

AGRICULTURAL DEVELOPMENT IN IRAQ

by

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TABLE OF CONTENTS

Chapter		Page
	ACKNOWLEDGEMENTS	ii
	TABLE OF CONTENTS	iii
	LIST OF TABLES	iv
	INTRODUCTION	1
I	THE PROBLEMS OF AGRICULTURAL DEVELOPMENT IN IRAQ	7
	Agricultural Products and Livestock	
	The Irrigation Problem	
	The Problem of Labor Engaged in Agriculture	
	Financial Problems	
	Marketing Problems	
II	LAND REFORM IN IRAQ	44
III	THE ROLE OF GOVERNMENT IN PROMOTING THE AGRICULTURAL SECTOR AND THE PLANNING IN AGRICULTURAL DEVELOPMENT	63
	Economic Development Planning in Iraq	
	The Plan for the Years 1961/62 - 1965/66	
IV	CONCLUSION	78
	BIBLIOGRAPHY	84

LIST OF TABLES

Table		Page
1	Total Area for the Winter Crops in Iraq from 1957-67	7
2	Total Production (tons) and Average Yield Per Dunum (kilogram).	8
3	Total Production and the Amount of Export Value	10
4	Principal Summer Crops of Iraq	11
5	Average Yields in Iraq, Yield = 100 kilogram/ hecta for 1966	13
6	Area of Forests Demarcated and Surveyed	14
7	Numbers of Livestock in Iraq	17
8	The Methods by Which Water is Supplied	21
9	Number of Pumps and Total Horse-power in Iraq	25
10	Area Within Irrigation Systems (in 1000 dunums)	26
11	The Population Census by Liwa for 1957 and 1965	30
12	Distribution by Age, 1957 for Iraq and United States	31
13	Rural and Urban Population and Workers - 1957 and 1965	33
14	Total Amounts of Agriculture Credits and Number of Loans from 1960/1961 - 1967/1968	39
15	The Sizes, Number and Area in Dunums of Land Owners in Iraq before 1958	48
16	Total Area of Sequestrated Lands, Total Area of Land Distributed and Number of Beneficiaries up to 1967 by Liwa	54
17	Agricultural Cooperative Societies Established According to Agrarian Reform Law up to December 31, 1967 by Liwa	55
18	Total Machines Owned by Agrarian Reform up to December 31, 1967 Distributed by Liwa	61

LIST OF TABLES (continued)

Table		Page
19	Production and Average Production of Main Crops In Iraq for the Years 1955 - 1967	62
20	Total Chemical Fertilizers Imported to Iraq and Its Value	65
21	Proposed Expenditures and Revenue of the Development Board 1951/52 to 1956/57 (thousands of I.D.)	70
22	Total Allotments and Actual Expenditure in Agricultural Sector and Per cent of Actual Expenditure	71
23	Allotment and Actual Expenditures in Agricultural Sector and Per cent of the Actual Expenditures	72
24	Second Plan 1955 - 1959	73
25	Agricultural Projects in the Plan 1961/62 - 1964/65	76

INTRODUCTION

Iraq was one of the earliest centers of civilization. Before 3000 B.C. the Summerians had established in the alluvial areas of the south, a complex society based on irrigation and agriculture.

The old name of Iraq was Mesopotamia, meaning the land between two rivers. In 633 A.D., Arabs conquered Mesopotamia, and in 1258 Mongols invaded Iraq and destroyed ancient irrigation systems of Mesopotamia. In 1534 Iraq fell under control of the Ottoman Empire, and on November 22, 1914, the British occupied Iraq. June 30, 1930, was the date of the independence of Iraq under the rule of King Faisal I. On July 14, 1958, the revolution of Iraq followed the overthrow of the Hashemite monarchy, and from that time until now Iraq has been a republic.

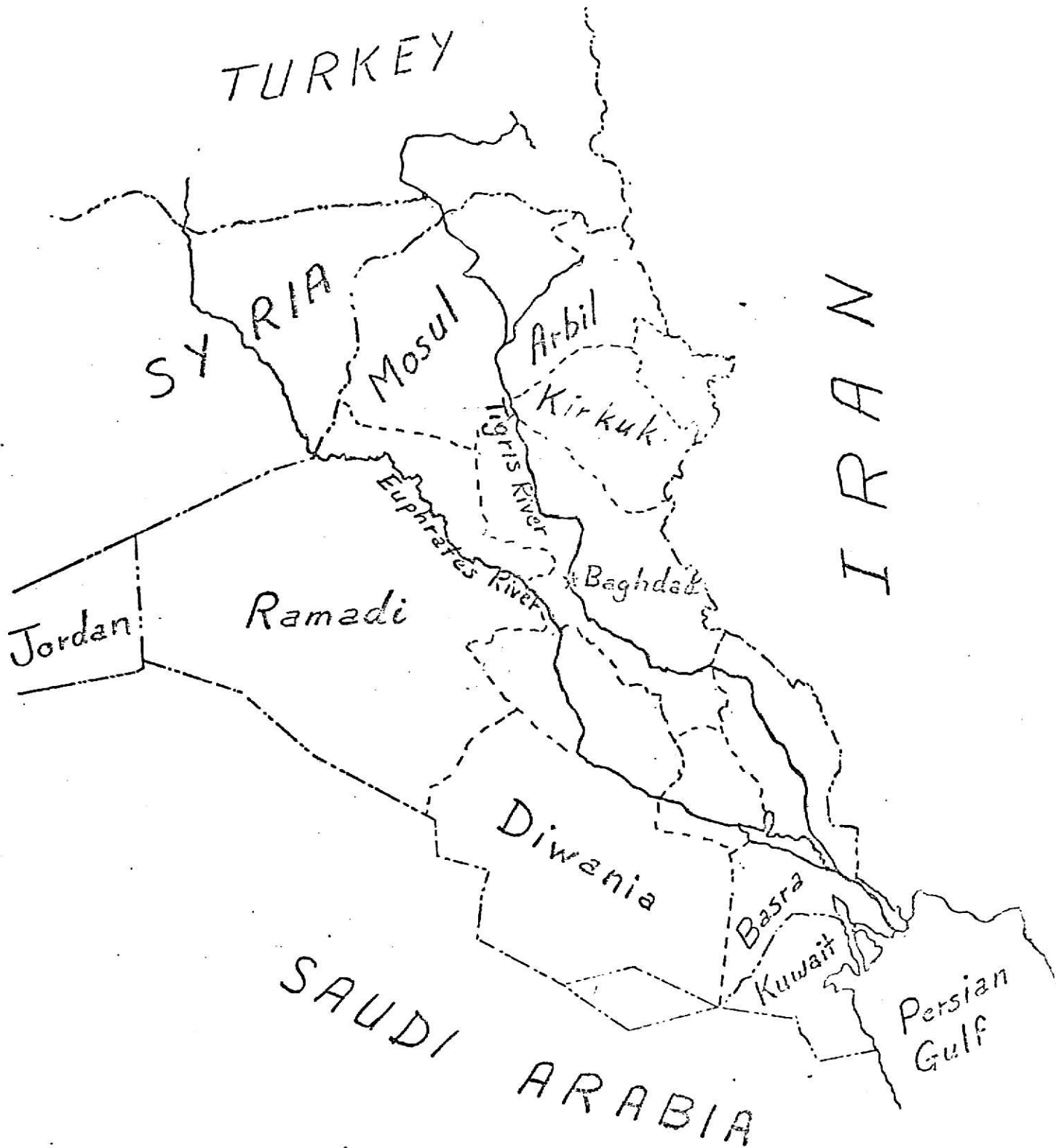
Iraq is bounded on the north by Turkey, on the east by Iran, on the south by Kuwait and Persian Gulf, on the southwest by Saudi Arabia and Jordan, and on the northwest by Syria.¹

The population in 1965 was 8,261,527, while the population of Baghdad, the Capital of the country was 2,124,323.² Seventy-five per cent of the population is Arab. Twenty per cent of the total population represents Kurds and five per cent is Persian and Turks. Ninety-four per cent of the population is Moslem; about five per cent is Christian and one per cent represents Jews and others. The total area of Iraq is 170,000 square miles (438,446 square kilometers).³

¹See map on page 2.

²Iraqi Government, Annual Statistical Abstract, 1967, (Baghdad 1968), p. 33.

³Ibid., p. 21.



----- Liwa's Lines
——— International Boundaries

Iraq includes 14 liwas; each liwa is governed by a person called Mutasarif. Each liwa is divided in qadha and nahia. (A liwa is like a state in terms of the United States; a qadha is like a city and a nahia is like a town).

Iraq is divided into three large zones and each zone contains several liwas as listed below:

A. The Northern Zone	B. The Middle Zone	C. The Southern Zone
(1) Mosul	(1) Diala	(1) Diwaniya
(2) Sulaimaniya	(2) Ramada	(2) Amara
(3) Arbil	(3) Baghdad (the capital)	(3) Nasiriya
(4) Kirkuk	(4) Kut	(4) Basra
	(5) Hilla	
	(6) Kerbela	

There are two large rivers in Iraq--the Tigris and the Euphrates, both of which originate in Turkey. The Euphrates passes through Syria and joins with the Tigris to form Shatt-al-Arab river in Kurna City in the southern part of Iraq.

The National Income for 1966 was \$1,869 million at factor cost and per capita national income was \$233. The Gross Domestic Product for 1966 was \$2,449 million and per capita for GDP was \$292.⁴

Attention must be paid to the problems of agriculture as much as to the problems of industry. Improved agriculture has a significant role to play in development. The end product of efforts to improve agriculture is not agricultural development for its own sake but for the sake of total economic growth. Agriculture is one part of the total picture. For various reasons, then, agriculture cannot be overlooked. Some of these reasons are:⁵

⁴U.N., Statistical Yearbook, 1968, (New York, 1968), p. 588.

⁵Bruce R. Morris, Economic Growth and Development, (University of Massachusetts, 1967), p. 116.

(1) The great bulk of the people in underdeveloped countries makes their living in agriculture. From 50 per cent to 70 or 80 percent of the people live on the farm, so progress there brings aid to the bulk of the people. Their health and happiness deserve consideration. In Iraq, 60 per cent of the population depends on agriculture for their income and about the same per cent are engaged in agricultural work.

(2) Prosperous farmers can provide a market for the products of industry. If the factories could sell all their products to people in sectors other than agriculture, such as industry, or commerce, or could sell their products abroad in return for things that are needed, including the necessary food and raw materials, developing agriculture would not be necessary. But the industry of underdeveloped countries is not likely to compete on an extensive scale in world markets, so that for some time to come it must rely on local markets. The bulk of this market must be the farmers. The farmers make up too large a proportion of the population to be allowed to remain in poverty, if markets are to develop. Any nation handicaps its economic activities if a substantial portion of the people are unprogressive economically. Exchange between the farmers and city leads to an increasing development of internal trade and the building up of roads and other means of communication. This, in turn, leads to diversification of the economic structure of the economy.

(3) Because it is unlikely that industry can earn enough abroad to obtain the necessary raw materials and food for its workers, a surplus production is necessary in agriculture. As industry grows and economic activity increases, purchasing power is made available to many, including the industrial workers and employers of commercial firms. The tendency is

for these people to increase their incomes. A major want is more food. If added food supplies are not available, the result will be rising food prices, which will result in pressure for increased wages and through to generally rising prices. Thus agricultural development is a major factor in slowing up the inflation that threatens most newly developing countries.

(4) Agricultural surpluses may at times be used for exports, thus building foreign exchange balances and so enabling the country to import its needs, including industrial capital. Or increased productivity may mean that less food need to be imported, thus saving foreign exchange.

(5) As productivity in agriculture grows, the workers who are needed in industry or other services can be supplied. All new economic activities require the release of workers from somewhere from existing employment or from nonemployment. Moreover, if agricultural productivity increases and food prices drop, the real incomes of nonagricultural people will be improved.⁶

Thus emphasis should be placed on agricultural development as much as on the other sectors of the economy. Even eleven years after land reform had been initiated in Iraq the agricultural sector still in a large sense was underdeveloped.⁷ Crop yields are generally low. The water supply is frequently inadequate. Agricultural methods have on the whole remained unchanged for centuries. Little or no animal manure or fertilizer is applied to the soil. Animal dung is used largely for fuel. Crop rotation is wholly inadequate and

⁶Ibid., p. 116.

⁷International Bank for Reconstruction and Development, The Development of Iraq, Report of a Mission Organized by I.B.R.D., (The Johns Hopkins Press, U.S., 1952).

makes little or no provision for soil building crops. Salinity, attributable to poor drainage, has materially lowered the productivity of land in the irrigation zone. Owing to insufficient and poor draft animals and lack of proper equipment, the soil is often poorly prepared and weeds detract from the yields. Up to half of the winter crop area is left fallow as a means of restoring fertility, but since the land is generally allowed to go up in weeds to afford grazing for animals, the efficiency of the fallow system is limited. The productivity of livestock is also low, primarily because of inadequate feeding, but also because of poor breeding, disease, and insufficient shelter.

The purpose of this paper is to explain the most important agricultural problems facing Iraq today and their influence in retarding the agricultural development as well as the economic development in the country. The effect of land reform in Iraq is considered in some aspects as well as the planning in the agricultural sector.

CHAPTER I

THE PROBLEMS OF AGRICULTURAL DEVELOPMENT IN IRAQ

1. Agricultural Products and Livestock

Iraq specializes in producing cereal crops (wheat, barley, rice) and on a smaller scale, dates and cotton. This specialization can be measured in two ways: (a) total land cultivated and (b) total production.¹

Total land cultivated

The total land cultivated by wheat and barley in Iraq amounted to 11,721,740 dunums in 1967 which represented 70 per cent of the total agricultural land cultivated. The total land cultivated in Iraq was 17,153,376 dunums, with one dunum equal to .618 acre or 2,500 square meters, as shown in Table 8.

Table 1. Total Area for the Winter Crops in Iraq from 1957-1967.

Year	Wheat	Barley	Rice	Cotton
	(dunums)	(dunums)	(dunums)	(dunums)
1957	5,827,150	4,959,281	364,454	259,678
1958	611,039	4,630,659	355,242	223,556
1959	5,959,963	4,355,180	235,337	147,000
1960	5,084,625	4,151,284	282,863	123,738
1961	5,385,399	4,164,125	255,207	147,678
1962	6,362,761	4,757,569	336,166	136,750
1963	6,818,025	4,874,034	430,821	98,496
1964	6,507,255	4,390,540	437,871	159,097
1965	6,813,070	4,389,128	464,280	134,661
1966	6,947,000	4,676,956	442,978	132,047
1967	7,374,523	4,347,217	563,240	157,833

Source: Annual Statistical Abstract for Agriculture Sector, 1967, Baghdad 1968.

