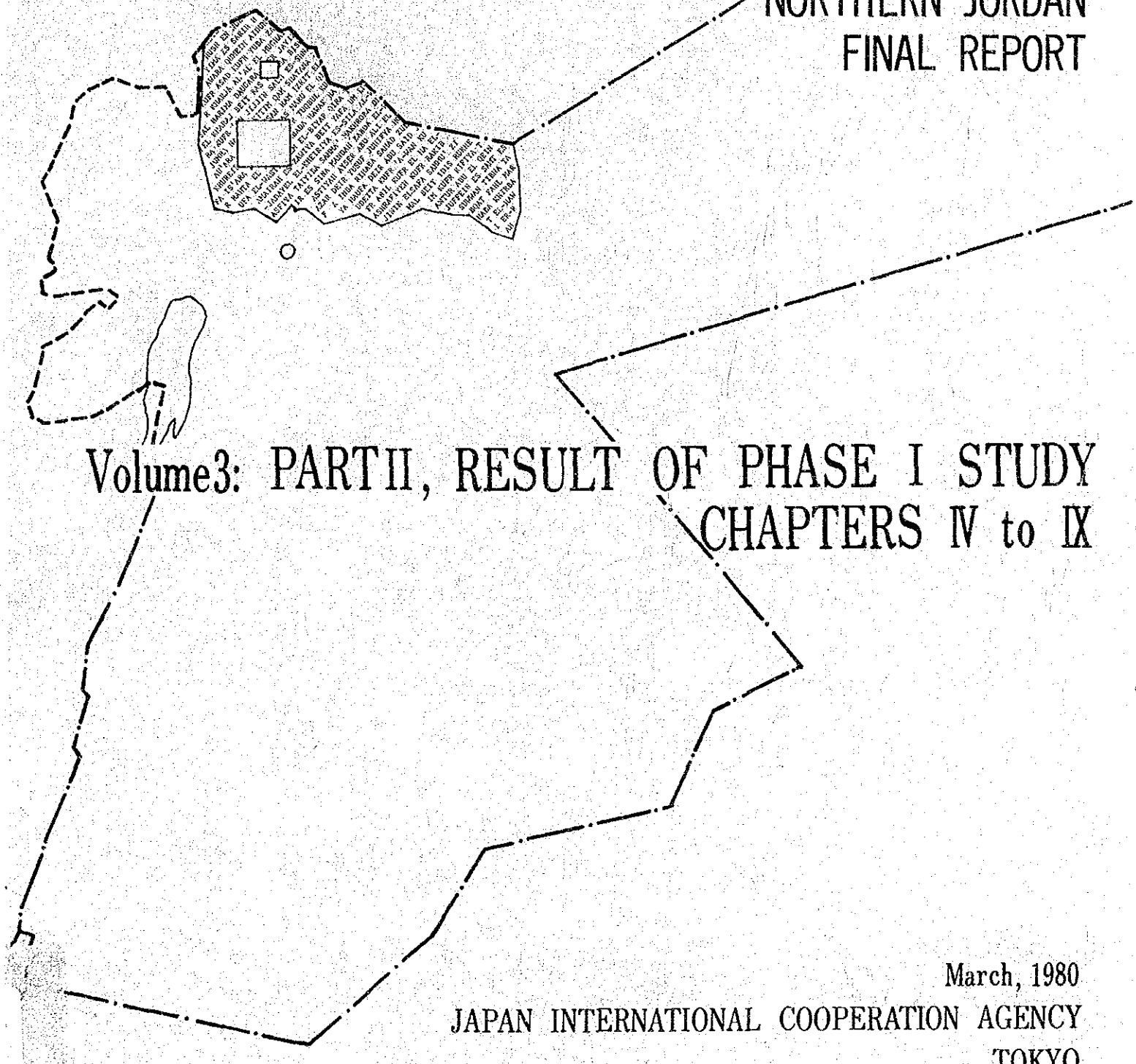
THE HASHEMITE KINGDOM OF
JORDAN

INTEGRATED REGIONAL DEVELOPMENT STUDY OF NORTHERN JORDAN
FINAL REPORT



Volume3: PART II, RESULT OF PHASE I STUDY
CHAPTERS Ⅳ to Ⅸ

March, 1980
JAPAN INTERNATIONAL COOPERATION AGENCY
TOKYO

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HUMAN RESOURCES

4.1 Population Profile

04.001 It must be pointed out, at the very beginning, that Jordan lacks comprehensive information on the recent demographic and economic characteristics and their past trends of its population. The most comprehensive information available, as of 1978, is still the First Census of Population and Housing conducted in 1961. With internal disturbance, no data comparable in coverage and detail have been compiled since then.[1/] The current characteristics of the Jordanian population and labour force have to be constructed from several variously designed and somewhat contradictory sample surveys, and from the informed estimation by the Jordanian specialists, and as such must be interpreted with due caution.

4.1.1 Population Growth and Its Distribution

a. East Bank

04.002 At the time of the 1961 Census, the total population of Jordan numbered 1.76 million, with some 60,000 among them residing abroad. The population of the East Bank numbered 0.9 million, or about 53 percent of the total excluding the Jordanians abroad. The majority of the East Bank population was concenterated in two governorates of Amman (48 percent) and Irbid (30 percent), then known as Ajlun.

04.003 Table 4.1 shows population estimates published by the Department of Statistics for the succeeding years. It must be noted however, that these figures were prepared by estimating annual rates of natural increase for the total population, with no account taken of internal and international mobility except the 1977 figure. Up to 1968, for instance, the percentage distribution at the time of the 1961 census was uniformly applied to estimate populations of the respective governorates. The estimates for 1969 and 1970 took into account,

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1/ The census law no. (24) for 1950 and its modifications indicated a general population census every ten years at most. Yet the Israeli aggression and 1st occupation of the West Bank of Jordan in 1967 and the consequent political conditions have so far postponed the undertaking of another census. However, the second general population census is scheduled by the Department of Statistics for the year of 1979.

Table 4.1 Population of East Bank, 1961, 1967 to 1977

	1961	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977 (estimates)	Average annual increase 1961-75
East Bank	900,776	1,094,000	1,126,000	1,594,000	1,668,000	1,723,000	1,774,000	1,831,000	1,890,000	1,951,968	2,018,407	2,126,540	5.7
(%share)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	
Growth%		3.3	3.0	41.5	4.6	3.3	3.0	3.2	3.2	3.3	3.4	5.4	
Amman	443,618	526,000	542,000	905,000	943,420	972,000	1,000,000	1,032,000	1,065,000	1,098,477	1,138,860	1,219,108	6.7
(%share)	(48.1)	(48.1)	(48.1)	(56.8)	(56.4)	(56.4)	(56.4)	(56.4)	(56.3)	(56.3)	(56.4)	(57.3)	
Growth%		3.3	3.0	67.0	4.2	3.0	2.9	3.2	3.2	3.1	3.7	7.0	
Irbid	273,976	334,000	343,000	457,000	476,380	491,000	506,000	522,000	539,000	563,990	581,521	600,076	5.3
(%share)	(30.4)	(30.5)	(30.5)	(28.7)	(28.6)	(28.5)	(28.5)	(28.5)	(28.5)	(28.9)	(28.8)	(28.2)	
Growth %		3.3	2.6	33.2	4.2	3.1	3.2	3.2	3.3	4.6	3.1	3.2	
Balqa	79,057	95,000	98,000	98,000	102,250	110,000	114,000	118,000	122,000	129,867	133,638	138,100	3.6
(%share)	(8.8)	(8.7)	(8.7)	(6.1)	(6.1)	(6.4)	(6.4)	(6.4)	(6.5)	(6.7)	(6.6)	(6.5)	
Growth%		3.1	3.2	1.0	4.3	7.6	3.6	3.5	3.4	6.4	2.9	3.3	
Karak	67,211	81,000	83,000	84,000	87,570	90,000	92,000	95,000	98,000	108,037	111,262	113,751	3.4
(share%)	(7.5)	(7.4)	(7.4)	(5.3)	(5.2)	(5.2)	(5.2)	(5.2)	(5.2)	(5.5)	(5.5)	(5.3)	
Growth%		3.2	2.5	1.2	4.3	2.8	2.2	3.3	3.2	10.2	3.0	2.2	
Ma'an	46,914	58,000	60,000	50,000	58,380	60,000	62,000	64,000	66,000	51,597	53,126	55,505	0.7
(share%)	(5.2)	(5.3)	(5.3)	(3.1)	(3.5)	(3.5)	(3.5)	(3.5)	(3.5)	(2.6)	(2.6)	(2.6)	
Growth%		3.6	3.4	- 16.7	16.8	2.8	3.3	3.2	3.1	-21.8	3.8	4.5	

Sources: 1961 figure from The First Census of Population and Housing 1961.
1967-1976 figures from Statistical Yearbooks, 1967-76.
1977 figure estimated by the Department of Statistics.

Note: The population of 1977 was obtained at a growth rate of 4.3% for 1976 as well as 1977, taking into account of the estimated net immigration of 0.9% per annum.

in addition to the natural increase of about 3.2 percent some 500,000 refugees who were expelled from the West Bank as a consequence of the 1967 War and moved mostly into the governorate of Amman and, to a lesser extent, to that of Irbid. This significantly changed the regional distribution of population on the East Bank, when the aggregate share of Amman and Irbid Governorates increased to 85 percent.

04.004 For the succeeding years, the population figure was again calculated on the basis of the estimated natural increase for the total population, with regional distribution by governorate keeping virtually the same proportion established in the beginning of 1970s. These figures apparently did not take into consideration the emigration of the Jordanians, the magnitude of which is said to have jumped during the period. A sudden increase of 5.4 percent in 1977 over the preceding year is due to an annual net immigration of 0.9 percent estiamted for 1976 as well as 1977 in addition to the natural increase of 3.4 percent. Presumably, the inflow of immigrant workers from negihboring Arab and other Asian countries are judged to have surpassed the out-migration of the Jordanians, thought the basis for estimating some 40,000 immigrants over two years was not specified.

04.005 As can be seen from the foregoing description, the Yearbook series of population estimates may indicate a broad growth trend over the last 15 years but are by no means susceptible for detailed examination, especially for grasping regional trends of population growth. However, the population figure for 1975 seems to have a firmer statistical basis. Its regional distribution was reportedly derived by adjusting the population counts enumerated by community at the undertaking of the Agricultural Census in 1975, which appears to have been reflected in perceptible changes in population distribution by governorate compared to the preceding years.

04.006 The major defects of the said Census which had to be adjusted are, according to the account given at the Demographic Section of the Department of Statistics, the substantial under-counting of urban population (notably of such major cities as Amman, Zarqa and Irbid) and the exclusion of people living in small isolated hamlets and scattered tent-dwellers. In the absence of the more reliable demographic information, the adjusted 1975 figure will have to be used as a reference point, assuming that its population counts by community cover both the natural increase and social mobility after 1961, though incapable of distinguishing their respective contribution to the regional population changes over the 14 years period.

04.007 During the period from 1961 to 1975, the population of the East Bank a little more than doubled to 1.95 million, with the average annual growth rate amounting to 5.7 percent. During the period, the urbanization of the population progressed rapidly. The aggregate population of 11 cities which were defined as "fully urban" at the time of the 1961 Census grew by 7.0 percent per annum, with its share in the total population increased from 51.5 percent

Table 4.2 Growth of Urban Population, East Bank

Major Cities 1/	1952	1961	1967	1975	1977 (Estimates)	Average annual increase 1961-67	Average annual increase 1961-75	Average annual increase 1975-77
Amman	108,304	246,475	330,220	652,000	732,587	5.0	7.2	6.0
Zarqa	31,496	96,080	121,303	244,700	269,780	4.0	6.9	5.0
Ruseifa	793	6,200	10,350	38,200	42,115	8.9	13.9	5.0
Madaba	8,545	11,224	n.a.	27,300	29,527	n.a	6.5	4.0
Irbid	23,157	44,685	62,563	128,000	139,780	5.8	7.8	4.5
Ramtha	8,779	10,791	n.a.	24,012	17,243	n.a	5.9	4.5
Mafraq	6,009	9,499	n.a.	16,094	26,219	n.a	3.8	3.5
Salt	15,478	16,176	n.a.	26,800	28,800	n.a	3.7	4.0
Karak	5,539	7,422	n.a.	11,869	12,710	n.a	3.4	3.5
Ma'an	4,509	6,643	n.a.	11,995	12,854	n.a	4.3	3.5
Aqaba	2,835	8,835	13,480	15,883	17,842	7.1	4.2	6.0
Total	215,444	464,103	538,276	1,196,853	1,329,642	5.9	7.0	5.4

Source: First census of population and Housing 1961 and Population Census and Internal Migration 1967, and estimation by the Dept. of Statistics.

Note: 1/ Cities which are defined as fully urban in the 1961 Census.

to 61.3 percent (Table 4.2). The number of communities with a population of 5,000 or more increased from 12 in 1961 to 31 (excluding refugee camps which were enumerated separately from adjacent local communities) in 1975, and their aggregate population expanded from 470,000 (52 percent of the East Bank population) to around 1,470,000 (75 percent).

04.008 Of the five governorates, Amman recorded the highest annual growth of 6.7 percent when its population increased nearly 2.5 times over the period. This is no doubt due to the rapid expansion of its urban population, partly influenced by the influx of refugees that occurred in late 1960s. The increase of aggregate population in its four urbanized centers, viz., Amman, Zarqa, Ruseifa and Madaba which were considered as fully urban in the 1961 Census, was 7.3 percent per annum, and accounted for little over 90 percent of the increase of the total governorate population. Especially, the population growth in Amman and Zarqa dominates on the National level, amounting to three-fourths of the increase of the total urban population (11 cities) and a little over one half of the increase of the total East Bank population.

04.009 Due to the overwhelming concentration in Amman, the growth rates of population in other four governorates were below the National average: Ma'an at the rate as low as 0.7 percent per annum and Karak and Balqa at the rates slightly higher than the average annual natural increase rate estimated for the period. Irbid, however, grew by 5.3 percent annually, reflecting the fact that the Governorate had been subject to the similar demographic forces, though smaller in impact, to Amman; the influx of refugees and the accelerated growth of the aggregate population in its "fully urban" centers, viz., Irbid, Ramtha and Mafraq, at the rate of 7.0 percent per annum.

b. Study Area

04.010 Table 4.3 shows the population distribution in Irbid Governorate by administrative unit effective as of 1978 and its changes over the period from 1961 to 1975. However, because administrative boundaries are not exactly the same between the two years of 1961 and 1975, it must be understood that the growth trends and changes in population density of the respective units give only a rough picture of the situation.

04.011 Administrative units with especially substantial boundary changes are what are now called Irbid Gatha (Sub-district), Bani Kinana Gatha (Sub-district), Taiyiba Nahiya, El-Mazar Shamaliya Nahiya and Kura Gatha (Sub-district), among which the internal division was apparently shifted since 1961, though their aggregate area did not seem to have changed much, provided of course that the current El-Aghwar Shamaliya Mutserfieh (District) has roughly the same area as the total of Shuna Shamaliya and the Ghor Ajlun in the 1961 Census respectively included in Irbid Sub-district (which at the time included Taiyiba, Mazar Shamaliya and Bani Kinana in addition to Shuna Shamaliya) and Ajlun Sub-district. Another is Jerash District, from which a sizable portion was transferred to Zarqa District of

Table 4.3 Population Distribution in Irbid Governorate

Administrative Unit as of 1978	Population 1961	Population 1975	Annual Growth (%)	Population Density 1961 Area(km2)	1961 Persons/km2	1975 Area(km2)	1975 Person/km2
Irbid Sub District	74,050 2/	222,702	8.2			507.0	439
Taiyiba Nahiya	12,519	11,176	-0.8			88.0	127
El Mazar Nahiya	7,040	17,160	6.5			86.0	25
Bani Kinana Sub District	14,926	26,473	4.2			234.5	113
Sub- Total	93,616	251,038	7.3	(876.5)	124	681.0	369
Kura Sub-District	23,955	32,710	2.2	273	88	210.0	156
Sub- Total	132,497	310,221	6.3	(1,149.5)	115	1,125.5	276
Ajlun District	26,093 3/	45,073	4.0	(412.0)	63	412.0	109
El-Aghwar Esh	29,357 4/	44,162	3.0	(195.5)	150	195.5	226
Esh-Shamaliya District							
Jerash District	23,377	61,343	7.1	575	41	411.5	149
Ramtha District	19,175	42.009	5.8	458	42	422.0	100
Mafraq District	25,314	60,682	6.4	1,095	23	2,123.0	29
				(2,123.0)	12		
Scattered Tent Dwellers	18,163	-					
Total Irbid Gov:	273,976	563,490 5/	5.3	3,885	71	4,689.5	120
				(4,689.5)	58		
Study Area 6/	244,619	519,328	5.5	(3,689.5)	66	4,494.0	116
				(4,494.0)	44		

Source: First Census of Population and Housing 1961. Information made available at the Department of Statistics.

