and meat have been identified. Although the larger projects usually involve the participation of government organizations, private farmers also are seeking foreign participation.

The larger projects involve the utilization of about 500 feddans of land and an investment of about \$3 million plus working capital, not including land. The largest proposed project, on some 3,000 feddans, would involve the government's North Tahrir Company.

Private projects are being assisted through the General Cooperative for Developing Animal Wealth and Products, a private cooperative founded by some 400 of the larger livestock and dairy farmers. The Cooperative's five-year goal for its members is to increase meat production from 3,000 MT to 60,000 MT annually and to increase annual milk production from 4,500 MT to 75,000 MT. U.S. firms interested in private joint ventures for the production of red meat and milk should contact Chase Trade Information Corporation, U.S.-AID, or the Investment Authority.

The Cooperative also intends to implement several

projects for milk processing and automatic slaughtering in which foreign technology and participation is sought.

Sheep and Goats

Although no specific joint ventures have been identified, the government also is encouraging the upgrading and expansion of sheep and goat production. There is interest in the establishment of breeding and raising operations starting with about 1,000 local ewes. Foreign rams would be imported for breeding. Such a project might be undertaken in conjunction with the development of newly reclaimed land. Sheep will adapt best to the poor pastures in the first years of land reclamation, and the soil will be improved by animal waste.

Joint-Venture Opportunities in Meat Processing

In addition to the Animal Wealth Cooperative's automatic slaughtering project, several other joint-venture opportunities exist in meat processing.

The Egyptian Company for Meat, Poultry, and Food Supplements plans to implement three new projects:

- o Two 80-ton-per-day plants to process imported frozen beef into minced meat, sausage, hamburger, and other specialties
- o A facility with a daily capacity to produce 10,000-20,000 TV dinners (meat and vegetables) for

export within the Middle East

- o An integrated finishing lot for imported live cattle with an annual capacity of 150,000 head, an associated 500-head-per-day abattoir, and a packaging plant for fresh, frozen, and deboned meats

Edfina Company, the government canning company in Alexandria, wants to establish a plant for canning corned beef, luncheon meat, and sausage. They also plan to build a plant with the capacity to produce 5 million TV dinners annually.

Joint-Venture Opportunities in Milk Processing

Although most locally produced milk is consumed raw, a substantial amount is used to produce some 160,000 MT of soft cheese. Small quantities of milk are used for pasteurized milk, ice cream, and other dairy products. A substantial portion of the processed dairy products made in Egypt rely on powdered milk, and increasing amounts of dairy products also are imported in the form of butter, cheese, and condensed milk.

Several Egyptian dairy product companies have expansion plans and other companies are entering the industry, several with foreign partners. The Animal Wealth Cooperative's milk plant initially will be able to

pasteurize 50 MT and, ultimately, 250 MT of milk per day. When fully operational, Golden Farms, a private Cairo firm, will be able to process 500 MT of raw milk per day into UHT (ultra high temperature) milk, cheeses, yogurts, and other dairy products. The government's Misr Milk Company is adding UHT capabilities. Four additional private joint-venture projects have been approved by the Investment Authority for UHT, cheese, yogurt, ice cream, and other dairy products. Two other proposed projects, for infant milk products, are under review by the Investment Authority.

Almost all of the approved and proposed joint ventures involve Western European firms, either Danish, German, British, French, or Swiss.

Poultry Products

Poultry production for meat and eggs is essential to the government's food security program. Not only does Egypt's warm, dry weather provide a natural advantage for poultry farming, but poultry production can be highly efficient in terms of feed inputs. Only slightly more than 2 kilograms of feed are required to obtain one kilogram of poultry meat or a kilogram of eggs versus at least a five-to-one ratio for red meat.

To encourage private poultry projects, the government

provides low-cost loans, subsidized corn for feed, and free veterinary services. As a result, highly specialized, large-scale broiler and egg projects have been established. These operations have been extremely profitable and are providing the knowledge base for a continued rapid expansion.

The government plays a minor role in poultry production. The principal government poultry company, the General Poultry Company, is responsible for only about 5 percent of total egg production and 17 percent of total poultry meat production, and these percentages are likely to decrease.

Despite the general expansion of poultry production, consumption has increased even more rapidly. Since 1974, the consumption of poultry meat has increased at an annual rate of 15.5 percent; egg consumption has increased at an annual rate of 8 percent during the same period.

Poultry Meat Production

In 1974, consumption of poultry meat amounted to about 95,000 MT. By 1981, it had expanded to 260,000 tons, and by 2000, it is likely to reach 700,000 tons. In 1981, 155,000 MT of poultry meat, less than 60 percent of the requirement, were produced locally. By the year 2000, the government hopes that the local industry will produce at

least 660,000 MT, over four times the 1981 production level.

The private sector is well on its way to meeting the government goals. Not only do the principal poultry companies raise broilers for their own account, but they supply one-day-old chicks, feed, and other services to smaller raisers of broilers. The number of smaller raisers of broilers, each of whom produce an average 25,000 broilers per year, increased to about 4,000 in 1980 and is expected to reach 21,000 by the end of the century.

Egg Production

Although the production of 2.4 billion eggs made Egypt virtually self-sufficient in egg production in 1981, by the end of the century consumption is expected to increase to 8.4 billion eggs. Private-sector commercial companies are expected to fill much of the gap with a tenfold expansion program from a current level of 360 million eggs in 1980 to 3.8 billion in 2000. As a result of government programs of genetic upgrading, improved veterinary practices, the provision of balanced feeds, and training in poultry management, the productivity of the small village flocks is also expected to more than double--from 1.8 billion eggs in 1980 to 4 billion in 2000.

A review of the expansion plans of existing poultry

companies and the plans of new companies that expect to enter the industry indicates that the goals for commercial egg production are likely to be achieved by the end of the century.

Joint-Venture Opportunities in Poultry

Existing poultry companies are expanding both horizontally (by adding to existing product lines) and vertically (by developing both upstream and downstream capabilities). The horizontal expansion will be based on the knowledge derived from previous experience. Although some additional specialized technology, usually available from suppliers or consultants, may be required, foreign joint-venture partners generally are not considered necessary. As these companies expand vertically, however, either into new products or into processes requiring unfamiliar technology or management skills, foreign joint-venture partners will be sought.

For example, several private poultry companies, including two of the largest--EGYPCO and MELARCGYPT--as well as the Animal Wealth Cooperative, want to establish joint-venture projects for raising parent hens for broiler-chick facilities. The Ministry has estimated that only about 190,000 parent hens were used in commercial broiler facilities in 1980; by the year 2000, some 4 million will

be needed. There is also considerable interest in raising layer chicks either for sale or for the raising company to use for increased egg production.

EGYPCO is interested in processing chicken residues for the manufacture of stock cubes and packet soups, and they are considering the expansion of their convenience food chain for retailing pre-cooked broilers.

Several other Egyptian groups wish to enter the poultry business on a fully integrated basis and to seek foreign partners with technical as well as management expertise. A number of private and governmental organizations are in this category.

Rabbit Farms and Prepared Livestock and Poultry Feeds

Outside the poultry industry, several Egyptians would like to form joint ventures to grow rabbits for both meat and fur.

At the present time, there is a shortage of livestock feed, and the demand for poultry feed soon will outstrip supply. Although it appears that the proposed expansion plans of the major poultry producers will accommodate the expected increase in demand in this area, proposals for joint ventures to produce livestock feed and milk replacers are welcome.

Fish Products

Fish consumption in Egypt has increased rapidly since 1976, largely because of higher living standards and shortages of other sources of animal protein. In 1981, total fish consumption was 350,000 MT versus 150,000 in 1976. Although local catches increased 67 percent between 1976 and 1979, this increase was insufficient to meet the rising demand, some of which was satisfied by additional imports. Between 1976 and 1981, imports of fish increased fivefold to a total of 150,000 MT.

The Egyptian government is anxious to increase local fish production by improving the catches from natural fisheries such as the Nile River and Lake Nasser, the northern lakes, and the Red and Mediterranean Seas; and through a substantial expansion of fish farming. The goal set by the Ministry of Agriculture for the year 2000 is 700,000 MT of locally produced fish.

Foreign technology and equity participation are being sought by both Egyptian private and government groups for joint ventures in fish farming.

There are also opportunities in the distribution of fish. Fish distribution systems are currently inadequate. Far more fish would be sold in Egypt were the retail system properly expanded and provided with produce.

One fishing company, organized under Public Law 43, is looking for joint retailing ventures in rural areas through the use of mobile fish outlets. The same company also would like to undertake a joint venture in retailing pre-cooked fish. The demand in Egypt for such convenience foods is great.

2. OVERVIEW OF EGYPTIAN AGRICULTURE

Agricultural activity in Egypt is confined almost exclusively to the Nile Valley and Delta. This region comprises only about 6 million feddans of arable land, or 2.5 percent of the country's total land area. Of this amount, about 700,000 feddans are devoted to orchards and the cultivation of sugar cane; the balance is used for field crops and vegetables. Virtually no land is used for pasturage. Large livestock, such as water buffalo and cattle, are confined or tethered. Small livestock, such as goats and sheep, are village scavengers and, under the supervision of local shepherds, roam village garbage dumps, ditch banks, and roadsides for food.

Because of Egypt's warm climate and an abundance of water for surface irrigation, the land can be worked intensively throughout the year with an average of slightly less than two croppings annually. The country therefore has the equivalent of about 11 million feddans under cultivation.

The arable land is divided among 3.5 million farm owners, 95 percent of whom are small farmers with less than 5 feddans each. This accounts for 52 percent of the arable land. About 300,000 landowners, less than one percent of the total, have land holdings greater than

20 feddans in size. These larger landowners hold approximately 27 percent of the land. Table 2-1 indicates the land distribution in Egypt as of 1977.

Table 2-1
DISTRIBUTION OF LAND OWNERSHIP IN EGYPT, 1977*

Bracket (in feddans)	Land- owners (000)	Number of feddans owned (000)	Percentage	
			Land- owners (%)	Area owned (%)
Less than 5	3,313	2,876	95.0	52.0
Between 5-10	94	616	2.7	11.1
Between 10-20	44	572	1.3	10.3
Between 20-50	23	668	0.7	12.1
Between 50-100	6	473	0.2	8.5
100 and over ¹	2	330	0.1	6.0
TOTAL	3,482	5,535	100.0	100.0

* State lands, desert prairie, and land distribution not included.

¹ Includes organizations, companies, and individuals.

Source: Central Agency for Public Mobilization and Statistics, Statistical Yearbook, Arab Republic of Egypt, July 1980.

The government establishes regional production quotas for basic crops--cotton, rice, fava beans, and onions. Local cooperatives then assign production quotas to individual farmers. Much of the seed, fertilizer, and chemicals required by the farmer are provided by the government at subsidized prices.

Rather than levying taxes, the government buys the established quotas of crops at prices generally well below free market prices and sells them at a profit. It has been estimated that this procedure represents a 30 percent tax on the farmer's income.

The government quota system applies particularly to small farms. Owners of larger farms are often able to operate outside this system and thus raise crops based on free market conditions. Increasingly, the larger farms are devoted to vegetable and fruit production, which yield a much higher return than field crops.

Small Landowners

The small Egyptian farm is usually a crop- and livestock-producing enterprise. Farms under 5 feddans in size consist, on the average, of less than one feddan.

Crop Production

A farmer's crops are his principal source of household food, animal fodder, and cash income. For the most part,

government-established crop quotas regulate how the small farmer utilizes his land. In winter, over 80 percent of his land is devoted to growing wheat for household use and berseem clover for livestock or for local sale. Clover predominates. The balance of the land in winter is used for vegetables and legumes, most of which are utilized by the household. Although neither wheat or clover production and sale are controlled directly by the government, the government may establish mandatory production quotas for legumes, which are purchased at prices below the free market prices.

In summer, the small farmer may be required to devote a fixed amount of his land to cotton, which is purchased entirely by the government, or he may be assigned to produce quantity quotas of rice, which the government also purchases. Any surplus rice over the government-established quota may either be used on the farm or sold in the free market. The farmer may also grow corn and vegetables for his own use or for sale to the extent that land is available after satisfying cotton, rice, or other quota requirements. The quota system does not apply to corn and most other vegetables.

Animal Production

Most small farmers maintain a few animals. Chickens

and ducks are kept to provide eggs and meat for the household; to use in bartering for local produce, labor, or services; or to enable members of the household to obtain "egg money" for personal needs. Although cattle and water buffalo are kept primarily as draft animals, they also provide meat, milk, and manure for farm use or for sale to supplement cash income from crops. Donkeys and, less frequently, camels are kept primarily for transportation, and sheep and goats are raised for meat. Because Moslem law forbids the consumption of pork, few pigs are raised in Egypt.

The government plays a far smaller role in the animal sector than with field crops. Through the agricultural credit bank, it does, however, allocate animal feed, when available, to authorized farmers on a subsidized basis, and it provides free veterinary services, including vaccinations. The farmer is free to raise whatever animals he can support, and he can market most animal products through the usual free market channels. Although meat prices are partially controlled by the government, there are no price controls on milk and eggs.

It is the small farmers, who own less than 5 feddans of arable land and only about 52 percent of the total arable land in the country, who probably raise most of the

livestock in Egypt. A survey of two Egyptian villages conducted by Winrock International indicates that most small farmers raise livestock.* About 80 percent of the farmers surveyed, who own less than 5 feddans of land, kept livestock. The average holding was slightly over 2 head. Assuming that the villages surveyed are representative of most Egyptian villages, it can be estimated that small farmers hold about 7 million of the 8.2 million head of cattle, buffalo, sheep, and goats in Egypt. The implications of this fragmented structure of the livestock industry in Egypt are discussed in the next section of this report.

Until recently, most of the poultry raised in Egypt also was held by small farmers. However, in recent years, village holdings of poultry apparently have decreased. In their place has been a remarkably widespread development of large commercial poultry operations for the production of both eggs and broilers. The poultry situation in Egypt is discussed in Chapter 4 of this report.

Large Landowners

Because the larger Egyptian farms are often outside

* "Potential for On-Farm Feed Production and Utilization by the Egyptian Small Farm Sector," Winrock International Livestock Research and Training Center, Petit Jean Mountain, Morrilton, Arkansas, June 1980.

the government's quota system, owners are free to grow crops and raise livestock so as to maximum their financial returns. Increasingly, these larger farms are used to produce vegetables and fruits for sale in the free market, where they are able to obtain a return several times higher than would be the case if they grew field crops. Thus, for each feddan cultivated, the financial return from the larger farms may be several times higher than that on small farms.

Generally, the owners of large farms maintain few livestock, although they may jointly invest in livestock with the small farm-owner. In such cases, the small farmers raise the animals, and proceeds from the sale of offspring are shared.

Owners of larger farms who do raise livestock do so primarily for draft purposes and to obtain manure. In these cases, the offspring are sold immediately following the winter clover season.

Some owners of the larger farms near major cities such as Cairo and Alexandria maintain herds of dairy cattle, purchasing milk-producing cows and selling the milk to wholesalers or milk processors. In the past, the cows were often slaughtered at the end of the milk-production period. In October 1980, however, the government issued a decree

banning the slaughter of female cattle and sheep.

Fish Production

Fish, which has always been an important element in the Egyptian diet, has become increasingly important in recent years. In 1980, Egyptians consumed nearly 300,000 MT of fish, of which 130,000 tons were imported. Production goals for the immediate future are high and will require substantial support from both the public and private sectors. To achieve these goals, foreign participation is being sought for a variety of joint ventures to improve Egyptian fisheries and establish fish farms throughout the country. A discussion of opportunities relating to fish production, processing, and distribution is included in Chapter 5 of this report.

3. THE PRODUCTION, PROCESSING, AND DISTRIBUTION OF RED MEAT AND DAIRY PRODUCTS

Introduction

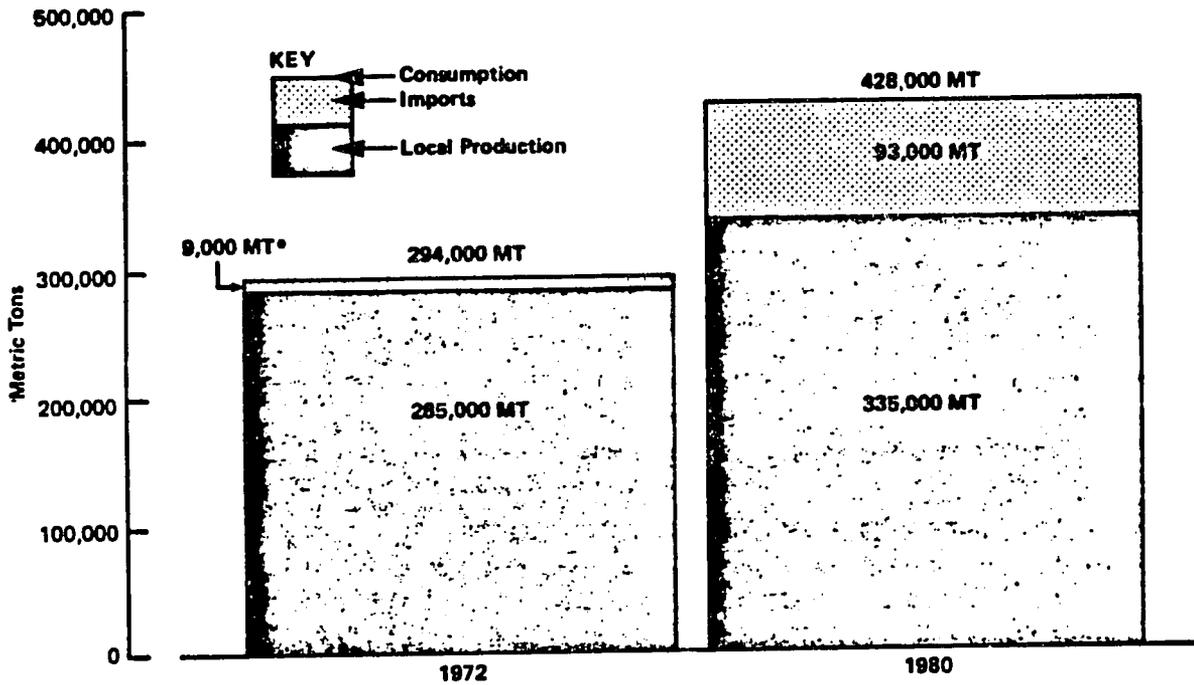
The Egyptian consumption of red meat and dairy products has been growing rapidly in recent years. As Figure 3-1 indicates, between 1972-1980, meat consumption increased almost 50 percent, and consumption of dairy products increased almost 85 percent. In each case, because local production has failed to keep pace with growing demand, imports have filled the gap between local supply and consumption.

The livestock industry in Egypt is highly fragmented. Few farmers specialize in meat and dairy production, and, as noted earlier, most livestock is held by millions of small farmers primarily for work purposes or to supplement local food requirements. Table 3-1 provides a breakdown of recent meat and dairy product consumption. Production for the commercial market is secondary.