¹Al Atiah Abdul Hussain Waday, Economic Development, (Baghdad 1965 in Arabic), p. 183.

Total Production

Agricultural production in Iraq is concentrated in wheat, barley, rice, cotton, and dates. The grains represent about 90 per cent of the total agricultural production as shown in Table 2.

Table 2. Total Production (tons) and Average Yield Per Dunum (kilogram*)

Year	Wheat		Barley		Rice		Cotton	
	Production	Ave.	Production	Ave.	Production	Ave.	Production	Ave.
1957	1,117,836	191	1,164,845	235	147,212	404	44,145	170
1958	753,634	124	964,653	208	137,073	386	37,370	166
1959	563,591	95	724,780	165	88,085	374	26,036	177
1960	591,519	116	803,808	194	118,325	387	23,898	190
1961	857,350	159	911,194	219	68,453	268	26,858	182
1962	1,085,494	171	1,125,257	236	113,097	336	25,600	187
1963	873,821	128	946,836	195	168,489	391	16,832	171
1964	807,013	124	622,927	142	184,350	421	29,353	184
1965	1,005,988	148	806,403	184	198,434	427	31,586	234
1966	825,955	119	832,090	178	182,087	411	28,696	217
1967	866,427	117	860,308	198	308,458	548	35,032	69
*One kilogram = 2.2 pounds.								

Source: Annual Statistical Abstract for Agricultural Sector, 1967, Baghdad, 1968.

Wheat

Wheat is one of the important winter crops which is cultivated in most of the liwas in Iraq. In the northern area of Iraq, which is the most important zone cultivated by wheat, the production depends upon rainfall so the total production of wheat is different from one year to another according to the amount of rainfall in this zone. In some years when the rainfall is insufficient, Iraq imports wheat from abroad. In the years when the

rainfall is abundant, Iraq exports wheat. So the planting of this product is attributed to natural climatic conditions and in order to solve the problem, irrigation of land must be increased.

Barley

Barley is cultivated in the whole country and is divided into two zones:

(1) Rainfall zone: This represents most of the land situated in the northern area. Also what was said about wheat is applied for barley production from the point of view of fluctuation in total products according to the amount of rainfall available each year.

(2) Irrigated zone: This area represents most of the land situated in the middle and in the south parts of Iraq. The product is planted in this zone by means of the irrigation process.

Cotton

Two varieties of American Upland cotton were cultivated in Iraq up to 1948--Akala Rogers and Old Akala. The cultivation of Old Akala has been prohibited since 1949 to avoid mixing and crossing with Akala Rogers which is a better quality. There is another kind called Coker Wolt "R-100" which replaced the Akala Rogers, and since 1961 the cultivation of this kind has covered all the liwas. The most important cotton growing areas of Iraq are in Baghdad, Diala, Kut, Hilla, Sulaimaniya and Mosul liwas. There are eleven ginneries now in operation in Iraq and producers from all over the country bring their seed cotton for ginning. There are five ginneries in Baghdad, four in Mosul, one in Kut, and one in Diala.³

Rice

Rice is very important in Iraq. Most of the people depend on rice as

³Iraqi Government, Annual Statistical Abstract, 1967, (Baghdad 1968), p. 139.

a significant food. In some years the product is more than the needs for domestic consumption and the surplus is exported abroad. Rice is cultivated in the whole country but the southern part is the most important, especially in Nasiriya, Amara, and Diwaniya where there is sufficient water available. Also in this part there is natural drainage which is necessary for the cultivation process.

Dates

Iraq is the world's largest date producing and exporting country. It also produces the finest dates. The annual average production of Iraqi dates amount to 350,000 tons.⁴ Two-thirds are exported and the remaining third is consumed locally. The total area planted in 1967 was 447,958 dunums and the number of palm trees was 32,056,801.

Table 3. Total Production and the Amount of Export and Value.

Year	Total Production	Total Exports	Value of Exports
	(tons)	(tons)	(I.D.)
1959/1960	270,000	176,001	5,209,299
1960/1961	300,000	217,220	7,090,917
1961/1962	350,000	238,927	7,044,042
1962/1963	420,000	252,076	8,223,042
1963/1964	320,000	228,357	5,888,385
1964/1965	310,000	235,227	6,481,603
1965/1966	280,000	216,712	6,395,044
1966/1967	380,000	257,015	6,712,071

Source: Annual Statistical Abstract for Agricultural Sector, 1967
Baghdad, 1968.

⁴ Ibid., p. 168.

Table 4. Principal Summer Crops of Iraq.

Crop	Year	Cultivated Area	Production	Crop	Year	Cultivated Area	Production
		(dunums)	(tons)			(dunums)	(tons)
Sesame	1963	40,500	6,100	Millet	1963	20,600	3,700
	1964	54,100	7,800		1964	23,000	5,100
	1965	58,800	9,500		1965	26,100	5,300
	1966	62,700	10,700		1966	27,000	6,200
	1967	68,200	1,200		1967	31,800	8,200
Maize	1963	10,800	2,000	Giant Millet	1963	22,200	4,500
	1964	12,400	2,800		1964	25,200	7,400
	1965	14,500	2,700		1965	26,300	7,100
	1966	16,200	4,300		1966	25,800	8,100
	1967	16,600	4,460		1967	28,300	9,100
Green-Game	1963	34,100	6,100	Cow Peas	1963	19,900	3,300
	1964	43,000	8,600		1964	24,300	6,300
	1965	47,100	10,800		1965	25,500	6,400
	1966	49,800	11,100		1966	25,500	6,600
	1967	64,700	14,000		1967	37,900	8,400

Source: Annual Statistical Abstract 1967.

Sesame is a summer crop and is very important because it contains a high percentage of oil which is used in industry, such as in the making of soap and vegetable oil. Sesame is widely cultivated through Iraq.

Maize is cultivated in all liwas in Iraq, especially in the northern and middle areas, with heavy concentration in Baghdad. Not enough is produced for domestic consumption so it is imported most of the years.

Green Game is cultivated in Kut, Diwaniya, Hilla, Ramadi, Diala, and Baghdad but mostly in Kut Liwa.

Millet is cultivated in Mosul, Sulaimaniya, Baghdad, Kut, Diala, and Ramadi. Cultivation is concentrated in Dimaniya.

Giant Millet is cultivated in the whole country but the southern area is more important.

Cow peas are cultivated in the whole country but especially in the middle area.

The problems in agricultural production in Iraq arise from specialization in a few products on the one hand and low average yield per dunum on the other hand. Specialization in agricultural production has many disadvantages:

1. The price of exports of Iraqi's agricultural product in the export market may decline. Since the farmer's income depends upon the revenue derived from the sale of these agricultural products, a lower price will result in lower income to the farmers. In the aggregate sense, this would affect national income.

The argument for international schemes for stabilization of primary product prices rests on the assumption that the governments of less developed countries are afflicted with especially severe problems of economic planning and management owing to fluctuations in their export earnings associated with the dominance of primary products in their exports. The facts responsible for this assumption are well known: the variability of supply and demand for individual primary products, the low elasticities of both supply and demand, the specialization of less developed countries on one or few primary product exports.⁵

2. It is not uncommon to expect that the fluctuation in export prices would in turn affect the domestic prices for the agricultural products and as

⁵Harry G. Johnson, Economic Policies Toward Less Developed Countries, (Frederick A. Praeger, Publishers, New York, 1967), p. 142.

a result lead to their fluctuation. Because of these fluctuations the farmers cannot maintain a steady income. Further, to aggravate the problems resulting from price fluctuations, lack of storage facilities compel the farmer to dispose of his product to whatever price he gets. This in effect would result in lower, and unassured income to the farming community as a whole.

Another problem is the average yield. Average yields in Iraq are very low compared with other countries. This is shown in Table 5.

Table 5. Average Yields in Iraq. Yield = 100 kilogram/hecta for 1966.

Country	Wheat	Barley	Rice	Cottonseed	Cotton lint
Iraq	4.8	7.1	22.0	5.1	2.5
Egypt	26.8	24.0	41.2	10.2	5.9
Belgium	30.5	25.1	--	--	--
West Germany	32.6	26.4	--	--	--
U.S.A.	--	--	48.5	9.3	5.4
Japan	--	--	50.9	--	--
Korea Republic	--	--	43.0	--	--
Greece	--	--	--	10.3	6.3
U.S.S.R.	--	--	--	16.0	8.3

Source: Production Year Book, FAO, UN, 1967.

The yield of wheat in Iraq is 4.8/100 kilogram/hecta while in Egypt it is about five times greater than in Iraq and in West Germany about seven times greater. Also the barley, rice, cottonseed and cotton lint is greater in different countries. The low crop yields have been caused by inadequate use of water supplies available for irrigation, use of seed of poor quality, inadequacy of measures against parasites and plant diseases, insufficient increase in the use of fertilizers, inefficient methods of cultivation, lack of technical knowledge, obsolete agrarian systems and unfavorable farming conditions.

Forestry in Iraq

Forestry production in Iraq is divided into two parts:

1. Produce of state forests

Charcoal and firewood have been produced from mountain forests of Mosul, Arbil, and Sulaimaniya liwas for commercial purposes but production of charcoal has now ceased because of government prohibition of tree cutting since 1955.

2. Produce of private forests

Private production consists principally of poplar, walnut, and oak timbers. They are produced from private plantations and riverian forests.

Table 6. Area of Forests Demarcated and Surveyed.

Liwa	Area of Forests Demarcated & Surveyed	Length of Boundaries & Forming Closed Forest Blocks	No. of Boundary Points Established & Forming Closed Forest Blocks
	(dunums)	(metre)	
Arbil	467,885	1,064,000	2,293
Mosul	30,450	308,000	1,380
Sulaimaniya	116,618	178,600	245
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Total	614,953	1,550,600	3,918

Source: Annual Statistical Abstract 1967.

Livestock in Iraq

Over 60 per cent of the population of Iraq is rural and is engaged largely in the breeding of one class or another of domestic animals. There are over twenty-one million domestic animals including sheep, goats, cattle, buffaloes, camels, horses, mules, donkeys, and chickens. Sheep and cattle are mostly exported to the neighboring countries, while hides, skins, casing,

wool, camel hair, goat hair, bones and similar products are exported to both Arabian and foreign countries.⁶

Sheep - There are three breeds of sheep which could be identified on the basis of the following characteristics:

1. Karadi: with long and colored wool is found mostly in northern mountains of Iraq.
2. Awassi: with shorter and finer wool than Karadi, is mostly found in the northwest and middle district of Iraq.
3. Arabi: with mixed color, and fine and short wool, is found mostly in southern plains of Iraq.

Goats - Although goats are kept throughout the country, they are most common in the northern districts. They can survive and produce milk even where grazing is very scanty and where sheep and cattle would hardly live. Ordinary types of goats have black and short hair. The Miriz type has long hair.

Cattle - There are two main types:

1. The cattle of the south where hump and dewlap indicate Asiatic origin. They are of fair size and are of mixed colors.
2. The cattle which are bred in the mountains and in the north of

⁶Iraqi Government, Annual Statistical Abstract 1967, p. 176.

Iraq. They are usually black and small with straight back and give very little milk. There are, also, cross bred varieties of the above two local types and Ayrshire and Sindi. Most of these are owned by the settled agrarian population residing around the large towns of Iraq. These cows give a fair amount of milk and are of mixed colors.

Buffaloes - The species found in Iraq are the "water buffaloes". They are very well grown and seem to have achieved the correct balance between their requirements and the environment in which they exist. They are kept mainly for their milk and bred on the plains and southern districts of Iraq, especially in the marshy areas.

Camels - These are mostly bred by the bedouin tribes. They are of two types "Khowar" and "Joudi". The first type is bred in the north west of Iraq and the second in the southern plains. They are kept for their milk, hair, meat, and for transportation in the desert.

Horses - In Iraq, only Arab horses are bred. Pedigree horses are mostly kept for racing. Arab horses bred in Iraq include the best bred strains, and the beautiful well shaped. Inferior horses are kept for farm work and draughts. Iraq exports the Arab race horses to various countries.

Mules - Mules are mostly bred in the mountains of northern Iraq, and are used as draught animals.

Donkeys - Donkeys are common throughout the country. There are two types; one large and white and the other small and of dark mixed colors. They are used for light transport of farm produce to towns.

Table 7. Numbers of Livestock in Iraq.

Year	Sheep	Goats	Cattle	Buffaloes	Camels	Horses	Mules	Donkeys
1953	4,942,192	1,688,532	721,439	52,802	--	--	--	492,496
1956	9,221,386	2,639,336	1,535,036	280,886	192,627	334,544	99,853	526,402
1958	5,598,292	1,733,300	855,583	44,392	--	179,176	100,830	558,000
1961	9,450,000	1,550,000	1,550,000	250,100	123,000	192,200	104,400	562,414
1964	11,040,205	1,845,488	1,454,923	224,622	201,830	122,189	71,705	--

Source: Annual Statistical Abstract for Agricultural Sector 1967, Baghdad 1968.
(Data for the years 1965 - 1967 are not available.)

Livestock Improvement

The productivity of livestock is extremely low, primarily because of inadequate feed supply.⁷ In addition to production of fodder crops, measures should be taken to improve natural pasture lands, particularly in the northern mountains, which have generally suffered from over grazing. Re-seeding and rotational grazing are necessary. Productivity could be further increased by the establishment of shelters, better breeding methods, especially the introduction of new and improved sires and maintenance of stud stations, and by more effective control of parasitic diseases through an increase in the number of veterinaries and the provision of more extensive diagnostic facilities in the provinces.

The quality of livestock products could be raised considerably by a number of measures. One of these is an improvement in the practices and more stringent sanitary supervision of abattoirs.

Improvement in both quality and quantity of livestock production is likely to be of growing importance in the future. One of the best methods of exploring the possibility of improved breeding and the results of better feeding and other livestock practices would be to establish a number of herds and flocks of indigenous breeds of livestock as well as poultry on government farms throughout Iraq.⁸

⁷International Bank for Reconstruction and Development, The Economic Development of Iraq, Report of a Mission Organized by I.B.R.D., (The Johns Hopkins Press, U.S., 1952.)

⁸Ibid., p. 243.