Notes:
1/ The area for 1961 is as measured in the 1961 Census, except for the figures in parenthesis which are derived by subtracting the northern Ghor area as mesh-measured in 1978 from Ajlun Sub-District and Irbid Sub-District in 1961.
2/ The total of Irbid Town and Irbid Rural as defined in the 1961 Census, excluding Taiyiba, Samma and Mazar Enumeration Districts.
3/ The figure excludes the Ghor Ajlun Enumeration District as defined in the 1961 Census.
4/ The total of the Ghor Ajlun Enumeration District and the Shuna Shamaliya Census Area as defined in the 1961.
5/ The figure shown here is obtained by aggregating the population counts by named settlement as originally collected by the agricultural Census and subsequently adjusted by the Department of Statistics. Although it does not exactly tally with the figure shown on Table 1, the difference is small enough to be ignored.
6/ It excludes El-Aghwar Esh-Shamaliya District.

Amman Governorate. The area of Mafraq District also differs between the two years. However, this is not because there was an explicit boundary shifting during the period, but because the settled area as defined in the 1961 census to eliminate the eastern desert area of the district is different from the area defined for the present Study.

04.012 Lastly, there is the problem of scattered tent dwellers, of which mention is made simply to note, for lack of information to remedy the situation, the uncertainty concerning their exact size. They were separately enumerated at the time of the 1961 Census and accounted for nearly 7 percent of the Governorate population, though the coverage does not appear to have been fully complete, and it is not possible to allocate them to respective administrative units. In contrast, they were not enumerated at all at the time of the Agricultural Census of 1975, but are said to have been taken into account when the Department of Statistics adjusted the population counts of the said Census, though how and where they were taken into account is unknown.

04.013 When the eastern boundary which defines the Study Area is used for the purpose of comparison, the population density of Irbid Governorate slightly more than doubled over the 14-year period from 58 to 120 persons per sq. km. The same applies to the Study Area, though the absolute figures are lower at 54 in 1961 and 116 persons per sq km in 1975 with a higher growth rate of population at 5.5 percent. This is due to the exclusion of the Ghor area which, though relatively densely populated (150 and 226 persons/km^2 in 1961 and 1975, respectively), grew only at 3.0 percent per annum.

04.014 This rapid population expansion in the Study Area from 245,000 to 520,000 was due to the urbanization with its center in Irbid Municipality though not limited to the city alone. Moreover, the influx of refugees after 1967 must have been one of the major demographic forces behind this rapid growth of urban population. As can be seen on Table 4.4, in 1975 about 50 percent of the population in the Study Area lived in communities with a population of 5,000 or more, compared to about 30 percent in 1961, and the share of people living in communities having less than 1,000 inhabitants declined from 35 percent to 17 percent.

04.015 The largest increase in density probably occurred in the present Irbid Sub-district where Irbid Municipality is located, though for lack of comparable information on the area size for 1961 makes it impossible to show this in exact figures. Over the period, Irbid Municipality nearly tripled its population, with an annual growth rate of 7.8 percent (Table 4.5), accounting for 23 percent of the total Study Area population in 1975 compared to 16 percent in 1961. The concentration of population in the Sub-district is not solely due to the expansion of the Municipality, but to the existence of other fair-size communities which substantially increased their demographic size. As shown on Table 4.4, there were 29 communities (excluding Irbid Municipality) which had a population of 3,000 or more in 1975 in the Study Area, the aggregate population of which grew at an average rate of 6.1 percent in 14 years. Of these

Table 4.4 Distribution of Population by Community Size in Irbid Governorate, 1961 and 1975

	10,000 or more		5,000 - 9,999		3,000 - 4,999		1,000 - 2,999		Less than 1,000	
	1961	1975	1961	1975	1961	1975	1961	1975	1961	1975
Irbid Sub-District	44,685(1)	145,848(2)	-	14,680(2)	7,118(2)	24,850(7)	21,234(15)	27,489(15)	-	9,835
Taiyiba Nahiya	-	-	-	5,168(1)	-	-	4,255(2)	4,679(2)	-	1,329
El-Mazar Esh-Shamaliya Nahiya	-	-	-	5,367(1)	-	-	7,016(4)	9,056(4)	-	2,737
Bani Kinana Sub-District	-	-	-		-	7,109(2)	7,273(5)	13,337(7)	-	6,027
Kura Sub-District	-	-	-	-	-	14,606(4)	9,855(6)	16,090(9)		2,014
Sub: Total	44,685(1)	145,848(2)	-	25,215(4)	7,118(2)	46,565(13)	49,633(32)	70,651(37)	31,061	21,942
Ajlun District	-	-	5,390(1)	12,919(2)	7,085(2)	8,091(2)	6,832(5)	11,891(7)	6,786	12,172
Jerash District	-	25,551(2)	-	-	7,055(2)	3,016(1)	3,866(3)	11,574(7)	12,456	21,202
Ramtha District	10,791(1)	24,012(1)	-	5,397(1)	-	4,000(1)	4,301(2)	5,326(3)	4,083	3,274
Mafraq District	-	16,094(1)	9,499(1)	-	-	-	-	13,303(8)	15,815	31,285
Study Area	55,476(2)	211,505(6)	14,889(2)	43,531(7)	24,300(7)	61,672(17)	64,632(52)	112,745(62)	85,322	89,875
El-Aghwar Esh-Shamaliya District	-	-	-	28,433(4)	3,462(1)	3,086(1)	8,606(5)	8,606(5)	17,235	4,037
Total Governorate	55,476(2)	211,505(6)	14,889(2)	71,964(11)	27,964(11)	27,762(8)	64,758(18)	73,292(57)	121,351(67)	93,912

Sources: First Census of Population and Housing 1961 and estimates by the Department of Statistics.

Note: The figure in parenthesis shows the number of communities.

Table 4.5 Population by Community (3,000 or More in 1975) in the Study Area

Settlement	(Admin Unit)	1961	1975	Annual Growth (%)
Irbid	(Irbid)	44,685	128,000	7.8
Ramtha	(Ramtha)	10,791	24,012	5.9
El-Husn	(Irbid)	3,728	17,848	11.8
Mafraq	(Mafraq)	9,499	16,094	3.8
Suf	(Jerash)	3,259	15,047	11.5
Jerash	(Jerash)	3,796	10,504	7.5
(Sub: Total)		(75,758)	(228,614)	(7.6)
Nu'eima	(Irbid)	2,206	7,672	9.3
Sarih	(Irbid)	3,390	7,008	5.3
Kufr Anja	(Ajlun)	3,922	6,930	4.1
Anjara	(Ajlun)	3,163	5,989	4.7
Et-Turra	(Ramtha)	2,331	5,397	6.2
Mazar Shamaliya	(Mazar)	2,820	5,367	4.7
Taiyiba	(Taiyiba)	2,606	5,168	5.0
(Sub: Total)		(20,438)	(43,531)	(5.5)
Hawara	(Irbid)	2,342	4,655	5.0
Judeita	(Kura)	2,278	4,351	4.7
Kufr Saum	(Bani K.)	1,439	4,103	7.8
Ajlun	(Ajlun)	5,390	4,087	- 1.9
Birkeh	(Ajlun)	-	4,004	
Shajara	(Ramtha)	1,970	4,000	5.2
Deir Abu Said	(Kura)	1,927	3,872	5.1
Aidun	(Irbid)	1,700	3,706	5.7
Mughayir	(Irbid)	1,891	3,387	4.2
Bishra	(Irbid)	1,560	3,379	5.7
Kufr Yuba	(Irbid)	1,565	3,269	5.4
Ashrafiya	(Kura)	1,475	3,258	5.8
Kufr Asad	(Irbid)	1,484	3,238	5.7
Beit Ras	(Irbid)	1,280	3,216	6.8
Kufr Al Ma	(Kura)	1,517	3,125	5.3
Sakib	(Jerash)	1,552	3,016	4.9
Malka	(Bani K.)	1,634	3,006	4.4
(Sub: Total)		(31,004)	(61,672)	(5.0)
GRAND TOTAL:		127,200	333,817	(7.1)

Source: Information from the Dept. of Statistics.

Notes:
1. Figures for El-Husn and Suf respectively include adjacent refugee camps.
2. Settlements with a population of 3,000 in El-Aghwar Esh Shamaliya District number five: Esh-Shunah Esh-Shamaliya (7,990), Kreimeh (7,595), El-Mashari (7,385). Wadi Elyabis (5,463), and Waqqass (3,081), with an aggregate growth rate of 7.9% per annum.

communities, 10 are located in Irbid Sub-district, with their aggregate population increased at 7.4 percent and accounting for 11 percent of the total Study Area population in 1975. El-Husn had the highest growth of 11.8 percent mostly due to the establishment of a large refugee camp after 1967. The increase of population in these 10 communities plus Irbid Municipality amounts to over two-fifths of the increase of the total Study Area population over the period.

04.016 What is defined by the Ministry of Municipal and Rural Affairs as the Greater Irbid Area, comprising Irbid Municipality, 7 communities having 3,000 or more inhabitants and 4 small villages, 2/ had a population of about 177,000 in 1975 or 80 percent of the Sub-district total, with its growth rate over 14 years at 7.6 percent per annum. According to the MMRA's calculation, the Greater Irbid Area covers 213 sq. km, with its population density thus amounting to 833 persons per sq. km.

04.017 Other administrative units which showed a substantial increase of population during the period are two districts of Jerash and Mafraq. The population of Jerash District grew at an annual rate of 7.1 percent, with its density more than tripled. But this demographic expansion must have owed a great deal to the influx of refugees after 1967 as well as to the growth of Jerash Town at 7.5 percent per annum. The refugees living at an emergency camp for people from Gaza and another camp at Suf alone number about 15,000 or one-fourth the district population in 1975, and if these refugees are excluded, the population growth is lower than the Study Area average, at around 4.5 percent.

04.018 Population increase in Mafraq Mutserfieh (District) is characterized by a moderate growth in its urban center, Mafraq Town, at a rate of 3.8 percent per annum, and a rapid increase of small settlements. 8 communities which had a population of 1,000 - 2,999 in 1975 had grown at an annual rate of 7.9 percent in 14 years, and their aggregate increase in absolute number (8,718) was larger than that of Mafraq Town. Communities with a population of 100 - 999 numbered 46 in 1961 but increased to 57 in 1975. Granted that the area size is not the same in two years, it is reasonable to suppose that the major demographic change in this district over the period had been gradual settlement of the area previously uninhabited.

04.019 The population growth of Ramtha District at 5.8 percent per annum was slightly lower than the administrative units mentioned above, though higher than the Study Area average. With the annual growth at 5.9 percent, the primacy of Ramtha Town was changed, accounting for 58 percent of the increase of the district population.

2/ 7 communities are El-Husn, El-Sarih, Hawara, Aidun, Mughayir, Bishra and Beit Ras. 4 villages consist of Sal, Hakama, Maru and Zabada Farkhu. Ministry of Municipal and Rural Affairs, "Irbid Governorate and Greater Irbid Area", prepared by Dr. S. Tell, 1977, mimeo.

A notable change over the period is found in the growth of fair-sized communities such as Et-Turra and Shajara and a decline of the population living in communities having a population less than 1,000.

04.020 Ajlun District registered the lowest growth, increasing at 4.0 percent per annum. The trend, as seen from a decline in the population of Ajlun Town, once the administrative center of the Governorate, indicates that the growth centers in the Study Area were shifted over the period toward further north-east, such as Irbid, Ramtha and Mafraq.

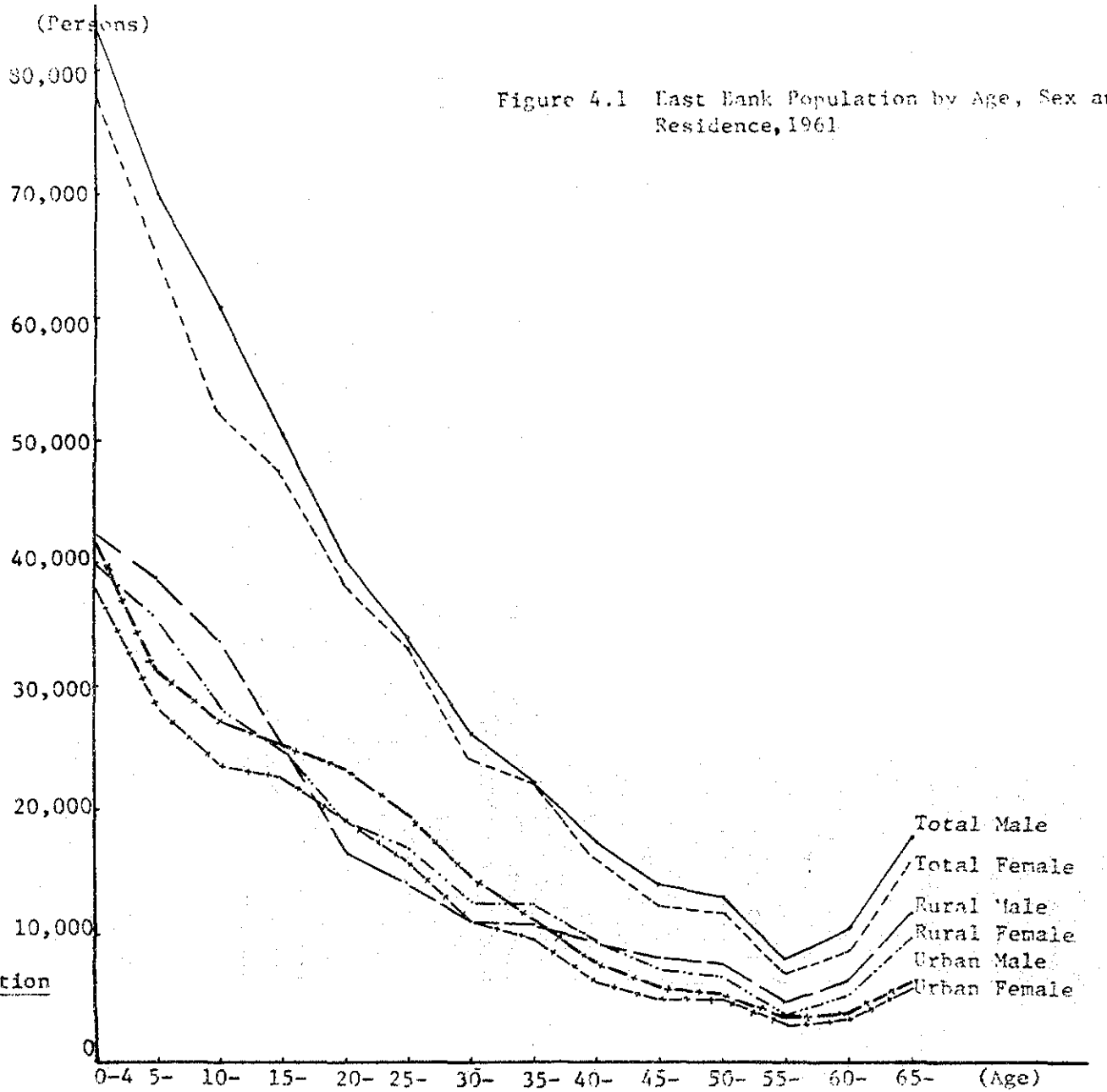
4.1.2 Age and Sex Structure

a. East Bank

04.021 In 1961, the age distribution of the East Bank population had a pyramidal shape, showing gradual decreases as the age advances (Figure 4.1). The sex ratio was 1,088 males per 1,000 females, with a preponderance of males seen throughout all the age groups but the 35-39 group, where it stood at 986. In addition, there were some distinct differences in both age and sex distribution between the urban and rural populations (Figure 4.2 and Table 4.6). The sex ratio in urban areas was 1,165 males per 1,000 females, compared to 1,034 in rural areas, and, in the age group of 20-39, it was as high as 1,237 compared to 854 in rural areas. The share of males aged 15-34 was thus higher at 19 percent among the urban population compared to 14 percent of the rural population, suggesting the out-migration of the younger economically productive segment of the male population from rural areas.