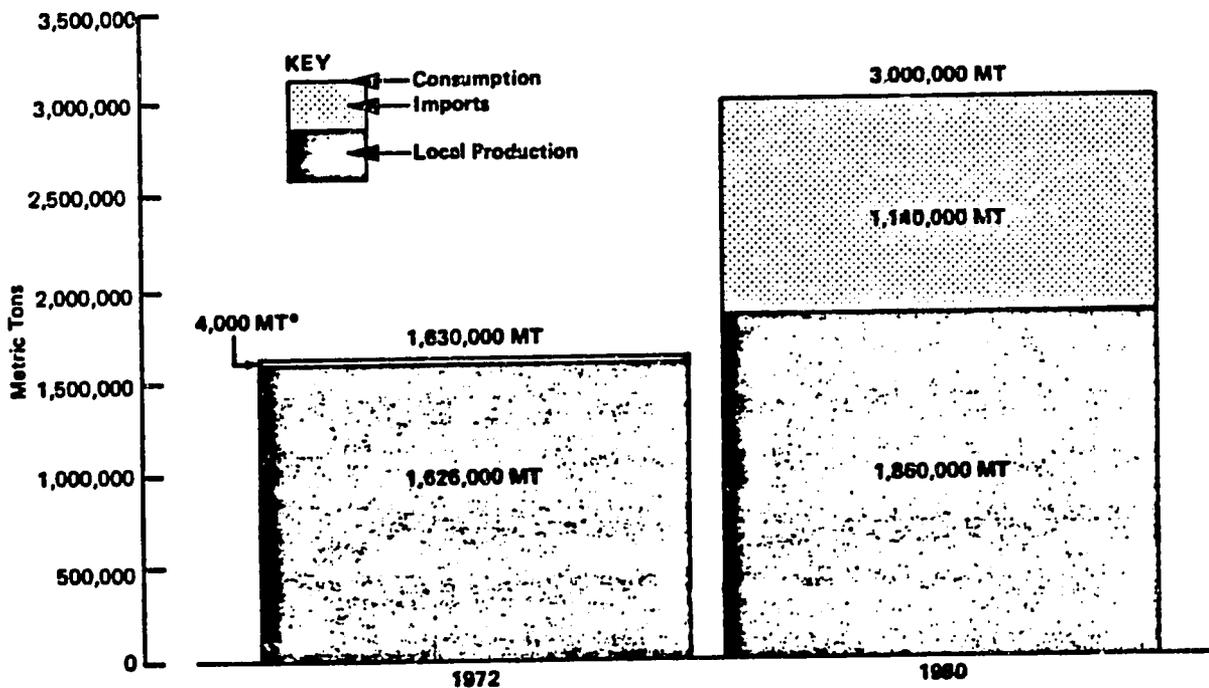
Historically, the government's major agricultural emphasis has been on increasing yields and improving production systems for field crops. Because animal production has been of secondary importance, yields of

Figure 3-1
EGYPTIAN CONSUMPTION, PRODUCTION, AND IMPORTS OF
RED MEAT AND DAIRY PRODUCTS,
1972 and 1980

RED MEAT



DAIRY PRODUCTS**



*CTIC estimates.
 **Whole milk equivalent.

Source: Ministry of Agriculture and U.S. Embassy, Cairo.

Previous Page Blank

Table 3-1

BREAKDOWN OF CONSUMPTION OF
MEAT AND DAIRY PRODUCTS IN EGYPT, 1980

Item	Production (000 MT)	Imports (000 MT)	Estimated Consumption (000 MT)	Estimated Per Capita Consumption (kgs per year)
Red meat				
Beef and buffalo	272	80	352	8.4
Sheep, mutton, camel, and pork	63	13	76	1.8
Poultry meat	128	76	204	4.9
Fish	168	130	298	7.1
Subtotal	631	299	930	22.2
Eggs*	79	2	81	1.9
Milk	1,860	1,140	3,000	71.8
TOTAL	2,570	1,441	4,011	95.9

* Expressed in millions of eggs, Egyptian production, imports, estimated Egyptian consumption, and estimated per capita consumption in 1980 came to 2,110, 57, 2,167, and 52, respectively.

Source: Ministry of Agriculture and U.S. Embassy, Cairo.

meat and milk have not expanded to the same degree as has the production of field crops. This situation is changing, however. In the 1980s and 1990s, greater government emphasis will be placed upon improving the livestock industry. The government hopes to increase the quantity of meat and milk available in Egypt through a series of programs to upgrade the productivity of the livestock raised by small farmers. In addition, the government is encouraging joint ventures with foreign livestock producers, and is supporting the establishment of specialized commercial meat and dairy operations.

This chapter examines opportunities for U.S. investors to provide support to the developing livestock industry and to become involved in the production, processing, and distribution of livestock and livestock products in Egypt.

Livestock Population and Products

Despite its lack of organization and extreme fragmentation, the livestock industry plays an important role in Egypt. As shown in Table 3-2, the farm value of meat and milk products was an estimated L.E. 932 million in 1980. This represents 25 percent of the total value of agricultural output in Egypt in that year. The work performed by cattle and water buffalo in the preparation

Table 3-2

VALUE OF FARM PRODUCTION OF
LIVESTOCK FOOD PRODUCTS IN EGYPT, 1980

Item	Quantity (000 MT)	Value (Million L.E.)
Red meat		
Beef	168	336
Buffalo	104	187
Sheep and goat	56	84*
Camel and pork	7	10*
Subtotal	335	617
Milk		
Cattle	656	98
Buffalo	1,150	207
Goat	70	10*
Subtotal	1,876	315
TOTAL	-	932

* CTIC estimates.

Source: Ministry of Agriculture, Cairo.

of land, the pumping of irrigation water, the harvesting and threshing of crops, and as the principal mode of transportation in rural areas is of considerable, but unmeasured, value. In addition, cattle waste is an important and much-needed source of organic matter required to restore depleted soils. The Winrock International survey indicates that manure may represent as much as 20 percent of the value of livestock products.

Table 3-3 indicates the Egyptian livestock population for selected years between 1974 and 1981 as well as the number of cattle slaughtered during this period. Both the livestock population and slaughtering have been relatively constant during this period.

Table 3-3

EGYPTIAN LIVESTOCK POPULATION AND NUMBERS SLAUGHTERED:
SELECTED YEARS, 1974-1981

Variety and Year	Year-End Inventory (000 Head)	Number Slaughtered (000 Head)
<u>Cattle</u>		
1974	2,119	-
1978	2,587	700
1979	1,954	750
1980	2,100	700
1981	2,300	750
<u>Water Buffalo</u>		
1974	2,170	-
1978	2,542	860
1979	2,321	900
1980	2,350	850
1981	2,350	900
<u>Sheep</u>		
1974	1,965	-
1978	2,554	1,470
1979	1,679	1,490
1980	1,700	1,520
1981	1,750	1,550
<u>Goats</u>		
1974	1,293	-
1978	1,440	980
1979	1,427	1,000
1980	1,500	1,150
1981	1,500	1,200
<u>Swine</u>		
1974	15	-
1978	15	45
1979	15	56
1980	15	58
1981	15	58

Table 3-3 (continued)

EGYPTIAN LIVESTOCK POPULATION AND NUMBERS SLAUGHTERED:
SELECTED YEARS, 1974-1981

Variety and Year	Year-End Inventory (000 Head)	Number Slaughtered (000 Head)
<u>Camels</u>		
1974	109	-
1978	93	52
1979	88	45
1980	90	40
1981	95	45

Source: "Livestock and Poultry Annual Report," U.S. Embassy, Cairo, August 1981 and for 1974 inventory; Statistical Yearbook, Central Agency for Public Mobilization and Statistics, July 1980.

Table 3-4 provides estimates of meat production, meat imports, and meat consumption in Egypt for the years 1979-1981. Although these data on Egyptian meat production differ somewhat from the estimates for 1980 as shown in Table 3-2, the table provides a more detailed overview of the red meat situation in Egypt, indicating clearly that cattle and water buffalo are the principal red meats consumed in Egypt and that imports of cattle and lamb meats have been expanding in recent years.

Table 3-4

RED MEAT PRODUCTION, IMPORTS, AND CONSUMPTION IN EGYPT,
1979-1981

Variety and Year	Number Slaughtered (000 Head)	Meat Production (CWE) * (000 MT)	Meat Imports (000 MT)	Meat Consumption (000 MT)
<u>Cattle</u>				
1979	750	135	73	208
1980	700	127	95	222
1981	750	138	120	258
<u>Water Buffalo</u>				
1979	900	140	0	140
1980	850	130	0	130
1981	900	140	0	140
<u>Sheep</u>				
1979	1,490	40	8	48
1980	1,520	48	13	61
1981	1,550	50	14	64
<u>Goats</u>				
1979	1,000	18	0	18
1980	1,150	20	0	20
1981	1,200	22	0	22
<u>Swine</u>				
1979	56		0	2
1980	58	3	0	3
1981	58	3	0	3
<u>Camels</u>				
1979	45	11	0	11
1980	40	10	0	10
1981	45	12	0	12

* CWE: carcass weight equivalent.

Source: "Livestock and Poultry Annual Report," U.S. Embassy, Cairo, August 1981.

Cattle and Water Buffalo

As shown in Table 3-2, cattle and water buffalo are the principal sources of local meat and milk in Egypt, accounting for 85 percent of the red meat production and 96 percent of the milk production. Unfortunately, both the number of livestock and meat and milk output have grown slowly in recent years, at a rate of increase that actually has been below the rate of population increase. Table 3-5 indicates the extent to which, since 1972, per capita production of meat and milk and the number of livestock per Egyptian have decreased.

There are many reasons for the continued low meat and milk production levels. The most important are as follows:

- o Because cattle and water buffalo are used principally for draft purposes, they are selected for their strength and adaptability to work rather than as productive producers of milk and meat.
- o Because much of the energy of the livestock is used for work, their milk, meat, and reproductive capabilities are reduced.
- o Calves, especially males, are slaughtered at an early age, before they have been fattened.

Table 3-5

NUMBER OF CATTLE AND WATER BUFFALO/
MILK AND MEAT PRODUCTION, COMPARED TO EGYPTIAN POPULATION,
1972 and 1980

Item	1972	1980	% Change Per Annum
Egyptian population (millions)	34.6	42.2	2.5
Meat production (1000 MT)	242.0*	272.0	1.2
Per capita meat production (kgs)	7.0	6.4	(1.1 decrease)
Milk production (1000 MT)	1,626.0	1,801.0	1.1
Per capita milk production (kgs)	47.0	42.7	(1.2 decrease)
Number of head (1000s)	4,114.0	4,400.0	0.9
Number of head per capita	.12	.10	(2.5 decrease)

* Chase Trade Information Corporation estimate.

Source: Ministry of Agriculture; Central Agency for
Public Mobilization and Statistics.

- o Especially during the summer months, sufficient quantities of proper feeds are unavailable. This reduces growth rates and milk output and encourages early slaughtering.
- o Sterility rates are high, and birth rates low.
- o Internal and external parasites are widespread, further lowering productivity.
- o There are no organized distribution systems for meat and dairy products.
- o Limited veterinary care is available.

Meat and Milk Production

Although cattle and water buffalo are used principally as draft animals, meat and milk production does represent a significant source of supplemental income and household food supply to the farmer and therefore influences, to some extent at least, the raising pattern of animals.

Most male water buffalo are sold for slaughter shortly after birth. The male buffalo is considered dangerous and not suitable for work purposes. Also, because of its higher fat content, buffalo milk is preferred to cattle milk and thus sells at a premium price. By disposing of the calf shortly after birth, the mother's milk is available for household use or sale. The Ministry of Agriculture estimates that of the 500,000 male water

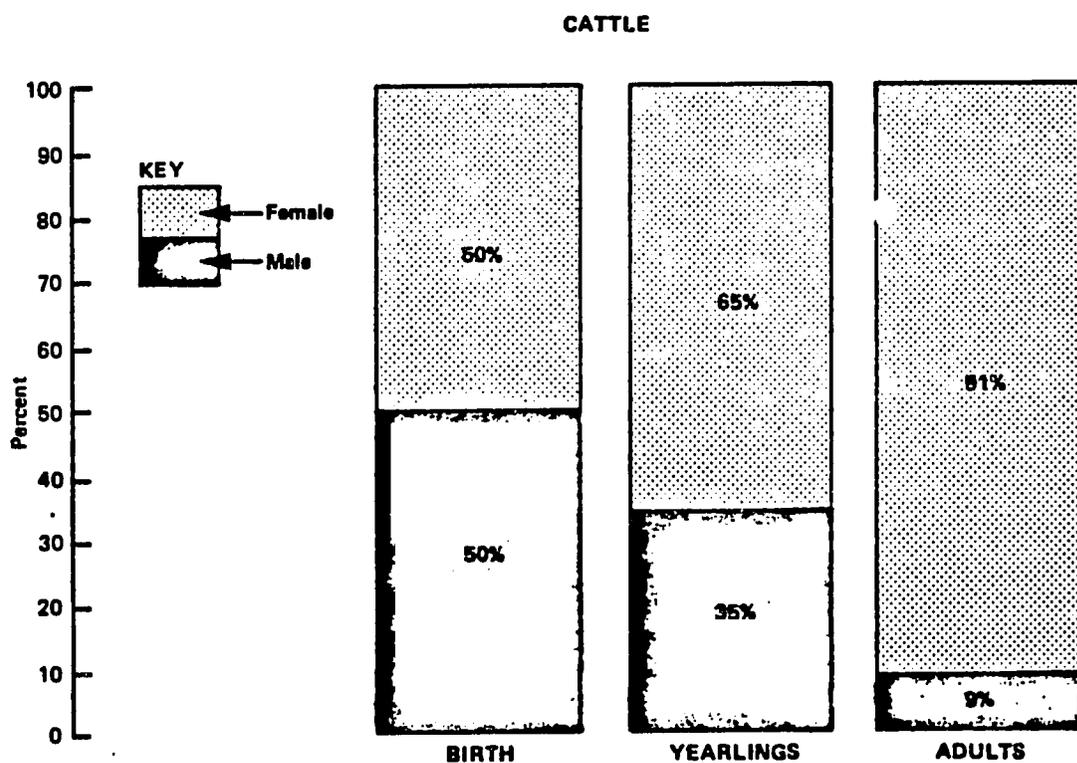
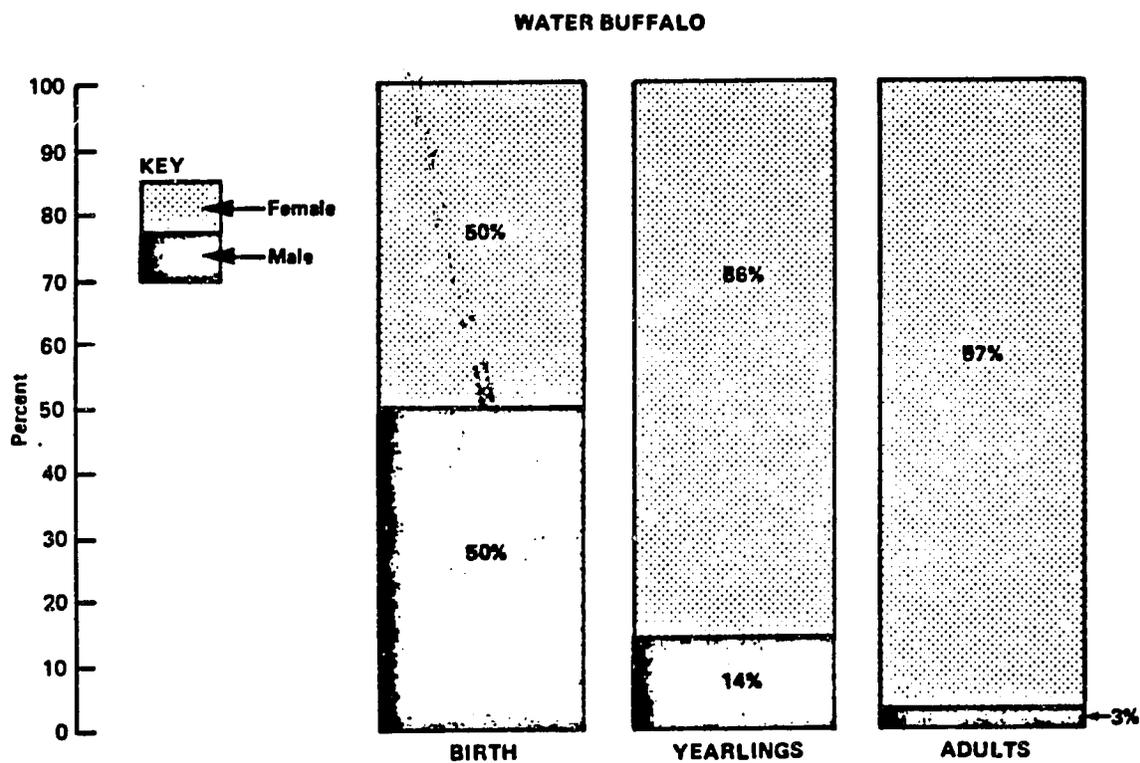
buffalo calves born annually in Egypt, 80 percent are slaughtered at an average live weight of 70 kilograms.

Figure 3-2, based on a 1970 survey conducted by USDA in cooperation with U.S. AID and the Egyptian Ministry of Agriculture, indicates that the percentage of calves and male water buffalo that survive to become yearlings is low. Few become adults. Male buffalo represent only 3 percent of adult buffalo herds.

Female cattle also are used for draft purposes. Male cattle are generally sold or slaughtered after weaning or at the end of the clover season. However, 35 percent of male cattle survive to become yearlings. Only about 9 percent of the adult cattle herds are males. Since October 1980, the slaughtering of female cattle has been banned by the government.

Table 3-6 provides a breakdown by size of cattle and water buffalo slaughtered at official Egyptian slaughterhouses during the first eight months of 1980. About 90 percent of the cattle slaughtered at official slaughterhouses were calves. Close to 70 percent of the water buffalo slaughtered during the period were calves, largely baby calves with an average carcass weight of only 40 kilograms.

Figure 3-2
PERCENTAGE OF MALE AND FEMALE WATER BUFFALO AND CATTLE
IN EGYPT FOR VARIOUS AGE CATEGORIES, 1970



Source: CTIC, based on data from *Egypt: Major Constraints to Increasing Agricultural Productivity*, Foreign Agricultural Economic Report No. 120, USDA, Washington, D.C., June 1976, page 118.

Table 3-6

NUMBER AND AVERAGE WEIGHT OF CATTLE AND WATER BUFFALO KILLED,
BY CATEGORY, AT OFFICIAL EGYPTIAN SLAUGHTERHOUSES, JANUARY 1-AUGUST 31, 1980

Category	Average Weight (CWE) * (kilograms)	Number Slaughtered	Percent of Total Number Slaughtered	Total Slaughtered Weight (MT)	Percent of Total Weight
<u>Cattle</u>					
Calves	165	298,407	90.1	49,237	83.4
Cows	300	31,802	9.6	9,541	16.2
Steers	250	994	0.3	249	0.4
TOTAL	-	331,203	100.0	59,027	100.0
<u>Water Buffalo</u>					
Baby calves	40	103,813	47.2	4,153	12.6
Fattened calves	180	48,406	22.0	8,713	26.2
Adults	300	67,908	30.8	20,372	61.3
TOTAL	-	220,127	100.0	33,238	100.0**

* CWE: carcass weight equivalent.