2. The Irrigation Problem

Iraq has an abundance of resources in land and in water. Irrigation in Iraq has passed through many stages and was very extensive at various periods in the past.⁹ Thousands of years ago, Iraq was the home of perennial irrigation. The ancient Babylonians made every possible effort to exploit the land of two rivers, developing a comprehensive system of canals for that purpose. The most monumental irrigation work on the Tigris was the famous Numrood Dam, which was constructed at the head of the delta over 3,000 years ago to feed the Nahrawan Canal System on the left bank and the Dujail and Is-haki Canals on the right.¹⁰

The beginning of modern irrigation in Iraq may be said to date back to the year 1908 when Sir William Willcocks, a British expert in irrigation, was called by the Turkish government to report the possibilities of agriculture in Iraq by means of irrigation.

The total area of the country within its political boundary amounts to 438,446 square kilometers of which about 120,000 square kilometers are cultivable. This area is divided into two regions. One, situated in the northern part of the country, is fed by rainfall supplemented by perennial

⁹U.N., Food and Agriculture Organization, Near East Meeting on Irrigation and Drainage Practices, Teheran, Iran, November 6 - 13, 1954, (Baghdad 1954), p. 2.

¹⁰Sixth Near East, South Asia Regional Irrigation Practices, Seminar, Amman, Jordan, (U.S. 1966), p. 172.

streams rising in the mountains, and is called the Rainfall Zone. The area of the cultivable lands in this region is approximately 40,000 square kilometers. The other, situated in the southern part of the country, forms the great delta of the twin rivers, the Tigris and the Euphrates. This part of the country depends almost entirely upon irrigation and is called the Irrigation Zone. The area of cultivable lands in this region is approximately 80,000 square kilometers.¹¹

The total land irrigated by different methods by which water is supplied amounts to 22,657,400 dunums. (See Table 8.) The total land irrigated by using the method of rainfall amounts to 11,008,249 dunums. The system used in planting the agricultural land in this region is called the fallow system, which means that the farmer plants only one-half of his land in one year, holding back the rest so that it may gain strength and richness for the next year's planting. Of the total agricultural land available in the country which is 22,657,400 dunums, only 17,153,275 dunums comprising 76 per cent of the total land area is cultivated every year. As such 5,504,124 dunums of land amounting to 24 per cent of the total area is left fallow every year. Because of this practice only 76 per cent of the total land area is used for purposes of agricultural production. In essence, this would result in lower production. This would not have been the case, had there been adequate water supply for irrigation purposes.

Water demanded for navigation plus dilution of drainage water recaptured from irrigated land reduces slightly the above requirement as follows:

¹¹U.N., Food and Agriculture Organization, Op. Cit., p. 3.

Tigris basin total annual requirement is 26.1 billion cubic meters, Euphrates basin total annual requirement is 18.1 billion cubic meters; making a total of 44.2 billion cubic meters.

Table 8. The Methods by Which Water is Supplied.

Method	Total Area	Total Land Planted Each Year
	(dunums)	(dunums)
Rainfall	11,008,249	5,504,124
Flow Irrigation	6,740,944	6,740,944
Pump Irrigation	4,478,106	4,478,106
Water Wheel Irrigation	224,573	224,573
Other Means (mainly flood irrigation for rice cultivation)	205,528	205,528
Total	22,657,400	17,153,275

Source: Salter, The Development in Iraq.

In the Tigris basin, successive dry years occurred from 1930 through 1934. During this critical period, the total flow of the upper Tigris and its tributaries was 162 billion cubic meters--32.4 billion cubic meters per year. As the requirement is only 26.1 billion cubic meters, it would appear that ample supply is assured.

In the Euphrates basin, successive dry years occurred from 1930 through 1934. During this period, the total flow was 86 billion cubic meters or an average flow of 17.2 billion cubic meters a year. As the requirement for the Euphrates projects is 18.1 billion cubic meters a year, it is apparent that insufficient supply must be supplemented with supplies from reservoirs in the future.¹²

¹²Sixth Near-East South Asia Regional Irrigation Practices, Seminar, Amman Jordan, 1966, p. 174.

Irrigation Practices

Irrigation practices adopted in Iraq are not conducive to maximum use of the land. The so-called "fallow" system is followed whereby the land is allowed to rest in alternate years. Under this system crop yields are low in comparison with those obtained in other countries where modern improved practices including crop rotations, drainage and proper methods of applying the water to the land have been followed.¹³

Of the lands now irrigated, nearly half are supplied with water by pumping from rivers and canals rather than by gravity. The pumping lift being low, and because large areas of land are to be served by pumping, it would seem uneconomical to go to the expense of installing and operating more and more pumping equipment when low diversion dams could be built to provide irrigation by gravity supply. Several factors have led to the present excessive use of pumping including:

- (1) The desire to limit irrigation to high bankland where drainage is not a problem rather than to low back-bottom land.
- (2) The independent action of individual landowners whose required capital investment for a pumping installation is much less than that required for a diversion dam serving a much larger area.

¹³U.N., Food and Agriculture Organization, Op. Cit., p. 4.

(3) The supposition that, in as much as pumping must bear the cost of fuel consumed, less water is used with pumping than with gravity irrigation.

(4) The rapid rate of which many irrigation canals have become filled with silt brought in by the turbid river waters.

(5) The extensive system of credit operations arising from the dependence on pumps which has become a salient feature of the local economy. Where gravity irrigation is practiced, little actual control of the flow of the rivers and canals is provided so as to take full advantage of topographic conditions and thus obtain a maximum extent of gravity irrigation. Furthermore, primitive flooding is generally practiced so that some crops get insufficient water while others are over-irrigated; thus in general, much wastage of water takes place.

After 1960, the investment on pumping irrigation increased as compared with investment for the construction dams. It could be seen from Table 9 that in spite of a slight increase in investment on pumping irrigation and thus increase the number of pumps, the average capacity of the pumps has decreased. In 1941-42, there were 2,570 pumps with a total horse power of 88,225 and with an average capacity of 35.1 compared with 1966-67 when there were 10,236 pumps with a total horse power of 306,900 and with an average of 29.98.¹⁴

The Irrigation Projects in Iraq

The objectives of an irrigation program in Iraq are:

- (a) To provide as soon as possible adequate flood control.

¹⁴A. W. M. Al-Dahri, The Introduction Into Traditional Societies and Economies (Using Iraq as a case study), (Baghdad, 1969), p. 119.

(b) To utilize the water stored by flood control structures and ultimately to provide any further storage necessary for the development of some 12,696,000 million dunums of new land in different areas.

The irrigation projects in Iraq are divided into two parts:¹⁵

A. The projects of the Euphrates River

1. Al-Habania Project

The aim of this project is for flood control. With level of storage about 3.2 million cubic meters, and to be able to reduce the flood discharge from a possible maximum of 5,200 cubic meters to 2,000 cubic meters. This will increase the minimum supply of water available for irrigation from 280 cubic meters to 440 cubic meters.

2. High Euphrates Tables

These projects are constructed in the south of Ramadi Liwa which contains Aklawia, Abu Garib, Al-Yosfia, and Al-latifia. It is possible for them to irrigate the land in Ramadi and Baghdad Liwas with a total area of 816,200 dunums.

3. Al-Hindia Project

This includes many projects some already established and some still under construction. These are Shatt-a-Hilla, Alkifl, Al Mussaiabl, Al Nasiriya, Alexanderia, Hassa, and Al Hussainia. The total area to be irrigated is about 3,500,000 dunums.

B. The Projects of the Tigris River

1. The Dokan Dam. The total amount of water stored by this dam is 6.8 million cubic meters and total electricity power provided by it is about 100,000 kilowats.

¹⁵ Agricultural Annual Statistical, 1967, Baghdad, Table 58.

2. Al Thorthar Dam. This project constructed for flood control, stores about 8 million cubic meters of water. Also, this project contains 24 gates used for irrigation in dry season, 17 gates used for fishing, and 15 gates used for providing electric power.

3. Derbendi Khan Dam. This is one of the major irrigation projects in the Middle-East with a total cost of I.D. 26 million. (I.D. = Iraqi Dinar = \$2.80.) The dam was completed in 1961 and can generate 112,000 kilowatts of electric power. The total area irrigated by this dam is about 2,000,000 dunums.

Table 9. Number of Pumps and Total Horse-power in Iraq.

Year	No. of Pumps	Horse-power	Average*
1961/1962	66,584	233,154	35.04
1962/1963	7,867	240,706	30.50
1963/1964	8,512	263,604	31.00
1964/1965	9,009	279,752	31.00
1965/1966	9,740	296,021	30.39
1966/1967	10,236	306,900	29.98

*Average = $\frac{\text{No. of pumps}}{\text{Horse-power}}$

Source: Annual Statistical Abstract 1967, p. 163.

4. Diala Dam. This dam was constructed in order to irrigate the land of Diala Liwa. The total area irrigated by this project is about 1,500,000 dunums.

5. Al Amara Project. The purpose of this project is to irrigate the land of Amara Liwa which amount to 1,000,000 dunums.

Irrigation Works

In view of the fact the water supply for irrigation purposes would be provided by the several irrigation projects discussed above, it is deemed necessary that further work should be undertaken to insure better and effective utilization of water.

Aside from flood control, the most important consequence of the new reservoirs will be the expansion of the area under irrigation. This has been estimated at 12,696,000 dunums gross¹⁶ of which 4,671,000 dunums are irrigated by the waters of the Euphrates and 8,025,000 dunums by those of the Tigris and its tributaries as shown in Table 10.

Table 10. Area Within Irrigation Systems (in 1000 dunums).

	Gross	Cultivated	Winter Crop Area Irrigated	Mean Discharge Used For Irrigation In Cumecs
Euphrates				
Flow irrigation	3,109	2,666	1,160	161
Pump irrigation				
a) Canals	607	515	263	32
b) River	955	812	474	43
Total	4,671	3,993	1,897	236
Tigris				
Flow irrigation	2,380	2,033	760	105
Pump irrigation				
a) Canals	1,060	901	400	49
b) Rivers	3,020	2,567	1,280	115
Total	6,460	5,491	2,440	269
Diala				
Flow irrigation	1,350	1,148	572	74
Pump irrigation	215	183	92	8
Total	1,565	1,331	665	82
General Total	12,696	10,815	5,002	587

Source: The Economic Development of Iraq - Report of Mission Organized by the I.B.R.D, 1952, p. 194.

¹⁶ International Bank for Reconstruction and Development, Op. Cit., pp. 193-195.

The International Bank for Reconstruction and Development Mission has reported on the availability of irrigated land. The Mission indicates that:

(1) The amount of cultivated land (in winter crops such as wheat and barley) which can be irrigated effectively by a constant flow of one cumec measured at the intake of an irrigation system (i.e., the so-called irrigation duty) is 7,200 dunums.

(2) Half of the cultivable area within an irrigation system is left fallow during the winter crop season; and since a given amount of water can generally irrigate an area in winter crops about four times as large as in summer crops (such as rice, cotton, tobacco), the area of an irrigation system is conceived in terms of the winter crops.

(3) The cultivable area within an irrigation system is about 85 per cent of the gross area, as indicated in Table 10, which includes the surface occupied by roads, villages, canals, and so forth.

The present fallow system practiced in agriculture should also not be regarded as sacrosanct. Through the use of fertilizers and the introduction of soil-building crops, the proportion of fallow might well be considerably reduced. Since almost all of the land which will be newly irrigated will be opened to settlement by small-holders under prescribed conditions, the state will be in a good position to insist on better agricultural practices in such areas. With water stored in reservoirs, it will also be possible to regulate the distribution of water as between winter and summer crops. In the past the amount of water which has flown down the rivers at critical parts of the growing seasons has set an automatic limit on the area both

in winter and summer crops. In the future, however, this flow will be subject to control through the release of stored water. Therefore, the government made a special study to determine what combination of winter and summer crops using a given quantity of water would yield the highest output for the manpower employed on the land. The outcome of this study as well as a re-examination of the fallow system may in the end affect the calculations of the gross area which needs to be covered by irrigation works in order to use a given supply of water. The sequence in which new areas are to be supplied with irrigation is governed partly by purely technical factors. Within the limits set by these technical factors, however, the selection of the areas to be irrigated should take into account the agricultural value of the land, its proximity to potential settlers and its ownership. Presumably most of this land is in state ownership. In any event, as long as it is technically feasible and not more costly; it will be desirable to give preference to the irrigation of good agricultural land remaining in state ownership because such land can be used for distribution among small-holders, since there are no fees to farmers for use of irrigated water.

The mission of agrarian reform experts from Egypt working in Iraq in 1964¹⁷ suggested that in order to extend the agricultural production, it must determine a new system of irrigation, and the cost for the projects

¹⁷Egypt Agrarian Reform Mission to Iraq, Agriculture and Agricultural Policy in Iraq, (Baghdad, 1964, in Arabic).

(about I.D. 335 million) should be held by the central planning board. The cost of new irrigation systems for each dunum estimated between I.D. 25-35 and the investment will be profitable since the value of the production attributed to this investment will be more than its cost. Before investment takes place in irrigation projects, the land should be classified on the basis of its market value and productivity, and according to whether drainage is possible or not.

3. The Problem of Labor Force Engaged in Agriculture

Labor is often considered the primary instrument for increasing production within the framework of traditional agriculture.¹⁸ The labor force is one of the important factors in agricultural production. Iraq, one of the underdeveloped countries, is different from other underdeveloped countries in that it is underpopulated. The density in Iraq is 19 persons per kilometer square as compared to a density of 113 persons per square kilometer in Pakistan, and in India 156 persons per kilometer square.¹⁹

Iraq has taken three official censuses for the years 1947, 1957, and 1965. According to the census of 1947 the total population of Iraq was 4,800,000.²⁰ In 1957 the total population was 6,339,960²¹ which represents

¹⁸ John W. Mellor, The Economics of Agricultural Development, (Cornell University Press, New York 1968), p. 156.

¹⁹ U.N., Statistical Year Book, 1968 (New York 1968), p. 82.

²⁰ U.N., Demographic Year Book, 1949-1950, (New York 1950), p. 77.

²¹ Iraqi Government, Annual Statistical Abstract, 1967, (Baghdad, 1968).

an increase of 1,539,960 persons over 1947 or 153,996 persons each year.

In 1965 the total population indicated was 8,261,527.²² (See Table 11.)