04.022 The dependency ratio was higher in rural areas at 51 percent relative to 48 percent in urban areas. But the difference was mostly due to the larger share of the population aged 65 and over in the former (5 percent compared to 3 percent), with only a slight difference in the share of children aged under 15. The higher share of children under 5 among the urban population (19 percent compared to 17 percent) probably corresponds to the fact that the urban areas attracted the younger generation of married couples from the rural areas.

Figure 4.1 East Bank Population by Age, Sex and Residence, 1961



Source: First Sensus of Population and Housing 1961

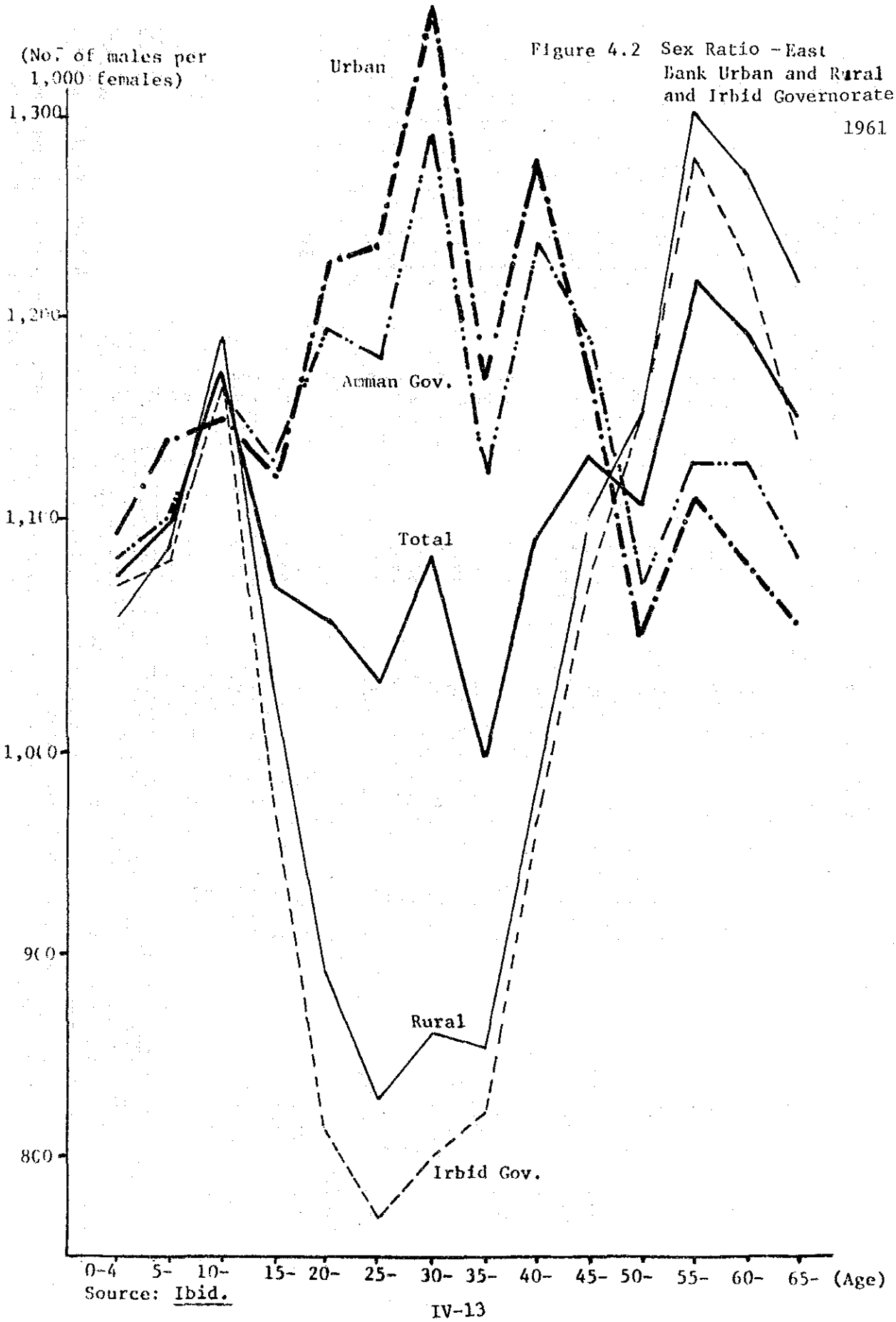


Figure 4.2 Sex Ratio - East Bank Urban and Rural and Irbid Governorate, 1961

Source: Ibid.

Table 4.6 Sex Ratio and Age Distribution, 1961 and Mid-1970s

		Sex Total Population	Ratio Age Group 20 - 39	Ratio Age Group 15 - 34	Dependency Ratio (%) Children under 15	Dependency Ratio (%) Population Aged 65 & over	Percentage in the Total Population of Males aged: 15 - 34	Percentage in the Total Population of Males aged: 35 - 54
East Bank:								
1961	Total	1,088	1,036	1,054	45.6	3.8	16.7	7.4
	Urban 1/	1,165	1,237	1,209	45.0	2.9	19.5	7.1
	Rural	1,034	854	910	46.1	4.6	14.1	7.6
1974	Total	1,037	882	950	51.5	2.9	13.5	7.4
	Urban 2/	1,031	888	959	50.5	2.8	14.0	7.6
	Rural	1,050	865	925	53.9	3.0	12.3	7.0
1975	Rural 3/	1,020	n.a.	856	54.5	4.0	10.7	7.0
1976	Total	1,033	870	922	51.6	2.8	14.0	6.7
Irbid Governorate:								
1961	Total	1,008	798	852	46.7	4.6	13.6	7.3
	Irbid City	1,067	952	1,019	47.2	3.4	16.1	6.9
	Rest of the Gov.	997	770	820	46.5	4.9	13.1	7.4
1974	Total	1,080	859	935	52.3	3.0	13.1	7.0
	Urban 2/	1,032	843	930	50.9	2.5	14.0	7.2
	Rural	1,048	872	939	53.4	3.3	12.5	6.8
1975	Rural 3/	1,009	n.a.	853	54.1	4.3	10.8	6.8
Study Area:								
1972	Total	1,044	885	954	51.2	3.0	13.8	7.0
	Urban 2/	1,037	862	916	50.6	2.6	13.9	7.3
	Rural	1,054	917	1,013	52.0	3.4	13.8	6.6
1975	Rural 3/	1,005	n.a.	846	54.3	4.4	10.7	6.6
1976	Total	1,039	838	964	51.4	2.4	13.8	6.8
	Urban 2/	1,020	818	905	49.9	2.4	14.0	7.2
	Rural	1,064	867	1.050	53.2	3.5	13.5	6.3

Sources: First Census of Population and Housing 1961, Multi-Purpose Household Sample Surveys of 1972, 1974 & 1976, Fertility Survey of 1976 (unpub.), and Agricultural Census of 1975.

Notes: 1/ Consists of the inhabitants in 7 municipalities of Amman, Zarqa, Irbid, Salt, Karak, Ma'an and Aqaba.

2/ Consists of samples from 7 municipalities mentioned above and 6 more of Madaba, Jerash, Ajlun, Mafraq, Ramtha, and Deir Abu Said.

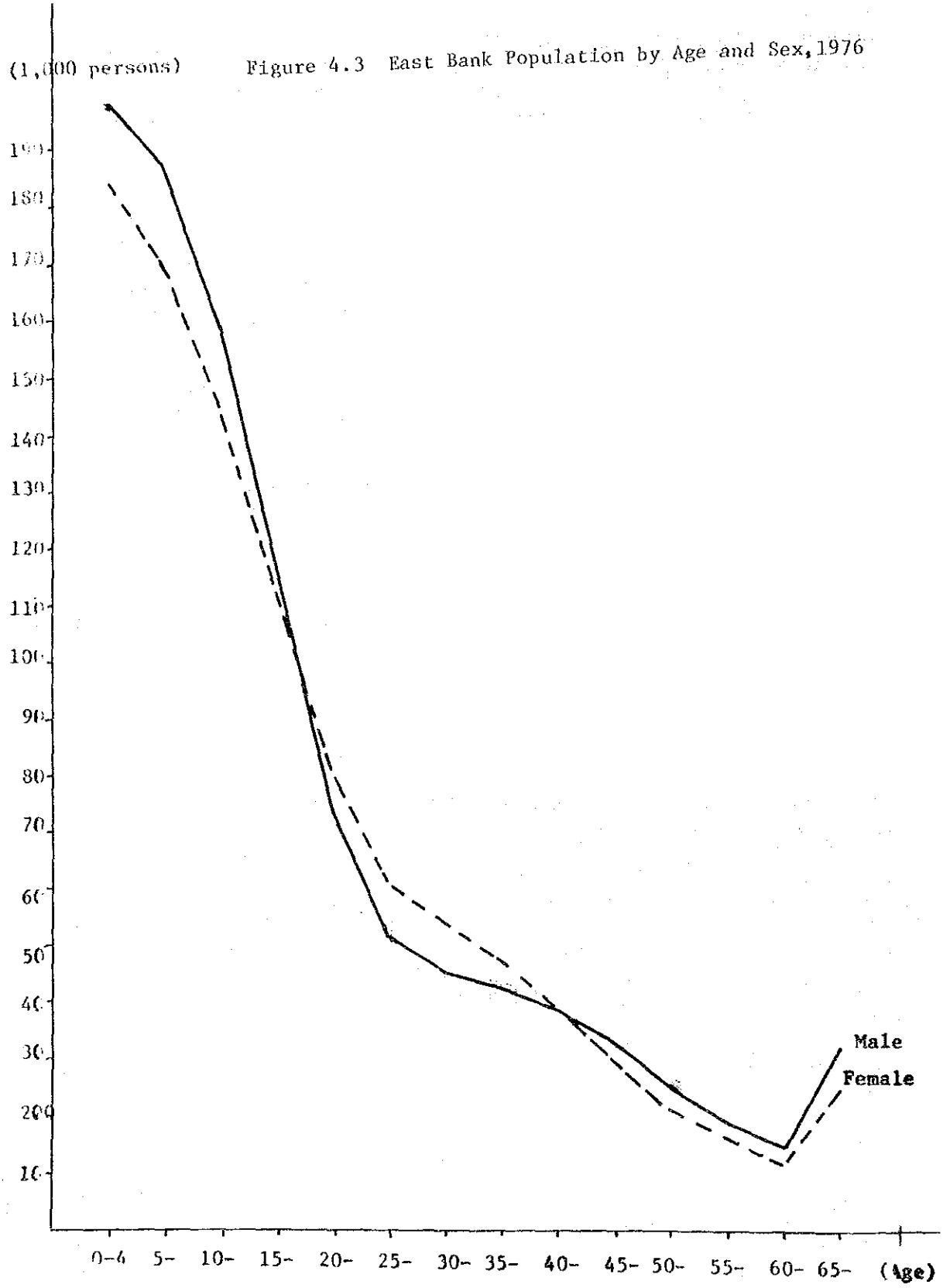
3/ The farm population enumerated by the agricultural census of 1975. Includes urban dwellers comprising approximately 18% of the national total, and 14% & 15% of Irbid Gov. and the Study Area respectively.

04.023 The situation in mid-1970s can be glimpsed from various sample surveys. 3/ As seen on Figures 4.3 and 4.4, the East Bank population as a whole shows the characteristics very similar to the rural population in 1961 in terms of sex and age distribution. The overall sex ratio was 1,037 males per 1,000 females in 1974 and 1,033 males in 1976. A preponderance of females is notable in the age group of 20-39, at 882 males in 1974 and 870 in 1976. Males aged 15-34 accounted for about 14 percent of the total population in both years. This is obviously due to the rapid increase since early 1970s of largely younger male Jordanians working and studying abroad. Coupled with the rapid increase in fertility, the dependency ratio rose to 54 percent in both 1974 and 1976 sample surveys.

04.024 The differences between the rural and urban populations are, according to the household sample survey of 1974, more a matter of degree than of kind (Figures 4.5 and 4.6, Table 4.6). The rural population had a slightly higher preponderance of females in the age group of 20-39, a lower percentage of males aged 15-34, and a higher dependency ratio. The tendency was even more pronounced among the largely rural farm population (1975 rural on Table 4.6).

3/ The Department of Statistics conducted several sample surveys in 1970s, from which some information on age and sex distribution can be obtained: namely, Fertility Survey 1972, Multi-Purpose Household Sample Surveys of 1972, 1974 and 1976 and Fertility Survey of 1976. According to the Department of Statistics, Fertility Survey of 1976 gives the most plausible picture on the age and sex distribution of the Current East Bank population as shown on Figure 4.3. However, the final results of this survey over some 16,000 families are not yet published and only the percentage distribution by sex and age was made available to the present Study. Another source of information is series of the household sample surveys listed above, which give detailed information on not only demographic but economic characteristics of the surveyed population and their regional breakdowns. However, only the survey conducted in 1974 can be consulted in relation to the total East Bank population, because it covered the Ghor area the other two similar surveys in 1972 and 1976 excluded from their coverage.

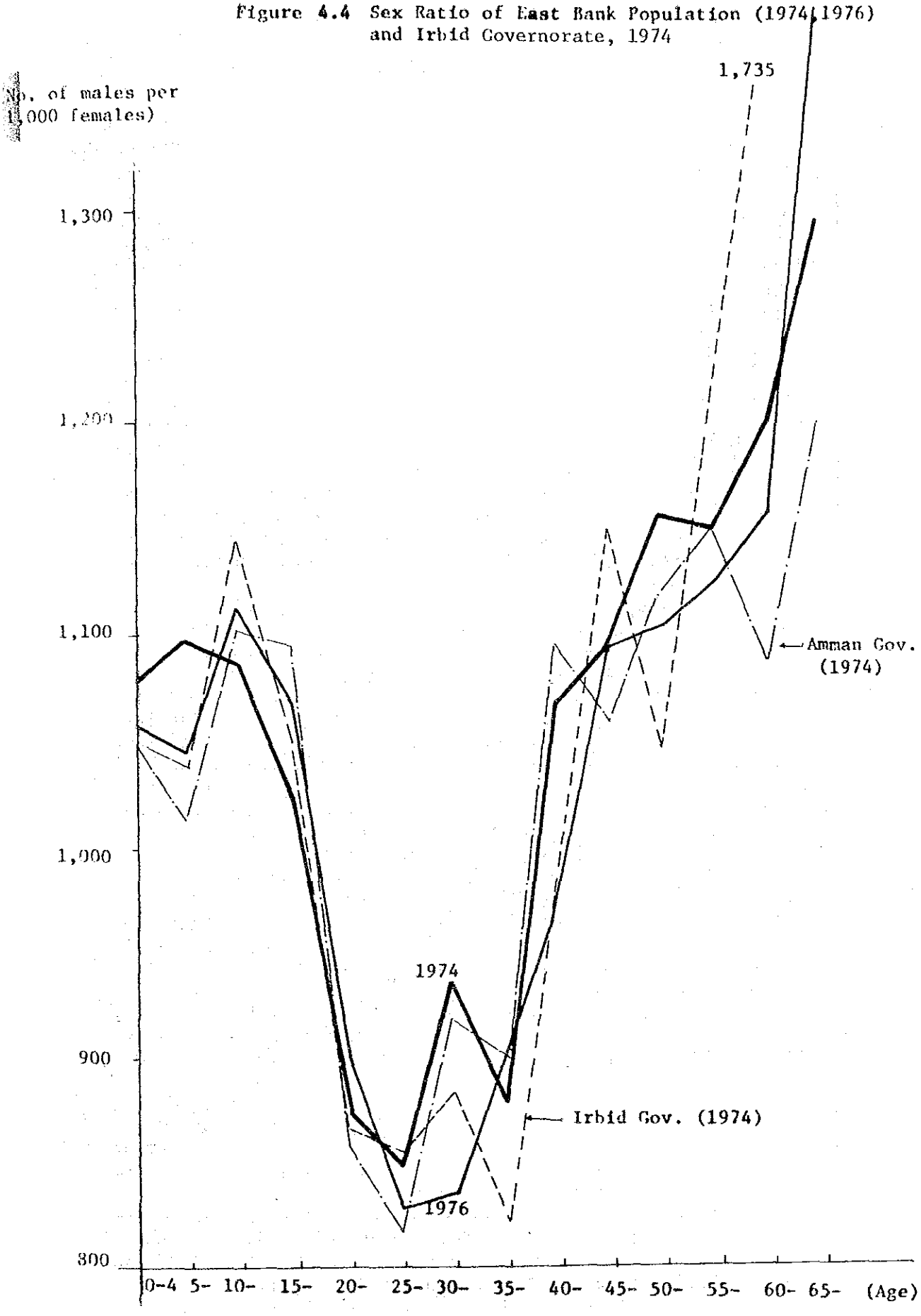
Figure 4.3 East Bank Population by Age and Sex, 1976



Source: Dept. of Statistics, Fertility Survey of 1970 (unpublished).