** Details do not add to total because of rounding.

Source: "Egypt: Livestock and By-Product Report," U.S. Embassy, Cairo, October 1980.

The Ministry of Agriculture Strategic Plan

To increase production of cattle and water buffalo meat as well as milk production, the Ministry of Agriculture has developed a strategic plan for the period 1981-2000. This plan has been ratified by the People's Assembly and the Egyptian Cabinet, and supportive implementation and financing plans are being prepared for approval. Overall goals of the plan for increased production are as follows:

	1980	2000	Total Increase	Percent Increase
Meat (000 MT)	272	518	246	90
Milk (000 MT)	1,806	4,679	2,873	159

Although these production goals represent substantial increases over 1980, if achieved, even at 1980 per capita consumption rates, they still will not satisfy projected annual consumption rates for the year 2000, assuming an increased population of 70 million. Table 3-7 indicates a production gap of 70,000 MT of meat and 360,000 MT of dairy products (in terms of fluid milk equivalent). The gap in 2000 will be less than the 1980 gap, especially for milk, unless, of course, per capita consumption increases.

Table 3-7

EGYPTIAN PER CAPITA PRODUCTION AND CONSUMPTION
OF CATTLE AND WATER BUFFALO MEAT AND MILK, 1980 AND 2000

Product	1980 Per Capita Production (kgs/yr.)	2000 Projected Per Capita Production (kgs/yr.)	1980 and Assumed 2000 Per Capita Consumption (kgs/yr.)	Production Gaps (MT 1000s)	
				1980 Imports	2000 Projected
Meat	6.5	7.4	8.4	80	70
Milk	43.0	67.0	72.0	1,140	360

Source: CTIC estimates, based on Ministry of Agriculture statistics.

The Ministry hopes, however, that the per capita consumption of red meat will stabilize at close to 1980 levels through increased consumption of locally produced poultry and fish.

Since 1972, per capita consumption of red meat has increased at an annual rate of only 1.5 percent. If this rate of increase were to continue through the year 2000, per capita consumption of water buffalo and cattle meat would increase to 11.3 kilograms and total consumption would reach 791,000 MT, thus raising the production gap to 273,000 MT.*

The per capita consumption of dairy products increased at an annual rate of 3.5 percent between 1972 and 1980. If this rate were to continue, which is unlikely, per capita consumption would double by the year 2000, thus resulting in a milk production gap of 5.4 million MT.

It should be noted, then, that even if the Ministry goals are achieved, additional meat and milk requirements will most likely have to be met either through supplemental local production or through importation.

* According to the U.S. Department of Agriculture, in 1980, per capita consumption of beef in the United States was 70 kilograms and fluid milk and cream per capita consumption was 135 kilograms.

Five projects relating to cattle and water buffalo are specified in the Ministry of Agriculture's strategic plan. Some of these projects will be implemented solely by the government, and others may offer opportunities for participation by foreign investors.

(1) Treatment of Sterility. The first project is designed to upgrade the fertility of existing cows through the application of hormones. It is hoped that fertility can be increased by 5 percent over a five-year period beginning in 1981. If this goal is achieved, birth rates of cattle cows are projected to increase from 72 percent to 77 percent, and projected birth rates of water buffalo will increase from 60 percent to 65 percent. If the goal is achieved, annual meat production will be increased by 20,000 MT, and annual milk production will be increased by 142,000 MT. The annual cost of the project is projected at L.E. 3.9 million, and the value of the additional meat and milk produced will be L.E. 64 million (L.E. 40 million for meat and L.E. 24 million for milk at current prices). The project will be implemented by the Ministry's field staff.

(2) Treatment of Parasites. The second project, also scheduled for five years starting in 1981, provides for the treatment of internal parasites such as stomach worms,

helminths, distoma hepatica, and blood parasites as well as external parasites, all of which reduce both the milk and meat productivity of livestock. The annual cost of the program, which includes treatment of sheep, goats, camels, horses, and poultry, is projected at L.E. 26 million, but, if successful, annual milk and meat production will be increased by an estimated 28,000 MT and 243,000 MT, respectively, and valued at a total of L.E. 97 million. This project also will be administered by Ministry personnel.

(3) Raising Male Buffalo Calves. The third program aims to increase the pre-slaughtering weight of male water buffalo calves from the current average of 70 kilograms to weights averaging between 400-500 kilograms. This program offers opportunities for commercial feedlot operations in which foreign investors might participate.

Currently, only about 115,000 of the 500,000 water buffalo calves born each year are fattened. The goal is to increase this number to 500,000 by 1988 by encouraging the expansion of feedlot operations. The Ministry proposes to provide low-cost, soft term loans of L.E. 1,000 per head to feedlot operators and to make available milk replacers for suckling calves so as to release the mother buffalo's milk for human consumption. The Ministry also

will make available primary feeds for the first three months after the calves' weaning and concentrated feeds until slaughtering.

This program is expected to increase the production of water buffalo meat from fattened calves by about 75,000 MT per year. The use of milk replacers will release for human use 100,000 MT of milk annually. These annual increases represent a value at current prices of L.E. 135 million (L.E. 117 million for meat and L.E. 18 million for milk).

In addition to providing opportunities for investment in feedlots, the program provides opportunities for the production and sale of milk replacers and prepared feeds. Once the program is fully implemented, annual program requirements for feeds, in addition to green rations, are estimated by the Ministry as follows:

Item	Annual Requirements Per Head (kgs)	Annual Program Requirements (MT)
Milk replacers	40	20,000
Primary feed	135	63,000
Concentrated feed	1,250	625,000
Corn	500	250,000
Bran	250	125,000

(4) Genetic Upgrading of Cattle. The fourth program, to be implemented over a ten-year period, involves the genetic upgrading of local cattle herds through artificial insemination, using imported semen. This program also would offer opportunities for feedlot operations as well as for the provision of milk replacers. In addition, systems for handling and distributing semen are required. Effective means of keeping imported semen properly frozen and of identifying cows in heat throughout the widely disbursed villages of the country also are required.

The project aims to increase average milk production to 1,300 kilograms annually, a doubling of current yields.* Milk replacers also would be used for cattle calves, thereby saving 250,000 MT of milk annually for human consumption. Male calves would be fattened in feedlots to reach a live weight of 400 kilograms, thus producing about 220 kilograms of meat per head.

The successful implementation of the project would increase annual meat production by 114,000 MT by 1992 and annual milk production by 1.2 million MT. The total

* The Winrock International survey found that the average cow on the farms surveyed yielded about 670 kilograms of milk per year, including amounts used for suckling calves.

annual value of the increased output at current prices is projected at L.E. 403 million.

The project's program of artificial insemination, which will establish frozen semen units in nine Egyptian governorates, in addition to the three units already established, is expected to require an investment of L.E. 6.5 million. In addition to 48 million MT of green forage and hay, the project is expected to require 1.5 million MT of feed concentrates, compared to the 340,000 MT used for cattle in 1980.

A project to genetically upgrade water buffalo, using local studs for semen, is expected to cost about the same as the project for cattle. During the first three years of the project, the Institute of Animal Production Research will work on breeding and selecting water buffalo studs. Once the studs have been selected, the program of artificial insemination will be implemented over a ten-year period.

(5) Importation of Pregnant Heifers. The fifth project, which will be implemented entirely by the government, contemplates the annual importation of 10,000 head of high-breed heifers, such as Friesians and Brown Swiss, for a period of ten years. These heifers will directly increase milk supply, and their male

offspring will be used as studs to further upgrade existing cattle herds. The imported heifers will be allocated to specialized private corporations, agricultural cooperatives, and governorates. The project is expected to increase yields as follows:

- o 549,000 MT of milk, worth L.E. 82 million
- o 13,200 MT of meat, worth L.E. 26 million

Implementation of this project will require an additional 240,000 MT of feed concentrates by 1991.

Table 3-8 indicates the total production quantities and values resulting from the five livestock projects through the year 2000.

Table 3-8

PROJECTED ANNUAL PRODUCTION OF CATTLE AND
WATER BUFFALO MEAT AND MILK THROUGH 2000, BASED ON
THE EGYPTIAN MINISTRY OF AGRICULTURE'S STRATEGIC PLAN

Year	Meat		Milk	
	Quantity (000 MT)	Value (L.E. Millions)	Quantity (000 MT)	Value (L.E. Millions)
1981	269	518	1,839	305
1986	395	744	2,612	403
1990	468	867	3,690	526
1994- 2000	518	965	4,679	689

Source: Ministry of Agriculture, Cairo.

Joint-Venture Opportunities

The Egyptian government is encouraging joint ventures with foreign partners to raise cattle for milk and meat. Of the several specific government-supported ventures that have been announced, all involve land development or reclamation. Although one project is being initiated with a German company in cooperation with the Giza Governorate, other joint ventures are still available for foreign-equity participation.

The Giza project is based on importing from Germany 1,100 Friesian cattle--1,075 pregnant cows and 25 bulls. The herd is expected to grow to 2,070 head within 12 years, and when full production is reached, output is projected to reach 5,070 MT of milk and 420 MT of meat per annum. The project involves the cultivation of some 1,350 feddans of land by the twelfth year of the project. Of this amount, approximately 1,000 feddans will be devoted to berseem clover and 350 feddans to alfalfa. The total fixed investment, at 1980 prices, excluding land, is projected to be \$3.3 million, plus working capital of \$1.6 million. The German feasibility study projected the internal rate of return at 17 percent.

Four other dairy projects of a similar nature have been proposed by the Ministry of Agriculture. Each requires about 500 feddans of land and an investment of \$3 million plus working capital, excluding land. Sites have not been selected, but the projects presumably would be on new lands. According to preliminary studies by the Ministry, annual net profits are expected to be approximately \$1.1 million. Local partners would be governorates or public companies associated with the Ministry of Agriculture.

Another project, proposed for the Kalubeya

MISSING PAGE S
NO. 53-54

include a 250 ton-per-day milk-processing plant, a 500 head-per-shift automatic slaughtering plant, and a 75 ton-per-hour feed mill. The Cooperative welcomes foreign-equity participation from firms having the appropriate managerial and technological know-how.

Many Egyptian farmer-businessmen are considering livestock projects. Because all of these projects cannot be discussed in this report, U.S. investors interested in joint ventures should request the Investment Authority for assistance in locating the most suitable partners. To indicate the type of private project being considered, two of them are outlined below.

- o The first would involve the utilization of 57 feddans of land about 120 miles south of Cairo. The land, which is irrigated and cultivated with alfalfa and berseem clover, is producing three crops annually. Using his land as his equity contribution, the owner would like to start a joint-venture dairy farm with 100 head of water buffalo. The owner values his land at L.E. 3,500 (\$5,000) per feddan, or a total of \$285,000, and anticipates a milk yield of about 250 tons per year, valued at about \$110,000 at 1981 prices. A Ministry of Agriculture official

estimates that investment in barns, milking machines, coolers, and harvesting and other equipment will come to about \$45,000. However, the owner is seeking better estimates. The 100 water buffalo will cost about \$115,000. Thus, total investment, excluding working capital, is expected to be about \$445,000.

- o The second project, located on 120 feddans of developed land about 25 kilometers from Alexandria, would involve the importation of Holstein-Friesian cows. The owner has received a quotation of \$2,800 per head for cattle shipped to Egypt from California, a high price (chiefly for freight) when compared with the \$1,800 for German Friesian cattle delivered to the Giza project. Further details have yet to be developed.

Sheep and Goats

Although the sheep and goat population in Egypt is close to four million head, its contribution to the country's meat and milk requirements is relatively small. In 1980, sheep and goats accounted for only 15 percent of the red meat supply. Goats provided only four percent of the milk consumed in that year. The Ministry of

Agriculture believes that sizable increases in meat production (principally from sheep) and in goat milk output can and should be made.

Meat and Milk Production

The sheep and goat industry, like the cattle and water buffalo industry, is highly fragmented and disorganized. A large percentage of the animal population is held by small farmers. Although most sheep and goats are slaughtered after weaning, some larger commercial operations raise sheep or purchase weaned sheep and goats from farmers for fattening. These animals are sold through commercial channels. The demand for sheep is high particularly during religious festivals, at which times live sheep are also imported.

Joint-Venture Opportunities

Although specific joint-venture opportunities in sheep and goat production have not yet been identified, the Ministry of Agriculture has proposed several projects to increase productivity in this subsector. Foreign investments in joint ventures for breeding and raising animals are encouraged.

The Ministry of Agriculture Strategic Plan

The average Egyptian ewe has one lamb per year. Usually slaughtered after weaning, at the age of about

two months, the animal yields only about 20 kilograms of meat. The Ministry believes that if farmers could be encouraged to manage their breeding programs properly, local ewes could give birth three times every two years, thus increasing total lamb output by 400,000 MT per year-- an increase of 8,000 MT of lamb meat annually, assuming the average slaughtered weight noted above.

Furthermore, by upgrading sheep herds through genetic improvements and proper management practices, the number of lambs produced per birth could be increased to an average of 2.3. The average number of lambs produced annually by each ewe would then average about 3.5, an extremely optimistic birthing rate by world standards even in developed countries such as New Zealand, where sheepraising is the mainstay of the economy. If these lambs were held in feedlots an additional two months after weaning, the average meat yield would be increased to 35-40 kilograms. Average meat production per ewe therefore would be 130 kilograms annually, a 550-percent increase over the current 20 kilograms.

To achieve these yields, the Ministry proposes the establishment of multiple breeding and raising projects, each starting with about 1,000 local ewes. Foreign rams would be imported to produce a mixed breed. Although the

Ministry of Agriculture has not yet made a detailed investigation of the technical and economic aspects of these proposed projects, an agreement to conduct research and tests with Finnish rams recently has been signed.

The Ministry believes that sufficient crop residue and other roughages not usable for other purposes are available to support an additional two million sheep on small farms. This can be managed without an appreciable increase in the cost of breeding and feeding.

In addition, the Ministry will support the breeding and raising of sheep and goats on newly reclaimed land. Not only do these animals adapt best to the poor pastures that prevail during the early years of reclamation, but the soil will be improved by the addition of organic matter from animal waste.

Finally, to encourage increased goat milk and meat production, the Ministry plans to support the raising of goats in pens. This program is designed principally for small farmers.

The Processing and Distribution of Red Meat

By law, all livestock in Egypt must be slaughtered under government inspection. Slaughtering is done by local butchers and in the government abattoirs located in major cities. As Table 3-9 indicates, most cattle and

Table 3-9

ESTIMATED NUMBER OF LIVESTOCK SLAUGHTERED
IN EGYPT BY LOCAL BUTCHERS AND OFFICIAL ABATTOIRS, 1979

Livestock	Total Head Slaughtered	Head Slaughtered In Official Abattoirs	Head Slaughtered By Local Butchers
Cattle	750,000	530,000	220,000
Buffalo	875,000	451,000	424,000
Sheep	1,490,000	432,000	1,058,000
Goats	1,000,000	24,000	976,000

Source: "Egypt: Livestock and By-Product Report," U.S. Embassy, Cairo, October 1980.

buffalo are slaughtered in government abattoirs, and most sheep and goat are slaughtered locally. The Ministry of Agriculture estimates that additional livestock, perhaps as many as 500,000 head, are slaughtered illegally.

Except for village slaughtering, most livestock are purchased live by wholesalers and slaughtered in the government-operated slaughterhouses for a small (subsidized) fee. About one-half of the 1.5 million head of cattle slaughtered annually in government abattoirs are handled by the Cairo Slaughterhouse, a century-old facility that lacks modern methods of production and protection. Except for blood used in poultry feed, there are no rendering operations, and much of the offals are burned or otherwise destroyed. Meat is sold fresh in carcass form, mostly on the day of slaughtering because of a lack of adequate refrigeration facilities.

The Ministry of Agriculture plans to replace the existing Cairo facility with a new abattoir. Because the new facility will operate on a service basis at subsidized rates, a joint-venture opportunity does not appear to exist. However, interested U.S. companies might propose the provision of management assistance and technology for the new facility.

As mentioned earlier, the General Cooperative for Developing Animal Wealth plans to install an automatic slaughtering plant for 500 head-per-shift. This plant will also have a refrigerated storage capacity of 10,000 MT and a unit for preparing and packing meat. The Cooperative is interested in undertaking a joint venture with a foreign company in which the foreign partner will provide management and technology assistance as well as equity of about 25 percent. According to preliminary estimates, net profits will range between 20-25 percent. A feasibility study has yet to be made.

The estimated investment for the Cooperative's slaughterhouse is as follows:

Plant construction	L.E.	350,000
Equipment for automatic slaughter		6,600,000
Refrigerated storage		10,000,000
Trucks for meat transport		450,000
Marketing outlets		<u>500,000</u>
Total fixed investments	L.E.	17,900,000

In October 1980, the government established fixed prices for red meat. The live weight price to the slaughterhouse was fixed at a maximum price of L.E. 1.15 per kilogram; the carcass price to the butcher

was fixed a maximum of L.E. 2.00 per kilogram; maximum retail prices were L.E. 2.50 per kilogram. These prices are still in effect, but because they have not been enforced, retail prices for red meat have increased to L.E. 4.00 per kilogram.

Most domestic meat is sold through private butchers and, by law, can be purchased by the public only on Thursday, Friday, and Saturday and during special religious feasts.

Very little locally produced red meat is processed. As illustrated in Table 3-10, the domestic output of conserved meat (luncheon meat, sausage, jerky) amounted to only 1,900 MT in 1979, down from 5,600 tons in 1973. On the other hand, imports of canned meat products have risen in recent years (see Table 3-11). The USDA projects that 1981 imports will reach 12,000 MT valued at \$30 million.*

* J.B. Parker and J.R. Coyle, Urbanization and Agricultural Policy in Egypt, Department of Agriculture, Foreign Agricultural Economic Report Number 169, Washington, D.C., September 1981.

Table 3-10

EGYPTIAN OUTPUT OF CONSERVED MEAT PRODUCTS,*
1973-1979

Year	Quantity (MT)	Value (L.E. 1,000s)
1973	5,600	3,192
1974	2,060	1,225
1975	1,911	1,147
1976	1,873	1,428
1977	1,849	1,676
1978	1,765	1,791
1979	1,900	2,107

* Includes luncheon meat, sausages, and jerked salted meats.

Source: Federation of Egyptian Industries, 1981.

Table 3-11

EGYPTIAN IMPORTS OF CANNED MEAT, 1973-1981

Year	Quantity (MT)	Value (\$000)
1973	1,038	1,534
1974	2,175	3,334
1975	7,749	9,554
1976	10,980	14,630
1977	3,557	6,739
1978	3,508	8,234
1979	3,640	9,500
1980	5,000*	12,000*
1981	12,000**	30,000**

* Preliminary.

** Estimated.

Source: J.B. Parker and J.R. Coyle, Urbanization and Agricultural Policy in Egypt, United States Department of Agriculture, Foreign Agricultural Economic Report Number 169, Washington, D.C., September 1981.