If census figures are assumed to be correct, this represents an increase of 1,921,567 over 1957 or about 240,195 persons each year. The annual absolute increase for the period 1957 to 1965 was higher than the annual increase in the period 1947 to 1957. This can be attributed to the progress in public health made over recent years, which causes the decline in the death rate. Census figures would indicate that the annual per cent of increase in the population in Iraq in recent years is 2.5.²³

Table 11. The Population Census by Liwa for 1957 and 1965

Liwa	1957			1965		
	Male	Female	Total	Male	Female	Total
Mosul	382,955	372,492	755,447	489,289	464,868	954,157
Sulaimaniya	158,624	146,271	304,895	210,262	197,958	408,220
Arbil	137,957	135,426	273,383	287,395	172,890	360,285
Kirkuk	198,112	190,727	388,839	238,037	223,990	462,027
Diala	167,746	162,090	329,836	204,650	195,399	400,049
Ramadi	130,765	122,258	253,023	165,057	154,232	319,289
Baghdad	677,465	635,547	1,313,012	1,095,047	1,029,276	2,124,323
Kut	140,349	155,550	295,899	164,817	170,678	335,495
Hilla	176,380	178,399	354,779	225,310	222,713	488,023
Kerbela	105,654	111,721	217,375	168,610	171,082	339,692
Diwaniya	253,538	266,932	520,470	271,795	277,035	548,830
Amara	162,307	167,533	329,840	174,963	171,700	346,663
Nasiriya	212,167	246,681	458,848	245,774	254,259	500,033
Basra	251,030	252,300	503,330	340,016	333,607	673,623
Total	3,155,049	3,143,927	6,298,976	4,181,022	4,039,687	8,220,709
Iraqi-abroad	30,068	10,916	40,984	24,179	16,639	40,818
Grand Total	3,185,117	3,154,843	6,339,960	4,205,201	4,056,326	8,261,527

Source: Annual Statistical Abstract for Agricultural Sector, 1967, Baghdad, 1968.

²²Ibid.

²³Information Service, Population Reference Bureau, 1969, World Population Data Sheet, (Washington, D.C., April, 1969).

Distribution of population by age

The total population of the country does not give a good idea about the number of workers in the country unless we know the distribution of the people by age. There were not too many population surveys available in Iraq except the official census and some studies made by economists. Also, the results for the 1965 census have not yet been released in detail. However, Table 12 shows that the total persons of working age (15 - 60 years) in Iraq is 3,023,770, but this number does not represent the actual workers in the country because it includes students, army personnel and a large number of women who do not work for several social reasons.

Table 12. Distribution by Age, 1957, for Iraq and United States.

Age	Iraq*		U.S.A.**	
	Number	Per cent	Number	Per cent
Less than 5 years	1,225,400	19.3	19,155,000	11
5 - 14 years	1,616,523	25.5	32,976,000	19
15 - 60 years	3,023,720	47.7	129,372,000	57
Over 60	474,267	7.5	22,671,000	13
	<hr/>	<hr/>	<hr/>	<hr/>
Total	6,339,960	100.0	171,198,000	100

*Source: Al Atiah Abdul Hussain Waday, Agrarian Reform in Iraq and Economic Development.

**Source: Demographic Year Book, 1960.

The total workers in 1957 in Iraq was 1,765,745 persons as indicated in Table 13. This figure represents about 58 per cent of the total perople of working age. The total population under the age of 15 years represents 44.8 while in the U.S., it is 30 per cent. Persons over 60 years of age in Iraq make up 7.5 per cent of the total population while in the U.S., it is 13 per

cent. This age distribution shows that Iraq suffers from the economic handicap of having a large number of children dependent on the adult population represented by the 15 to 60 age group. The age group distribution of the total working population shows that those that are under 15 years of age at present would be replacing those that would retire or stop working. As such, it is necessary to provide this group not only with better education and training facilities but also healthy surroundings conducive for their proper and healthy growth. Healthy, well trained, and educated people of this age group would be an asset to the economy of Iraq.

These conclusions are made from Table 13.

(1) Total workers in 1957 were 1,766,745 while in 1965 there were 1,981,282 which was an increase of 214,537 or about 27,000 each year. This annual increase is very small if it is compared with the annual population increase which amounts to about 140-150 thousand each year.

(2) Total rural population in 1957 was about 61 per cent of the total population while in 1965 it was about 50 per cent.

(3) The number of female workers in the rural area is about 60 per cent higher than the number in the urban area.

Migration from rural to urban areas

In conclusion (2) above, it was indicated that the 1965 rural population was about 11 per cent less than in 1957. This decline can be attributed to the migration from rural to urban areas. Ranis and Fei analyse that the marginal productivity of agriculture in the first stage in underdeveloped countries equal to zero.²⁴ Underdeveloped countries suffer from disguised unemployment in the agricultural sector. A large part of the population could

²⁴ G. Ranis and Fei, "Theory of Economic Development," American Economic Review, September 1961, pp. 523-565.

Table 13. Rural and Urban Population and Workers - 1957 and 1965.

	Total Population*				Total Workers			
	Urban		Rural		Urban		Rural	
	(Number)	(Per cent)	(Number)	(Per cent)	(Number)	(Per cent)	(Number)	(Per cent)
<u>For 1957</u>								
Male	1,284,744	40.3	1,900,373	59.7	446,044	25.2	713,540	40.0
Female	1,201,699	38.1	1,953,144	61.9	106,830	6.1	499,331	28.7
Total	2,486,443	39.2	3,853,517	60.8	552,874	31.3	1,212,871	68.7
<u>For 1965</u> ⁺								
Male					448,706	22.7	828,473	41.8
Female					120,042	6.1	584,061	29.4
Total	4,302,327	52.1	3,959,000	47.9	568,748	28.8	1,412,534	71.2

*Demographic Year Book, U.N., 1962.

**Salman, M. H., Population in Iraq, 1957-1965.

+Production Year Book, U.N., 1967. (Urban population found by subtracting rural population from total population in the country. Distribution of male and female rural and urban population not available.)

be removed without reducing agricultural output.²⁵

The standard in Iraq is different. The marginal productivity in agriculture is more than zero. The movement of workers, or heavy migration, without increasing the productivity of the workers is one of the most important reasons of decreasing agricultural output. Migration in Iraq with other reasons causes a decline in agricultural output. Total wheat production for 1957 was 1,117,836 ton while for 1965 it was 1,005,988 ton, in spite of an increase in the total area cultivated between these years. Also, the total barley production in 1957 was 1,164,845 tons while in 1965 it was 806,403 tons.

Migration to urban areas in Iraq is due to the system of land ownership,²⁶ the neglect of the rural area, the greater amenities of the urban centers, and the lack of transportation between the urban and rural areas. This lack creates difficulties in the marketing of agricultural products of the farmers and in turn affects their income and causes them to leave this occupation.

It stands to reason that these migrants would consist principally of young adults or adolescents, especially men, and it is not surprising to find that the census shows a much higher proportion of the very young (under 10 years) and the old (over 50 years) in the rural area.

²⁵Ragner Nurkse, Problem of Capital Formation in Underdeveloped Countries, (London, 1958.)

²⁶Fuad Baali, Relation of the People to the Land in Southern Iraq, University of Florida, Monographs, (Social Science, No. 31, Florida 1966), p. 49.

Like other countries at a similar stage of development, Iraq has a very young population; about half being under the age of 20 years. There were 3,341,874 persons under the age of 20 years in 1957.²⁷ These will become the active people in the economy within years.

Development of labor force

The per cent of illiterate persons in Iraq during 1957 represented about 66 per cent of the total population. Further, the rate of illiteracy is higher in rural areas. A low level of income also prevailed, especially in the rural areas where the average was about I.D. 27 annually, in comparison to an average of about I.D. 150 annually outside the rural area.²⁸

The necessity of a survey for the population in different areas in the country is very important; also the survey of the workers in different sectors in the economy is important. Data are not available for an adequate study of the labor force in the economy.

However, development in Iraq, and in particular its pace and timing, will be substantially affected by the availability of labor (especially skilled labor); at present skilled labor would seem to be a very important limiting factor. The labor position needs to be seen in relation to the present and prospective size of the population, the numbers of workers now employed on different classes of work, and the increase in skills which may be expected from technical schools and other forms of training. The development policy should be adjusted without regrets or laments--to the

²⁷U.N., Demographic Year Book, 1967, p. 174.

²⁸M. R. Al-Ganimi, Lecture on the Role of Agrarian Reform in Economic Development, (Baghdad 1967 in Arabic), p. 54.

needs of its present and prospective population.²⁹ The real problem is not to change its total size but to increase (whether by training or special importation) those skills upon which the general standard of living of all will largely depend. The most urgent needs at the present time are for technical and agricultural education, the need for agricultural training for development of agriculture being acute. Coordination between training in technical schools and the occupation is also needed. Extension work needs to be expanded to bring accurate and fruitful knowledge about better methods and new practices to the cultivators.³⁰

Technical advance in agriculture depends in great measure on governmental action. In part, direct government measures to increase productivity are necessary, in part the government must provide information, inducements, and assurances to cultivators.³¹

4. Financial Problems

The resources of the state-owned Agricultural Bank, the only agricultural credit institution, are insufficient to meet existing needs for credit. In many cases farmers must either borrow money from private lenders at exorbitant rates of interest or sell their crops in advance of the harvest at substantial discounts. The Agricultural Bank started its function in this field in 1936 under the title of the Agricultural-Industrial Bank of Iraq.

²⁹Lord Salter, The Development of Iraq, (Caxton Press, Ltd., London 1955), p. 32.

³⁰A. W. M. Al-Dahri, The Introduction of Technology into Traditional Societies and Economies (using Iraq as a case study), 1969, p. 243.

³¹Everett E. Hagen, The Economics of Development, (Richard D. Irwing, Inc., U.S. 1968), p. 66.

Owing to the rapid development that has prevailed in various spheres and the intensive progress achieved by the cultivators, the government decided to divide the aforesaid bank into two banks: The Agricultural Bank and the Industrial Bank. Each one of them started to operate independently in April 1946.

The nominal capital of the Agricultural Bank on independence was I.D. 500,000 and the paid up capital during 1946-47 had amounted to I.D. 380,000. The nominal capital has, since then, increased gradually until it reached I.D. 10,000,000 and the paid up capital I.D. 6,410,000 in 1967-68.³²

At the present, the Agricultural Bank has 20 branches, fourteen of which are located in the provincial capital cities of the fourteen liwas of Iraq. The remaining six branches are located in the important agricultural areas.

Agricultural Credit

The Agricultural Bank is practicing at present, four kinds of agricultural loans which differ from one another in the method used and in the purposes financed by the loans. These four kinds are ordinary loans, co-operative loans, supervised loans, and loans to purchase agricultural machinery.

1. Ordinary loans

These loans are issued to farmers and orchard owners at five per cent interest for various operation required for farm and orchard management in all seasons. These include ploughing, canal clearing, purchase of seeds, tree plants and fertilizers, cash loan to farmers and agricultural laborers and for other purposes relating to farming. Whenever the work to be done by loans has to be constructed by stages, such as establishing new orchards, or building

³² Iraqi Government, The Agricultural Bank for the Financial Year 1967-68, (Baghdad 1968), p. 5.

fencing to the existing orchard, or building bins and basins, such loans would be issued to borrowers in installments to insure through inspection, that the work is properly completed. There were 4,029 ordinary loans amounting to I.D. 1,095,587.³³

2. Co-operative loans

These loans are issued only to agricultural co-operative societies established in accordance with the Agrarian Reform Law, for cultivating the sequestrated lands, at concessional rate of three per cent interest. The loans and their purposes are decided according to the plan of work prepared by the Directorate General of Agricultural Co-operation and Production for Co-operative farms. There were 321 loans amounting to I.D. 246,254 issued to 234 co-operative societies of 35,993 farmer-members who are beneficiaries of the Agrarian Reform Law.³⁴

3. Supervised loans

These loans are issued to small and tenant farmers and to the farmers who are not members of agricultural co-operatives, at the same concessional rate of three per cent interest. These loans are disbursed in installments under the supervision of agricultural extension workers for preparing land for cultivation, to buy improved seeds, fertilizers, pesticides and for harvest and marketing expenses. There were 195 loans amounting to I.D. 13,124 issued to those groups of farmers.³⁵

4. Loans to purchase agricultural machinery

These loans are issued only to purchase agricultural machines of different

³³Ibid., p. 15

³⁴Ibid., p. 17

³⁵Ibid., p. 14

types such as tractors, combines, irrigation pumps and other apparatus at five per cent interest. The loans are disbursed directly to suppliers. They are considered ordinary loans when applied by individual farmers and co-operative loans when applied by co-operative societies. There were 190 loans amounting to I.D. 323,313 to purchase machines.³⁶

It should be noted that the state-owned Agricultural Bank offers credit at interest rates below the market rate. The reason for this implicit state subsidy is to encourage small farmers to expand their production.

Table 14. Total Amounts of Agricultural Credits and Numbers of Loans From 1960/61 to 1967/68.

Year	No. of Loans	Amounts I.D.
1960/1961	2,390	559,457
1961/1962	2,664	910,771
1962/1963	2,684	875,881
1963/1964	2,634	654,959
1964/1965	4,557	1,314,104
1965/1966	2,939	907,607
1966/1967	3,472	1,203,163
1967/1968	4,735	1,678,277

Source: The Agricultural Bank for the Financial Year 1967-1968, Baghdad, 1968.

It can be seen from Table 14 that the supply of loanable funds is not keeping pace with agricultural development. The loans for 1967-68 were only I.D. 1,678,277 and represents the small amount of paid-up total capital which was I.D. 6,410,000.

The limitation of the bank's activities attributed to lack of resources

³⁶The Agricultural Bank for the Financial Year 1967-1968, Baghdad, Iraq p. 76.

and lack of understanding on the part of the management, even with the heavy red tape used by the bank, but some loans have not been repaid when due and indefinite extensions have been allowed. In fact, the small farmers are unable to get benefits or credit from the bank because they cannot submit enough security for the bank. Therefore, most of the financial help offered by this bank goes to the wealthy farmers. The total amount of ordinary loans was 1,095,587 for the financial year 1967-1968, while the remainder of the loans totaled only I.D. 582,688.