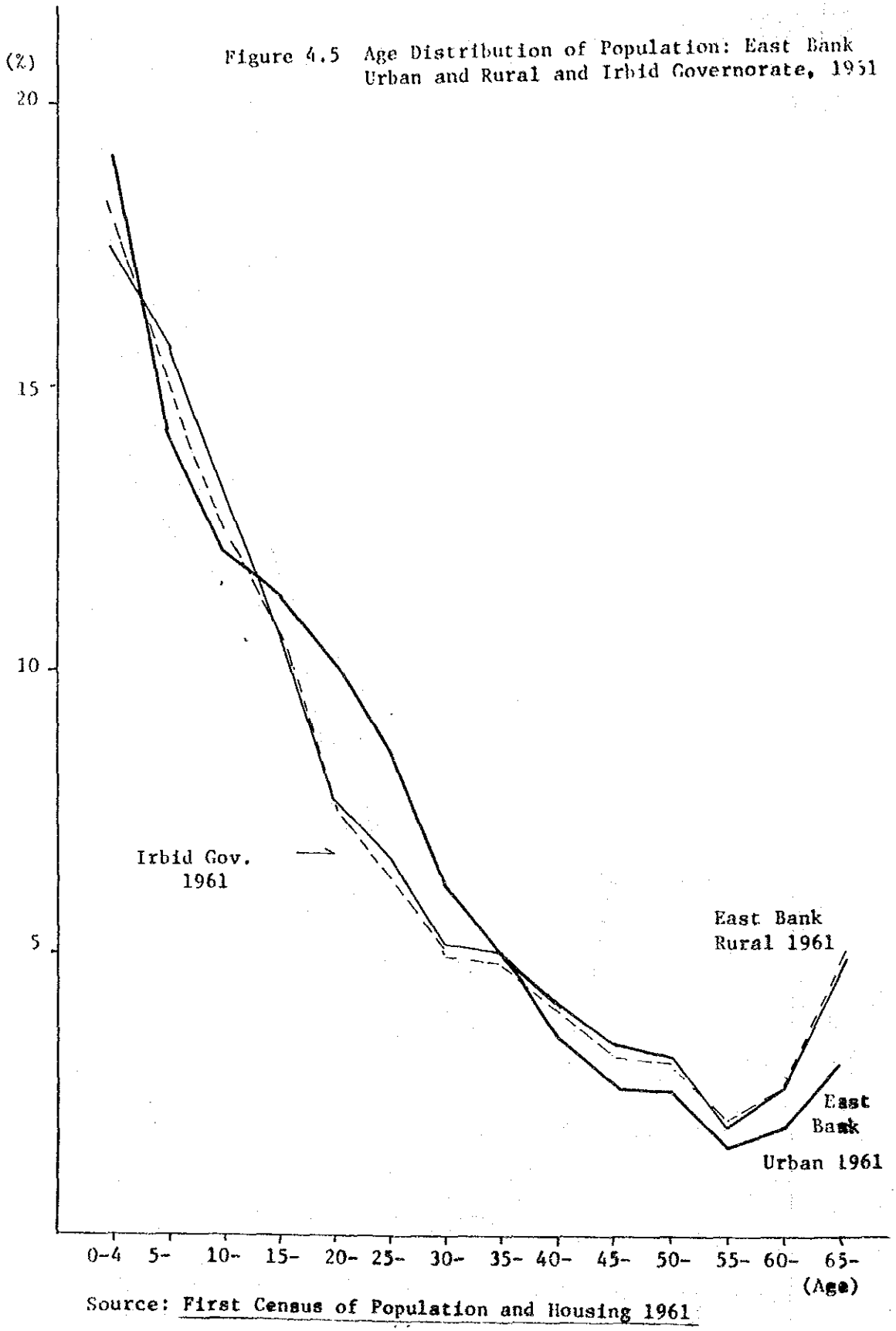
Note: The population figure is taken from Table 4.1.

Figure 4.4 Sex Ratio of East Bank Population (1974, 1976) and Irbid Governorate, 1974



Sources: Multi-Purpose Household Sample Survey 1974 and Fertility Survey 1976.

Figure 4.5 Age Distribution of Population: East Bank Urban and Rural and Irbid Governorate, 1961



Source: First Census of Population and Housing 1961

b. Study Area

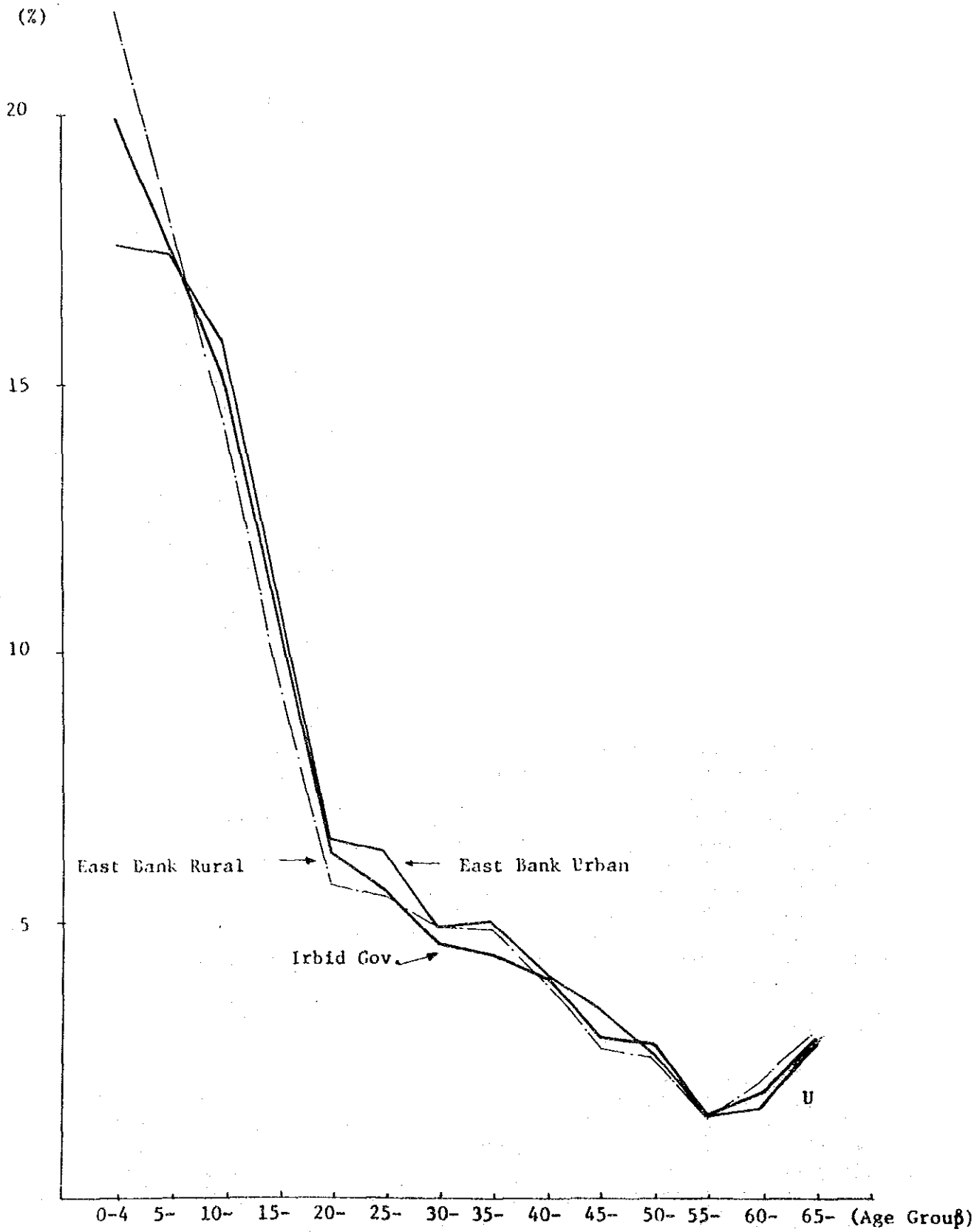
04.025 In 1961, the population of Irbid Governorate had an age and sex structure similar to the total rural population of the East Bank at that time(Figures 4.2 and 4.5 and Table 4.6). A sex ratio in the total population lower than the national average (1,008 males per 1,000 females), a pronounced preponderance of females in the age group of 20-39 (798 males), a lower percentage of males aged 15-34 (13 percent), and a higher dependency ratio (51 percent) due to the higher share of population aged 65 and over (5 percent). That is, the Governorate had the population profile which indicated the considerable outflow of its younger productive male segments to the expanding urban centers elsewhere, such as Amman and Zarqa. Irbid Municipality, the largest urban agglomeration in the Governorate, had some of the urban characteristics such as a higher percentage of males aged 15-34 (16 percent) and a lower share of population aged 65 and over (3 percent), but its lower sex ratios in the total population (1,067 males) and in the age group of 20-39 (952 males) and a higher dependency ratio (51%) suggested that the city was yet a fledgling urban center in attracting younger segments of the rural population.

04.026 The situation in mid-1970s shows that the Governorate was under the same demographic force as in 1961: a considerable perhaps accelerated, outmigration of younger, largely male segments of its population, which, however, is no longer the unique characertistic of the Governorate but of the total East Bank population. Basically the same applies to the population of the Study Area. What is discernible from the figures on Table 4.6 is that the pull from abroad and larger urban centers elsewhere in the country apparently had exerted, contrary to the situation in 1961, more influence over the urban than rural population, as seen from the respective sex ratios in the total population and in the age group of 20-39. However, the farm population enumerated in the agricultural census of 1975 indicates that the rural population, of which the farm population presumably accounts for the majority, was more affected by the out-migration of the younger male segments than the urban population as defined by the household sample surveys. If the discrepancy was not caused by some built-in bias in either of the household survey or the census, this might suggest that the economic activities in the rural areas, not only in the Study Area but in Jordan as a whole, have diversified considerably, with more non-agricultural opportunities made available for younger population than before.

4.1.3 Population Dynamics

04.027 As commonly found in other developing countries, the dearth of comprehensive statistics is most pronounced in Jordan with regard to fertility and mortality rates and the pattern and magnitude of internal and international migration. The discussion in this section will, therefore, indicate only a rough picture of the population dynamics which are pieced together from a variety of sources with different areal and temporal coverage.

Figure 4.6 Age Distribution of Population: East Bank Urban and Rural and Irbid Governorate, 1974



Source: Dept. of Statistics, Multi-Purpose Household Survey of 1974.

a. Fertility and Mortality

04.028 Following the pattern common to the developing world, the crude birth rate of the Jordan's population is estimated to have risen steadily over the past two decades. With the concomitant decline of the crude death rate, the rate of natural growth in Jordan is estimated to have climbed from 2.43 percent in 1950-55 to 3.45 percent in 1970-75 as shown below. According to the Department of Statistics, the rate of natural growth in mid-1970s is estimated to be around 3.4 percent, with a crude birth rate of 4.6 percent and a crude death rate of 1.2 percent (Table 4.7).

Table 4.7 Estimated Crude Birth and Death Rates(Medium Variant)

(Unit: %)

Period	Av. Crude Birth Rate	Av. Crude Death Rate	Av. Rate of Natural Increase
1950-55	4.53	2.10	2.43
1955-60	4.68	2.11	2.57
1960-65	4.90	1.83	3.07
1965-70	4.91	1.60	3.31
1970-75	4.82	1.37	3.45

Source: Hanna Rizk, Trends in Family Size, Attitudes and Practice of Family Planning in Jordan, 1972.

04.029 The rise in the fertility level can be also glimpsed in Table 4.8, where the marital fertility is shown for 1961 and 1972. The number of live-births per 1,000 ever-married women below 50 years is substantially higher in 1972 than roughly a decade ago. In addition, it is possible to descern one significant change over the period in the differential fertility by residence. In 1961, the Irbid Governorate, which was demographically rural as mentioned in the preceding section, had the higher fertility rate than the strongly urban Amman Governorate. In early 1970s, in contrast, the urban areas showed the higher marital fertility than the rural areas. The reversal in the differential fertility by residence runs counter to the conventional saying that urbanization is often associated with lower fertility, but is in fact not uncommon in developing countries.

Table 4.8 Number of Live-births per 1,000 Ever-married Women, 1961 and 1972

	1961			1972			
	East Bank	Irbid Gov:	Amman Gov:	East Bank	Urban	Semi-Urban	Rural
Under 15	61	25	67	0	0	0	0
15 - 19	667	562	666	801	848	633	803
20 - 29	2,843	2,648	2,851	3,465	3,388	3,712	3,485
30 - 39	6,035	5,991	6,000	6,698	6,705	6,974	6,637
40 - 49	7,436	7,449	7,248	8,239	8,132	8,727	8,280
Total	4,496	4,517	4,277	5,103	5,407	5,377	4,732

Sources: First Census of Population and Housing 1961. Department of Statistics, Fertility Survey 1972.

04.030 Consequences of the rapid population growth are usually regarded as unfavourable, because it often functions to dampen the effects of economic and social development. In order to chart the future course of socio-economic development, therefore, it is necessary to know when the birth rate will peak, because, even though the decline in fertility oftener than not lags behind the decrease of death rate, it does decline as the population's expectations of better living become high. The Fertility Survey conducted by the Department of Statistics in 1972 gives a useful clue. That is, the fertility level significantly declines as the level of education of married women advances (Table 4.9). Although the same survey showed that the urban areas had the higher fertility, the school enrollment of women is higher in urban areas of Jordan as will be shown later in Section 4.3. It is reasonable to expect that the fertility level will probably peak sometime in 1980s, when the age groups currently enrolled at preparatory and secondary schools reach child bearing ages. In addition, it was found during the interview survey conducted in the Municipality of Irbid in September 1978 that young married couples were led to decide to limit the number of children they were going to have due to the recent rises in the costs of living and education. The same opinion was voiced by the interviewed young unmarried men and women with secondary or higher education. The changing economic circumstances will no doubt function to push down the fertility level in the future.

Table 4.9 Live-births per 1000 Ever-married Women Classified by Their Educational Attainment and Age

	University	Secondary School	Elementary Preparatory	Illiterate
Less than 15	0	0	0	0
15 - 19	0	577	803	829
20 - 24	1,200	1,617	2,420	2,603
25 - 29	1,833	2,809	4,247	4,673
30 - 34	2,737	4,020	5,894	6,381
35 - 39	4,750	4,300	6,502	8,022
40 - 49	5,000	4,737	7,335	8,630
Total	2,327	2,715	4,024	5,968

Source: Department of Statistics, Fertility Survey 1972

b. Internal and International Migration

04.031 Information on recent internal and international mobility is extremely scarce in Jordan, although the rough magnitude can be glimpsed from the age and sex structure of the Jordanian population presented in the preceding section. Supposing that the age and sex structure in mid-1970s were the same as in 1961 and that the age groups below 15 years were unaffected by the international emigration, the total Jordanian population in and outside the Country would have numbered approximately 2.21 million in 1975. Then, the difference of 260,000 from the population resident in Jordan for the same year might be regarded as staying outside the Country. The figure is naturally an estimate, but it is not very far from the number of Jordanians employed abroad who are variously estimated to have totalled 250,000 - 300,000. When the Jordanians studying abroad estimated to have numbered 40,000 - 50,000 in 1976/77 are added, the Jordanians staying outside the Country total 300,000 - 350,000 in mid-1970s. If the allowance is made for the families which accompanied those employed outside the country, the figure might as well be higher.