Joint-Venture Opportunities

As a result of the growing demand for processed meat products, two new meat-processing projects have been implemented, and several others are being considered.

The two new companies, Americana and Gangari, process frozen hamburger patties, sausages, and individually packaged meats for sale in supermarkets. The five projects under consideration provide joint-venture opportunities for U.S. businessmen, and each of the five involve existing Egyptian government companies as partners.

Three projects are proposed by the Egyptian Company for Meat, Poultry, and Food Supplements, a government-owned company reporting to the Ministry of Supply. Although private Egyptian firms are allowed to import meat, most of the red meat imported into Egypt is handled by the Ministry of Supply company. In 1980, this company imported 100,000 MT of frozen meat and 160,000 live cattle, mostly from Ireland. Irish companies have orders for 90,000 head of cattle to be delivered in 1982.

The imported frozen meat is sold at subsidized prices through government-owned retail outlets. The 1981 price for imported frozen beef was only L.E. 0.68 per kilogram at government retail stores. However, customers could not specify the cuts they desired, and often had to wait in long lines to make purchases. About 20,000 MT of frozen meat was processed into deboned cuts, hamburger, sausage, frankfurters, and other special products for local sale at

higher prices.

Of the three projects proposed by the Egyptian Company for Meat, Poultry, and Food Supplements, two involve the establishment of new meat-processing plants, one in Alexandria, the other in Cairo. Each plant will process 80 MT per day of imported frozen meat into minced meat, sausage, hamburger, and other specialties for sale in the local market. The company also wants to establish facilities for producing 10,000-20,000 TV dinners (meat and vegetables) per day for export within the Middle East, particularly Saudi Arabia. A pre-feasibility study has been completed for the Alexandria plant. The Egyptian company is interested either in forming a joint-venture Public Law 43 company or in making a technology agreement with a foreign firm.

The same company also wishes to establish an integrated finishing lot for imported live cattle which would be held for fattening and finishing for two months prior to slaughter. The planned project would have a capacity of about 150,000 head per year. An associated abattoir would have a slaughtering capacity of 500 head per day. The meat would be sold packaged fresh, frozen, and deboned. There is also the possibility of a by-products plant for tallow, extracts, blood collection

and processing, and other specialties.

The fourth joint-venture opportunity involves the Edfina Company, the government-owned food-canning plant located in Alexandria. In addition to fish and meat products, Edfina's eight plants produce 30,000 MT annually of canned and bottled vegetables, fruits, jams, and juices.

Edfina plans to establish a plant to produce annually five to six million cans of corned beef, luncheon meat, and sausage for both local consumption and export. This plant eventually will be expanded to a capacity of 25 million cans per year. In time, the company also will manufacture the containers it requires for its own meat products.

In examining the possibility of a joint venture to produce about five million TV dinners per year, Edfina prefers the establishment of a joint-venture project rather than a technology licensing agreement. Total investment required for the canning project is estimated by Edfina at about U.S. \$5 million; an estimate for the TV dinner project is not yet available. Preliminary discussions have been held with several foreign companies, including one U.S. company.

The Processing and Distribution of Dairy Products

Most of the 1.8 million tons of milk that are

produced annually for human consumption are consumed unpasteurized. Milk is collected by local dealers and distributed by street vendors and through private retail stores. Substantial quantities of local milk are used for making cheese and other dairy products. Local milk supplies are supplemented by imports of powdered milk, which are processed into dairy products. In addition, large quantities of butter and cheese are imported.

Table 3-12 lists the quantity and value of dairy products manufactured in Egypt for the years 1976-1980. With the exception of soft cheese, ice cream, yogurt, and milk powder, production has been relatively stable. Eighty percent of the output is from private Egyptian companies. The remaining 20 percent is from Misr Milk Company, the only government-owned company producing dairy products.

Table 3-12
PRODUCTION OF MILK AND DAIRY PRODUCTS IN EGYPT, 1976-1980

Article	1976		1977		1978		1979		1980	
	Quantity*	Value**								
Soft cheese	134,174	67,470	137,070	71,835	146,872	81,206	155,343	86,380	161,928	126,711
Hard cheese	4,253	4,979	4,333	4,904	5,029	5,674	5,019	5,783	6,069	9,371
Processed cheese	8,326	6,710	8,206	6,453	9,059	7,331	9,050	8,102	8,852	8,617
Table butter & butter oil	1,574	1,755	1,428	1,751	1,541	1,926	1,539	1,931	1,793	3,565
Pasteurized milk	53,791	4,964	67,769	6,189	71,972	6,697	69,859	6,346	52,278	4,845
Cream products	890	801	910	910	927	927	936	936	1,076	1,615
Ice cream	1,870	1,556	2,735	2,353	2,778	1,421	3,445	2,979	3,499	3,476
Yogurt	3,946	776	5,276	1,061	6,836	1,387	7,870	1,790	10,687	2,624
Milk powder	59	37	87	53	19	17	9	8	38	32
Rockford cheese	147	185	137	172	157	190	158	200	187	320
Other	-	272	-	351	-	589	-	745	-	734
TOTAL	-	89,505	-	96,032	-	107,365	-	115,200	-	161,910

* Quantity measured in MT.

** Value measured in L.E. 1,000s.

Source: Federation of Egyptian Industries.

- 70 -

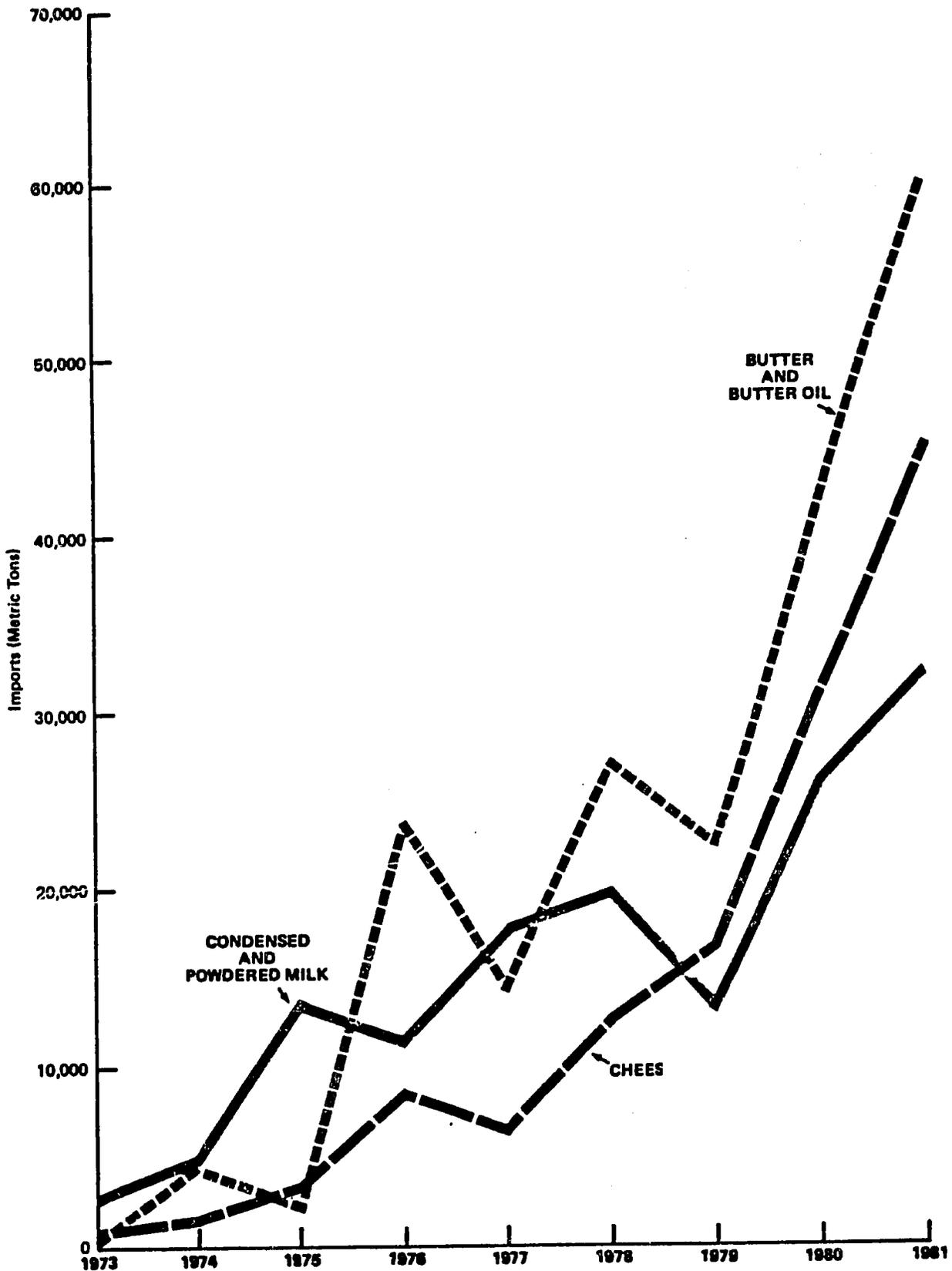
Because local production of dairy products is insufficient to meet local demand, Egypt has been importing increasing amounts of cheese, butter and butter oil, and condensed and powdered milk (see Figure 3-3). Only small amounts of other dairy products are imported.

Misr Milk Company, which has nine plants located in Cairo, the Nile Delta, and in Upper Egypt, produces 100 percent of the pasteurized milk and processed cheese made in Egypt, most of the yogurt, about 10 percent of the soft and dry cheese, and about 2 percent of the ice cream.

In 1980, the company purchased 50,000 MT of milk locally, about 30,000 MT from private farmers and 20,000 MT from Ministry of Agriculture dairies. The balance of the company's 300,000 MT milk requirement is imported in the form of powdered milk. The company is in the process of developing, as a joint venture with the French firm Frommance, a large dairy farm which will provide additional milk for processing.

Misr Milk Company also is planning a project with a Finnish group to produce ultra high temperature (UHT) milk. The UHT milk, which can be kept up to three weeks without refrigeration, will replace pasteurized milk, which

Figure 3-3
EGYPTIAN IMPORTS OF SELECTED DAIRY PRODUCTS,
1973-1981



Source: Egyptian Federation of Industries, 1973-1979; USDA estimates for butter, butter oil, and cheese, 1980-1981; CTIC estimates for condensed and powdered milk, 1980-1981.

requires refrigeration.

In addition to Misr Milk Company, several private companies with modern facilities produce dairy products, principally ice cream, using both local raw and imported powdered milk. These products are distributed directly to retailers or through company-owned retail chains. The principal producers of ice cream are Groppi and Dolci. Golden Farms, which has a processing capacity of up to 500 MT of raw milk per day, started production in 1981. Its \$6.5 million plant will produce UHT, butter, cheeses, yogurt, and milk base puddings. Most of the soft cheese made in Egypt is produced by small rural industries.

Joint-Venture Opportunities

Several organizations are planning to enter the dairy products industry in Egypt. The General Cooperative for Developing Animal Wealth and Products plans to install a plant for pasteurizing initially 50 MT of milk per day and eventually 250 MT per day. This capacity will enable the Cooperative to process the 75,000 MT of milk its members expect to produce. The Cooperative would like to have a foreign partner supply management and technological assistance as well as equity of about 25 percent. The fixed investment required for the initial 50 ton-per-day plant plus milk-collecting centers and transportation

equipment is projected to be about \$15 million, excluding land and working capital.

The Alexandria Confectionery and Chocolate Company, a government-owned firm, plans a joint venture to produce ice cream--initially, cups and boxes of ice cream using imported powdered milk. The total investment is expected to be L.E. 5 million. Although the project has yet to be approved under Public Law 43, equity participation is likely by Kuwaitis, Saudis, and possibly, some Americans. The fixed ownership structure has not yet been determined.

The Investment Authority has approved four private projects under Public Law 43 for the production of dairy products. These projects, which are in various stages of implementation, are described briefly below as samples of dairy projects that have been recently approved.

- o A proposed joint venture to produce for the local market the milk equivalent of 20,000 MT per year UHT, yogurt, and ice cream from imported powdered milk. Total investment, including land and working capital, is expected to be almost L.E. 6 million. U.S. investors interested in participating in this project should notify the Investment Authority or Chase Trade Information Corporation.

- o A 24,000 MT-per-year plant to produce milk, yogurt, hard cheese, ice cream, and whey. Total investment is expected to be L.E. 6.4 million. In this joint venture Egyptian companies and individuals hold 92 percent of the equity. The balance is held by a German company. Production is already underway.
- o A private Egyptian project to produce 16,000 MT of milk, yogurt, semi-dry cheese, and cream. The total projected investment of L.E. 3 million includes a 400-cow milk farm.
- o A joint venture to produce, with locally produced milk, 16,000 MT of UHT milk plus 1,000 MT of ice cream and other dairy products annually. The project will eventually expand into the production of baby foods, butter, and cheese. The total investment, including working capital, is expected to be L.E. 7.6 million; the equity will be held in roughly equal shares by Egyptian, Saudi Arabian, and British interests. About one-half of the output is expected to be exported to Middle Eastern and African countries; the remainder will be consumed locally.

Two other projects, both for powdered infant milk

products, are being evaluated by the Investment Authority, the Ministry of Health, and the Ministry of Industry.

- o A Swiss-Egyptian joint venture to produce dietetic infant milk products. The company will supply two-thirds of the infant food market in Egypt, which is expected to amount to about 25,000 MT during the first ten years of the project. About 2,500 MT of local fresh milk will be utilized to the extent that it is readily and commercially available. Total investment is expected to be L.E. 14.1 million. Equity will be held 90 percent by the Swiss and 10 percent by the Egyptian partner. The Ministry of Health's trading company, Egydrug, may also participate.
- o A joint venture in which a French firm will have 51 percent equity and the government-owned Misr Milk Company will have 49 percent equity to produce 4,500 MT per year of powdered milk products. Total investment is expected to be L.E. 3 million.

4. THE PRODUCTION, PROCESSING, AND DISTRIBUTION OF POULTRY PRODUCTS

Introduction

In its strategic plans for increasing the production and consumption of animal protein in Egypt, the Ministry of Agriculture has given high priority to poultry. It hopes to approximately triple per capita consumption of both eggs and poultry meat by the end of the century as well as to become virtually self-sufficient in both products. In achieving these goals, the Ministry anticipates that the private sector will play the dominant role. Although the government will actively encourage private commercial poultry operations through concessionary financing, exemption from import duties on equipment and supplies, and the provision of feed materials and other supplies at subsidized rates, it does not expect to interfere with the free marketing of poultry products.

Until about a decade ago, village flocks of chickens, ducks, and other poultry accounted for virtually all of the poultry meat and eggs produced in the country. In recent years, however, specialized commercial poultry farms have been introduced and there has been a trend toward operations on a larger scale. In 1980, less than a third of the poultry meat produced in Egypt came from village flocks. Although

the villages still provide 83 percent of total eggs consumed, that percentage is expected to fall as commercial egg farms increase in size and number.

Direct government participation in the poultry sector is limited. The government-owned General Poultry Company accounts for only about 5 percent of the eggs and 17 percent of the poultry meat produced in the country. These percentages are expected to decrease by the end of the century.

Several factors contribute to the large potential for expanding the commercial poultry sector in Egypt.

- o The private sector already has initiated several successful large-scale commercial egg and broiler projects. The valuable experience that has been gained from these projects will provide a basis for further expansion. These projects have demonstrated that Egyptian farmers can achieve rates of productivity comparable to those in Europe and North America and that high returns on investment can be achieved.
- o In recent years, consumption of poultry products has increased rapidly in Egypt. Since 1974, poultry meat consumption has increased by

8 percent annually. The Ministry of Agriculture has projected continued high annual rates of increase in both products through the year 2000: about 5 percent for poultry meat and 7 percent for eggs.

- o The government encourages commercial production through financial and technical assistance, but it has allowed poultry farmers to sell their products in a virtually free market. This policy is expected to continue.
- o International organizations, both private and governmental, are rapidly providing Egyptian-based companies with the technology necessary to develop the industry's infrastructure with parent stock centers, hatcheries, feed mills, vaccines and other health care products, meat-processing and storage facilities, and marketing systems.

All told, commercial poultry operations in Egypt can be expected to expand rapidly over the next two decades. The sector has a good track record to date; the market is expanding; the government's policy is to provide support without interference; and a modern infrastructure is being developed. Opportunities for U.S. companies to become

partners with Egyptians in this growing sector appear to be numerous.

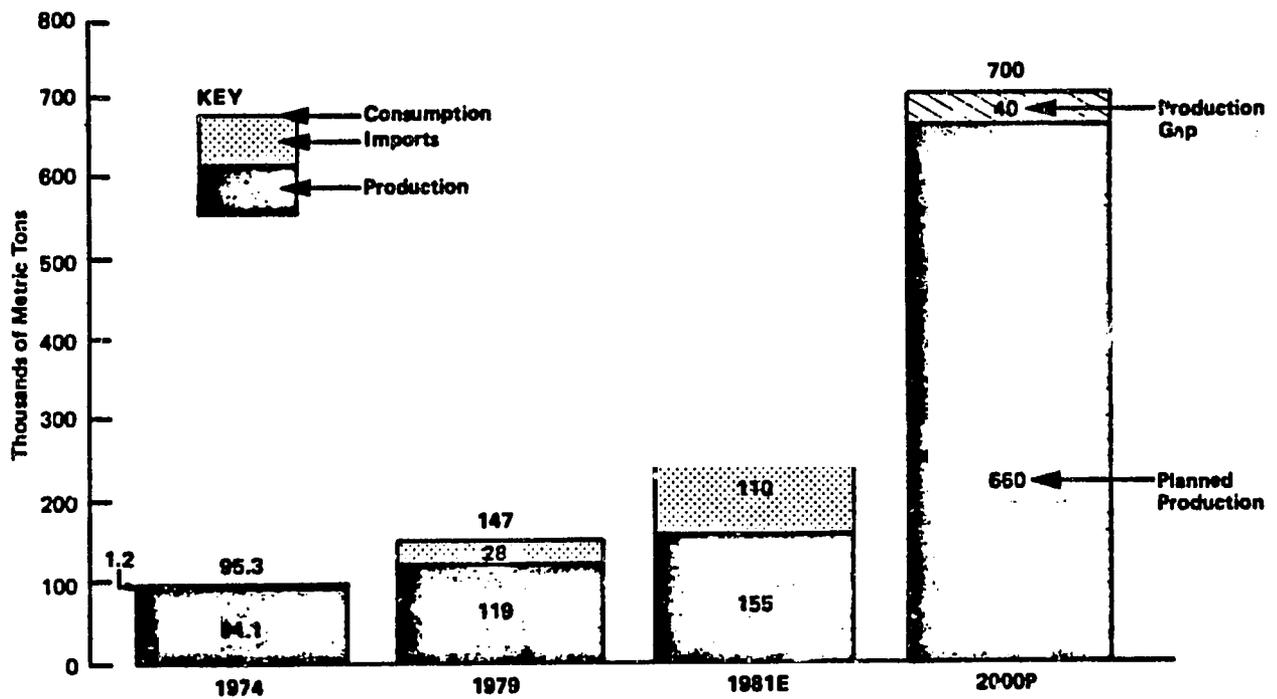
Poultry Meat Production

Although the production of poultry meat increased 65 percent between 1974 and 1981, consumption has increased even more rapidly. As a result, it is expected that imported frozen poultry meat will account for over 40 percent of the poultry consumed in Egypt in 1981. Figure 4-1 illustrates the growth in production and consumption since 1974 and the Ministry of Agriculture's production and consumption goals for the year 2000. Population is assumed to have expanded from 36 million in 1974 to 70 million in the year 2000.