To solve the financial problem in Iraq, the following might be done:

- (1) Increase the loans for the purchase of machines.
- (2) Establish loans for livestock.
- (3) The provision of capital to enable new settlers to develop their farms.
- (4) Short-term financing for seeds, fertilizers, etc.
- (5) Loans for sinking of wells and similar capital projects.³⁷

The credit system is still inadequate and there is a need for a sound agricultural credit policy. The goal of such policy should be to make the credit extended to the farmers productive in the long run. The farmers who have obtained land, need to be provided with facilities of production, especially credit.³⁸ Otherwise agricultural production will decline. Supervised credit is needed which involves loans plus technical assistance and guidance for the borrowers, the significance of supervised agricultural credit programs and its connection with land reform program. Under conditions existing in rural areas of Iraq, the need for supervision of credit alone to cultivators does

³⁷Lord Salter, Op. Cit., p. 201

³⁸A. W. M. Al-Dahri, Op. Cit., p. 240.

not in itself insure that funds will be used to improve agricultural production. Thus, a specialized agency is evidently needed to take the responsibility of training rural supervisors and field inspectors. Such an arrangement assists cultivators in introducing new machinery, technical needs for irrigation, fertilizers, credit, and at the same time provides for sale of their crops. These can be done through cooperative societies, which were established according to the agrarian law in 1958. In the absence of proper supervision it is rather hard to find out that the loans granted for improving agriculture would be properly utilized. Therefore, it is needless to mention that properly trained persons should be appointed to supervise the amounts loaned for agricultural production. To overcome the scarcity of supervisory staff, it is necessary to establish a training program which would provide trained supervisors who would efficiently supervise the co-operatives. If the same could not be done in Iraq, it is advisable to send a select group of Iraqis abroad to get training in this field.

5. Marketing Problems

Agricultural marketing can be looked at from many points of view. To farmers it is the means of changing their products into money income, to get back their production expenses and to provide living expenses for their families. To a large number of people engaged in buying and selling, processing, transportating, storing, and distributing farm products, it is what they do for a living. To consumers, it is the source of food and other goods that they need and want. To the society in general, it is the system by which a nation is fed and clothed and supplied with many other goods.³⁹

³⁹Bowring, Southworth, Waugh, Marketing Policies for Agriculture, 1960, (Englewood Cliffs, N.J.), pp. 13-14.

The ideal set of marketing services for a given agricultural product may be one of which is more costly, rather than less costly.⁴⁰ So the farmer's income will not be affected only by the bulk and quality of production, but also by the level of the prices by which he could sell his crops with least cost of marketing. But the very poor and primitive facilities of marketing in Iraq affect the product in two ways: either spoilage and storage or accepting very low prices which will lower the farmer's income.

The agricultural marketing in Iraq is characterized by:

- (1) Poor classification--mixing good and poor grades or mixing more than one variety.
- (2) Poor grading in packing.
- (3) Canning is still facing many problems.
- (4) Lack of roads and communication facilities which make it difficult to transport the products to the domestic and to the foreign markets.
- (5) Lack of knowledge about local and foreign agricultural markets and their prices.

The problem faced by the farm population as a whole not only in Iraq, but also in other developing countries is that they do not have an organized marketing institution. In addition to this the industries concerned with the processing and preserving of agricultural products, which are by nature perishable, is also absent. Because of this the farmer takes his produce to the weekly market and sells his product for whatever price he gets. This, he does because "something is better than nothing." If it does not sell to the price he gets in the market either he has to consume more than he needs, give it

⁴⁰N. R. Collins and R. H. Holton, Agriculture in Economic Development, (Programming Changes in Marketing in Planned Economic Development), McGraw Hill Series in International Development, (Edited by Carl Eicher and Lawrence Widd, U.S., 1964.

away, or throw away when the product goes bad. Therefore, if the production should be made more efficient and incentive oriented every effort should be made by the government to establish processing and storage facilities and to organize an efficient marketing system.

CHAPTER II

LAND REFORM IN IRAQ

Land reform in the traditional and accepted sense means "the redistribution of property in land for the benefit of small farmers and agricultural workers." There is also a wider definition now in use in which land reform is understood to mean any improvement in the agricultural economic institution.¹

The object of using this broader definition is to widen the concept of reform policy, in order to emphasize that governments undertake to reform land, but should also undertake many other things--the regulation of rents, conditions of tenancy and farm wages, the improvement of farm credit systems, methods of land taxation, co-operative organization, agriculture education and others.²

Parsons defined land reform--"A land reform is directed toward the redistribution of wealth, opportunity and private power as manifested in the ownership and control of land. Agrarian reform has come to have the broader meaning; at least in the discussions of policy in the United Nations and the U.S.A., of the reconstruction or reformation of the whole structure of the agricultural economy by creation of appropriate institutions and public services designed to strengthen the economic position of the independent farmer."³

¹Doreen Warriner, Agriculture in Economic Development, (Land Reform and Economic Development), McGraw-Hill Series in International Development, Edited by Carl Eicher and Lawrence Witt, U.S., 1964, p. 272.

²Ibid., p. 273.

³K. H. Parsons, an article on "Agrarian Reform Policy as a Field of Research", Agrarian Reform and Economic Growth in Development Countries, Economic Research Service, March 1962.

The Situation in Iraq before 1958

Up to the end of the Ottoman period the basis of landownership was the tribal system, a large area not limited to land actually tilled, but including also non-cultivated land or submerged marsh land, over which the tribe exercised a customary right of occupation. Great holdings of lands are tribal in origin and became private property as a result of the appropriation of tribal land by the tribal Sheiks (the head of the tribe) in the last forty years.⁴

Under the tribal system the area cultivated was small and shifted as canals silted up and the land was impoverished by salt, so the area cultivated by each peasant shifted also. The function of the sheik was political; he maintained the tribal militia and kept the mudhif (the guest-house and civic and social centre). Revenues to enable him to carry out these duties were collected by the sirkals (the relatives of the sheik who managed the agricultural process) from the tribesmen; one-third or one-half of the cultivated land was set aside to provide for the sheik's income. This income accrued to the office of the sheik and not to his person. His right to revenue depended on his political functions. The tribesmen, under this system, were neither individual owners nor laborers; they were cultivators of land communally owned. Since the early years of the twentieth century, the tribal system has been breaking up, as a result of settlement for permanent cultivation, the opening of markets, greater political security, and technical change. When steamship transports came to the Persian Gulf at the end of the nineteenth century, markets for Iraqi grains opened, and the sheiks found it profitable to

⁴ Doreen Warriner, Land Reform and Development in Middle East, A study of Egypt, Syria, and Iraq. (Oxford University Press, London 1957.)

take more grain from their cultivators in order to export. In the 1920's, pump irrigation gave them a strong motive for acquiring land as their own property. These economic changes were consolidated by the settlement of title to land carried out from 1933. The sheiks have now become legal owners of the dirah (district area where tribes live). The sirkals have become the managers and agents; and the tribesmen have become share-cropping fellahin (farmers), with no rights or status.⁵

The fellahin are in law tied to the land; a law of 1933 provided that no laborer could leave the land if he was in debt to the landowner; and as laborers are usually in debt they are in effect serfs. If a laborer deserts the estates, the landowner can punish him by destroying his family's hut and driving the family out. Though the cultivator is a share-cropper, he is not properly speaking a tenant, since he has no security or freedom of action.

High level of rents is the main cause of rural poverty, and not the shortage of land. The area cultivated by one family in south Iraq averages 30 dunums of which half is cropped and half left to fallow. This area should be sufficient to support a family and produce a surplus for sale, even with such an extensive system of farming; but when two-thirds of the produce is taken as rent, it is not sufficient.

The proportion of the crop taken by the landowner varies with the type of cultivation. On irrigated land it is generally three-fifths, and two-thirds if the landowner provides the seed. On pump-irrigated land the landowner takes five-sevenths. The prestige of the sheiks rests on their former function of leadership in a tribal society which owed the state no allegiance. The

⁵Ibid., p. 136.

foundation of the new kingdom in 1930 strengthened them, giving them legal ownership of land and representation in Parliament. The landowners in the northern part of the country, especially in Mosul Liwa, predominantly city merchants, have acquired land either by inheritance or by lending to impoverished cultivators, and taking the land when debt cannot be paid. Rents taken by the landowners are lower in the north, because population is sparse. On irrigated land where pumps are installed the landowner's share amounts to 50 per cent of the gross produce, while in the south it is between 66 and 75 per cent.⁶ One of the three large land holders for example, the Senator Mohammed El-Araiby, has 6,000 'people' (i.e. fellahin--tribesmen), a family of 200, and four wives. Also he has his own court to punish the fellahin who do not obey the rules.

The institutional setting of Iraqi agriculture was dominated by a system of absentee landlords, most of whom lived in cities and towns and left their daily administration of their villages to resident bailiffs. The land distribution among land owners prior to 1958 is shown in Table 15. This Table shows that only 13.9 per cent of the total land owners own 89.5 per cent of the total agricultural land; while 86.1 per cent of the total land owners own 10.5 per cent of the total agricultural land. Therefore, distribution of agricultural land was one of the important problems facing agricultural development. This situation, with other factors, is attributed to the fact that landowners could not supervise all the land they own because it is so vast. Also the bad conditions of their farmers from the point of view of health and social conditions and with their knowledge that most of their production will go to the landowner. However, many recommendations and

⁶Ibid., p. 139.

suggestions have been made since 1924 in Iraq for changing the system of land ownership and for solving the social problems that confront rural areas.⁷

Table 15. The Size, Number and Area in Dunums of Land Owners in Iraq Before 1958.

Size Dunum	Owners		Total Area	
	Number	%	Dunum	%
Less than 4	57,958	34.5	73,055	.30
4 - 30	56,725	33.7	696,889	3.00
31 - 100	30,119	17.9	1,677,118	7.20
101 - 1,000	20,126	11.9	5,024,736	21.50
1,001 - 10,000	3,143	1.838	9,090,279	39.00
10,001 - 50,000	251	.150	4,544,280	19.50
50,001 - 100,000	19	.010	1,334,102	5.80
Above 100,000	5	.002	876,913	3.70
Total	168,346	100.000	23,227,259	100.00

Source: Agricultural and Livestock Census in Iraq for the year 1958-59.

Land Reform in 1958.

The Iraqi government, after the July 1958 revolution, passed an agrarian reform law in September 1958.⁸ This law is divided into four sections which includes fifty-one acts. Following are the most important provisions.

(1) The fixed maximum area of holding land is limited to 1,000 dunums of irrigated land and 2,000 dunums for non-irrigated land or rain fed land.

(2) All of the land owned by the land owners over that mentioned above

⁷Fuad Baali, "Relation of the People to the Land in Southern Iraq," University of Florida Monographs, Social Science, No. 31, p. 54.

⁸Iraqi Government, Agrarian Reform Law No. 30, (Baghdad 1958 in Arabic).

comes under the control of the government.

(3) Thirty to sixty dunum of irrigated land and 60 - 120 dunum of rain fed land sequestrated by the government is redistributed to the farmers.

(4) The land acquired by the government under the agrarian reform act is to be distributed to Iraqis in agriculture who have not more than 120 dunum of rain fed land and not more than 60 dunum of irrigated land prior to the enactment of the law.

(5) An executive committee, "high form of agrarian reform", is to represent the government and take care of control and redistribution of the land.

(6) One or more agricultural co-operative society is to be established in each nahia.

(7) The duties of Agricultural Co-operative are to:

- (a) Get credits and loans according to distance of the land owned by the farmer in that place;
- (b) Sell the agricultural products of the farmers; and
- (c) Take care of all agricultural services demanded by the members.

The agrarian reform law in Iraq has three objectives:

First - Political objective⁹

This is one of the most important objectives of the agrarian reform. Its aim is to end the power of the feudalists in the government in order to reduce their interference in ruling the country according to their personal benefits.

⁹Al-Attiah Abdul Hussain Waday, Agrarian Reform in Agricultural Development in Iraq, (Baghdad 1965 in Arabic), p. 70.

The Parliament, being dominated by the feudalists as members, was reluctant to pass any législation that would benefit the farm population. Because of this most of legislations that were passed in the Parliament prior to 1958 were all in favor of the feudalists. To consider an example, according to law No. 28 passed in 1933, the farmer was prohibited to leave the land he worked unless he had a certification to that effect. Most of the farmers were indebted to their landowner because of their inability to market their products and their shares from the crops were too low. In some cases the farmer borrowed money with a higher rate of interest. Also most farmers who signed the contract with the sheiks were illiterate and did not know if the contract was true as the sheiks described it.

Second - Social objectives

The agrarian reform is considered the best remedy for rural social changes. It is considered as a social revolution, as well as an economic revolution. It aims to free Iraqi farmers from the control of the land feudalist and from the backward customs and traditions. The tribal system has prevailed in the most rural areas. All decisions were made by the sheik, no one had the right to object. Some sheiks established a jail in their own land for those who did not obey them. Also education in their own land was prohibited and most sheiks prevented the government from establishing schools. The health of the farmer was very bad. There were no hospitals and no medical care. The people drank the water from the rivers and disease was prevalent among them. So the agrarian reform is expected to raise the standard of living, health and education, by breaking the power of the feudal-ist. It will provide the farmers with proper shelters, medical service and better vocational education in order to improve their productivity. It is

difficult to increase the production and the national income without improving the farmer's status because the farmers are considered as one of the important factors in agricultural production. As long as the farmers have a good standard of living, are in good health and have a good level of education, their ability to produce will be more efficient. In other words, the farmers represent the majority of the nation's population and keeping them in their backward social condition will prevent them from participating in building the country.

Third - Economic objectives

The aim of this objective is to increase the level of production. The land is only one part of the agricultural process. There are other parts such as capital investment, credit, management, including marketing, irrigation, drainage, fertilizers, and new methods of planting. All of these are necessary in the agricultural process but most of them are unknown in agricultural production relations in feudalistic system in Iraq.

Agrarian reform put into practice a well-studied plan which increased the productivity of natural resources as well as developed the national industry by providing it with raw materials. The increased demand for agricultural products both by population and by the industry would result in higher income, and as a result increase in savings and capital formation, a necessary first step in the process of development.

The Role of Agrarian Reform in Agricultural Development and its Implementation in Iraq.

Land reform can make a major contribution to economic development, as well as to social welfare. The presumption is especially strong for the less developed countries, in view of the relative importance of agriculture and of

the rural population in their economy.¹⁰ However giving the land to the landless is only one step, after steps have been taken to distribute land more equally, other obstacles to economic development come into view. It follows that government undertaking land redistribution should also be prepared to take the series of succeeding institutional reform steps required to make agriculture more efficient and more productive. These developmental steps, to the extent that they come within the scope of land reform, are these:¹¹

(1) Provision of technical guidance and training; this in turn presupposes quite apart from land reform itself, a broad base of technical knowledge and a research program (e.g., for soil analysis).