04.032 The trend of international migration can be guessed from another source, as shown on Table 4.10. According to the external travel statistics prepared by the Department of Statistics, the excess of departures over arrivals of Jordanians shows a substantial increase after 1973, reflecting the surge of development efforts in neighbouring oil-rich countries at around the same time. The annual average from 1974-1977 numbered 65,400, compared to 24,600 in the period from 1970 to 1971. What is noticeable from the table is that the excess of arrivals over departures of other Arab nationals and non-Arab Middle

Table 4.10 Arrivals and Departures of Jordanians and Non-Jordanians 1/

(Unit: 1,000 Persons)

	Jordanians			Other Arab Nationals			Non-Arab Middle Eastern and Asian Nationals		
	Departures	Arrivals	Balance	Departures	Arrivals	Balance	Departures	Arrivals	Balance
1970	394.5	368.5	- 26.0	210.0	223.4	+ 13.4	76.5	76.1	- 0.4
1971	362.7	341.2	- 21.5	209.7	223.1	+ 14.0	14.9	14.6	- 0.3
1972	379.7	345.2	- 34.5	240.2	244.0	+ 3.8	14.0	17.3	+ 3.4
1973	464.5	448.0	- 16.5	249.0	258.6	+	16.7	17.0	+ 0.3
1974	583.4	547.9	- 35.5	306.1	350.0	+ 43.9	135.7	149.1	+13.4
1975	655.1	615.6	- 39.5	366.7	431.1	+ 64.4	175.8	192.8	+17.0
1976	715.8	633.0	- 82.8	617.5	746.1	+128.6	200.0	196.3	- 3.7
1977	770.8	667.1	-103.7	640.4	781.7	+141.3	174.7	199.2	+24.5
Annual Average:									
1970-73			- 24.6			+ 10.2			+ 0.7
1974-77			- 65.4			+ 94.5			+12.8

Source: Department of Statistics, Statistical Yearbooks, 1974 - 1976, and Demographic, Social and Commercial Characteristics of the Jordanian Population, 1978 (in Arabic).

Note: 1/ Excludes Europeans and Americans.

Eastern and Asian nationals also sharply increased in mid-1970s, and apparently even exceeded the net departures of the Jordanians. It might be possible to presume that the international migration is now close to an equilibrium in net term.

04.033 As for internal migration, there is only one source i.e., Population Census and Internal Migration compiled by the Department of Statistics in 1967. The information is not complete, however, because, it only concerns the permanent migrants into the four municipalities of Amman, Zarqa, Ruseifa and Aqaba during 1962-67, not to mention the fact that it was conducted before the inflow of refugees which considerably changed the population distribution in the Country. According to this survey, a total of 44,000 moved into the municipalities mentioned above in five years, contributing 37 percent to the increase of the population in these cities over the period. These cities grew at the rate of 5.9 percent annum with the immigration amounting to approximately 2.1 percent per annum (see Table 4.2).

4.1.4 Population Projection to 1985 and 2000

04.034 The growth of a population is determined by three factors: birth rate, death rate and internal and international mobility. In view of the paucity of data in Jordan on these factors as well as on the actual number of population, the population projection for the Study Area cannot use any of the methods demographers normally adopt. Moreover, because another population census is scheduled for the coming year of 1979, it is rather futile to resort to one of the elaborate projection methods on so shaky statistical bases now available. Therefore, the projection will be carried out by the rule of thumb.

04.035 For the rate of natural increase, the rates used by the Department of Statistics for projecting the growth of total East Bank population to be utilized for the educational development are adopted and assumed to be uniform over the Country; that is, 3.4 percent per annum for the period from 1975 to 1980 and 3.5 percent for the period from 1980 to 1985. For mobility, it is assumed that the international emigration is now in balance with immigration so that the natural increase rate is actually the growth rate of the total population.

04.036 For internal distribution of population, it is assumed that the Amman Governorate will continue to attract immigration from the rest of the country by growing at around 4.3 percent per annum. The rate is the composite rate obtained by assuming the growth of the cities of Amman and Zarqa at 5.0 and 4.5 percent respectively and that of the rest of the Governorate at 2.0 percent.

04.037 The Irbid Governorate is assumed to continue being the population "push" area, in view of the substantial share of the

agricultural population, and as yet generally underdeveloped non-agricultural employment opportunities and amenities for living to attract people compared to the Amman Governorate. On the basis of the growth rates suggested by the Department of Statistics and the Water Master Plan with regard to the major cities in the Governorate, it is assumed that the Municipality of Irbid grows at an annual rate of 4.5 percent, while cities with a population of 5,000 and more and the rest of the Governorate grow at 3.0 and 1.5 percent respectively. The composite growth rate is at around 2.66 percent per annum. The net emigration is thus between 0.7 - 0.8 percent per annum, accounting for about 40 percent of the annual inflow of population into the Amman Governorate.

04.038 For the Study Area, it is assumed that Aghwar Esh-Shamaliya (Ghor) Mutserfieh would attract some population from the rest of the Irbid Governorate, as the development in the Jordan Valley proceeds. According to the Jordan Valley Development Plan 1975 to 1982, it is estimated that the Ghor area as a whole will attract 8,000 immigrants per annum for the period from 1976 to 1981 on the basis of the facilities to be developed there. Taking account of the delay of implementation, and assuming that the Ghor area in the Irbid Governorate will attract 2,200 immigrants by 1985 plus the growth of the population at 3.0 percent, the population of the Mutserfieh is estimated to grow at 5.0 percent per annum. The results are shown on the following table. The population of the Study Area will grow from 519,000 in 1975 to about 660,000, or at an annual rate of 2.43 percent, while that of Irbid Governorate will increase at 2.66 percent to the order of 732,000 in 1985.

04.039 For the period after 1985 to 2000, the natural increase will begin to decline, but due to the current high percentage of the age groups below 10 years and the high rate of natural increase expected through mid-1985, the decline of the natural increase rate will be slow at around 3.4 percent for the period of 1985 to 1990 and 3.1 percent for the period of 1990 to 2000. For internal distribution of the population, the pull of the Amman Governorate is assumed to decline, and the"push" of the Irbid Governorate will dimish considerably, due to the socio-economic development expected of the Study Area. The population growth rate of the two Governorates are tentatively set at 3.5 and 3.0 percent over the period, with the respective populations coming to some 2.83 million and 1.14 million in the year 2000 (Table 4.11).

Table 4.11 Population Projections for the Study Area

(Unit: 1,000 Persons)

	1975	1980	1985	1990	2000
Total East Bank	1,952	2,307	2,740	3,239	4,395
Amman Governorate	1,098	1,360	1,689	2,006	2,827
Irbid Governorate	563	641	732	848	1,140
Rest of the Country	291	303	319	385	428
Study Area	519	585	660		1,020
Major Municipalities					
1. Irbid	128		199		360
2. Ramtha	24		38		75
3. El-Husn	18		27		35
4. Mafraq	16		22		40
5. Suf	15		19		30
6. Jerash	11		16		30
7. Yarmouk (New)	0		22		50
Sub Total	229		343		620
8 - 31. 24 Municipalities	105		137		200
Municipality Total	334		480		820

Source: Study Team.

Note: Populations in major cities are estimated assuming that (1) the Irbid Municipality will grow at 4.5 percent per annum (2) the other 6 municipalities will grow by 1.3 to 1.5 times as much from 1975 to 1985, (3) the last 24 municipalities will grow by 1.34 to 1.28 times as much from 1975 to 1985, and (4) the residual is allocated to the rural and village areas.

4.2 Labor Force and Employment

4.2.1 East Bank

04.040 Three major characteristics of the current Jordanian labour force are the low labour participation (or activity) rate, extremely low contribution of women to the labour force and the low open unemployment rate.

04.041 When the economically active population enumerated in the 1961 Census 4/ are compared with the equivalent data in the Multi-purpose Household Sample Survey of 1974, the gross labour participation rate (the percentage of the economically active among the total population) declined from 24 percent to a little less than 20 percent (Table 4.12). One of the major factors for the decline is, as mentioned already, the higher dependency ratio caused by the increased fertility, on the one hand, and by the accelerated out-migration of the active younger male segments, on the other. Another factor is the rapid rise in school enrollment among the youthful population in both urban and rural areas. According to the same household survey, the enrollment ratio among the population aged 6 - 24 years was 71 percent in 1974 compared to 34 percent in 1961, and this is reflected in the decline of the labour participation rates in the age groups of 5-14, 15-19 and 20-24.

04.042 Another factor is a sizable decline of the participation rate among the age groups of 60 and over (29 to 24 percent) and, to a lesser extent, 50-59 (45 to 43 percent), a tendency often associated with development of an economy.14 years ago, differential participation by residence was distinctively noticeable. The aged population had considerably higher participation rates in rural than urban areas, suggesting that they shouldered a significant part of agricultural works, the mainstay of the rural economy, after the outflow of younger productive segments. In the mid-1970s, the participation rates among the older population showed substantial declines in rural areas and sizeable rises in urban areas, obliterating the differential participation by residence. That is, the participation rate among the population aged 50 and over was 32 percent in urban and 34 percent in rural areas in the mid-1970s, compared to 29 and 41 percent, respectively, in 1961.

4/ Excludes "Unclassified".

Table 4.12 Labor Participation Rate in East Bank, Jordan, 1961 and 1974

(Unit: Percent)

	Age Group	Labor Participation Rate					
		Total		Male		Female	
		1961	1974	1961	1974	1961	1974
Urban	5 - 14	2.7	0.7	4.3	1.1	0.9	0.2
	15 - 19	31.8	18.0	55.3	30.4	5.5	4.7
	20 - 24	53.6	49.9	90.7	80.1	8.2	23.6
	25 - 49	53.6	50.7	93.7	95.4	4.1	8.4
	50 - 59	39.7	43.0	74.4	78.8	2.7	2.1
	60 -	19.8	22.6	37.4	40.0	0.1	1.2
	Total 15 and over	45.3	43.3	79.6	77.5	4.8	9.3
	Total 0 and over	25.3	20.0	45.5	35.4	2.8	4.5
Rural	5 - 14	2.5	1.0	4.6	1.7	0.2	0.2
	15 - 19	30.8	21.8	58.7	40.5	2.3	2.2
	20 - 24	43.2	43.3	88.9	84.5	2.8	6.8
	25 - 49	45.5	47.1	94.0	95.5	2.2	2.1
	50 - 59	48.7	42.7	88.6	82.2	0.8	1.1
	60 -	34.7	26.8	62.6	44.2	1.1	1.4
	Total 15 and over	41.2	42.6	81.2	82.2	2.0	2.8
	Total 0 and over	22.9	18.2	43.9	34.3	1.2	1.3
Total	5 - 14	2.6	0.9	4.5	1.4	0.5	0.3
	15 - 19	31.3	19.1	57.0	33.1	3.9	4.1
	20 - 24	48.8	48.8	90.0	81.3	5.5	19.1
	25 - 49	49.5	49.7	93.7	95.7	3.0	6.4
	50 - 59	45.0	42.9	82.9	79.8	1.6	1.8
	60 -	29.1	24.0	53.5	41.5	0.8	1.2
	Total 15 and over	43.1	43.1	80.3	78.8	3.3	7.5
	Total 0 and over	24.2	19.6	44.7	43.1	1.9	3.5

Sources : First Census of Population and Housing 1961
Multi-purpose Household Sample Survey 1974.

04.043 As shown on Table 4.12, the gross labour participation rate of the female population appreciably increased over the 14-year period from a little less than 2 percent to well over 3 percent. The rise in their participation is most pronounced among the age group of 20-24, especially in urban areas where it rose from 8 to nearly 24 percent, the tendency already apparent in 1961. Substantial improvement notwithstanding, the female contribution to the total labour force still remains very low. However, it must be pointed out here that the female participation rate in the rural areas appears to have been considerably understated in the 1961 Census.5/ The 1974 Household Sample Survey seems to have had the same bias, judging from the information available in the socio-economic survey conducted in 1973 in the Jordan Valley.6/ The field observation during this Study also revealed that women in fact shoulder a significant part of the agricultural works in the rain-fed Study Area. Considering the out-migration of male segments from the agricultural areas, females must be accounting for a larger share of the rural labour force than as indicated in the 1974 survey.

04.044 As a consequence, the age and sex composition of the Jordanian labour force underwent a substantial change over the period (Table 4.14). Compared to 1961 when the age groups of less than 25 years accounted for 35 percent of the total labour force, their contribution declined to 27 percent in the mid-1970s. The contribution of the age groups of 50 years and over remained relatively unchanged at approximately 15 percent in 1961 and 14 percent in 1974, while the percentage of women in the total labour force rose from 4 percent to 9 percent (5 to 11 percent in urban areas). The age group of 25-49, whose participation rate remained unchanged over the period at 50 percent, accounted for nearly 60 percent in 1974 compared to 50 percent in 1961.

5/ Department of Statistics, Population and Labour Force in Agricultural Sector 1967.

6/ Department of Statistics, Social and Economic Survey of the East Jordan Valley, 1973, Tables 5 and 6, pp. 90-91. The gross participation rate among the female population was reported to be 17.8 percent relative to 42.3 percent among the males, with the resulting total gross labour participation rate rising to 30.5 percent. Thus, women accounted for 28.1 percent of the total work force.

Table 4.13 Unemployment Rate in East Bank, Jordan, 1961 and 1974

(Unit: Percent)

	Age Group	Unemployment Rate					
		Total		Male		Female	
		1961	1974	1961	1974	1961	1974
Urban	5 - 14	16.3	2.0	18.5	1.8	4.2	2.9
	15 - 19	15.3	5.0	15.8	4.7	9.1	7.2
	20 - 24	7.0	6.5	7.2	7.2	3.7	4.3
	25 - 49	4.9	1.6	5.0	1.6	1.9	1.0
	50 - 59	8.1	1.0	8.3	1.0	1.9	0.2
	60 -	6.0	0.6	6.2	0.6	0.9	0
	Total 15 and over	7.1	2.6	7.2	2.6	4.2	3.0
	Total 0 and over	7.3	2.6	7.2	2.6	4.2	3.0
Rural	5 - 14	15.2	0	15.7	0	2.3	0
	15 - 19	18.4	1.9	18.9	1.9	4.8	2.6
	20 - 24	9.2	3.1	9.5	2.9	1.9	5.3
	25 - 49	4.9	0.5	4.5	0.5	24.2	0
	50 - 59	3.3	0.2	3.3	0.2	2.4	0
	60 -	1.3	0	1.3	0	0	0
	Total 15 and over	7.0	0.9	6.8	0.9	13.7	2.1
	Total 0 and over	7.2	0.9	7.1	0.9	13.1	2.3
Total	5 - 14	15.7	1.2	16.9	1.1	3.8	2.0
	15 - 19	16.8	4.1	17.4	3.8	7.8	6.6
	20 - 24	7.9	5.6	8.1	6.0	3.2	4.4
	25 - 49	4.9	1.0	4.8	1.3	10.6	0.9
	50 - 59	5.1	0.8	5.1	0.8	2.0	2.3
	60 -	2.5	0.4	2.5	0.4	0.5	0
	Total 15 and over	7.0	2.2	7.0	2.1	7.3	2.9
	Total 0 and over	7.1	2.1	7.3	2.1	7.1	2.9

Sources: First Census of Population and Housing 1961
Multi-Purpose Household Sample Survey 1974

Table 4.14 Age and Sex Composition of Labor Force and Unemployment, 1961 and 1974

(Unit: %)

	Total		Urban		Rural	
	1961	1974	1961	1974	1961	1974
Labour Participation						
Total						
Less than 25	34.6	26.9	37.6	27.0	31.6	26.6
25-49	50.1	58.7	52.8	59.5	47.3	56.7
50 and over	15.3	14.4	9.6	13.5	21.1	16.7
	100.0	100.0	100.0	100.0	100.0	100.0
Male						
Less than 25	32.5	22.4	34.6	21.5	30.5	24.7
25-49	48.6	54.7	51.0	54.4	46.1	55.4
50 and over	15.1	14.1	9.3	13.2	20.9	16.4
	96.2	91.2	94.9	89.1	97.5	96.5
Female						
Less than 25	2.1	4.5	3.0	5.5	1.1	1.9
25-49	1.5	4.0	1.8	5.1	1.2	1.3
50 and over	0.2	0.3	0.3	0.3	0.2	0.3
	3.8	8.8	5.1	10.9	2.5	3.5
Unemployment						
Total						
Less than 25	57.9	60.5	54.9	59.4	61.0	69.4
25-49	34.0	35.3	35.5	36.1	32.4	29.0
50 and over	8.1	4.2	9.6	4.5	6.6	1.6
	100.0	100.0	100.0	100.0	100.0	100.0
Male						
Less than 25	56.5	50.5	52.6	49.0	60.5	61.3
25-49	31.8	33.6	35.0	34.2	28.5	29.0
50 and over	8.0	4.0	9.5	4.3	6.5	1.6
	96.3	88.1	97.1	87.5	95.5	91.9
Female						
Less than 25	1.4	10.0	2.3	10.3	0.5	8.1
25-49	2.2	1.7	0.5	1.9	3.9	-
50 and over	0.1	0.2	0.1	0.3	0.1	-
	3.7	11.9	2.9	12.5	4.5	8.1

Sources: Ibid.