Figure 4-2 depicts the per capita consumption of poultry meat in the same years and the Ministry's goal for the year 2000--almost a four-fold increase in 25 years. However, an annual per capita consumption of 10 kilograms of poultry meat is low by U.S. standards. In 1979, the average American consumed three times as much poultry meat.

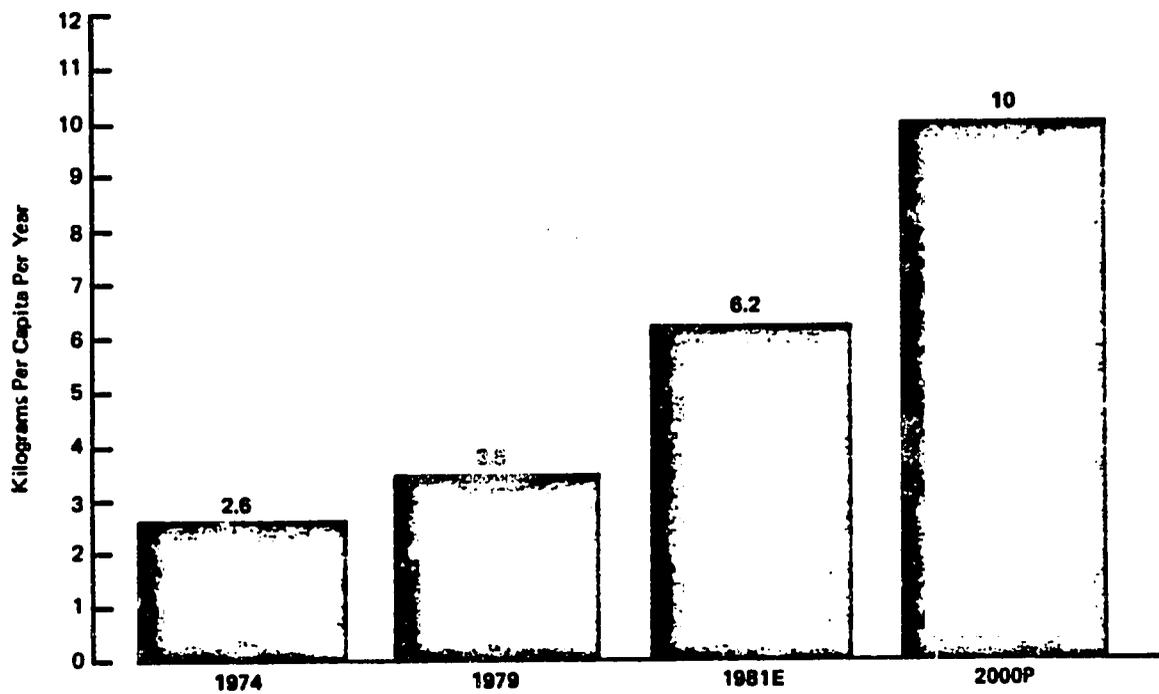
The structure of the poultry meat industry has changed significantly over the last decade. As has already been noted, before 1970, almost all of Egypt's poultry meat came from small village flocks. However, at the turn of the decade, the government-owned General Poultry Company (GPC)

Figure 4-1
EGYPTIAN POULTRY MEAT PRODUCTION, IMPORTS, AND CONSUMPTION:
SELECTED YEARS, 1974-2000



Source: Central Agency for Public Mobilization and Statistics (CAPMAS), Ministry of Agriculture, Cairo; U.S. Embassy, Cairo; CTIC estimates.

Figure 4-2
EGYPTIAN PER CAPITA CONSUMPTION OF POULTRY MEAT:
SELECTED YEARS, 1974-2000



Source: Figure 4-1 and CAPMAS population figures for 1974 and 1979; CTIC population projections for 1981 and 2000.

Previous Page Blank

was established and started producing broilers on a commercial scale. The company also encouraged the establishment of private broiler farms to which GPC would provide day-old chicks and feed for fattening. A standard-size broiler operation had a capacity of 5,000 chicks and fattened five to six cycles of chicks annually. Over 2,000 such operations are established by 1979.

During the 1970s, four large private commercial poultry breeders entered the picture. By 1980, these companies not only were producing poultry meat and eggs on a large scale, but they were also providing technical assistance and chicks and supporting materials to smaller broiler farmers, in some cases competing directly with GPC. These four companies and the broiler producers they support accounted for some 20,000 MT of poultry meat in 1980.

The Ministry of Agriculture expects the commercial poultry breeder to provide leadership for the industry's development for the balance of the century. An indication of the expected change in the structure of the poultry meat industry and its total output between 1980 and 2000 is shown in Table 4-1.

Although production is expected to increase in each segment of the industry, the government and institutional share of total production is expected to fall from about

Table 4-1

EGYPTIAN POULTRY MEAT PRODUCTION AS PROJECTED BY MINISTRY OF AGRICULTURE
 BY TYPE OF POULTRY PRODUCER, 1980-2000
 (in MT 000's and percentage of yearly total)

Type of Producer	1980		1990		2000	
	Quantity	Percent	Quantity	Percent	Quantity	Percent
General Poultry Company	22.5	17.5	28.0	7.0	30.0	4.5
Other governmental and institutional producers	6.1	4.7	9.0	2.2	9.0	1.4
Village flocks	42.3	32.9	70.8	17.9	91.5	13.9
Private producers with GPC support	37.4	29.1	93.1	23.6	93.1	14.1
Private producers with private breeder support	<u>20.3</u>	<u>15.8</u>	<u>193.7</u>	<u>49.1</u>	<u>437.0</u>	<u>66.2</u>
TOTAL	128.6	100.0	394.6	100.0*	660.6	100.0*

* Details do not add to total because of rounding.

Source: Ministry of Agriculture, Cairo.

29 percent to 6 percent. The contribution from village flocks, while more than doubling in absolute terms, falls from about 42 percent to about 14 percent. The private commercial producer's share of the total market increases from 45 percent to 80 percent.

The Ministry of Agriculture Strategic Plan

To achieve its goals for the production of poultry meat, the Ministry of Agriculture is undertaking four programs. It is the fourth of these programs that is most important from the point of view of opportunities for joint-venture projects.

The first program consists of several projects to increase GPC's output of broiler chicks sufficiently to meet the needs of private growers while private hatcheries are building up capacity to meet growing needs. Chick production capability will be increased from 62 million in 1980 to 120 million in 1985, at which time the private sector will meet any excess demand for chicks. GPC also will produce 30,000 MT of meat by 1991, a modest increase from the 22,500 MT produced in 1980. This continued production will provide subsidized poultry meat through government stores to less affluent Egyptians.

The second program will upgrade village flocks in order to increase village egg production. The simultaneous

increase in meat production is essentially a by-product of the egg program. The third program involves only a minor increase in chick production by institutional organizations.

The fourth, and principal, government program aims to develop and expand the specialized, private, integrated poultry companies that will import parent stock to provide hatchery eggs for the production of broiler chicks. These chicks will be grown to broiler size by the integrated companies and by private growers who will be supplied with chicks by the integrated companies. The large integrated companies, which will provide feed, medical supplies, and technical assistance to private growers, may provide slaughtering, processing, freezing, and marketing services as well.

In 1980, four major private companies produced chicks for themselves and for private growers. According to the Ministry of Agriculture, their 1981 production was as follows:

Company	1980 One-Day Old Broiler Production (millions)
MELARCGYPT*	8
EGYPCO (Egyptian Poultry Company)	6
Cairo Poultry Company	3
General Farm Company	3

In 1980, these four companies, plus GPC, were reportedly supporting 3,200 broiler growers. According to the Ministry plan, by 1985 the number of broiler growers is expected to reach 7,600, and by the year 2000, over 21,000 broiler farms will be in operation. These farms will produce an average of 25,000 broilers per year, or a total of 529 million broilers.

Discussions with private companies indicate that the private sector is ahead of the goals established by the Ministry. MELARCGYPT management, for example, claims to have created a poultry-breeding, broiler, and egg-production empire which has grown from 2,400 farms in 1979 to 7,000 farms in 1981. The farmers manage the poultry, with MELARCGYPT supplying everything required for successful operation, and reportedly less expensively than if purchased

* The Middle East Company for Land Reclamation and Development of Agricultural and Animal Industries, S.A.E.

from government sources. MELARCGYPT expects that total broiler output from these farms will surpass 200 million in 1981. In the same year, they also expect to produce 60 million broilers in partnership with Ismailia Poultry Company.

Although poultry production is only one aspect of MELARCGYPT's overall operations, it is significant that the company reported a net return of 70 percent on invested capital in 1980.

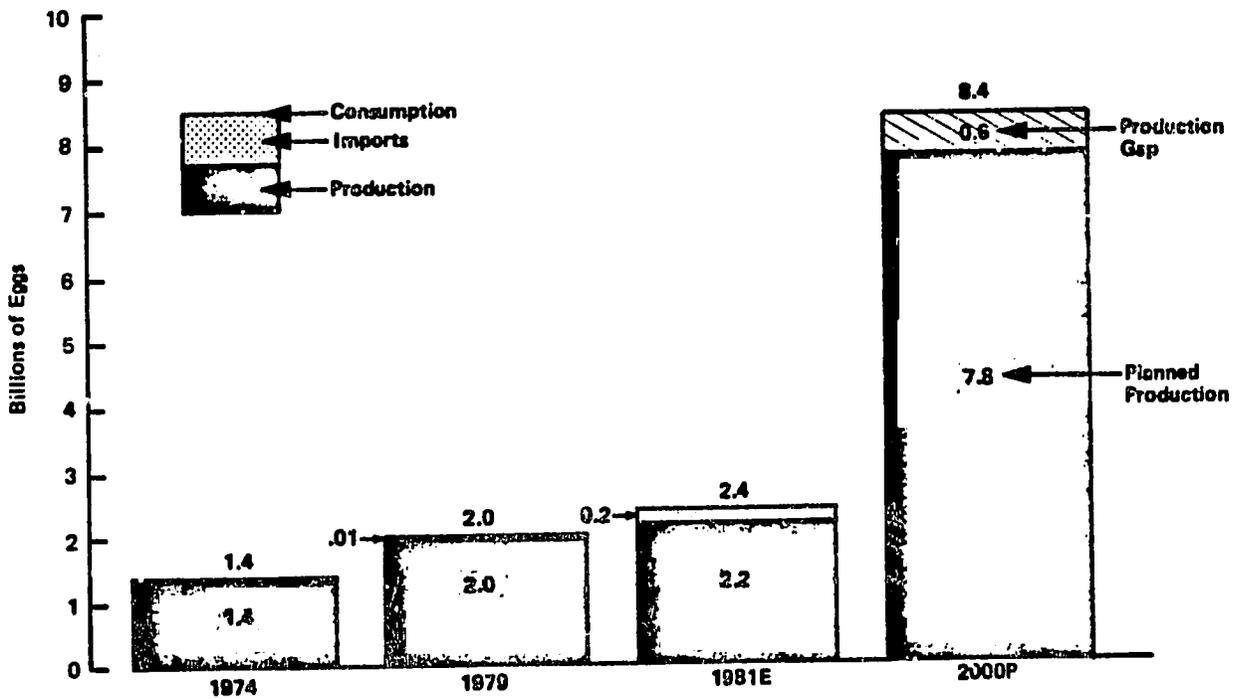
The Animal Wealth Cooperative, which produced 25 million broilers in 1981, anticipates that its members will produce 100 million broilers annually within five years.

Egg Production

As shown in Figure 4-3, despite steadily increasing national consumption, Egypt is virtually self-sufficient in the production of eggs. By the year 2000, the Ministry of Agriculture anticipates a quadrupling of the consumption level of 1979. The Ministry aims to keep local production levels abreast of demand, which, it is expected, will continue to grow as the population increases from about 43 million in 1981 to 70 million in 2000.

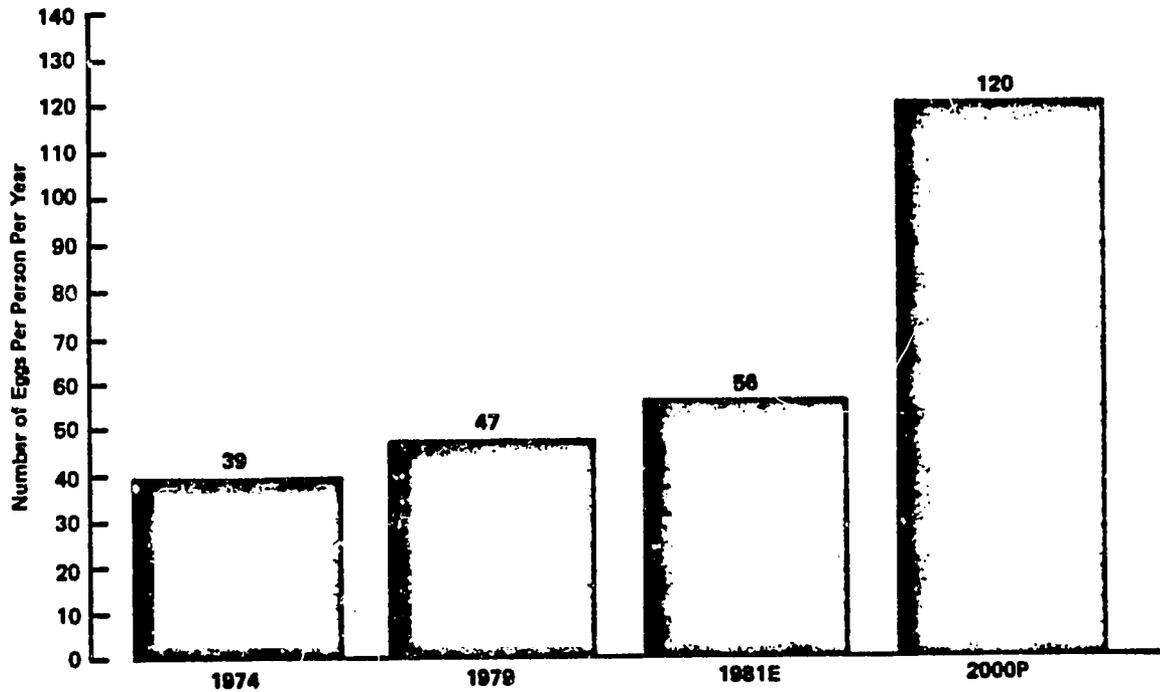
As Figure 4-4 indicates, it is anticipated that per capita consumption will more than double by the year 2000. The projected 2000 per capita consumption of 120 eggs is

Figure 4-3
EGYPTIAN EGG PRODUCTION, IMPORTS, AND CONSUMPTION:
SELECTED YEARS, 1974-2000



Source: CAPMAS, Ministry of Agriculture, and CTIC estimates.

Figure 4-4
EGYPTIAN PER CAPITA CONSUMPTION OF EGGS:
SELECTED YEARS, 1974-2000



Source: Figure 4-3 and CAPMAS population figures for 1974 and 1979; CTIC population projections for 1981 and 2000.

Previous Page Blank

equivalent to about 5 kilograms. For purposes of comparison, it can be noted that the U.S. annual per capita consumption of eggs in 1979 was 17 kilograms.

As stated earlier, until the fairly recent development of commercial production, village flocks accounted for virtually all of the eggs produced in Egypt. They provided five of every six eggs consumed in Egypt in 1980.

In 1980, 360 million eggs were commercially produced, as follows:

- o 105 million by GPC
- o 30 million by other government institutions
- o 225 million by private sector commercial companies

The Ministry of Agriculture Strategic Plan

The Ministry expects to increase egg production by improving the size and output of village flocks and by encouraging commercial production. Although commercial production is projected to increase more than tenfold over the next two decades, commercial production by the year 2000 will still represent less than half the total production in the year 2000 (see Table 4-2).

The Ministry's projections of commercial egg production may be somewhat conservative. Reports from other organizations, private and public, indicate that

Table 4-2

EGYPTIAN VILLAGE AND COMMERCIAL EGG PRODUCTION AS PROJECTED
 BY THE MINISTRY OF AGRICULTURE, 1980-2000
 (in millions of eggs and percent of yearly total)

Producing Segment	1980		1990		2000	
	Quantity	Percent	Quantity	Percent	Quantity	Percent
Village flocks	1,750	82.9	3,616	73.7	3,984	51.0
Commercial flocks	<u>360</u>	<u>17.1</u>	<u>1,289</u>	<u>26.3</u>	<u>3,821</u>	<u>49.0</u>
TOTAL	2,110	100.0	4,905	100.0	7,805	100.0

Source: Ministry of Agriculture, Cairo.

over the next few years, annual commercial production may increase to 1.5 billion eggs. General Farm Company plans to add production facilities for 280 million eggs per year; Ismailia Poultry Company (with MELARCGYPT) plans to increase annual output to 540 million eggs; and the Investment Authority has approved or is reviewing applications involving the production of nearly 250 million additional eggs per year. Further, a number of individuals with whom the CTIC team spoke have made plans to enter the poultry business.

On the government side, GPC plans to increase annual egg production to 180 million in 1983, and 13 governorate projects, each expected to produce 15 million eggs, are being implemented with the assistance of Hungarian and German interests for a total of 195 million eggs per year.

The Ministry plans to increase village egg production by:

- o Increasing hatching rates from 60 percent to 70 percent
- o Decreasing the losses from death from 50 percent to 35 percent
- o Increasing the annual egg production rate per hen from 70 to 100 eggs

It is expected that these goals can be achieved through genetic improvements, improved veterinary practices, provision of balanced feeds, and better poultry management. The program will be implemented principally by government organizations.

Joint-Venture Opportunities

The major poultry companies mentioned above--GPC, MELARCGYPT, General Farm Company, Ismailia Poultry Company, and EGYPCO-- have modern facilities and reportedly are achieving productivity rates comparable to those of commercial poultry facilities in Europe and North America. These companies, as well as other Egyptian businessmen who are about to enter the poultry business, have significant expansion and development plans.

The major companies already in existence are expanding both horizontally (by adding to existing production lines) and vertically (by developing both upstream and downstream capabilities). For their horizontal expansion programs, these companies generally do not need foreign joint-venture partners. They all produce broiler chicks (which may be grown to slaughtering size by the company or sold to growers) from breeder stock. All plan to expand their broiler chick production, broiler production, and egg production. All have feed-mixing mills and plan to expand. Two have

slaughtering and processing plants and plan to expand. In none of these specific expansion projects is a joint venture desired.