(2) Financial arrangements to provide credit and capital, not only for current farm operations and for land improvement, farm buildings, and other agricultural investment such as livestock and orchards, but also especially in the case of new settlements, for infrastructure facilities such as roads, irrigation and power systems, community facilities for education and health.

(3) Reorganization of the scale of farm plots and farming operations, through consolidation of fragmented holdings or through co-operative arrangements of various kinds, in cases where this is necessary for efficient production.

(4) Provision of marketing arrangements and adequate price inducements as well as a supply line of agricultural requisites.

National economic development requires non-agricultural as well as agricultural progress, even in rural areas. It especially requires industries capable of operating on a dispersed basis; widely spread schools, medical facilities and other social items of human investment type; and general administration as represented by local government bodies operating on some kind

¹⁰U.N., F.A.O., Progress in Land Reform, Third Report, (New York 1962), p. 9.

¹¹Ibid., p. 9.

of partnership basis with the central government.

Land Reform Law and its Implementation in Iraq.

In previous pages in this chapter, it is mentioned that the agrarian reform has many objectives. In order to achieve these objectives, the steps were taken -

- (1) To limit the acreage of land owned by an individual farmer.
- (2) To distribute the land in excess of the limitations to the landless in such a manner that the payments for the land could be made over a long period of time--a period mutually agreed upon by the government and the recipient of land.
- (3) To establish cooperative systems in the centers of production through the grouping of farmers into cooperative societies for production and marketing.
- (4) To clarify agricultural relations between those concerned by fixing a just share for every aspect of production, in other words to recognize the rent problem.
- (5) To mechanize agriculture, and educate the farmer.¹²

In spite of the fact that a number of changes have been introduced following the agrarian reform, it is still facing a number of difficulties as mentioned below:

First - Distribution of land among farmers

It is known that the major goal of the agrarian reform is to distribute the land among the smaller farmers. The total land distributed up to 1967 was only 1,337,099 dunum irrigated land; 1,212,867 rain fed land among 53,817

¹²A. W. M. Al Dahri, The Introduction of Technology Into Traditional Societies and Economies (using Iraq as a case study) Baghdad, 1969.

farmers as shown in Table 16. This represents only about 37.4 per cent of the total land sequestered by the government (6,817,875 dunums). From the point of view of total rural beneficiaries, for want of proper distribution arrangement, the number of beneficiaries who received the land were much smaller than it should have been. If one assumes that each farmer had a family of 5 persons, the total number of beneficiaries (53,817 x 5 = 269,085) the number of beneficiaries in terms of total rural population representing only 6.8 per cent of the total rural population that existed in 1965. (Total rural population in 1965 - 3,959,000.)

Table 16. Total Area of Sequestered Lands, Total Area of Land Distributed and Number of Beneficiaries up to 1967 by Liwa.

Liwa	Sequestered Land	Distributed Land		Number of Beneficiaries
		Irrigated	Rain Fed	
Mosul	1,771,505	---	814,770	10,483
Arbil	467,587	---	151,490	2,139
Kirkuk	377,650	4,657	180,228	2,493
Sulaimaniya	272,337	21,911	12,429	1,549
Baghdad	470,523	243,103	34,650	7,172
Diala	610,170	75,262	10,300	1,919
Ramadi	85,062	8,456	---	204
Hilla	491,591	276,957	---	7,671
Kerbela	86,036	17,175	---	1,526
Kut	1,354,797	550,917	---	13,567
Diwaniya	684,603	17,960	---	2,261
Nassiriya	1,596	38,548	---	449
Amara	86,399	3,866	---	1,684
Basrul	58,019	---	---	700
Total	6,817,815	1,337,099	1,212,867	53,817

Source: Annual Statistical Abstract for Agricultural Sector, 1967, Baghdad 1968.

Second - Co-operative societies and agrarian reform

The co-operative movement began in Iraq in 1944. From our previous study of the peasant farmer in Iraq, we saw that most of them are unable to finance the stages of production. These co-operatives aim to provide their members with a low rate of interest which they can use for agricultural and livestock productive purposes. In this way, co-operatives can rid the farmers of money lenders and assist them to improve and increase the production. There were only 403 agricultural co-operative societies in Iraq up to 1967 as shown in Table 17.

Table 17. Agricultural Co-operative Societies Established According to Agrarian Reform Law up to December 31, 1967 by Liwa.

Liwa	Number of Societies	Number of Members
Mosul	46	6,334
Arbil	21	2,872
Kirkuk	26	4,106
Sulaimaniya	9	1,023
Baghdad	55	7,414
Diala	21	3,762
Ramadi	30	1,676
Hilla	39	5,376
Kerbela	17	2,303
Kut	51	9,232
Diwaniya	32	4,707
Nasiriya	10	891
Amara	36	4,684
Basrul	10	1,056
	—	—
Total	403	55,436

Source: Annual Statistical Abstract for Agricultural Sector, 1967, Baghdad 1968.

Assuming that the ministry of agrarian reform is correct in their estimation that 15,000 dunums of land could be supervised by one co-operative society, to supervise 12,000 dunum of land belonging to the ministry of reform, there is a need for 800 co-operative societies (12,000,000 divided by 15,000 = 800). Whereas there exists only 403 co-operative societies representing little over 50 per cent of the total demand. In order to make the agrarian reform more efficient it is needless to mention that a number of co-operatives must almost be doubled. Also from the point of view of the total members which was 55,436 persons, and from our assumption that each farmer has a family of 5 persons*, we get $55,436 \times 5 = 277,180$ --the total rural population benefitting from these societies. This is about 7 per cent of the total rural population (3,959,600 in 1965). Apart from the need for co-operatives to supervise the land that was given away under agrarian reform, the co-operatives are also needed to meet the needs of agriculture like supplying machinery, fertilizers and so forth, in addition to cater to the needs of the people who cultivate and live on this land.

Third - Mechanization in agriculture and agrarian reform

It is necessary to mention first, that Iraq has abundance of capital (foreign exchange) and land available for cultivation. The revenue of oil from the oil companies in 1966 was I.D. 308,800,000 and the income tax from these companies was I.D. 67,716,198; these two will add up a total of I.D. 376,516,000. So it is clear that capital and foreign exchange are fairly

*See our assumption earlier in the paragraph.

readily available in Iraq.¹³ The land available for agriculture is estimated to be 38,000,000 dunums,¹⁴ which shows that there is an abundance of land ready for cultivation if mechanization with irrigation projects are introduced in agricultural production.

In Iraq, agricultural techniques are little different from those used many centuries ago. The farming methods have scarcely changed in a thousand years. The majority of farmers in Iraq are still working almost exclusively with their traditional nail plow, shovel and sickle and using donkeys, mules, horses or cattle as draft animals for the farm operations. In fact, an animal-drawn wooden plow, a wooden roller for threshing and some hand tools are all the implements that a farmer uses.

As a rule, extensive mechanization has been associated with the opening-up of new lands, and with new settlement. Here the advantages afforded by mechanization are speed of operation, and the profits accruing to the individual farmer are often high in relation to those which would have been obtained from the use of manpower and animals on much larger scale. Furthermore, mechanization is useful for land clearance and for helping to make land available which otherwise would have remained uncultivated. In the Tigris and Euphrates valley of Iraq, for instance, irregularities in the land surface (covering an area estimated to be one-fifth of the available land of the valleys), might be eliminated by the proper use of levelling equipment. In these cases the cost of mechanization is minor when set against the increased production which follows, and the machines perform tasks which

¹³Iraqi Government, Annual Report for Iraqi Central Bank, (Baghdad 1967 Arabic).

¹⁴Al-Atiah, Abdul Hussain Waday, Op. Cit.

could not be carried out by manual labor.¹⁵

The speed of operation with power mechanization is of course, primarily a technical advantage. Seeding and harvesting can be so arranged as to minimize weather risks. Another technical advantage is deeper ploughing. In Iraq, mechanization is said to have contributed to a rise in wheat yields and of some 30 per cent for barley. Mechanization not only enables higher yields to be secured, but at the same time curtail expenditures. Saving 30 to 40 kilogram of seed per hector is possible when drills are used to seed grain. Drilling also facilitates weed control and gives a more efficient distribution of fertilizers.¹⁶

Finally mechanization saves labor. Given the degree of underemployment, where a vigorous industrial expansion is foreseen, and where the bulk of underemployment is seasonal, mechanization would alleviate the need for a large labor force at peak periods and permit the fuller use of labor in industry. Clearly, the pace of mechanization must depend on a country's rate of development. In the absence of major increase in urban employment, power mechanization may merely increase problems of unemployment and underemployment.¹⁷

Farm technology can be classified into three types:

First, there is biological improvement which affects the increase of the total output (per acre, animal or unit of feed) from a given land base, such as new varieties of crops, the application of fertilizers, improved breeding and animal feeding, etc.

¹⁵U.N., FAO, The Integrated Development of Mediterranean Agriculture and Forestry in Relation to Economic Growth - A study and proposals for action (Rome, 1959), pp. 81-82.

¹⁶Ibid., pp. 81-82.

¹⁷Ibid., pp. 81-83.

Second, mechanical improvement, such as farm machinery and equipment which tends to substitute capital for labor, but changes very little the physical productivity of plants or animals to which they apply.

Third, the biological-mechanical improvement. These, the mechanical innovations that have a physiological effect in increasing time lines of operations, social structure or otherwise directly effect the plant or animals.

The effects of these three types of improvements on productivity can be interpreted as follows:¹⁸

- (1) Increases with productivity of land (per acre) or
- (2) Increases in the productivity of labor (per man hour) or
- (3) Increases in both productivities.

In fact most agrarian reforms include in their program some kind of mechanization. In general tendency in the agrarian policy in Iraq is not different. The mechanization of agriculture within the limits of economic feasibility has many advantages. These are:¹⁹

- (1) Reduction in the drudgery of manual operation.
- (2) Reduction in cost per unit of output on a large operation.
- (3) Saving time, performing several operations at a time.
- (4) Increase in the productivity of farm labor.
- (5) Improvement in the quality of product.
- (6) By serving as a means for structural change in a predominantly agricultural economy.

¹⁸ A. S. Alwan, The Iraqi Economic Association, The Economist, "Economic Aspects of Technological Advance in Iraqi Agriculture," (July 1961, Vol. II, Baghdad 1961 in Arabic), p. 4.

¹⁹ Ibid., p. 11.

In Iraq and in other developing countries in which a bulk of total population, accounting to as much as 75 per cent have agriculture as their occupation. It has been discussed that the countries with larger per cent of their population has lower per capita income. Also it has been argued that to increase the per capita income and thus improve the standard of living, the people in agriculture should be moved to industries and other occupations. Iraq with about 60 per cent of population agriculture has comparatively higher per capita income than most of developing countries. If the per capita income of Iraqis should be increased further, the solution remains in transferring the agricultural population to industries. If this is to be made without any reduction in the present output, and if the farm output is to be increased with smaller number of people in agriculture, there is no other alternative other than depending upon the mechanization.

The structural change implies improvement in that it shifts people away from agriculture into urban and industrial occupations, and development takes place in all sectors of the economy. Such shifts are considered as a sign of economic development. The advanced countries have already experienced such a structural change which assisted them during the transition of their economies from a subsistence level to a commercial level. The mechanization of agriculture usually provides the focal point around which such structural change has been achieved. However, the machines used in the agricultural process in Iraq are still insufficient. The use of machines should be more extensive and the training of the farmers in how

to use the machines should be increased. This is important, because the Iraqi farmers have a lack of training in the use of machines.

Table 18. Total Machines Owned by Agrarian Reform up to December 31, 1967 Distributed by Liwas.

Liwa	Tractors		Combines		Water Pumps		Cars
	No.	Horse power	No.	Horse power	No.	Horse power	
Mosul	30	1,610	30	2,100	6	372	23
Arbil	38	1,940	30	1,990	--	---	9
Kirkuk	55	2,770	30	2,700	--	---	17
Sulaimaniya	15	790	--	---	--	---	7
Baghdad	186	9,561	106	1,718	271	17,993	184
Diala	29	1,471	20	1,300	23	1,389	13
Ramadi	33	1,860	6	480	20	521	13
Hilla	22	1,166	11	775	16	666	14
Kerbela	20	1,660	--	---	15	1,264	9
Kut	106	5,831	--	3,614	316	21,042	62
Diwoniya	40	2,190	53	3,985	64	2,802	29
Nasiriya	26	1,293	43	390	2	114	10
Amara	31	1,715	6	720	114	7,054	20
Basra	6	328	10	---	13	915	10
Total	637	33,585	345	24,235	860	54,132	420

Source: Annual Statistical Abstract for Agricultural Sector, 1967, Baghdad, 1968, p. 146.

Fourth - Land reform and its effect on production

Since 1958 crop production has fallen, partly owing to the long drought in the north and partly owing to the reform. Table 19 shows the total and average production of the main crops for the years 1955 - 1967.

Table 19. Production and Average production of Main Crops in Iraq for the Years 1955 - 1967.

Year	Production in 1,000 metric tons			
	Wheat	Barley	Rice	Cotton
1955	453	757	83	23
1956	776	1,016	110	21
1957	1,118	1,305	147	44
1958	753	964	137	37
Average	775	1,010	119	31
1959	563	724	88	26
1960	591	803	118	23
1961	857	911	68	26
1962	1,085	1,125	113	25
1963	488	790	143	14
Average	717	871	106	23
1964	807	622	184	29
1965	1,006	806	198	31
1966	826	832	182	27
1967	866	860	311	35
Average	876	780	219	31

Source: Ministry of Agrarian Reform Report issued in March 1968-Constructed by Al-Dahri, A.W.M., The Introduction of Technology Into Traditional Societies and Economies (Using Iraq as a case study). pp. 186-189.

CHAPTER III

THE ROLE OF GOVERNMENT IN PROMOTING THE AGRICULTURAL SECTOR
AND THE PLANNING IN AGRICULTURAL DEVELOPMENT

From previous chapters we noticed that agrarian reform can play an important role in agricultural development, also the Ministry of Agriculture in Iraq has a significant affect on agricultural development. Some duties of the Ministry of Agriculture can be summarized as follows:

- (1) Agricultural research.
- (2) The study of application applied to importing chemical fertilizers, seeds, fruit trees, and shrubs.
- (3) Preparation of agricultural supervisors.
- (4) Establishment of Social Centers in rural areas.
- (5) Study of animal resources and veterinary services.