04.045 According to the 1961 Census, the open unemployment rate at the time amounted to 7 percent (Table 4.13), although it is suggested elsewhere that the true figure might have been closer to 15 percent. 7/ As seen from Table 4.13, higher unemployment was observed among the younger labour force aged 15-19 (16 percent) and 20-24 (8 percent). Although the level of unemployment of the total labour force did not vary much by residence, the distribution of unemployment showed some difference between rural and urban areas. While the age group of 25-49, the main body of the work force, had the same unemployment rate of 5 percent in both rural and urban areas, the younger segments aged 16-24 had higher unemployment in rural areas and the older labour force aged 50 and over showed higher unemployment in urban areas. This indicates that agriculture was unable to absorb the younger labour force, while the urban areas, although there were relatively more employment opportunities, were neither able to absorb all of the labour force seeking work.

04.046 The situation in mid-1970s is characterised by a drastic reduction of open unemployment to a mere 2.1 percent. Although the reduction nearly an across-the-board phenomenon by age, sex and residence, it is more pronounced in rural areas where virtual full employment appears to have been reached at 0.9 percent of unemployment. In terms of age, the distribution of unemployment is basically similar to that in 1961, with the age groups of 15-24 showing higher unemployment compared to the other groups. However, the unemployment is far higher in the urban areas at 5.0 percent for the age group of 15-19 and 6.5 percent for the age group of 20-24, compared to the rural areas (1.9 and 3.1 percent, respectively), the reversal of the situation prevailed 14 years ago. The sharply decreased unemployment obviously had to do with the increase over the period of the Jordanians employed outside the country, who are variously estimated to have totalled 200,000 to 300,000 in mid 1970s, compared to 12,000 in 1961. The buoyancy of Jordan's economy which recovered from the economic disruptions in the beginning of 1970s also contributed to the decline in unemployment. Considering that the unemployment rate is estimated to have been about 14 percent at the beginning of 1970s 8/, the reduction must have proceeded rapidly in a few years.

7/ The timing of the 1961 Census in November when seasonal work declines sharply compared to the first half of the year and the inadequate definition of the economically active population are suggested to have led to the probable understatement of the labour force, thus lowering the unemployment rate. See Michael P. Mazur, "Economic Development of Jordan", in Economic Development and Population Growth in the Middle East, e.g. by C.A. Cooper and S.S. Alexander, American Elsevier Pub., 1972.

8/ IBRD, Sector Report on Manpower Situation and Prospects in Jordan, October 1972.

04.047 As a consequence of the across-the-board reduction of unemployment, the composition of the total unemployed labour force did not show much change over the period (Table 4.14). The unemployment in mid-1970s is appreciably more concentrated in the age groups of less than 25 years which accounted for 61 percent of the total, compared to 58 percent in 1961. The unemployed labour force aged 50 and over accounted for a much reduced percentage of the total in 1974 at 4 percent relative to 8 percent in 1961. The share of the age group of 25-49 remained largely unchanged at around 34-35 percent. Perhaps the most notable change over the period is the increased share of the unemployed female labour force which rose from 4 percent in 1961 to 12 percent of the total in 1974. Even if the participation rate has improved considerably among the younger generation, it appears that women cannot as yet avail themselves of equally increased employment opportunities.

04.048 On the basis of the household sample survey of 1974, the employed population of the East Bank are estimated to have numbered approximately 374,000 in 1975, an average annual increase of 4.5 percent since 1961 (Table 4.15). The major change is found in the sectoral composition of employment. Agricultural employment recorded a sharp decline by 34 percent, with its share in total employment dropping to 13.3 percent in 1975 from 35.9 percent in 1961. The other directly productive sectors, that is, mining and manufacturing and construction, recorded only a moderate combined growth of 54.6 percent, with their share declining to 18.3 percent from 21.9 percent. If the construction sector which is by nature subject to short-term fluctuation is excluded, the increase was 70.6 percent which is still lower than that of total employment. This probably reflects the capital-intensive development pursued in the mining and manufacturing sector over the period.

04.049 In contrast to the primary and secondary productive sectors, the tertiary sector showed remarkable expansion in 14 years. Commerce and transportation more than trebled their employment, thus increasing their respective shares in total employment to 17.0 and 7.4 percent from 8.6 and 3.7 percent in 1961. The service sector, comprising banking and insurance, public utilities and community services and general administration, recorded equally remarkable expansion. If "the unclassifiable" in the 1961 Census is included in the service sector, employment nearly trebled in 14 years, amounting to a little more than three-fifths of the increase of total employment over the period, and its share rose from 30 to 44 percent. What is notable in additon is that the four-fold increase of female employment largely accrued from the service sector, accounting for 80 percent of their increase over the period. The public sector (community services and administration) greatly contributed to their increased employment, by offering three-fourths of the jobs held by women in 1975. The rapid expansion of the public sector employment as a whole must have had a decisive influence on the decline of unemployment.

Table 4.15 Labor Force and Sectoral Employment in Jordan, 1961 and 1975

	1961					
	Total		Male		Female	
	No.	%	No.	%	No.	%
Agriculture	72,664	35.9	72,291	37.2	373	4.8
Mining & Manufacturing	22,256	11.0	19,411	10.0	2,845	36.9
Construction	22,046	10.9	22,026	11.3	20	0.3
Transportation	7,592	3.7	7,513	3.9	79	1.0
Commerce	17,450	8.6	17,217	8.8	233	3.0
Public Utilities	923	0.5	914	0.5	9	0.1
Banking & Insurance Community Services and General Adm.	28,653	14.2	24,682	12.7	3,971	51.5
Unclassifiable	30,701	15.2	30,518	15.7	183	2.4
Total Employment	202,286	100.0	194,573	100.0	7,713	100.0
Total Labor Force	217,841		209,849		7,992	
Unemployment Rate (%)	7.14		7.28		3.49	

Source: First Census of Population and Housing 1961
Multi-Purpose Household Sample Survey of 1974

(To continue)

Table 4.15 (Continued)

	1975						Changes of Total Emp.1961-75 %
	Total		Male		Female		
	No.	%	No.	%	No.	%	
Agriculture	49,640	13.3	48,230	14.1	1,410	4.3	- 33.6
Mining & Manufacturing	37,980	10.2	34,250	10.0	3,730	11.1	+ 70.6
Construction	30,240	8.1	30,120	8.8	120	0.3	+ 37.1
Transportation	27,630	7.4	26,680	7.8	950	2.9	+264.0
Commerce	63,700	17.0	62,530	18.3	1,170	3.6	+265.0
Public Utilities	2,170	0.6	2,160	0.6	10	—	+135.8
Banking & Insurance	6,650	1.8	5,590	1.6	1,060	3.2	+467.0
Community Services and General Adm.	155,800	41.7	131,530	38.6	24,270	74.3	
Unclassifiable	-		-		-		+173.7
Total Employment	373,810	100.0	341,090	100.0	32,720	100.0	+84.2
Total Labor Force	382,010		348,330		33,680		+75.4
Unemployment Rate (%)	2.15		2.08		2.85		

Source: First Census of Population and Housing 1961
Multi-Purpose Household Sample Survey of 1974

4.2.2 Study Area

04.050 In the beginning of 1960s, the labour force in Irbid Governorate showed characteristics very similar to the total rural population of East Bank mentioned in the preceding section. The gross participation rate of 21 percent was even lower than that of the total rural population, indicating the effects of the considerable outflow of the active male segments, on the one hand, and of the much slower progress of urbanization which could have absorbed the younger labour force from its rural areas and contributed to the rise in the female participation rate, on the other. Despite the considerable outmigration, the Governorate had the high unemployment rate of 9.1 percent, which was in fact highest of all the governorates at that time. 9/ As was the case with the total rural population, the unemployment rate was pronounced in the age groups of 15-19 (24.0 percent) and 20-24(12.2 percent), which together accounted for nearly 60 percent of the total unemployed in 1961.

04.051 The situation in mid-1970s indicates that the Governorate underwent changes similar to the total East Bank population in 14 years. The gross participation rate was reduced to 19 percent due to the increased dependency ratio, on the one hand, and to the rise in school attendance among the youthful population, on the other. The school enrollment ratio rose from 36 percent in 1961 to 68 percent in 1974 among the population aged 6-24, with consequence that the labour force aged less than 25 years accounted for a slightly smaller share of the total in 1974 than in 1961. The smaller decline of their share compared to the East Bank total appears to be due to the proportionately greater outmigration among the population aged 25 and over. The decline of the activity level among the older population also contributed to the reduction. The female participation rate improved substantially from 1.4 to 3.3 percent in 14 years apace with the progress of urbanization in the Governorate, although their share in the total labour force still remained low at 8 percent.

04.052 The decreased labour participation rate and the continued outmigration of the active segments sharply reduced the unemployment to a low of 1.7 percent. As was the case with the total East Bank population, the unemployment, although dramatically reduced, was still pronounced among the younger labour force aged less than 25 years, which accounted for nearly three-fourths of the total unemployed. Apace with the improved activity level, the unemployment among the female labour force increased substantially accounting for nearly one-fifth of the total unemployed (Tables 4.16 and 4.17).

9/ The unemployment rates for other governorates in 1961 were: 6.3 percent for Amman, 8.5 percent for Balqa, 5.3 percent for Karak and 5.5 percent for Ma'an.

Table 4.16 Rates and Composition of Labor Participation in Irbid Governorate, 1961 and 1974

	Labour Participation					
	Total		Male		Female	
	1961	1974	1961	1974	1961	1974
Rates						
5-14	1.9	0.9	3.4	1.4	0.3	0.3
15-19	26.1	21.3	49.9	37.0	3.1	4.8
20-24	41.1	47.5	86.3	79.7	4.5	19.5
25-49	44.4	48.0	94.2	94.7	1.9	5.4
50-59	47.6	42.7	86.8	79.7	0.8	1.8
60-	32.7	32.7	60.1	52.5	0.7	1.5
Total 15 and over	39.0	39.9	78.3	73.0	2.3	6.6
Total 0 and over	21.3	19.3	41.0	34.0	1.4	3.3
Composition						
Less than 25	30.3	28.7	28.5	23.8	1.8	4.9
25-49	47.9	53.5	46.7	50.4	1.2	3.1
50 and over	21.8	17.8	21.6	17.4	0.2	0.4
Total	100.0	100.0	96.8	91.6	3.2	8.4

Sources: Ibid

Table 4.17 Rates and Composition of Unemployment in Irbid Governorate, 1961 and 1974

	Unemployment					
	Total		Male		Female	
	1961	1974	1961	1974	1961	1974
Rates						
5-14	17.8	0	19.0	0	0	0
15-19	24.0	5.1	25.1	4.3	6.7	11.2
20-24	12.2	4.3	12.7	3.9	4.4	5.7
25-49	6.3	0.9	6.4	0.9	1.7	0
50-59	4.9	0	4.9	0	4.1	0
60-	1.7	0	1.7	0	0	0
Total 15 and over	8.9	1.8	9.0	1.5	3.8	4.2
Total 0 and over	9.1	1.7	9.3	1.5	3.6	4.1
Composition						
Less than 25	59.1	72.9	58.1	53.3	1.0	19.6
25-49	33.1	27.1	32.9	27.1	0.2	0
50 and over	7.8	0	7.7	0	0.1	0
Total	100.0	100.0	98.7	80.4	1.3	19.6

Sources: *Ibid*

04.053 Table 4.18 shows the sectoral composition of employment in the Irbid Governorate for 1961 and 1975. The total number of employment is estimated to have doubled to 107,000 over the period. Due to the higher average annual growth rate of 5.1 percent than the National average, the Governorate's share in the total employment in mid-1970s was approximately proportionate to its share in the total population at about 29 percent.

04.054 The increase in employment was led by the remarkable expansion of the service sector, as was the case with the East Bank as a whole. In fact, the sector grew even more rapidly, quadrupling its employment, and accounting for nearly 70 percent of the increase of the total employment over the period. The other tertiary sectors, commerce and transportation, also expanded rapidly, by growing at a rate of 9.5 and 13.9 percent per annum. Thus their combined share in the total employment rose from 10 percent in 1961 to 20 percent in 1975, which is, however, still smaller than the figure for the East Bank as a whole.

04.055 In contrast to the tertiary sector, the directly productive sectors did not fare very well, as was the case with the East Bank total. Agricultural employment decreased, though to a lesser extent than in the East Bank as a whole, by 12 percent in 14 years, accounting for only one-fourth of the total employment in 1975 compared to well over one half in 1961. Nontheless, the sector occupied a far more important place in the Governorate's economy in mid-1970s than in the East Bank as a whole.

04.056 The mining and manufacturing sector increased its employment more rapidly in the Governorate than in the East Bank as a whole. But with its declined share of 5.5 percent, the sector is still considerably underdeveloped in the Governorate, compared to the East Bank total where the dominant position of the Amman-Zarqa metropolitan area is reflected. The growth of the construction sector in the Governorate is considerably lower than in the East Bank as a whole, indicating the relatively small public sector development expenditure as well as private sector investment in the region.

04.057 Female employment nearly quintupled in the Governorate in 14 years, although its contribution to the total work force was still low. As pointed out in the preceding section, their dramatic increase largely came from the service sector, which accounted for 77 percent of their increase over the period. In 1975, the public sector employment, especially in the spheres of education and community health care, amounted to 70 percent of their employment.

04.058 As referred to in Section 4.1, the Irbid Governorate showed since the beginning of 1960s the characteristics of the population-pushing rural areas, with its conspicuous dent in the age groups of 20 to 39 where the lower sex ratios indicated the outmigration of younger and productive male segments. The characteristics persisted to mid-1970s when the country as a whole was affected by the

Table 4.18 Labor Force and Sectoral Employment in Irbid Governorate, 1961 and 1975

	1961						Changes of Total Emp.1961-75 %
	Total		Male		Female		
	No.	%	No.	%	No.	%	
Agriculture	29,859	56.1	29,730	57.8	129	9.3	- 12.3
Manufacturing	3,471	6.5	2,510	4.9	961	69.4	82.9
Construction	5,537	10.4	5,533	10.8	4	0.3	+ 16.0
Transportation	1,194	2.2	1,193	2.3	1	0.1	+394.1
Commerce	4,088	7.7	4,068	7.9	20	1.4	+254.5
Public Utilities	134	0.3	133	0.3	1	0.3	+452.2
Bank & Insurance Community Services and General Adm.	5,630	10.6	4,969	9.7	661	47.7	+687.2
Unclassifiable	3,271	6.1	3,263	6.3	8	0.6	+398.0
Total Employment	53,184	100.0	51,399	100.0	1,385	100.0	+101.0
Total Labor Force	58,502		56,654		1,848		+ 85.9
Unemployment Rate (%)	9.09		9.28		25.05		

(To continue)

Table 4.18 (Continued)

	1975						Changes of Total Emp.1961-75 %
	Total		Male		Female		
	No.	%	No.	%	No.	%	
Agriculture	26,200	24,5	24,870	25.4	1,330	15.1	- 12.3
Manufacturing	6,350	5.9	5,370	5.5	980	11.1	82.9
Construction	8,880	8.3	8,850	9.0	30	0.3	+ 16.0
Transportation	5,880	5.5	5,840	6.0	40	0.5	+394.1
Commerce	14,500	13.6	14,440	14.7	60	0.7	+254.5
Public Utilities	740	0.7	730	0.7	10	0.1	+452.2
Bank & Insurance	1,050	1.0	940	1.0	110	1.3	+687.2
Community Services and General Adm.	43,270	40.5	37,040	37.8	6,230	70.9	
Unclassifiable	-	-					+398.0
Total Employment	106,870	100.0	98,080	100.0	8,790	100.0	+ 85.9
Total Labor Force	108,762		99,604		9,159		
Unemployment Rate (%)	1.74		1.53		4.03		

Sources: Ibid

international outmigration. Since migration is selective of population groups with distinct levels of education and occupational qualification, as well as with particular sex, age and marital status characteristics, it causes changes in the composition of local manpower.