However, EGYPCO plans to expand vertically by raising parent stock for the production of broiler breeders and laying hens. Up to the present time, parent stock or fertile eggs have, for the most part, been imported by commercial egg and broiler chick producers.

The Ministry of Agriculture estimates that, in 1980, only 190,000 parent hens were available in commercial broiler chick facilities. By 1985, 704,000 parent hens will be needed. The number required in 1990 is expected to be 1.8 million, and by the year 2000 the requirement will rise to over 4 million.

EGYPCO wants to start a facility with about 5,000 parent hens to produce 500,000 breeders annually. This capacity will be expanded as the company gains experience. In the meantime, EGYPCO is seeking a joint-venture operation with a foreign partner who would provide technical and management know-how as well as equity. The investment cost for such a breeder station would be about L.E. 500,000. Although the initial project is small relative to Egyptian production requirements, it will be an important step in vertical integration.

EGYPCO also wants to expand its egg production as well as to produce layer chicks for subsequent sale. It visualizes a 20,000-hen unit which would produce about 2 million layer chicks. The estimated investment is L.E. 2 million. A foreign partner also is sought for this venture.

The largest producer of day-old chicks, MELARCGYPT, and the General Cooperative for Developing Animal Wealth and Products each wish to embark upon similar projects. To establish several centers which will expand over a 5-year period to about 100,000 parent hens, the Cooperative seeks a foreign joint-venture partner with technology, management capability, and willingness to take 49 percent equity. The total investment required is estimated at L.E. 8.2 million.

The Cairo Poultry Company would like to expand vertically downstream (toward the market) by adding a slaughtering, processing, and freezing plant with a handling capacity of 2,000-3,000 birds per hour. Although the company is interested primarily in obtaining the latest technology, a joint venture with a foreign partner might be of interest.

The Animal Wealth Cooperative wishes to undertake automatic slaughtering through a joint venture with a foreign firm. At present, however, unless the Cooperative's members achieve the organization's five-year goal of producing 300 million broilers per year, it is doubtful whether two new poultry-slaughtering plants are required.

CTIC estimates, as shown in Table 4-3, that in mid-1981 broiler-slaughtering capacity was approximately 19,000 birds per hour, or about 57 million per year on a one-shift (10 hour), 300-day basis.

Table 4-3

ESTIMATED BROILER-SLAUGHTERING CAPACITY
IN EGYPT, 1981
(number of broilers per hour)

Company	Hourly Capacity
GPC	14,000
MELARCGYPT	3,000
EGYPCO	2,000
TOTAL	19,000

Source: CTIC estimates, based on interviews with GPC, MELARCGYPT, and EGYPCO, summer 1981.

Probably fewer than 40 million broilers were slaughtered, however, since commercial production of broilers amounted to only about 80 million birds, and a large percentage of poultry is still sold live to retailers. However, by 1985, when commercial production of broilers is projected to rise

to roughly 170 million birds, a larger percentage of birds will be sold to retailers slaughtered, processed, and frozen. Additional slaughtering facilities, such as proposed by the Cairo Poultry Company or the Animal Wealth Cooperative thus may well be in demand, as they will be should broiler production increase, according to the Ministry plan, to almost 300 million birds in 1990 and about 500 million in the year 2000.

EGYPCO also is anxious to expand vertically in a downstream direction. For a joint venture to utilize chicken residues in the manufacture of stock cubes and packet soups, an investment of about L.E. 300,000 would be required. EGYPCO has had discussions with both a Dutch and an Italian company regarding this project.

EGYPCO wishes as well to expand its retail convenience food chain, which now has six outlets in Cairo for the sale of frozen chicken parts and ready-cooked broilers. The opening of eight additional outlets in the greater Cairo area has been authorized, and other outlets in Alexandria are being negotiated. EGYPCO sees steadily increasing demand for convenience foods, and would like to work with a foreign firm to study the possibility of a sizable expansion.

There are a number of additional investment opportunities in the poultry sector, three examples of

which are listed below. U.S. firms interested in working on these projects on a joint-venture basis with Egyptian partners should contact the Investment Authority as well as the Cooperative.

- o One private firm company has proposed an integrated project to hatch 1.2 million broiler chicks annually. Of the total, one half would be sold to local broiler growers; the other half would be grown to slaughter age by the company. Parent stock for producing hatching eggs for the 1.2 million broiler chicks would be imported initially. Land is available both for hatching and broiler growing.

Nearby, land is available for a 1,000 MT-per-hour slaughterhouse with freezing facilities and freezer storage for 150 MT. The slaughtering and freezing facility will process the company's output of broilers as well as the live, fully fattened broilers that will be supplied on contract basis by local farmers.

At a later date, the project is to include a 200 MT-per-day feed mill that will supply the company's needs and those of local farmers.

Based on a cost of \$3 million for the total plant machinery (including vehicles and training), the estimated total cost of the project is about \$4-5 million.

Estimates were obtained from offers by U.S., Dutch, and Belgian equipment suppliers. Civil costs are expected to be between \$1 and \$2 million.

- o Another private company wants to establish an integrated project to produce one million broilers annually. This output will be increased to five million birds within five years of project initiation. In addition, the company will produce 15 million eggs per year. Hatching facilities necessary to provide the breeders and layers would be included as would a unit for egg grading, packing, and cooling, and a slaughterhouse.

The first phase of the project, the establishment of a 15 MT-per-day feed mill, already has been initiated.

- o The Arab Investment Company plans a project to produce 40 million eggs and 10 million broilers per year, a slaughtering plant with a capacity of 2,400 broilers per hour, and a supporting feed mill. Although ownership of the venture has not yet been structured, the chairman has suggested the following equity participation:

Saudi Arabian private groups	49 percent
Arab Investment Company	5 percent
Bank Misr	29 percent
Other Egyptian	17 percent

U.S. investors interested in possible participation should contact the Arab Investment Company or Chase Trade Information Corporation.

In addition to joint ventures with private Egyptian companies, there are also a number of projects with the Ministry or various government groups for which foreign partners are being sought.

- o The first group of projects involves producing 6-7 million broilers per year from hatching through slaughtering, processing, and freezing. A feed mill will also be included, and the Egyptian partner will be either one of the companies of the Ministry of Agriculture or one of the governorates. The total investment required (excluding land and working capital) is estimated to be \$12.6 million. Rate of return on the investment is projected to be 32 percent on a preliminary basis.

- o An integrated poultry-production project has been proposed at El Tal Il Kebeer for the annual production of 60 million eggs and 1.2 million broilers. Although a feasibility study has not yet been undertaken, the Ministry of Endowment, the Egyptian partner, estimates that the investment required for the project would be about L.E. 10 million. This includes layer houses, egg-grading facilities, broiler farms, slaughter and freezing

facilities, and feed production, and excludes land and working capital. The estimated net profit is L.E. 3 million per year.

- o The Ministry of Agriculture is seeking foreign partners for several egg-production projects in which the Egyptian partner would be the governorate in which each of the four projects is located--Gharbia, Giza, Behira, or Alexandria. Each of these projects is to produce 15 million eggs annually. The Ministry of Agriculture estimates a total investment (excluding land and working capital) of L.E. 1.5 million per project, and the project rate of return is 14 percent.
- o The private National Development Bank, which considers poultry a high-priority sector for their investment portfolio, is interested in providing equity to poultry projects of most types.

All told, there is a large and growing market for poultry products in Egypt. A large number of poultry projects has been proposed to meet projected demand, and foreign joint-venture participation in these projects is welcomed. For further details, U.S. investors interested in any of these projects should contact the Investment Authority or Chase Trade Information Corporation.

5. RABBIT FARMS AND PREPARED LIVESTOCK AND POULTRY FEEDS

Rabbit Farms

Because some rabbit meat tastes like chicken, statistics on the production of rabbit meat is sometimes aggregated with poultry statistics. To a small extent, rabbits are eaten wild in Egypt. They are also commercially produced. In 1980, about 2 million rabbits were produced in Egypt. There were no imports or exports. Retail prices in 1980 were about L.E. 1.50 per kilogram for live animals, L.E. 2.50 per kilogram for freshly dressed animals. Frozen dressed rabbit is sold at a slightly lower price than the fresh meat. Rabbit fur is not utilized commercially.

The Ministry of Agriculture has proposed that several rabbit farms be established, each producing about one million rabbits per year. These farms, which would produce both meat and fur, would be fully integrated to include breeding, slaughtering, freezing, fur processing, and fodder production. Table 5-1 presents a profile of such a project developed by Arthur D. Little, Inc., from information collected through the Ministry of Agriculture.

In addition to the Ministry of Agriculture, some private groups are interested in developing rabbit farms.

Table 5-1

RABBIT FARMS (MULTIPLE PROJECTS)

<u>Project description:</u>	One or more rabbit farms to produce meat and fur. Complex to include breeding farm, slaughterhouse, freezer storage, fur-processing unit, fodder production, and related infrastructure. <ul style="list-style-type: none">o Capacity: one million rabbits per year per unito Market: meat for local consumption and fur for exporto Infrastructure: to be developed as part of project
<u>Location:</u>	Gharbia, Suez, Alexandria, and Sharkia Governorates
<u>Land available:</u>	27 feddans per project
<u>Egyptian partner:</u>	Governorates or company affiliated with Ministry of Agriculture
<u>Financing:</u>	Equity
<u>Role of foreign company:</u>	Joint venture: marketing and technical know-how and financial participation
<u>Project status:</u>	These projects were developed by the Ministry of Agriculture, which prepared one generic package of information. No site-specific feasibility studies have been done. Formal efforts to locate foreign investors or to specify Egyptian partner have not yet been made.

Table 5-1 (continued)

<u>Sources of information:</u>	Mr. Mahmoud Nur, Assistant to Minister of Agriculture, responsible for follow-up.
<u>Total cost:</u>	U.S. \$10 million each, including land and buildings.
<u>Foreign exchange cost:</u>	Not specified.
<u>Annual import requirements:</u>	Breeding stock.
<u>Exports:</u>	Fur valued at \$3 million per year per project
<u>Profitability:</u>	Annual revenues estimated at \$4.5 million per project
<u>Employment:</u>	Not specified, (probably low-moderate for size of project)
<u>Other considerations:</u>	Contributes to objectives for food security, foreign exchange savings, regional decentralization, new export markets, and modernization of production.

Source: Arthur D. Little, Inc., May 1981.

One private Egyptian, who would offer his land as equity in the project, would like to start a small rabbit project on 6 feddans of land about 20 kilometers from Cairo (near Kaliyoub). This project, which is now in the idea stage, might be a joint venture with a coat manufacturer, who could be supplied with at least 10,000 furs annually. The

meat would be sold locally.

Prepared Livestock and Poultry Feeds

At the present time, there is a shortage in Egypt of ingredients for both livestock and poultry feed. In the absence of ingredients for livestock feed, the animals simply do without their full requirements. The shortage of ingredients for poultry feed is made up largely by importing and mixing the necessary ingredients into specially prepared feeds.

Livestock Feed

Livestock are well fed during the winter months, principally by berseem clover forage. During the remainder of the year, livestock receive limited rations of various straws; residues from the processing of wheat, rice, and cottonseed; and limited amounts of prepared feeds. Rations during the non-berseem months are insufficient to meet the animal's energy and protein requirements.

Currently, Egypt produces about 1.4 million MT of prepared feed, principally in government-owned edible oil facilities under the direction of the Ministry of Industry. The principal protein utilized in these feeds is cottonseed cake. About 40 percent of the feed is cottonseed cake, but because only about 600,000 MT of cottonseed cake is

available, some of which is utilized in direct feeding, the output of prepared feed for livestock is strictly limited.

It is estimated that 4-5 million MT of livestock feed is required annually. The Ministry of Agriculture has encouraged the Ministry of Industry to reduce the percentage of cottonseed used in feed from 40 percent to 25 percent and replace the reduced protein content by utilizing molasses and urea. Although it would not completely eliminate the shortage, this substitution would enable the industry to produce some additional 900,000 MT annually. Unfortunately, at the present time, the existing edible oil facilities are unable to formulate feeds to the specifications desired.

In view of the shortage of cottonseed cake, the Ministry of Agriculture will support any project utilizing nonconventional processes, especially if local agricultural residues, such as rice straw, bagasse, or corn stalks, are utilized. U.S. companies with the appropriate technology, such as the various single cell protein processes, might find interesting opportunities to produce animal feed in Egypt.

The price of livestock feed distributed by the government is highly subsidized. For example, in 1980 the

subsidized price of dairy feed was \$46.40 per MT versus about \$95 per MT in the free market. The subsidized price of fattening rations was \$36.60 per MT versus a free price of approximately \$75.00 per MT.

Milk Replacers

As noted in Chapter 3, the Egyptian government is encouraging the use of milk replacers for suckling livestock in order to free the mother cow's milk for human consumption. Because milk replacers are not now produced in Egypt, conceptually, opportunities exist for manufacturing the product locally, using imported ingredients. The potential demand is large.

About one million water buffalo and 900,000 cattle calves are born annually in Egypt. Assuming that each calf utilizes an average of 500 kilograms of milk during the nursing period, the total milk consumed annually would be close to one million tons. Because one kilogram of powdered milk replacer will make 8 kilograms of milk, the total potential demand for powdered milk replacer is about 120,000 MT annually.

Milk replacer powder sold for about L.E. 700 per MT in 1981. Thus, the potential market, at retail prices, is L.E. 84 million, or about \$120 million at the early 1981 exchange rate.

Poultry Feed

The capacity for mixing poultry feed in Egypt in 1981--about 600,000 MT annually--satisfied current requirements. This production was divided approximately between the government's General Poultry Company (GPC) and private producers. The GPC output was sold at highly subsidized prices. For example, the subsidized price of broiler rations was \$99.50 per MT in 1980 versus a free market price of \$207 per MT; layer rations were \$92.70 per MT at the subsidized price versus \$170 in the free market. Imported corn, soya, and various additives are utilized in the preparation of poultry feed. The corn is sold to feed producers at a subsidized price.

By the year 1986, poultry feed requirements will reach about 2 million MT per year if government poultry goals are achieved. By the year 2000, feed requirements are likely to exceed 3 million MT.

The major poultry producers are currently producing their own poultry feeds plus additional quantities to supply local farmers. Each of these companies has major expansion plans. Proposed new, large, integrated poultry projects, for the most part, can be expected to expand as well, thus obviating the necessity for any major independent joint-venture projects to produce poultry

feed. There may, however, be opportunities to produce poultry feed additives or pre-mixes locally. Pre-mixes are mixtures of small quantities of feed with vitamins, essential trace elements, antioxidants, growth promoters, and anti-infection agents (coccidiostats, antibiotics, anti-fungal agents, etc.) that are combined with imported corn and soya and other nutrients such as fish meal.

6. THE PRODUCTION, PROCESSING, AND DISTRIBUTION OF FISH PRODUCTS

The Production and Consumption of Fish in Egypt

Traditionally, fish has represented an important source of protein in the Egyptian diet. A 1977 report prepared by U.S. AID indicates that per capita fish consumption was close to 4 kilograms in that year.¹ In recent years, despite rising prices, the per capita consumption has more than doubled to 8.1 kilograms per year.² This rapid increase in per capita consumption is directly related to increasing per capita incomes and, perhaps more importantly, to the shortage of red meat and the government regulation forbidding the sale of red meat four days per week.

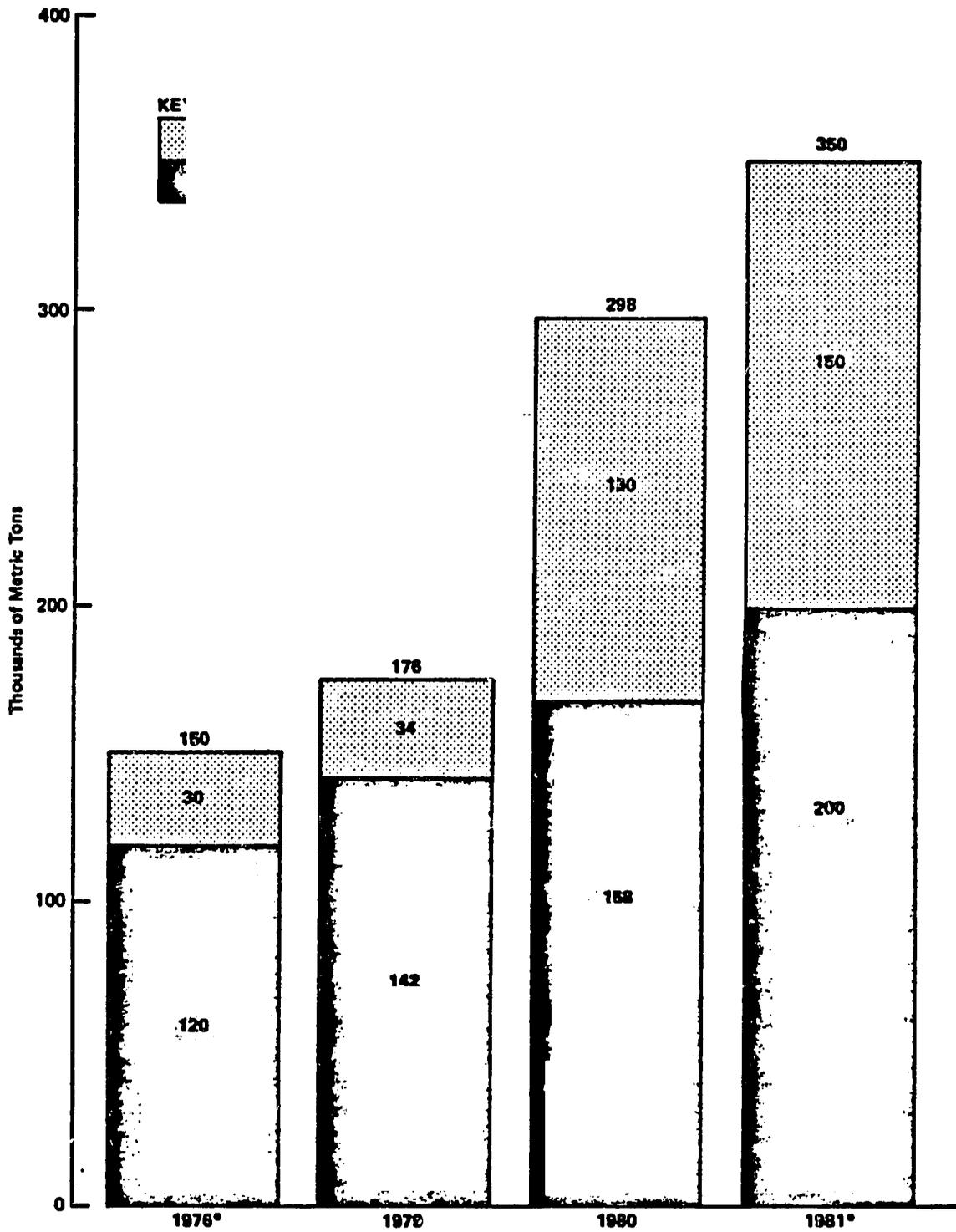
Over the last five years, fish consumption in Egypt has increased by 133 percent, but because fish production during the same period has increased by only two-thirds, there has been a 500-percent increase in imports of fish. Figure 6-1 indicates the rise in consumption, production,

¹ Egyptian Aquaculture Feasibility Report, prepared for the U.S. AID Mission, Cairo, December 5, 1977.