Extension services for governments help to make a practical research program, which will develop new crops and more productive varieties, improved livestock breeds and better methods of cultivation.¹

At present there are few people engaged in full time research in Iraq. However, most farmers will probably prove unwilling or unable to invest money or time in the cultivation of fodder crops or the use of fertilizers unless they are convinced through practical experience that such an investment is really worthwhile. In order to induce farmers to experiment themselves, the government might provide free seeds for fodder crops and defray part of the cost of fertilizers; or alternately make a flat money payment per dunum to

¹ International Bank for Reconstruction and Development, The Development of Iraq, Report of a Mission Organized by I.B.R.D., (The Johns Hopkins Press, U.S., 1952), p. 24.

those undertaking to use fertilizers or grow feed.

Of total workers in research in the General Directorate of Research, one of the branches of the Ministry of Agriculture for 1967, 16 had Ph.D. degrees, 21 had Master's degrees, 57 had B.S. degrees, and 41 had high school agricultural diplomas.² It is necessary to increase the experts in these fields by sending more students abroad for higher education, and by increasing the ability in this field in the College of Agriculture which has granted only B.S. degrees, in order to expand the extension or advisory service to farmers and livestock keepers.

Expenditure on bringing new knowledge to cultivators is probably one of the most productive investments open to Iraq. For it is thought agricultural experts agreed that agricultural yields per acre can be doubled by the application of techniques now known in the Western civilization. The research is a prerequisite to extension so we should speed up the basic research methods, since there is no place for agricultural extension without a stock of knowledge about agriculture.³

W. A. Lewis has suggested that the underdeveloped countries should spend on research of all sorts somewhere between one-half and one per cent of the national income.⁴

Agricultural productivity is also very low because little animal manure or commercial fertilizers are used, although half of the winter crop areas are left to fallow to build up fertility.⁵ Table 20 shows that the use of chemical fertilizers in agricultural production is very low.

² Iraqi Government, Annual Statistical Abstract, 1967, (Baghdad 1968), Table 89.

³ A.W.M. Al-Dahri, The Introduction of Technology Into Traditional Societies and Economies (using Iraq as a case study).

⁴ W.A. Lewis, The Theory of Economic Growth, (London 1955), p. 176.

⁵ A.W.M. Al-Dahri, The Introduction of Technology Into Traditional Societies and Economies, (using Iraq as a case study), p. 201.

Table 20. Total Chemical Fertilizers Imported to Iraq and Its Value.

Year	Metric Ton = 1,000 Kilogram	Value I.D.
1956	791	28,137
1957	1,363	50,730
1958	4,353	128,726
1959	1,643	51,495
1960	4,784	132,600
1961	6,413	108,818
1962	8,502	167,505
1963	10,308	212,116
1964	11,326	292,290
1965	13,010	316,629
1966	17,585	403,434
1967	31,460	720,842

Source: Annual Statistical Abstract for Agriculture 1967.

The total amount of chemical fertilizers imported in 1967 was 31,460 metric tons with the total cost I.D. 720,842, which was very small and insufficient for expanding agricultural production. Therefore, crop yields were low. Experiments conducted over a long period in the United States have shown the reaction of wheat yields to fallow, fertilizer and crop rotation. The results indicate that yields respond most favorably to fertilizers used in combination with a crop rotation scheme. The yields under various conditions were as follows in terms of bushels per acre:⁶

1. Continuous wheat, without fertilizer - - - - - 12.33
2. Continuous wheat, with fertilizer - - - - - 23.58
3. Wheat after one year of fallow - - - - - 22.00
4. Wheat in a 4-year rotation, without fertilizer - 24.20
5. Wheat in a 4-year rotation with fertilizer - - - 32.00

⁶International Bank for Reconstruction and Development, Op. Cit., p. 235.

Also we know that the peasant farmers are unfamiliar with the use of new methods in the agricultural process, such as using chemical fertilizers in planting, so it is necessary to show them correct methods in order to be more useful in increasing the agricultural production. This should be initiated by organizing an effective extension service to advise and counsel farmers and to work in education.

We can summarize by stating that to improve agricultural productivity we need to put emphasis upon:⁷

- (1) Diversification of production
- (2) Improved methods of cultivation
 - a. Dry farming techniques
 - b. Fallow practice
 - c. Tool and draft
- (3) Control of pests and disease
 - a. Livestock pests and mortality
 - b. Plant disease and pests
- (4) Education and research
 - a. Organization of an extension service
 - b. Expanding and strengthening the research department

The research should be concentrated on:

1. Soil management and conservation--soil survey
2. Introduction of new and better varieties of crops
3. Horticulture
4. Tools and machinery
5. Forestry
6. Animal husbandry

⁷Ibid., pp. 217 - 279.

As mentioned previously, a sufficient number of trained people are not available for such programs. Therefore, it is necessary to establish short term training programs at home to produce a large number of technicians. In addition, the government must initiate a program to send a larger number of qualified people abroad to get specialized training.

Economic Development Planning in Iraq

Low income nations have turned to planning as a tool to accelerate agricultural growth. An agricultural development program based on increasing economic incentive and commercial inputs may have several substantial advantages. It tends to reach more responsive farmers in the community who are, in any event, the ones who really do things. It is these exceptional farmers, the responsive margin, who are of the most concern in the early stages of agricultural growth. Using price incentives and market demands as a basis for decisions, farmers will tend to increase production in crops for which there is a high income elasticity of demand among consumers. Not only does this have the greatest immediate impact on subjective evaluations of progress among consumers (and on nutrition, since it is generally nutritionally important foods that have high income elasticity), but it also causes more additional purchasing power to be absorbed as investment for growth proceeds and, thus, helps most to contain inflationary forces. It tends to enhance capital formation because when a better farmer adopts a new, modern practice, there is more likely to be a relatively large change in his income; the increasing monetization necessary for using commercial inputs also encourages capital formation. Furthermore, the more active farmers, who respond best to economic incentives and information about new commercial inputs are the ones most likely to save and invest. Commercial inputs tend to be used on market crops--such as livestock feed, vegetables, and tobacco--rather than on those consumed in household, and so contribute to a cumulative increase of monetization and commercialization in agriculture.⁸

⁸J. Price Bitteringer, The Literature of Agricultural Planning, National Planning Association, Center for Development Planning, (Planning Methods Series No. 4, U.S. 1966), pp. 32-33.

Agriculture development planning has special problems because it deals with a sector which already contains a large quantity of resources and because the productivity and use of those resources is highly variable.⁹ The first step taken in Iraq for development planning was in 1950 when the "Development Board" was established by law No. 23, 1950. The second step was the establishment of the Ministry of Development in 1953.¹⁰ The Board first prepared a five year program with a total expenditure of I.D. 168,500,000. The Iraqi government replaced its earlier plan by a six year plan (April 1951 - March 1957) calling for an expenditure of I.D. 155,374,000 and the revenue for the same period was I.D. 168,740,000.¹¹

The execution of the six-year plan was entrusted to the Development Board. It was constituted under the presidency of the prime minister; the members were the Minister of Finance and six executive members nominated by the Council of Ministers for a term of five years, including three experts; one each in finance and economics; in irrigation, and in an unspecified field to be prescribed by the Council of Ministers. The Board was entrusted with the duty of preparing "a general economic and financial plan" for the development of resources of Iraq and the raising of the standard of living of the people.

The Board has its own budget, and its revenue consisted at the outset, of total revenue received from the oil companies. However, in 1952 this was amended to 70 per cent plus such other sums as may be allotted to it by Parliament and the proceeds of any loans, domestic or foreign.¹² In July 1953, the

⁹ John W. Mellor, The Economics of Agricultural Development, p. 381.

¹⁰ Lord Salter, The Development of Iraq, p. 126.

¹¹ U.N., Economic Development in the Middle East, 1945-54, (New York 1955).

¹² Ibid.

Ministry of Development was set up, headed by new cabinet minister who became the Board's representative on the Council of Ministers and the link between Parliament and the Board. The latter changed the organizational framework and required the new minister to prepare a new development plan to be executed after the completion of the present one.

Table 21. Proposed Expenditure and Revenue of the Development Board 1951-52 to 1956-57. (Thousands of I.D.)

Item	1951/52	1952/53	1953/54	1954/55	1955/56	1956/57	Total
REVENUE							
Oil revenue	10,150	18,960	32,900	34,300	34,300	34,300	164,640
Proceeds-Tharthar project loan	320	1,850	900	640	185	---	3,965
Misc. receipts	2	8	50	35	20	20	135
Total revenue	10,472	20,548	33,928	34,975	34,505	34,320	168,740
EXPENDITURES							
Administrative & research expenses	170	460	600	650	650	650	3,180
Irrigation projects	3,024	7,100	10,840	11,950	10,335	10,125	53,374
Roads and bridges	2,066	3,800	4,700	5,300	5,450	5,450	26,766
Buildings	2,368	2,650	3,100	3,300	3,300	3,300	18,018
Reclamation of land	1,686	3,450	4,150	4,400	4,600	4,700	22,986
Industries	50	3,000	5,000	6,000	8,000	9,000	31,050
Total Expend.	9,364	20,640	28,390	31,600	32,335	33,225	155,374

Source: Economic Developments in the Middle East, U.N. 1945-54.

One of the main purposes of this plan was to control floods and irrigation and that investment in agriculture was to be given priority in Iraq. The International Bank Mission itself focused attention upon the need for an

an integrated agricultural program, not only in dams and irrigation, but also in agricultural education and extension work, and the investment should be made in equipment, maintenance and professional training, as well as roads, schools, and hospitals.¹³ However, there was a gap between the allotment and the actual expenditures according to this plan as shown in Table 22.

Table 22. Total Allotments and Actual Expenditure in Agricultural Sector and Per cent of Actual Expenditure.

Year	Allotment	Actual Expenditure	Per cent of Actual Expenditure from total allotment
1951	3,584,000	1,072,400	29.9
1952	8,750,000	2,840,900	32.4
1953	13,340,000	6,201,400	46.5
1954	14,550,000	9,753,100	67.0

Source: The First Plan for the Development Board, Baghdad, p. 217.

The shortage in actual expenditures can be attributed to many reasons:

- (1) Estimation of the cost of such projects was overestimated.
- (2) The survey and study of the plan by the Board was insufficient and needed more emphasis on engineering and economy.
- (3) Lack of data, which was also important in order to construct a complete and correct plan.

The New Five-Year Plan

The Ministry of Development and the Development Board have approved the

¹³

A.W.M. Al-Dahri, The Introduction of Technology Into Traditional Societies and Economies, (using Iraq as a case study), p. 147.

new five-year plan 1955-1959 that has been suggested by Lord Salter (a British expert who worked in Iraq during the 1950's). Subject to approval by Parliament, the plan calls for an estimated total expenditure of I.D. 303,306,000. Revenue was estimated at I.D. 252,685,000. These are calculated on an estimated annual revenue of I.D. 43 million derived from a 70 per cent share of the oil receipts making a total of I.D. 215 million, plus a sum of about I.D. 37 million from previous years.¹⁴ The deficit of about I.D. 50 million is to be balanced by anticipated increase in oil revenue during this period.

According to the progress of the Plan, the development of the country's oil and water resources will again predominate in the new plan, which covers irrigation projects, flood control, canalization, drainage and land reclamation. A total of about I.D. 108 million is to be invested in these projects during the five years. Also in this Plan, as was true in the first one, there was a shortage of total expenditures from the allotment as shown in Table 23.

Table 23. Allotment and Actual Expenditures in Agricultural Sector and Per cent of the Actual Expenditures.

Year	Allotment	Actual Expenditure	Per cent
1955	15,241,600	12,727,700	83.5
1956	28,650,000	13,311,200	46.4
1957	27,750,000	14,070,400	50.7
1958	30,350,000	13,308,800	43.8
1959*	32,575,000	8,116,600	24.9

*Represents 9 months.

Source: The Second Plan for Development Board, p. 219.

¹⁴U.N., Economic Development in the Middle East, 1945-54, (New York 1955), p. 117.

Table 24. Second Plan 1955-1959.

Vote	Particulars	Provision for the year -					Total
		1955	1956	1957	1958	1959	
Chapter 1:							
1	Administration Expenses	650,000	650,000	650,000	650,000	650,000	3,250,000
2	Amortization of Thir- thar Loan	---	550,000	550,000	550,000	550,000	2,200,000
3	Irrigation Drainage & Storage Schemes	21,700,000	23,400,000	22,950,000	20,800,000	19,085,000	107,935,000
4	Roads and Bridges	10,970,000	16,200,000	13,130,000	8,450,000	4,950,000	53,700,000
5	Air Fields	500,000	1,500,000	1,000,000	1,000,000	1,000,000	5,000,000
6	Railways	5,500,000	2,500,000	2,500,000	2,500,000	2,500,000	15,500,000
7	Main Buildings	4,300,000	7,450,000	7,690,000	5,600,000	3,510,000	28,550,000
8	Industrial, Mining & Electricity	8,211,900	12,737,000	8,322,200	7,200,000	7,100,000	43,571,000
9	Development of animal, plant, & underground water resources	1,665,000	1,565,000	1,275,000	1,185,000	785,000	6,475,000
Total of Chapter 1		53,496,900	66,552,000	58,067,200	47,935,000	40,130,000	266,181,100
Chapter 2:							
10	Buildings & Institutes	6,250,000	6,250,000	6,250,000	6,250,000	6,250,000	31,250,000
11	Miscellaneous Projects	1,525,000	1,275,000	1,025,000	1,025,000	1,025,000	5,875,000
Total of Chapter 2		7,775,000	7,525,000	7,275,000	7,275,000	7,275,000	37,215,000
GRAND TOTAL		61,271,900	74,077,000	65,342,200	55,210,000	47,405,000	303,306,100
Estimated Revenues for the Five Years Ending 1959							
No.	Description of Revenue	1955	1956	1957	1958	1959	Total I.D.
1	Oil Revenues	43,000,000	43,000,000	43,000,000	43,000,000	43,000,000	215,000,000
2	Proceeds of Thirthar Project Loan	10,000	---	---	---	---	10,000
3	Miscellaneous Revenues	15,000	15,000	15,000	15,000	15,000	75,000
4	Interest	130,000	200,000	90,000	90,000	90,000	600,000
5	Provisionals brought forward from previous programme	37,000,000	---	---	---	---	37,000,000
Total of Revenues		80,155,000	43,215,000	43,105,000	43,105,000	43,105,000	252,685,000

A number of suggestions made by Lord Salter, such as scale and timing of each main class of projects, keeping in mind the availability of skilled personnel, were considered. Also there was consideration for the need of consequent action in the sphere of land tenure and taxation, health measures, and agricultural methods. The plan was also to prevent a serious inflationary rise of prices which might result from a sudden increase in purchasing power through development expenditure, by suitable monetary policy and by measures to insure that goods are available to meet the increased demand. It considered the most desirable priorities necessary to re-examine not only the priority of one main class of work, e.g., irrigation, in relation to other development projects (on roads or industries), but also priorities within a class in light of the economy as a whole.