04.059 Although the full magnitude of the effects of the outmigration cannot be known exactly, given the paucity of statistical information, some indication can be presented in relation to the Governorate. The Ministry of Labour instituted in 1974 the system of issuing certificates to those Jordanians who were about to work outside the Country, and in the following year the system of issuing permits to the foreign workers employed in Jordan. The statistics made available at the Labour Office of the Governorate do not cover all the out-migrating Jordanians and the incoming foreign workers. For instance, what are missing in Table 4.18 are teachers whose migration is reported to have been sizeable. In addition to the lack of compliance among the prospective emigrants and outmigrants, the movement between Syria and Jordan does not require official registration, for short-term (less than one year labour mobility. Nonetheless, Table 4.19 shows some patterns. That is, the external demand on the manpower in the Governorate concentrated in particular job categories. Of the total Governorate residents who received certificates during the period from 1975 to 1977, a little over 87 percent held jobs connected construction industries (including 66 surveyors and 4 engineers). Another pattern discernible from the table is that, since 1977, the number of outmigrants have been apparently more or less in balance with that of immigrant workers, who are said, however, to have held more diverse jobs than the outmigrating Jordanians and been working largely as semi-skilled or unskilled workers.

04.060 The drain of the skilled construction workers apparently influenced their wage levels in the Governorate, coupled with the construction boom which was partly caused by the increased remittances from abroad. Three skilled construction workers interviewed in the Municipality of Irbid reported that they earned an average JD 120 to 125 a month, sometimes even JD 200 to 300. Granted that the stability of their income is not guaranteed, their current earnings compare favourably at least with the civil servants in the Municipality. For instance, a headmaster of a secondary school earns JD 130 per month. That jobs requiring manual skills in general are currently more rewarding than the white-collar jobs is attested by the fact that most of the preparatory and secondary school pupils interviewed professed to get technical or vocational training in the future.

Table 4.19 Certificates Issued to Jordanians Working Abroad and Labor Permits Issued to Immigrant Workers

	1975	1976	1977	1978 till July
Carpenter(buildings)	88	204	79	
Carpenter	43	32	8	
Electrician	107	104	21	
Pipe makers	42	34	23	
Painters	34	20	3	
Floor panellists	36	26	2	
Foremen	-	-	3	
Blacksmiths	113	115	49	
Mechanics	125	207	53	
Surveyor	35	23	8	
Engineer	2	-	2	
Glassworker	2	1	-	
Tailor	17	14	7	
Barber	5	5	-	
Watchmaker	3	-	-	
Butcher	4	3	-	
Cook	11	7	4	
Driver	12	8	4	
Baker	5	-	2	
Accountant	34	32	22	
Pharmacist	3	-	4	
Photographer	11	2	1	
Typist	9	5	4	
Total Certificates	741	842	299	243
Total Labor Permits	34	98	265	263

Source: Labour Office, Irbid Gov.

4.2.3 Projected Labor Force in the Study Area

04.061 As was the case with the population projections, the future labour force can be estimated only in rough terms. Supposing that the same gross participation rate will prevail through mid-1980s with the implied assumption that the age and sex structure will remain the same, the labour force in the Irbid Governorate will increase from 106,900 in 1975 to 141,300 in 1985, at an annual growth of 2.8 percent over the period. For the period from 1980 to 1985, a net addition to the total labour force would be about 17,200, or 3,440 per annum. If the same is applied to the Study Area, the labour force will increase from about 100,000 in 1975 to 127,000 to 1985, a net addition of 13,600 between 1980 and 1985, or 2,720 per annum. For the year 2000, the gross participation is assumed to rise to some 30 percent, largely due to the increased labour participation of the female population and the declined share of children aged less than 15 years. Therefore, the labour force will reach the order of some 342,000 in the Irbid Governorate.

4.2.4 Employment in the Study Area

04.062 Employment estimate in 1975 and its projection for 1985 or 2000 is more difficult than that of labour force because of the data scarcity. One way to estimate is to deduct the unemployed from the total labour force. It is said that unemployment rate in Jordan was arround two percent in recent years, and this situation of labour shortage even in unskilled labour force will prevail as long as the economic prosperity in Gulf countries continue. If we assume the minimal rate of two percent unemployment rate will continue until 2000, employment in the Study Area will almost equal to the labour force, resulting about 100,000 in 1975, 130,000 in 1985 and 300,000 in 2000 in the Study Area.[10/]

10/ Human Resources Committee for the Irbid Region Planning Study of the Government of Jordan provided us a new data on Sectoral Employment in Irbid Governorate in 1975, which appear on the following table.

Sectoral Employment in Irbid Governorate in 1975

Sector	Male	Female	Total
Agriculture	43,812	24,630	68,442
Mining and Manufacturing	1,015	262	1,277
Construction	1,285	1	1,286
Transportation	2,352	16	2,368
Commerce	4,477	18	4,495
Public Utilities	298	0	298
Bank and Insurance	210	15	225
Community Service and General Administration	7,505	2,950	10,455
Total Employment	60,954	27,892	8,846

4.3 Education and Manpower Development

4.3.1 Educational Characteristics of the Population

04.063 General educational aspect of the formal education is also handled in Chapter XII, and the recommendations on the general education will be made also in the Chapter XII.

a. East Bank

04.064 The educational standards of the Jordanian population are very high as a result of the Government's consistent policy of expnading educational opportunities in the past decade and a half. As shown on Table 4.20, the school enrollment ratio among the younger population aged 6-24 showed remarkable improvement between 1961 and 1974.

04.065 The age groups of 6-14, which correspond to the elementary and preparatory education, came to have near full enrollment by mid-1970s. The lower ratio among the age group of 6-9 appears to be due to the commonly practiced delayed enrollment, even though the official age for starting education is six. With the dramatic rise in school attendance, the wide disparities of enrollment which existed between rural and urban areas and between sexes in 1961 largely disappeared in the age groups of 6-14.

04.066 For the age groups of 15-24 which correspond to secondary and higher education, differential enrollment by sex and residence was still substantial in mid-1970s. The enrollment is considerably lower in rural areas and among females, with the lowest enrollment thus found among rural females. As shown on Table 4.20, the differential enrollment is more pronounced in the age group of 20-24, in which the urban male enrollment is as high as 18 percent compared to 2.1 percent for the rural females. Nonetheless, the level of enrollment showed considerable across-the-board improvement in 14 years, with nearly 60 percent of the age group of 15-19 and 12 percent of the age group of 20-24 attending school in 1974, compared to 21 and 3 percent in 1961.

04.067 As a result, 70 percent of the population aged 6-24 were enrolled at schools of various levels in mid-1970s, compared to a little more than one-third in 1961. This improved scholl enrollment, as mentioned already, contributed to the decline in labour participation among the younger population.

04.068 Concomitantly with the increased school attendance among the younger population, the literacy rate among the adult population improved a great deal over the period. As shown on Table 4.21, the literate comprised only one-third of the population aged 15 and over in 1961, which was, however, already higher than many other developing countries at the time. By mid-1970s, the literacy rate rose to 62 percent, although the female population showed a substantially lower rate of 47 percent, which correlates with the lower school enrollment among them. The effect of expanded educational opportunities can be seen clearly in the gradual decreases in literacy as the age advances.

Table 4.20 School Enrollment Ratio by Sex, Age and Residence, 1961 and 1974 (Unit: Percent)

Age	Sex	Total East Bank						Irbid Governorate					
		Total		Urban		Rural		Total		Urban		Rural	
		1961	1974	1961	1974	1961	1974	1961	1974	1961	1974	1961	1974
6-9													
	Total	48.2	83.9	61.3	86.6	37.7	77.4	48.9	83.9	65.4	88.5	45.7	80.5
	Male	57.7	85.2	66.0	86.9	50.9	81.3	62.5	85.1	68.3	88.3	61.4	82.6
	Female	37.9	82.4	56.1	86.3	23.5	73.3	34.2	82.7	62.2	88.6	28.9	78.4
10-14													
	Total	55.1	92.3	68.1	95.4	44.5	84.0	55.0	90.3	53.7	95.4	55.3	85.9
	Male	70.1	95.6	66.2	96.3	73.4	93.6	75.8	94.8	79.5	95.8	75.1	94.0
	Female	37.7	88.6	70.4	94.4	10.2	73.0	30.7	85.0	24.9	95.1	32.0	76.6
15-19													
	Total	21.0	57.2	26.8	62.4	15.6	42.8	21.9	51.3	36.0	62.7	18.6	41.1
	Male	30.5	63.3	33.9	65.9	27.3	56.1	36.5	58.2	47.3	63.0	33.9	53.9
	Female	11.0	50.7	19.2	58.7	3.6	28.9	7.6	44.1	23.5	62.3	4.2	27.7
20-24													
	Total	2.7	12.3	3.0	14.5	2.5	6.6	3.5	10.7	5.9	15.0	2.9	6.9
	Male	4.4	16.0	4.2	17.7	4.8	11.7	6.7	14.4	10.1	16.2	6.0	12.6
	Female	0.9	8.9	1.5	11.5	0.4	2.1	0.7	7.5	2.0	13.9	0.5	1.8
Total 6-24													
	Total	33.8	70.8	40.2	73.9	27.8	62.8	35.5	68.4	48.0	72.6	32.9	63.6
	Male	43.4	75.1	42.3	76.4	44.4	71.7	51.0	73.4	55.2	75.6	50.1	71.5
	Female	23.2	66.3	37.9	71.3	10.3	53.3	19.7	63.1	40.2	72.6	15.5	55.3

Sources: First Census of Population and Housing 1961
Multi-Purpose Household Sample Survey 1974.

Table 4.21 Literacy Rate in East Bank and Irbid Governorate, 1961 and 1974

(Unit: Percent)

Age group	1961			1974		
	Total	Male	Female	Total	Male	Female
East Bank:						
15-19	54.7	75.0	34.0	88.4	94.2	82.2
20-24	40.0	62.4	19.0	80.6	92.9	69.8
25-29	34.2	55.7	14.4	71.7	89.8	56.4
30-39	30.6	51.9	11.4	52.0	77.5	35.0
40-49	22.4	38.3	6.9	46.6	66.2	25.5
50-	12.4	21.1	3.2	28.9	43.8	10.8
Total	32.4	50.1	15.2	61.8	76.2	47.3
Irbid Gov.:						
15-19	45.1	70.7	20.5	84.9	93.9	75.5
20-24	29.3	52.8	10.2	75.8	93.9	60.2
25-29	23.3	45.6	6.1	63.5	89.1	41.2
30-39	21.4	42.5	4.4	43.1	70.8	19.4
40-49	18.2	34.1	2.1	36.8	59.5	12.9
50-	10.6	18.9	0.7	24.3	39.8	3.7
Total	24.6	42.6	7.6	54.7	72.4	36.8

Sources: Ibid.

b. Study Area

04.069 The educational characteristics of the population in the Irbid Governorate underwent similar changes as the total East Bank population. What is noticeable from Table 4.22 is that the enrollment ratios among the Governorate's younger population in both urban and rural areas were generally higher than the national averages in 1961, despite the strongly rural characteristics of the Governorate population and labour force as mentioned already. The tendency persists in mid-1970s, although it was largely confined to the age groups of 6-14. The probable reason for the higher school attendnace is overage enrollment commonly found in areas or countries where schools are recently introduced. Whatever was the reason for higher enrollment, the level of school attendance in the Governorate was more or less equivalent to the National average in 1974, with near full enrollment among the age groups of 6-14 and vastly improved attendance among the age groups of 15-24. In mid-1970s, a little more than 68 percent of the population aged 6-24 were enrolled at schools, compared to 35 percent in 1961. As was the case with the East Bank total, the urban areas had a higher enrollment ratio of 73 percent in 1974 comapred to 64 percent in the rural areas, the difference largely being due to the lower school attendance among rural females.

04.070 The literacy level of the adult population conforms more to the rural characteristics of the Governorate population as shown on Table 4.21. The literacy rate among the population aged 15 and over was lower than the National average by sex and age group in both 1961 and 1974. This probably reflects the frequently-observed tendency that migrants generally have the higher level of educational attainment in their places of origin. In the Governorate, the literacy rate among the adult population who chose to remain there tended to be lower than the National average which was pushed up by the higher literacy rate prevailing in the far more urbanized Amman Governorate. The generally lower literacy rate notwithstanding, the improvement during the 14-year period was just as striking as in the East Bank as a whole. Considering the fact that the age groups of 6-14 had higher enrollment ratios than the National averages in mid-1970s, after 20 years or so, the Governorate's standing in terms of the literacy rate will be greatly improved vis-a-vis the National average, provided, of course, that the outmigration from the Governorate be reduced mainly by increased job opportunities attractive to the educated young labour force.

4.3.2 Formal Education in Jordan

a. Present Conditions

04.071 Formal education in Jordan is conducted by the Ministry of Education, other ministries,[11/] United Nations Relief and Works Agency (UNRWA) and private agencies. The system is based on six years of

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11/ Ministry of Defence, Department of Social Affairs, Ministry of Health, Ministry of Awqaf and Islamic Affairs, Ministry of Labour, and Ministry of Industry and Trade.

Table 4.22 General Education Facilities in Irbid Governorate, 1976/77

	Irbid Governorate								East Bank			
	No. of Schools	No. of Class-Units	No. of Teachers	No. of Students	Class-Units per School	Students per Class	Students per Teacher	Percentage of Rented Schools 1/	Class-Units per School	Students per Class	Students per Teacher	Percentage of Rented Schools
Elementary	335	3,446	3,562	111,876	10	34	33		10	36	35	69.0
(MOE)	(301)	(2,754)	(2,962	(93,241)	(9)	(34)	(31)		(9)	(34)	(33)	(75.1)
Preparatory	319	1,254	2,003	35,152	4	28	18		5	32	21	42.0
(MOE)	(281)	(1,055)	(1,709)	(28,493)	(4)	(27)	(17)		(4)	(30)	(19)	(44.2)
Secondary	99	397	615	14,120	4	(35)	23		6	37	25	30.9
(MOE)	(98)	(375)	(595)	(13,440)	(4)	(36)	(23)		(6)	(38)	(25)	(29.1)
Total	753	5,097	6,180	165,148	7	32	27		7	35	29	
(MOE)	(674)	(4,184)	(5,266)	(135,174)	(6)	(32)	(26)	(54.3)	(7)	(33)	(28)	(57.7)

Source: Ministry of Education, Educational Statistical Yearbook 1976/77.

Note: 1/ The Figure for 1977/78 as obtained from the School Construction Plan for Irbid Governorate 1978/79 and 1982/83.