² The free price of tilapia (boliti) was reported to be L.E. 0.75 per kilogram in 1977; the 1981 price was as high as L.E. 2.00 per kilogram. Mullet was selling at L.E. 3.50 in 1981 compared with about L.E. 1.50 in 1977.

MISSING PAGE
NO. 120

Figure 6-1
THE PRODUCTION AND CONSUMPTION OF FISH IN EGYPT, 1976-1981



* Estimated.
 Source: 1976 figures from U.S. AID; figures for other years from Ministry of Agriculture, Cairo.

and imports from 1976 through 1981.

The Ministry of Agriculture has established a goal for the development of local fish resources that would provide Egyptians with 10 kilograms of fish per capita by the year 2000.* Assuming a population of 70 million persons in 2000, fulfilling this goal will require the local production of 700,000 MT, 3.5 times as much as the 1981 production of 200,000 MT, or an average annual increase in local production of roughly 6.5 percent over the next two decades.

The Ministry believes that this goal can be achieved by tripling the yield from traditional fish resources--the Mediterranean and the Red Seas, the Nile River, Lake Nasser at Aswan, and the northern lakes. A substantial increase in fish farming also will be required, as will substantial government management and support. However, the private sector is expected to be the principal participant in increasing fish production. The application of foreign technology through joint ventures is encouraged both to develop existing fish resources and to participate in fish farming.

Foreign participation also is sought in joint ventures

* The average world per capita consumption of fish is about 17 kilograms per year. The U.S. per capita consumption was only about 6.3 kilograms as of 1979.

to process and distribute fish products, and still other joint-venture opportunities may exist in the development of improved repair and maintenance facilities to service fishing fleets in the Mediterranean and Red Seas and the major inland lakes.

Fish Production and Joint-Venture Opportunities

Because much of the catch is consumed locally or is sold through other than normal distribution channels, in part to avoid government price regulations, statistics on fish production in Egypt are difficult to obtain. The estimates of fish catch for 1980 shown in Table 6-1 are based on a review of various reports and on interviews with government officials and private firms. Data on the potential catch of major sources is as reported in the Middle East News and in interviews.* The right-hand column of the table indicates the Ministry of Agriculture goals for the year 2000. These goals are based on the expectation that the catch from major sources can be tripled and that the balance needed to reach a total catch of 700,000 will be obtained from fish farms and other non-conventional sources.

As a group, the northern lakes--including Lakes Mariut,

* Middle East News, Middle East News Agency, January 9, 1981.

Table 6-1

ESTIMATED 1980 FISH CATCH IN EGYPT BY SOURCE,
SUGGESTED POTENTIAL OF PRINCIPAL SOURCES, AND
APPROXIMATE MINISTRY OF AGRICULTURE GOALS FOR THE YEAR 2000
(in metric tons)

	Estimated 1980 Catch	Suggested Potential Catch	Approximate Goals for Year 2000
Northern lakes	72,000	100,000	220,000
Lake Nasser (Aswan)	30,000	100,000	100,000
Nile River	20,000	50,000	60,000
Mediterranean and Red Seas	34,000	80,000	110,000
Lake Qaroun and Wadi Al-Rayan	4,000	6,000	10,000
Subtotal	160,000	336,000	500,000
Other (including Lake Bardaweil, fish farms, and the high seas)	8,000	N.A.	200,000
TOTAL	168,000	N.A.	700,000

Source: CTIC estimates based on interviews with Ministry of Agriculture and officials of private fishing industry, and on U.S. AID, World Bank, Middle East News, and other published sources.

Edku, Baurolos, and Manzala--are the largest source of fish within Egypt. Lake Nasser, the Nile River and its branches, and the adjoining Mediterranean and Red Seas yield most of the balance. Other lakes and fish farms provide only a small percentage of the total catch, but future developments, especially fish farms, are expected to become a major fish resource by the end of the century.

A small catch is made by Egyptian High Seas Fisheries, a Ministry of Agriculture company, off Senegal. Because, for political reasons, fishing rights off other African coasts have been withdrawn, the High Seas Fisheries total catch is negligible, and the company's fleet of five trawlers is used for importing fish from the United Kingdom and elsewhere.

The Ministry of Agriculture believes that, through improved management programs, the yield from the northern lakes can be tripled by the year 2000. However, the U.S. AID study team, which visited Egypt in late 1976, suggests that, because changes in traditional fishing practices are involved, the achievement of this goal will take time. As a first step, the U.S. AID team recommended in its 1977 report that improved catch statistics be collected and that a more detailed analysis be undertaken. At this writing, specific joint-venture opportunities involving foreign

firms have yet to be recommended for the northern lakes.

For the past several years, an extensive program to increase the productivity of Lake Nasser has been underway with the technical and financial assistance of the Japanese. This recently established L.E. 9 million facility of the Misr-Aswan Fishing and Processing Company in Aswan has a large stake in assuring that fish catches are substantially increased. The government is also investing in a fish research center in the area and providing improved fishing boats and equipment to local fishermen.

Among the programs to increase the Nile River yield is one being conducted by the Aquatic International Company, a U.S. firm under subcontract to Checchi and Company of Washington, D.C., which, in turn, has a contract with U.S. AID to assist and develop small private industry in Egypt. The Aquatic International program involves supplying fishermen with some 50,000 two-cubic-foot fish cages for placement in the Nile. Each cage is expected to yield an average of about 100-150 kilograms of fish annually, thus providing a significant supplement to household food supplies and income. The cages cost about L.E. 15 apiece.

Although, to date, little has been done to increase

the Mediterranean yield, the Ministry believes that the fish catch from this source could be increased substantially by modernizing the fleet and fishing further away from the coastal shelf, which is now overfished.

The Ministry of Reconstruction and Land Reclamation announced in 1981 that a Rumanian group will participate in a project for developing the Red Sea fisheries by providing 32 large fishing boats and by establishing cold-storage and processing facilities. An official of the Egyptian Fish Distribution Company believes that the Red Sea offers opportunities for additional joint-venture fishing projects, and there may be interesting joint-venture opportunities as well in repair and maintenance facilities for an expanded Red Sea fishing fleet.

U.S. AID is involved in a tripartite marine research project with Egypt and Israel which will attempt to upgrade natural fish resources in the lakes of the two countries and the adjacent seas. The project, which is just starting, involves Scripps Institute, Auburn University, and Texas A & M, and is coordinated by N. J. Marine Sciences Consortium.

The principal joint-venture opportunities in fish production, however, appear to be in fish farming or aquaculture.

Aquaculture and Joint-Venture Opportunities

The principal aquaculture projects are located in the northern lakes, where shallow areas have been partitioned with dikes. Additional private projects have established ponds in the Delta, south of Lake Manzala. The U.S. AID survey published in 1977 estimated that some 10,000 feddans were devoted to fishponds at that time. Production varied from a few hundred kilograms to up to two tons per feddan per year.

Of the several quasi-commercial fish farms operated by the government, the major ones are located at Abbassa and Manzala. In 1977, the Abbassa farm, operated by Egypt's Institute of Oceanography and Fisheries (IOF), consisted of about 110 feddans and yielded about 636 kilograms of fish per feddan. The Manzala farm, operated by the Under-Secretary of Agriculture for Aquatic Resources, consisted in 1977 of 270 feddans and yielded about 400 kilograms per feddan.

Although both operational and investment costs and fish prices have increased substantially since the 1977 U.S. AID report was released, the survey team's economic and financial evaluations of a 50-feddan and a 500-feddan fish farm still offer valuable guidelines for an assessment of the opportunities available in Egyptian aquaculture.

- o Fifty-Feddan Fish Farm. The U.S. AID survey team estimated in 1977 that a 50-feddan fish farm would require a capital expenditure of about \$100,000, including earthwork, water control structures, and buildings. Annual operating costs were estimated at about \$14,000. Assuming a yield of 1,000 kilograms per feddan of mullet, carp, and tilapia, annual revenue was estimated at \$38,000, resulting in a net profit of \$24,000. A similar pond constructed today probably would cost twice the 1977 estimate, and operating costs also would be higher. However, because fish prices have more than doubled since 1977, profitability also would be higher.
- o Five-Hundred-Feddan Fish Farm. According to the U.S. AID report, in 1977 a 500-feddan fish farm would require a capital outlay of about \$600,000, cost about \$82,000 annually to operate, and yield a revenue ten times higher than the 50-feddan farm--or \$380,000, with a resulting net profit of about \$300,000, a return of nearly 50 percent on investment. Because of today's higher prices for fish, profits also would be higher.

Both of the examples cited above assume a

gravity-filled and drained pond. If additional pumps were to be added, profits would be lower, though still substantial. The study also assumes the sale of all catches to private wholesalers. If the fish were sold to the government, these projects would be only marginally profitable.

The Ismailia Fish-Farming Company

The only large-scale private, commercial fish farm in Egypt at present is operated by the Ismailia Fish-Farming Company, which consists of 2,000 feddans and currently yields about 10 MT per day of carp, mullet, and tilapia. Production is expected to reach two metric tons per feddan shortly. The farm utilizes Chinese technology and is a combination fish-and-duck farm. The waste from the 250,000 ducks provides fertilizer for the pond. The duck feathers are sold to an American company; the skin, feet, and tongues are sold to the Chinese; and the meat is sold locally. The remaining duck offals are ground up and used as fish feed. The fish is sold gutted or filleted. The fish by-products are fed to the ducks.

In 1981, company sales totaled L.E. 7 million, and profits were excellent, according to company officials. An expansion of the current operation to one million ducks and 50 MT per day of fish is planned, and there are plans also

for two additional farms and, in the long term, a similar farm in each of the Egyptian provinces.

Aquatic International, Inc.

Aquatic International, in addition to the Nile River fish-cage project described earlier, is helping to develop fish farms in Egyptian villages as community projects. They are also assisting several U.S. private investors in developing fish-duck farms.

Government Fish-Farm Projects

In addition to the existing government ponds, several major, new projects are being financed and developed by foreign and international development agencies in cooperation with the Egyptian government. U.S. AID has a project involving 1,200 feddans in Abbassa; FAO is developing a farm at El Zawaya; and the World Bank is involved in a 3,100-feddan, \$26-million project at Maryut. All of these projects will provide further findings regarding the profitability of various fish-farming plans.

Highly Intensive Aquaculture

The Ministry of Agriculture would like to encourage highly intensive fish farming in Egypt with yields in the vicinity of 100 MT per feddan. Although intensive fish farming requires high technology, well-trained management, and a substantially higher investment than is required for

standard fish farms, it conserves both land and water and, according to Ministry officials, can be highly profitable.

A pre-feasibility study for a highly intensive aquaculture project was submitted to the Ministry by Aqua Services of France in March 1981. The projected yield of the project is 270 MT per year of tilapia, with investment costs estimated at L.E. 379,000. Operating costs were projected to be L.E. 126,000 per year, of which the major items were feed (L.E. 60,000) and electricity (L.E. 53,000). The study indicates an internal rate of return of 24 percent for a 1,500-square-meter (about 1/3 feddan) farm. Based on a selling price of L.E. 0.80 per kilogram for tilapia, this rate of return is quite conservative inasmuch as tilapia is now retailing for up to L.E. 2.00 per kilogram.

Other Fish-Farm Projects

Several Egyptian private parties are interested in fish farming as a joint venture. They are prepared to provide the land if the foreign partner will provide management, technology, and equity.

One such landowner has a 75-feddan natural lake in Upper Egypt, of which he now uses about 39 feddans for fish farming. Because the natural catfish are eating the carp, mullet, and tilapia with which the lake is stocked, the

operation has not achieved profitable yields. Working with a partner with technology and management expertise, the owner wants to improve the lake by dredging and putting in dams.

The private National Bank for Development also is anxious to invest in fish-farm projects if appropriate foreign partners can be found.

Development of Lake Bardaweil

The Egyptian government is interested in obtaining a partner to manage Lake Bardaweil, in Northwest Sinai. This 80-kilometer-long lake covers 165,000 feddans and, as a natural fish farm, has produced up to 3,500 MT annually of seabass, bream, snapper, mullet, and other quality fish. The yields of this lake are sold principally in Europe, where demand is reportedly high. The Governorate of North Sinai wants to modernize the operation and increase production through partnership with an experienced foreign fish-farming company, which would be responsible for the management of the lake.

As part of its U.S. AID-financed Sinai Development Study for the Egyptian Ministry of Development, Dames and Moore of Washington, D.C. has suggested the initiation of a feasibility study to explore development opportunities at and in the vicinity of the lake.

Lake Bardaweil is located about 40 kilometers from Port Said, where both airport and shipping facilities are available for reaching the European market. Created by Nile silt moving east and forming a sandbar, the lake has two openings to the Mediterranean Sea, inlets that require new design and maintenance programs. Three lagoons, which might be used for breeding shrimp, eels, and other fish, are also connected to the lake. Some development work already has been initiated: two dredgers have been purchased, and an 80-cubic-meter cold-storage facility has been built.

Studies to determine salinity and nutrient levels and the best use of the lake are yet to be undertaken. One company, for example, would like to establish a salt production plant by the lake. This, however, may conflict with fishing operations. The region also has touristic interest as a major stopping-off point for birds migrating between Africa and Eurasia.

Fish Distribution and Joint-Venture Opportunities

Most fish caught in Egypt is sold fresh--either collected by fishing cooperatives or middlemen and distributed to central fish markets or directly to retail stores, or purchased from small fish farms by the government-owned Egyptian Company for the Distribution of

of Fish (ECDF), which obtains large quantities of fish through the Misr-Aswan Fishing and Processing Company. The Misr-Aswan Company is a private Public Law 43 joint venture of which the government owns 85 percent and Japanese, Swiss, and private Egyptian groups hold the balance.

Most of the imported fish comes principally from Sweden, Russia, and Somalia, and is brought into the country and distributed by the Egyptian High Seas Fisheries Company. ECDF has 250 retail shops, 125 of which are in Cairo. These retail outlets sell fresh and cooked fish at highly subsidized rates.

Although ECDF is said to distribute about 90 percent of all imported fish and a large percentage of the local fish, the company unfortunately lacks adequate refrigerated trucks and railroad cars, storage facilities, and retail outlets.

A senior official of ECDF, who is also a Director of the Misr-Aswan Company, believes there are great opportunities for joint ventures in fish distribution involving Misr-Aswan, ECDF, and foreign companies. He suggested two such projects:

- (1) The development of a chain of modern, retail, fish outlets with ovens and deep-fry units for

cooking to customer specifications. This chain, which might eventually include 1,000 outlets throughout Egypt, might include small fish restaurants as part of the complex.

- (2) The establishment of a network of mobile, retail fish stores to transport frozen or chilled fish to villages. These mobile units also might have facilities for cooking fish.

Fish Processing

Several companies process fish in Egypt. Edfina, the government-owned canning plant in Alexandria, purchases from the High Seas Fisheries Company about 15,000 MT of fish (mostly mackerel and sardines) for canning.

Recently, the Misr-Aswan Company inaugurated its L.E. 9-million facility which can process 100 MT of fish daily. In addition to fish processing, freezing, canning, smoking, and drying, the company produces poultry feeds. It also plans to open a facility in Tanta, north of Cairo, to produce frozen "fish fingers."

Another fish-processing project, with financing from the Ministry of Supply and Home Trade, is planned for Matariya, Cairo. The project, which is expected to cost about L.E. 6 million, will be able to handle 115 MT of fish (frozen, canned, smoked, and salted) and 15 MT of

fish meal daily.

Kaha, the government-owned fruit and vegetable cannery, also is considering a unit to can 12,000 tons per year of Atlantic mackerel and, at a later date, tuna. The project will be a joint venture with Edfina and Egyptian, Saudi Arabian, and Swedish private groups.

In light of the limited current availability of fish, the number of new or planned fish-processing projects, and the preference of Egyptians for fresh fish, it does not appear that additional opportunities for fish processing exist in the short term. As noted above, the principal opportunities are in aquaculture and fish distribution projects.

7. A REVIEW OF POTENTIAL INVESTMENT OPPORTUNITIES

This report has identified some 30 potential joint-venture opportunities in the production and processing of Egyptian livestock, poultry, and fish products. A summary of these opportunities is presented in Table 7-1. Many of these opportunities are in the preliminary investigatory phase; others are further advanced. Following Table 7-1 is a series of "Profiles" summarizing potential opportunities that may be of particular interest.

Because the production of animal protein in Egypt is growing steadily, new project opportunities are continually being advanced. Interested U.S. investors are therefore encouraged to remain in touch with the Egyptian Investment Authority and Chase Trade Information Corporation.