The Plan for the Years 1961/62-1965/66

To give prospective and proportion to particular projects, it is necessary to have a clear conception of the general character of the national economy which will best serve its interests. No plan can be based upon exact calculations and implemented without modification over a long period.¹⁵ No plan can forecast exactly the consequences of a development policy. They depend largely upon the reaction to new economic incentives of different sections of society. They may also be affected by either external or domestic events.

Iraq's five year plan 1961/62-1965/66 was established after the agrarian reform through which some expenditures were allocated to this field. The Development Board of Iraq established in 1950 was abolished by the Executive

¹⁵Lord Salter, The Development of Iraq, p. 9.

Authority law No. 74 of 1959 and was replaced by an Economic Planning Board.¹⁶ This consists of representatives of the Ministries of Planning, Finance Industry, Agrarian Reform, Agriculture, Communication, Works and Housing, Social Affairs and Interior. The Prime Minister is chairman. Under the new set-up, the Economic Planning Board is not responsible for the actual implementation of the projects included in the Development Program. This has become the responsibility of the individual ministries. A new comprehensive development program has been put into operation on a longer-term basis. According to this plan, an expenditure of over I.D. 556 million has been made on development projects.¹⁷ The major projects in the agricultural sector are those related to water storage, irrigation and drainage, silos, ground water and agrarian reform. The investment allocations for irrigation and drainage alone constitute over 65 per cent of total allocations for the major projects in agriculture. In 1961, a 65,000 ton capacity grain silo in Basra was completed. Also silos of 24,000 ton capacity in Mosul and 16,000 ton capacity in Arbil were completed.

In 1963, the allocation of I.D. 3.6 million was made for the completion of the Dam Debendi-Khan, which had begun storing water in 1961. The plan also included total allotments of I.D. 4,306,000 for agrarian reform projects, I.D. 2,776,000 for silo projects and I.D. 4,500,000 for ground water projects. The total allotments for the agricultural sector was I.D. 87,259,000 which represented about 15 per cent of the total allotments of the entire plan. It is clear from this plan, there is a shortage in actual expenditures as well as in previous plans.

¹⁶U.N., Economic Development in the Middle East, (New York 1962), p. 39.

¹⁷Ibid., p. 18.

Table 25. Agricultural Projects in the Plan 1961/62 - 1964/65.

Projects	1961/62		1962/63		1963/64		1964/65	
	Allotment	Act. Exp.	Allotment	Act. Exp.	Allotment	Act. Exp.	Allotment	Act. Exp.
Principle Projects	6,470	231	2,100	938	1,410	254	1,020	425
Irrigation & Drainage	5,775	1,541	10,660	2,673	14,780	2,260	18,000	1,515
Ministry of Agriculture	3,802	457	4,312	979	4,020	527	3,328	1,055
Ministry of Agrarian Reform	1,799	457	1,107	326	800	228	600	227
Silo Projects	776	38	1,000	286	500	195	500	198
Ground Water Projects	1,000	99	1,000	784	1,250	976	1,250	334
Totals	19,622	2,823	20,179	5,986	22,760	4,440	24,698	3,754

Source: Economic Plan 1961/62 - 1964/65 for Economic Planning Board.

Comparisons of the pre-reform years 1955 - 1958 and past reform years 1959 - 1963, the average shows a decline in wheat from 775 to 717 thousand tons; barley from 1,010 thousand tons to 871; rice from 119 thousand tons to 106; and cotton from 31 thousand tons to 23 thousand tons.

The reform reduced production, first, through the extreme uncertainty caused by delay in distribution; on requisitional land owners did not cultivate more than expected to retain, while the cultivators did not know what land would be allocated to them. Second, it reduced production in the irrigation zone through the failure to replace landowners' functions in pump maintenance so that production could not have been much affected by its withdrawal. Cultivators could work with their own animals and graze them; they could use their own seed. Fertilizers were not missed because they had not been used, except on the cotton crop, where the decline in production was caused by lack of fertilizers and pesticides. In the north, where tractors were generally used, the shortage of machinery was a drawback. Spare parts took several months to obtain, while service and repair facilities were inadequate.¹⁸

The average for 1964-1967 shows an adjustment in most of the crops in comparison to 1959-1963 and higher averages in rice and wheat than in 1955-1958. So we can say that land reform started its correct function in 1964 and will be more efficient if a more successful policy is used to apply this law in the right direction.

¹⁸Doreen Warriner, Land Reform in Principle and Practice, (Clarendon Press, Oxford, 1969), p. 95.

CHAPTER IV

CONCLUSION

From previous chapters in this Report, we have noted that production, land use, methods in agricultural production, mechanization and so on, are still inefficient in the agricultural sector of Iraq, even after agrarian reform and after the new plans. However, we can suggest some steps that should be taken in order to solve most, if not all of the problems in agricultural development.

First - Land adjustment and the analyzation of the soil

It is clear that the lack of fertility of the land is one of the important reasons affecting agricultural production. Extensive areas of agricultural land became useless for planting because of insufficient water for irrigation. For this reason, it is necessary to analyze the soil in scientific ways, in order to understand whether or not it is economically sound to invest in this land. There are many factors which affect the productivity of the land:¹ (1) Lack of water for irrigation (2) lack of drainage and (3) bad chemical and physical characteristics of the land. By analyzing the problem area, we are able to suggest the proper investment or the project needs, thus we avoid the waste of resources. That is, if the land is found to be classified under Number 3 (bad chemical and physical characteristics), there would be no need to invest in drainage or irrigation projects. In other words, the cost of laboratory work will be much less when investment takes place without preliminary reconnaissance, especially in the selection of land for irrigation and drainage projects.

¹Egypt Agrarian Reform Mission, Agriculture and Agricultural Policy in Iraq, (Baghdad 1964).

Second - Mechanization in agriculture

Increased use of machines in the agricultural process is very important to increase total production and to increase the income for the farmers, more saving, and more capital formation. In this sense, capital-intensity should be used for the agricultural process. A recent study for mechanization in Iraqi agriculture has been made by the experts of the agricultural machinery department in the Ministry of Agrarian Reform. The total cost of the expanded program of mechanization estimated to be about I.D. 90 million--I.D. 60 million for machines and equipment and I.D. 30 million for repair workshop and building.² The introduction of industries such as oil, processing and textile is already causing numerous peasants to leave the countryside, looking for employment in the industry plants. Although their wages are still low and their standard of living still near the subsistence level, these people prepare for the new jobs. Looking to the future, the growth of the population may not add to the number of peasants but to a steadily increasing number in agriculture. This is necessary and even a precondition to industrial development.³ It is clear from this point that the problem of balance of payment will occur since all of the machines are imported from abroad. However, in the case of Iraq, this problem might not occur in full term in that foreign exchange is available from the oil production. Also there is another factor related to introducing machinery in the agricultural process. Usually animals are used in the agricultural process, such as for planting and transportation; so substituting machines for animals leads to placing more emphasis on the use of animals for producing foods, such as milk, eventually

²The Iraqi Economic Association, The Economist, "Economic Aspects of Technological Advance in Iraqi Agriculture," July 1961, Vol. II, No. 1, p. 8.

³A.W.M. Al-Dahri, The Introduction of Technology Into Traditional Societies and Economies (using Iraq as a case study), p. 211.

increasing the total production of livestock in general.

Since Iraq does not produce agricultural machines at home, all machinery is imported from abroad. In order to choose a best way of importing machines we notice two things:

(1) Choose the types of machines which are suitable for the agricultural conditions and needs.

(2) Importing spare parts for this machine should be continuous to keep the machines working.

It is necessary to establish training stations to teach the farmers how to use these machines.

Third - Expansion and improvement of livestock production⁴

The main impetus for the development of animal husbandry will come from the production of irrigated land, but also on rain fed fields. The increased supply of feed from cropland will facilitate measures for a rational utilization and increased productivity of the natural range. On the other hand, rising incomes in the region will increase the demand of livestock products, while export markets are also promising. Livestock improvement will require action along the following lines:

(1) Management of the range. This will insure administrative measures for the control of grazing; restoration of the range through re-seeding, spreading, rotated grazing, etc.

(2) Control of parasites and disease. This will demand stronger veterinary services, with an increased number of veterinarians to advise the farmers and stockowners on the prevention and treatment of animal pests.

(3) Breeding work in order to select animals which will be able to take full advantage of the improved management and give higher yields.

⁴U.N., FAO, Mediterranean Development Project, (Rome, Italy 1959), p. 138.

(4) Improved facilities for processing and marketing livestock products.

Fourth - Expansion of agricultural credits

We noticed from previous study that the Agricultural Bank is the only state source for agricultural credit in Iraq. With small paid capital this Bank is not able to provide the whole credit for the farmers, which they need for the agricultural process. The repayment for the financial year 1967-68 by the farmers was only 17 per cent of the total credit.⁵ It is clear that most of the credit not returned by the farmers means that their income is very low. This is attributed to the low production for various reasons.

To solve the financial problems in agriculture, it is necessary to increase the capital for the Agricultural Bank and to insure the repayment by the farmers. It is necessary also that the credit of the Bank be used in the agricultural process, so to increase the production by the farmers, so that they will be able to pay back the loan and increase more and more the ability of the Bank to extend credit. It is also necessary to establish the short-term credit especially one used for marketing, which is important to deliver the products to the markets.*

Fifth - Agricultural service must be expanded in order to insure technical support for the development plans.⁶

Extending the rate of progress in the conservation, development and rational use of agricultural resources will depend to a very high degree on a system of efficient technical agricultural services. Urgent action is needed along the following lines:

⁵ Iraqi Government, The Agricultural Bank for the Financial Years 1967-68, (Baghdad 1968).

* See also page 40.

⁶ U.N., FAO, Mediterranean Development Project, (Rome, Italy 1959), p. 139.

(1) Agricultural research must be strengthened and expanded so as to gradually serve all the major agricultural enterprises.

(2) An efficient extension program is needed to advise and encourage farmers in improving the management of their farms. This need assumes great urgency in view of the conditions arising from the agrarian reform being implemented in the region.

(3) The expansion and reorganization of the services should give special attention to the need for co-ordination of the above program, so that they may assure mutual support.

Sixth - Co-operative system

Co-operative societies are very important for the farmers. The small farmer alone is not able to finance all the agricultural process. Therefore, co-operatives may play a useful role by influencing their members through publication, technical meetings, and study groups, and by stimulating a co-operative approach to common problems.⁷

It is useful to increase the numbers of co-operatives in Iraq which will affect the increase of the use of machinery by the encouragement of these societies and by their machinery training sessions. The government should encourage the establishment of new co-operatives and also to finance these co-operatives in order to become able to support its members. Also provide to these societies supervisors to explain to the farmers the benefit of becoming members in the society. The flexibility of co-operation is very necessary in order to serve its members in a correct way. It is necessary to establish various kinds of co-operatives, each kind responsible for one or two processes, such as production co-operative, marketing co-operative and so on.

⁷U.N., FAO, Mediterranean Development Project, (Rome, Italy 1959), p. 100.

Seventh - Formulation of the development plans and their execution needs a careful study of the needs. As such the following steps are considered to be preliminary for such appraisal:

- (1) Preparing a well-studied plan for the agrarian reform.
- (2) Forming a Board of Directors of the agrarian reform in order to study all of the agricultural development plans and make their performances possible.
- (3) Make legislation for the agricultural development, similar to the industrial law, in order to protect all of the agricultural products through the importing and exporting tax duty.
- (4) Make a legislation for rural service. This would give some privileges in promotion of the officials who work on the farm to encourage the people to work there.

Developing an underdeveloped country is a slow process. Because every program included in the development plans do have greater impact on not only the economic set-up of a country but also on the culture and traditions followed by the people of the country. Therefore, one has to carefully plan and execute the development programs in such a manner that economic development does not come in the way of culture and tradition of the people of Iraq. The ball of development has been set moving and it is hoped that it would gain momentum, move at an accelerated phase, and reach the goal-- the goal of creating a prosperous and advanced Iraq.

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AGRICULTURAL DEVELOPMENT IN IRAQ

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AN ABSTRACT OF A MASTER'S REPORT

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Iraq is located in the Middle East with a total population of 8,250,000.

The purpose of this paper is to describe and analyze some of the major agricultural problems in Iraq, such as production, irrigation, finance, marketing and labor force.

The most commonly cultivated agricultural crops are wheat, barley and similar grains. These types of crop production are very specialized; it is difficult for the country's economy to depend on the income derived from the sale of these products. Added to this, the foreign exchange earning capacity of these products is very little. As such, diversifying production would help the country in cutting off imports, and overcome the foreign exchange problem. Another problem is that, at present, agriculture in Iraq is mainly supported by rainfall and irrigation by wells. This type of irrigation severely limits the area of land under cultivation. Irrigation facilities could be expanded by constructing dams and canals to utilize surface waters.

In addition, the biggest problem retarding the country's development may be mass illiteracy in rural areas. Development requires promotion for mass education to the vast majority of people living in the rural areas.

Lack of financial institutions to extend rural credits, and marketing institutions to channel the product produced also greatly hinders the process of economic development. Therefore, improved organization of financial institutions and marketing organizations is needed.

Development planning in the country began during the year 1950. The first plan covered the years 1951-1957, and emphasis was placed on irrigation projects with the view of assisting the agricultural sector of the economy. A second plan, covering the years 1955-1959, followed the recommen-

dations made by Lord Salter, and other British experts and emphasis was placed on agricultural sector. The third plan for the years 1961-1966, established after the agrarian reform of 1958, reviewed the plan allocations to effectively and efficiently utilize the available resources at home and emphasis was placed on industrial sector as well as the agricultural sector.

In brief, for a proper development in the agricultural sector, the following suggestions should be considered: (1) classification of the cultivated land according to its fertility and suitability for the cultivation of particular class of product, (2) mechanization of agricultural production, (3) expansion of agricultural credit and, (4) the accelerated adoption of improved technology through an efficient network of rural extension services.