Table 7-1

JOINT-VENTURE POSSIBILITIES DISCUSSED IN REPORT ON
PRODUCTION AND PROCESSING OF LIVESTOCK, POULTRY, AND FISH PRODUCTS IN EGYPT

Project	Egyptian Interest in Public Law 43 Joint Ventures	Page Reference
1. Four integrated dairy projects (500 feddans)	Governorates or public sector companies associated with Ministry of Agriculture	52
2. Livestock for meat and milk (500 feddans)	Kalubeya Governorate	53
3. Integrated livestock production (3,000 feddans)	North Tahrir Company	53, Profile 1
4. Dairy and meat production	Several private companies, members of private group, General Cooperative for Developing Animal Wealth and Products	53-54
5. Dairy project with 100-head water buffalo (57 feddans)	Private Egyptian individual	55, Profile 2
6. Holstein-Friesian dairy project (120 feddans)	Private Egyptian individual	56
7. Milk-processing plant	General Cooperative for Developing Animal Wealth and Products	55, 75, Profile 3
8. Mill for livestock feed	General Cooperative for Developing Animal Wealth and Products	55
9. Automatic slaughtering plant	General Cooperative for Developing Animal Wealth and Products	55, 62, Profile 4

Project	Egyptian Interest in Public Law 43 Joint Ventures	Page Reference
10. Sheep raising	Conceptual	57-58
11. Two plants (Alexandria and Cairo) for minced meat, sausage, hamburger, and other meat products	Egyptian Company for Meat, Poultry, and Food Supplements	67, Profile 5
12. Integrated finishing lot with slaughterhouse and packing plant	Egyptian Company for Meat, Poultry, and Food Supplements	67, Profile 6
13. TV dinners (meat and vegetable)	Egyptian Company for Meat, Poultry, and Food Supplements	67
14. Canned meats	Edfina Company	68, Profile 7
15. TV dinners	Edfina Company	68
16. Ice cream	Alexandria Confectionery and Chocolate Company	76
17. Dairy-products plant for UHT, yogurt, ice cream	M. Rachid and Company	77
18. Raising parent hens for broiler chick facilities	EGYPCO, MELARCGYPT, General Cooperative for Developing Animal Wealth and Products	100-101, Profile 8
19. Raising layer chicks	EGYPCO, MELARCGYPT	102, Profile 9
20. Automatic slaughterhouse for poultry	General Cooperative for Developing Animal Wealth and Products, Cairo Poultry Company, EGYPCO	102, Profile 10
21. Processing chicken residues into stock cubes and packet soups	EGYPCO	104

Project	Egyptian Interest in Public Law 43 Joint Ventures	Page Reference
22. Retail convenience food chain for broilers	EGYPCO	104, Profile 11
23. Integrated poultry operation	Several private and government organizations	105-108, Profile 12
24. Large rabbit farm	Ministry of Agriculture or governorates	111
25. Small-scale rabbit farm	Private Egyptian individual	113
26. Prepared animal feed	Conceptual	115
27. Poultry feed	Several private parties	117
28. Milk replacer for calves	Conceptual	116
29. Fishing in Red Sea	Misr-Aswan Fishing and Processing Company and the Ministry of Land Reclamation and New Societies	128
30. Fish farming	Various private and government parties, National Bank for Development	129-134
31. Highly intensive aquaculture	Ministry of Agriculture	132-133, Profile 13
32. Development of Lake Bardaweil	Governor of North Sinai, Misr-Aswan Fishing and Processing Company	134-135, Profile 14
33. Expansion of outlets for ready-cooked fish	Misr-Aswan Fishing and Processing Company, Egyptian Fish Distribution Company	136-137, Profile 15
34. Mobile retail fish stores	Misr-Aswan Fishing and Processing Company, Egyptian Fish Distribution Company	137, Profile 16

Profile 1

LARGE INTEGRATED DAIRY PROJECT

- Description: New venture to raise cattle for milk and meat on about 3,000 feddans of newly reclaimed land.
- Egyptian Interest: The North Tahrir Company, a government-owned land company. This project will be the initial stage of a program to develop the company's 42,000 feddans.
- Location: North Tahrir, fifty kilometers southwest of Alexandria.
- Role of Foreign Firm: To provide management, technology, and equity participation.
- Project Status: A feasibility study was prepared by Jensen Cattle Company of Denmark.
- Output: Approximately 5,000 MT of milk and 400 MT of meat.
- Investment: Arthur D. Little, Inc., has estimated total investment required at L.E. 28 million, including L.E. 10.3 for infrastructural development. Foreign exchange costs will be 60-75 percent of the total costs.
- Market: The Egyptian demand for milk and meat products greatly exceeds local output. In 1980, imports of milk were 1.1 million MT, over one-third of total consumption; imports of red meat (mostly beef) were 93,000 MT, about 22 percent of total consumption. Egyptian consumption of milk is expected to increase about 160 percent by the year 2000; consumption of red meat is expected to increase about 90 percent.

Pricing/Price Controls:

The price of milk is not controlled. The government-owned Misr Milk Company purchases cow milk at 17.5 P.T. per kilogram. However, private companies are paying prices in excess of 20 P.T. for cow milk and 30 P.T. for buffalo milk.

In October 1980, the government established fixed prices for red meat. The live-weight price to the slaughterhouse was fixed at a maximum of L.E. 1.15; the carcass price to the butcher was a maximum of L.E. 2.00; maximum retail prices were L.E. 2.50.

Although these prices are still in effect, they have not been enforced. Retail prices of red meat have continued to increase to about L.E. 3.00.

Competition:

There is such a shortage of locally produced milk and red meat that competition from other dairy and cattle farms is low. Imports of powdered milk are inferior, and much of the meat is frozen.

Raw Materials:

Especially during the summer months, domestically produced feed and forage is insufficient to satisfy requirements. The project should therefore utilize the land available (3,000 feddans) to provide the necessary feed crops.

Profitability:

The internal rate of return is estimated at 29 percent.

Remarks:

Similar projects are being promoted by several governorates and companies affiliated with the Ministry of Agriculture. No sites have been specified as yet.

Profile 2

SMALL DAIRY PROJECT

Description: Dairy project with 100-head of water buffalo.

Egyptian Interest: A private farmer with 57 feddans of cultivated land.

Location: Nile Valley, 120 miles south of Cairo.

Role of Foreign Firm: Private management, technology, and equity participation.

Project Status: Owner has completed some pre-feasibility analysis and is actively seeking partner.

Output: 250 MT per year of buffalo milk

Investment: About \$500,000 including land, buildings, equipment, 100 water buffalos, and working capital.

Pricing/Price Controls: See Profile 1, Large Integrated Dairy Project.

Profitability: No estimate.

Remarks: Owner also is interested in utilizing 120 feddans of developed land near Alexandria for a dairy project.

Several other private parties are interested in similar joint ventures.

Profile 3

MILK-PROCESSING PLANT

Description: Milk pasteurization plant (50 MT daily).

Egyptian Interest: General Cooperative for Developing Animal Wealth and Products.

Location: Cairo vicinity.

Role of Foreign Firm: Management and technological assistance plus 25 percent equity participation.

Project Status: Project is included in Cooperative's five-year plan.

Output: Initial 50 MT of pasteurized milk per day to be expanded to 250 MT per day.

Investment: The fixed investment for the 50-MT-per-day plant is estimated by the Cooperative as \$15 million, including supporting milk collection centers and transportation equipment. Land costs and working capital are additional.

Markets: The Egyptian demand for milk, currently about 3 million MT annually, is expected to increase to over 5 million MT by the year 2000.

Pricing/Price Controls: There are no price controls on pasteurized milk. Misr Milk Company sells pasteurized fresh milk at the subsidized rate of 20 P.T. per kilogram. However, imported UHT retails for about 60 P.T. per kilogram. A retail price of about 40 P.T. per kilogram is the expected price of locally produced UHT.

Competition:

Misr Milk Company is the only producer of pasteurized milk in Egypt. In 1981, production was about 300,000 MT, of which 250,000 MT was reconstituted from powdered milk. Several companies, including Misr Milk, plan to produce UHT milk. However, even with these additions to capacity, the demand for locally processed fresh milk will continue to exceed supply.

Raw Materials:

Raw milk will be provided to the plant by members of the Cooperative.

Profitability:

No estimate.

Remarks:

In addition to the Cooperative, several other private groups are interested in similar dairy projects including UHT, cheeses, yogurts, baby milks, and so on.

Profile 4

AUTOMATIC SLAUGHTERING PLANT

Description: Automatic slaughtering plant for 500 head of cattle per shift, plus refrigerated storage capacity of 10,000 MT and preparation and packing facilities

Egyptian Interest: General Cooperative for Developing Animal Wealth and Products.

Location: Cairo vicinity.

Role of Foreign Firm: Management and technological assistance; possible equity position up to 25 percent.

Project Status: Project is included in Cooperative's five-year plan. Feasibility study not yet undertaken.

Output: Approximately 100,000 MT of products (carcass-weight equivalent) per year.

Investment: The Cooperative estimates that the investment required for the slaughterhouse (less land and working capital) is as follows:

Plant construction	L.E.	350,000
Equipment for automatic slaughter		6,600,000
Refrigerated storage		10,000,000
Lorries for meat transportation		450,000
Marketing outlets		<u>500,000</u>
<u>Total fixed investment</u>	L.E.	17,900,000

Markets:

The Egyptian consumption of cattle and water buffalo meat in 1981 was almost 400,000 MT, of which 120,000 MT was imported. By the year 2000, the demand is expected to increase to about 600,000 MT annually.

Competition:

Existing Egyptian slaughterhouses operate on a service basis at subsidized rates. Principally government-owned, they are old, and productivity is low.

The proposed slaughterhouse would operate as a service to its members. Output would be sold to butchers and supermarkets. The higher-quality produce would provide a competitive edge, despite the subsidized prices of meats sold through government channels.

Raw Materials:

Livestock would be supplied to the project by Cooperative members.

Profitability:

According to preliminary Cooperative estimate, net profits will be in the 20-25 percent range.

Profile 5

PROCESSING AND PACKING OF IMPORTED FROZEN MEAT

Description: Two plants for processing imported frozen red meat into minced meat, sausage, and hamburger for local markets. Eventual addition of a line to produce TV dinners.

Egyptian Interest: Egyptian Company for Meat, Poultry, and Food Supplements, Ministry of Supply.

Location: Alexandria and Cairo.

Role of Foreign Firm: To provide management and technical assistance. Possible equity participation.

Project Status: Pre-feasibility study completed for Alexandria plant.

Output: 80 MT per day of processed meats in each plant. Eventual addition of a line to produce 10,000-20,000 TV dinners (meat and vegetables) per day.

Investment: Not determined.

Markets: In 1980, the Egyptian Company for Meat, Poultry, and Food Supplements imported 100,000 MT of frozen meat (mostly beef). This was sold at the highly subsidized retail price of L.E. 0.68 per kilogram through government retail stores. These stores lack refrigerator capacity but, at the subsidized prices, the meat is sold shortly after delivery. Customers must wait in long lines and accept whatever cuts of meat they are given. Supplies, which are usually insufficient, are rationed according to availability.

The domestic output of conserved meats (luncheon meat, sausage, jerky, etc.) was only 1,900 MT in 1979. Imports have increased. According to USDA estimates, 1981 imports of 12,000 MT were valued at \$30 million.

Pricing/Price Controls:

Although the government has established maximum prices for meat, these prices have not been enforced. It is unlikely that the price of specialty meats would be fixed.

Competition:

Negligible.

Raw Materials:

Imported frozen meats.

Profile 6

INTEGRATED FINISHING LOT

Description: Finishing lot for imported cattle, with two-month finishing cycle. Adjacent abattoir. Meat will be sold packaged, fresh, frozen, and deboned. Possible addition of by-products plant for tallow extracts, blood collection, and processing.

Egyptian Interest: Egyptian Company for Meat, Poultry, and Food Supplements, Ministry of Supply.

Location: Alexandria.

Role of Foreign Firm: Technology agreement or equity participation.

Project Status: Preliminary analysis only.

Output: Capacity to finish, slaughter, and process meat of 150,000 head of imported cattle per year.

Investment: Not estimated.

Market: Although a market survey has not yet been conducted, there is a growing market, especially in the middle- and upper-income groups, for packaged meat products.

Pricing/Price Controls: Although the government has established maximum prices for meat, these prices have not been enforced. Special cuts may be free from controls in any event.

Competition: Local butchers.

Raw Materials:

Imported cattle.

Remarks:

Several private groups, including the Osman Ahmed Osman group, are either importing cattle for finishing or are considering doing so.

Profile 7

MEAT CANNING

Description: Plant to process and can imported meats into corned beef, luncheon meat, and sausage for local consumption and export.

Egyptian Interest: Edfina, the government food-processing company.

Location: Port Said or Alexandria.

Role of Foreign Firm: Equity participation and technical assistance.

Project Status: Some preliminary discussions with U.S. and other foreign firms; partners not selected to date.

Output: About 5-6 million cans per year (increasing to 25 million cans per year) of corned beef, luncheon meat, and sausage. (The 450-gram cans eventually will be produced as part of project.) Possible additional production of about 5 million TV dinners annually.

Investment: Edfina estimates total investment requirements of \$5-6 million.

Market: Egyptian output of conserved meat products has fallen from 5,600 MT in 1973 to 1,900 MT in 1979. Imports have been erratic, though generally rising since 1978. The following table shows Egyptian imports of canned meat as reported by the USDA.

MISSING PAGE
NO. 155-156

Profile 9

LAYER CHICKS

Description: Farm to produce layer chicks for subsequent sale to egg producers.

Egyptian Interest: Egyptian Poultry Company (EGYPCO), a private firm located in Cairo.

Location: Cairo vicinity.

Role of Foreign Firm: Technology, management, and possible equity participation.

Project Status: Preliminary discussions only.

Output: The project would consist of 20,000 hens for the production of about 2 million layer chicks annually.

Investment: Estimated at L.E. 2 million.

Market: The number of commercial flocks for egg production is expected to increase tenfold, or more, by the end of the century. The Ministry of Agriculture's goal for commercial egg production is as follows:

<u>Year</u>	<u>Egg Production (millions)</u>
1980	360
1990	1,289
2000	3,821

Competition: Principally from imports.

Remarks: Several other private organizations, including the General Cooperative for Developing Animal Wealth, are interested in similar projects.

Profile 10

AUTOMATIC SLAUGHTERHOUSE FOR POULTRY

Description: A slaughtering, processing, and freezing plant with a capacity of 2,000-3,000 birds per hour.

Egyptian Interest: Cairo Poultry Company, a private firm located in Cairo.

Location: Cairo vicinity.

Role of Egyptian Firm: To provide latest technology. A joint venture with a foreign firm might be of interest.

Project Status: In preliminary discussion phase.

Output: The annual output would be six to nine million processed broilers on a 10-hour, 300-day production schedule. A portion of the output would be frozen.

Investment: To be determined.

Market: Approximate demand for processed broilers was estimated at about 40 million in 1980; existing capacity to process broilers was estimated at 57 million annually. However, by 1985, commercial production of broilers is projected to rise to 170 million birds, a large percentage of which will be processed. The number of broilers in demand is expected to reach 300 million by 1990 and 500 million by 2000.

Pricing/Price Controls: In mid-1981, frozen imported broilers were being sold for L.E. 1.05 through government retail food stores. However, supplies are limited. In the

private market, the price of broilers was about L.E. 1.40-1.50 per kilogram at the same time. Prices of dressed broilers are controlled but not strictly enforced. Prices of live chickens and special cuts are not controlled.

Competition:

Principal local competition is from the government's General Poultry Company (GPC), which has a slaughtering capacity of 14,000 broilers per hour. GPC is not expected to greatly increase production. Two major private companies have the capacity to process 5,000 birds per hour.

Profile 11

RETAIL OUTLETS FOR PREPARED CHICKEN

Description: A chain of retail outlets throughout Cairo and Alexandria that serves broilers off the spit.

Egyptian Interest: Egyptian Poultry Company (EGYPCO).

Location: Cairo and Alexandria.

Role of Foreign Firm: To provide technical and managerial assistance. Possible equity participation.

Project Status: Company has already established several outlets. Expansion on a major scale is envisioned.

Investment: To be determined.

Market: To be determined. However, with more and more women working, there is an increasing demand for convenience foods.

Profile 12

INTEGRATED POULTRY PROJECT

Description: Proposed broiler-production project with feed mill, hatchery, broiler-raising, slaughtering, processing, and freezing facilities.

Egyptian Interest: Private Egyptian Company.

Location: Sharkeya, between Ismailia and Cairo.

Role of Foreign Firm: Technical and managerial expertise; equity participation.

Project Status: The company is now producing broilers; expects output of about 210,000 in 1982. Both vertical and horizontal expansion.

Output: About 1.2 million broiler chicks per year are produced from imported parent stock. The company will sell 600,000 chicks to local farmers for raising; the remaining 600,000 will be raised by the private Egyptian company.

Slaughterhouse to process and freeze about 1,000 broilers per hour with 150 MT cold storage.

Feed mill with capacity of 200 MT per day.

Investment: Fixed investment, excluding land, of about \$4-5 million, including plant machinery and transportation equipment (\$3 million total for both) and civil costs (\$1-2 million).

Market: The Ministry of Agriculture expects consumption of poultry meat to

increase from about 147,000 MT
in 1979 to 700,000 in the year
2000.

Pricing/Price
Controls:

See Profile 10.

Competition:

See Profile 10.

Profile 13

FISH FARM

Description: This project involves the development of 35 feddans of natural pond area into a fish farm through excavation and erection of dams.

Egyptian Interest: The private farmer who owns the pond.

Location: Upper Egypt.

Role of Foreign Firm: To provide technology and management plus equity.

Project Status: Owner of land is actively seeking foreign partner. A preliminary analysis has been conducted.

Output: Approximately one metric ton per feddan per year, or a total of 35 MT per year as follows:

- 10 percent mullet
- 30 percent tilapia
- 60 percent carp

Investment: About L.E. 100,000, including land.

Market: By the year 2000, the Egyptian demand for fish is expected to continue its rapid rise to least 10 kilograms per capita. Total fish demand for the anticipated population of 70 million will be about 700,000 MT. In 1981, local catch was only 200,000 MT compared with a total consumption of 350,000 MT.

Pricing/Price
Controls:

There are no price controls on fish in the free market. Fish prices have increased in recent years. Tilapia, for example, has reached prices as high as L.E. 3.50 per kilogram in 1981 as against L.E. 0.75 in 1977.

The government wholesale and retail prices of fish are substantially lower than those of the free market. For example, the government's wholesale purchase price for tilapia was L.E. 0.45 in 1981.

Competition:

Principally from the government's Egyptian Fish Distribution Company. However, the demand for fish is so great that the stock held by the company retail outlets is depleted within a few hours after delivery.

Remarks:

Several additional private and public individuals and groups are interested in both large- and small-scale fish farming as joint ventures.

Profile 14

LAKE BARDAWEIL

Description: The Egyptian government is offering a 165,000-feddan lake for partnership with a reputable foreign aquaculture group. Management of the lake will be the responsibility of the foreign partner.

Egyptian Interest: The Governor of North Sinai and the Misr-Aswan Fishing and Processing Company.

Location: Northwest Sinai.

Role of Foreign Firm: To develop and maintain the lake so as to increase fish yield.

Output: Output in recent years has been 2,500-3,500 MT per year. It is hoped that, through proper management, yields can be increased. The lake produces high-quality fish such as bream, seabass, snapper, mullet, and grouper.

Investment: To be determined. One government official estimates a minimum of L.E. 5 million.

Market: The fish catch is currently sold in Europe, where demand is reported to be strong.

Pricing/Price Controls: If European sales continue, international free market prices would prevail.

Competition: International.

Profile 15

RETAIL OUTLETS FOR PREPARED FISH

Description: Development of a chain of about 1,000 retail outlets for fish, including ovens with deep-fry units for short-order cooking. A small restaurant might be included at some outlets.

Egyptian Interest: Misr-Aswan Fishing and Processing Company, a Public Law 43 joint venture.

Location: Throughout Egypt, with emphasis on Cairo and Alexandria.

Role of Foreign Firm: Management, technology, equity participation.

Output: Fresh and cooked fish.

Investment: To be determined.

Markets: There is a strong demand for convenience foods, especially as more and more women enter the labor force. The Egyptian Fish Distribution Company has 250 retail outlets, many of which provide cooking services. Demand is now unsatisfied.

Pricing/Price Controls: Prices would not be subject to government controls.

Competition: The principal competition would be from the government's Egyptian Fish Distribution Company. However, as noted above, this company's retail outlets are unable to meet demand.

Profile 16

MOBILE RETAIL FISH STORES

<u>Description:</u>	Mobile refrigerated units to transport fish products, frozen or chilled, to villages. These units might also have facilities for cooking fish.
<u>Egyptian Interest:</u>	Misr-Aswan Fishing and Processing Company, a Public Law 43 joint venture.
<u>Location:</u>	Throughout rural Egypt.
<u>Role of Foreign Firm:</u>	Management, technology, equity participation.
<u>Output:</u>	Fresh, frozen, and ready-to-serve fish products.
<u>Investment:</u>	To be determined.
<u>Markets:</u>	There is a strong demand for fish throughout the country.
<u>Pricing/Price Controls:</u>	Prices would not be subject to government controls.
<u>Competition:</u>	Local fishmarkets in villages, where they exist.