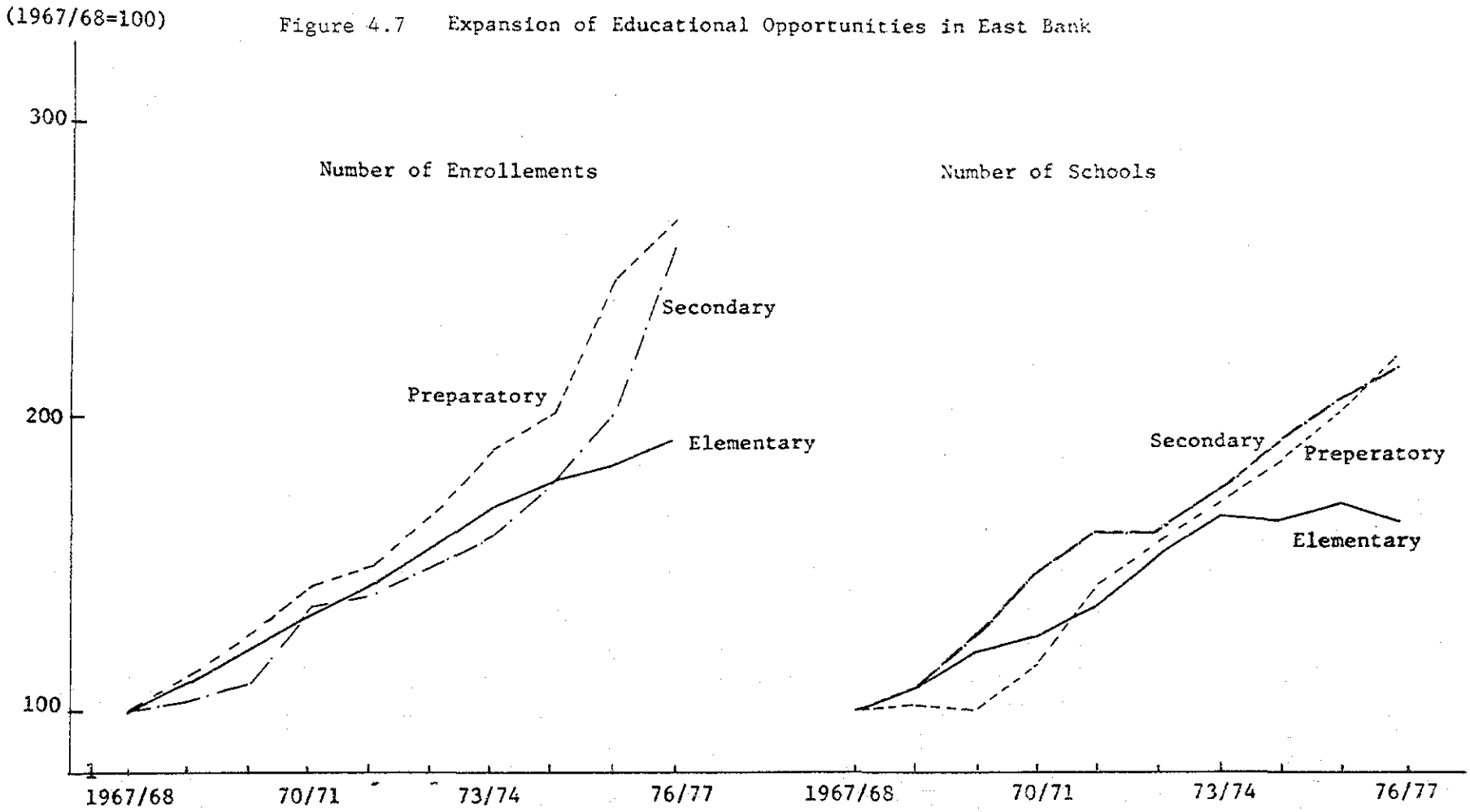
elementary education, three years each of preparatory and secondary education, and then either two-year post-secondary technical and teacher training or university education extending from four to six years. Since 1973, the Ministry of Education began to emphasize technical training on various levels, and established several specialized trade training centers to give two-year skill training to preparatory school graduates, a couple of comprehensive secondary schools and a polytechnic and other institutes for advanced training. School enrollment normally begins at the age of six and is made compulsory for the first nine years, that is, till the end of preparatory education. Education is free except for universities and privately-run schools. For pre-school-age children, kindergartens are available in major cities, though all of them are run by private agencies.

04.072 The compulsory education is well developed in Jordan. Accordingly to the statistics prepared by the Ministry of Education, enrollments in the elementary and preparatory cycles numbered in 1976/77 402,000 and 125,000 repsectively, nearly two-fold and three-fold increases since 1967/68 when they totalled 207,000 and 46,000, respectively (See Figure 4.7). Of these students, 70 percent each were attending schools managed by the Ministry of Education in 1976/77, while UNRWA schools accounted for 22 percent for the elementary school cycle and 24 percent for the preparatory cycle. The private schools had only a limited share, 8 percent for elementary and 5 percent for preparatory.

04.073 As for the secondary education, the enrollments grew just as rapidly. Students attending general secondary schools increased by 2.5 times in nine years from 21,000 to 53,000, while the enrollments at vocational secondary schools more than trebled from 2,100 to 7,500. The share of the schools managed by the Ministry of Education is higher in secondary than in compulsory education, making up approximately 90 percent in both general and vocational schools in 1976/77. UNRWA schools are almost exclusively for vocational education, accounting for a little more than 8 percent of the students attending vocational schools, while private schools concentrate in academically-oriented education, making up 12 percent of the students enrolled in general secondary schools. As for higher education, it is reported that a total of 16,000 were enrolled at universities and technical, vocational and teacher training institutes inside the Country in 1976/77, compared to a little over 3,200 in 1967/68. Of the total students in 1976/77, 56 percent were enrolled at technical vocational or teacher training institutes, the last of which accounted for nearly four-fifths of the total of 8,896. In terms of university education, Jordan probably has at present one of the highest enrollment ratios in the developing world. If students studying abroad, who are estiamted to have totalled 46,000 to 50,000[12/] in 1976/77, are added, roughly one-fourth of more of the population aged 18-24 were supposedly learning at universities in 1976.

12/ The figure of 46,000 was given in the Educational Statistical Yearbook of 1976/77 prepared by the Ministry of Education, while the other was given in Demographic, Social Commercial Characteristics of the Jordanian Population compiled by the Department of Statistics and published in 1978.

Figure 4.7 Expansion of Educational Opportunities in East Bank



Sources: Ministry of Education, Educational Statistical Yearbooks, 1970/71 - 1976/77.

b. Problems and Needs

04.074 As in many other countries where educational opportunities were rapidly expanded, the present education system in Jordan suffers from various problems, though the current Five-Year Plan as well as the preceding Three-Year Plan have accomplished a great deal to remedy the situation. One of the two major problems is that the provision of new school buildings and other scholastic facilities failed to catch up with the tremendous increase in school enrollment. One result was the very high percentage of rented premises, which runs to the order of 69 percent for elementary, 42 percent for preparatory and 31 percent for secondary schools in 1976/77. The ratio of rented premises among the schools run by the Ministry of Education was slightly higher in compulsory cycles, amounting to 75 and 44 percent respectively for elementary and preparatory schools, while lower for secondary schools at 30 percent. Another result was the fairly high occurrence of the double-shift system. Of the total class units, 21, 13 and 6 percent were in the second shift for elementary, preparatory and secondary cycles in 1976/77. The percentages were significantly higher in the schools managed by the Ministry of Education amounting to 28, 14 and 7 percent, respectively.

04.075 Disregarding the question of the double-shift system which could function to tide over the fluctuations of school enrollments and thus to economize on the educational investment, the effects of rented premises are more far-reaching. Most of the rented premises were originally built for dwelling purposes, and students are generally forced to sutdy in smaller ill-ventilated rooms at these schools, which, moreover, lack often than not such facilities as playgrounds, laboratories and workshops. In addition to these problems, the running costs of these schools have jumped in recent years due to the sharp rise in rent in urban areas, where 47 percent of the rented schools were located in 1976/77. The rent paid by the Ministry of Education is estimated to be roughly equivalent to 40 percent of development expenditure budgeted for the Ministry in 1976/77.[13/]

04.076 The other major problem is the relative over-expansion of academically-oriented general education compared to technical and vocational education in the secondary cycle. As the demand for craftsmen and skilled labour as well as for technicians and engineers rose sharply in early 1970s in neighbouring Arab countries, Jordan came to suffer from growing shortages of middle-level technicians and skilled labourers, because the country itself needed these personnel to bolster the development of its economy envisaged in the Three-Year Plan. As of 1971/72, only 12 percent of the secondary cycle students were enrolled at commercial (6 percent), agricultural (1 percent) and, industrial (5 percent) secondary schools. These vocational and technical schools were, moreover, generally poorly equipped and their curricula were not geared to meet the changing demands of the Country's economy.

13/ Ministry of Education, Fifth School Construction Plan 1977-81 (in Arabic).

c. National Strategy

04.077 These major shortfalls, as well as others not mentioned above, of the formal education system were recognized early on by the educational authorities of Jordan, as clearly shown in the Three-Year Plan and the current Five-Year Plan. The Plans, to put it briefly, defined the educational development objectives as (1) continuous expnasion of compulsory and secondary education facilities, (2) adaptation of secondary and higher education to the manpower needs of the Country, and (3) creation of professionally qualified teachers in proportion to the demands accruing from (1) and (2).

04.078 In the current Five-Year Plan, a total of JD 15 million was allocated to the educational development, excluding university education which was separately allocated JD 17 million for its development. Of the total non-university education development expenditure, slightly over one half (JD 7.85 million) was meant for the construction of school buildings (40 compulsory and 10 secondary shcool buildings plus schools in the Jordan Valley) and refurbishing equipment, that is, for the objective (1) stated above. Despite the efforts since the preceding Three-Year Plan,the percentage of rented schools improved little by 1976/77 due to the continued expansion of school enrollment. The figures quoted for the MOE schools in the beginning of this section for the year 1976/77 were exactly the same as those in 1973/74. As a result, the Ministry of Education drew up a fifty school construction plan for the period of 1977/78-81/82 to replace the rented premises and meet the increasing demand. According to this plan, 388 school buildings are expected to be, or need be, constructed and furnished by the end of 1981/82. An estimated cost is JD 290 million, (including a cost of land purchase amounting to JD 76.3 million).

04.079 According to the current Five-Year Plan, a little over two-fifths (JD 6.21 million) of the development expenditure was allocated for the construction and upgrading of technical and vocational training facilities for post-preparatory and post-secondary education, that is, for the objectives (2) and (3) mentioned above. Especially with regard to post-preparatory education, the plan envisaged to increase the number of enrollment in the first secondary vocational class from 15 to 30 percent of the total enrollment by 1980 and proposed one each of commercial and industrial secondary schools and 11 vocational training centers. In addition, the plan proposed to establish two comprehensive secondary schools where enrolled students are given orientational vocational training as well as general education.

04.080 For higher education, the second polytechnic at Husn and a teachers' training college at Karak were proposed. These projects, together with the establishment of the Yarmouk University with emphasis on technical and technological fields and the expansion of faculties at the University of Jordan, were directed at training qualified teachers as well as serving to meet the growing needs for highly trained manpower in the National economy.

04.081 In addition, several projects were envisaged to cater for the diverse needs of the Jordan's labour force and economy. A hotel training center at Amman, which was already completed, gives specialized training for both secondary and preparatory school graduates. A vocational training center at Aqaba would give full-time and part-time training to preparatory school graduates as well as adult workers in those skills especially needed in the locality. A rural development center and an agricultural vocational training center were proposed for the Jordan Valley to improve agriculture-based technology among the residents in the area, and so forth.

04.082 In addition to the above development expenditure by the Ministry of Education and the universities, the Ministry of Labour allocated JD 3.8 million in the Plan for the establishment and operation of a Vocational Training Corporatoin. The Corporation, which was established in 1976, gives, among several activities and services envisaged in the Plan, short- and medium-term training courses, plus arranging inplant training in co-operation with enterprises, for new preparatory school graduates as full-time apprentice trainees, on the one hand, and for the already employed adult workers as part-time trainees, on the other. In the second year of its operation in 1978, the Corporation accepted approximately 300 apprentice trainees and 500 part-time trainees. The Corporation is currently planning to expand its programs through establishing five training centers of its own by the end of 1982. If these centers are completed, the Corporation projects to give training to some 2,300 full-time and part-time trainees and to 300 more who will act as supervisors and instructors of these trainees.

4.3.3 Formal Education Facilities in the Study Area

a. General Education

04.083 As of 1976/77, there were 753 compulsory and general secondary schools in the Irbid Governorate, enrolling 165,000 students (Table 4.21). The schools run by the Ministry of Education (MOE) numbered 674, enrolling 135,000 students. Although breakdowns by educational cycle are not available, the total number of these schools is reported to have increased to 807 in 1977/78, of which 723, or 90 percent, are MOE schools, with the rest being run by UNRWA (6 percent) and by private agencies (4 percent).14/

04.084 As shown on the table, such indexes as the number of students per class or per teacher in the Governorate are just as good as the East Bank total. The percentage of rented schools in the total MOE schools for compulsory and secondary educational cycles in the Governorate is reported to be 54.3 percent in 1977/78 (no breakdown is available by educational cycle), which seems to compare favourable with the figure

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14/ Ministry of Education, School Construction Plan for Irbid Governorate 1978/79-1982/83.

of 1976/77 for the East Bank total as shown on Table 4.21. The percentage in considerably higher in cities where it reaches 75 percent compared to 27 percent in rural areas. The corresponding figures for the East Bank, though the year is 1976/77, were 82 percent for cities and 46 percent in villages. Again, the Governorate seems to fare better than the East Bank as a whole. However, the differences in figures are not significant enough to conclude that the Governorate is definitely better placed in terms of physical facilities. Rather, the Governorate faces the same problems as the rest of the Country in that more than a half of the MOE schools are rented to the detriment of teaching efficiency and student welfare.

b. Vocational Education

04.085 As of 1977/78, the following facilities existed in the Irbid Governorate to give specialized technical and vocational training to preparatory and secondary school graduates.

Post-Preparatory:

Industrial Secondary School (Irbid)	520 boys
2 Commercial Secondary Schools (Irbid)	441 boys 252 girls
3 Vocational Training Centers (Irbid, Jerash, Mafraq)	294 boys
3 Sewing Centers (2 in Irbid, Mafraq)	140 girls
Commercial Secondary Section (Jerash)	56 boys
Nursing Section (Irbid)	67 girls
Total	1,795

Post-Secondary:

Teacher Training Institute (Ajlun)	756 girls
Teacher Training Center (Hawara)	609 boys
Total	1,365

04.086 According to the School Construction Plan for Irbid Governorate 1978/79-1982/83, the students enrolled in post-preparatory vocational schools and centers listed above accounted for 9.3 percent of the total students in the secondary school cycle. The corresponding percentage for the East Bank in the year 1976/77 was 12.4 percent for all the secondary cycle shcools and 12.8 percent for MOE schools. Therefore, the Governorate is a little behind the rest of the Country in providing vocational training facilities for preparatory school graduates.

04.087 However, in terms of perhaps the most vital industrial vocation training, the Governorate is no worse than the East Bank as a whole. The percentage of the enrollments in the industrial secondary

school and vocational centers in the total secondary level students was 4.2 percent in 1977/78 in the Governorate, compared to 4.0 percent in 1976/77 in the East Bank as a whole. The Governorate might be even better placed than the rest of the countries, because 38.5 percent of the total East Bank enrollments at industrial secondary schools and vocational centers could have been in the Governorate in 1976/77 (because 4 establishments already existed in this year with probably the same level of enrollments). This percentage is significantly higher than the Governorate's share in the total East Bank secondary school enrollments (17.7 percent) in the same year.

04.088 In addition to vocational training opportunities provided at the MOE facilities listed above, the Vocational Training Corporation accepted in 1978 some 70 full-time apprentice trainees in Irbid under the bilateral agreement with the electricity company located in the Governorate.

04.089 The Education and Higher Education Committee for Irbid Region Planning Study of the Jordan Government has the following opinion about the vocational secondary schools and centers: The number of students enrolled in vocational training for 1978/79 in the Irbid Governorate being 856 (228 girls and 628 boys) and by comparing this number with the number of students enrolled in the first secondary class for the same year, it can be seen that the ratio of vocationally oriented teaching is 10 percent for boys, 5.5 percent for girls and 8 percent for all. And as the world ratio in developed countries of vocational trainees (those with an intermediate university degree and below) to university graduates of the same specialization ranges from 1:3 to 1:5, Jordan must proceed in the same direction in spite of the difficulties faced by the Ministry of Education in attaining the ratio charted for vocational training, i.e., 30 percent for 1980. These difficulties seem to be resulting from poor technical potentialities and inferior social consciousness of vocational training. The committee believes that an annual increase of 5 percent in the number of students enrolling in this field will be reasonable starting from 1980/81. It is also believed that the rate will be 15 percent in 1980/81 and will go as high as 35 percent in 1985. With the adoption of this policy in this field, it has been possible to draw Table 4.23, which shows the prospective sex-based number of students in secondary vocational training in Irbid province for 1980-1985.

Table 4.23 The Prospective Number of Students in Secondary Vocational Training in Irbid Province, 1980 to 1985

Scholastic Year	Prospective Number of Students in SVT		
	Male	Female	Total
1980/81	1,200	600	1,800
81/82	1,900	900	2,800
82/83	2,500	1,200	3,700
83/84	3,000	1,500	4,500
84/85	3,400	1,800	5,200

Table 4.24 shows the number of the present and planned vocational secondary schools and centers in Irbid Region until 1985 distributed according to kind and location.

Table 4.24 Distribution of Vocational Secondary Schools and Centers, Including Presently Existing and Planned, the Study Area, at 1985

Directorate of Education		Vocational Secondary Schools and Vocational Secondary Centers					
		Industry (Schools)	Commerce (Schools)	Nursing (Schools)	Comprehensive (Schools)	(Schools)	Annual Capacity (Students)
GRAND TOTAL	Total	2	3	1	4	13	2,400
	Male	2	2	-	3	8	1,800
	Female	-	1	1	1	5	600
IRBID	Total	1	2	1	3	5	1,680
	Male	1	1	-	2	3	1,200
	Female	-	1	1	1	2	480
JERASH	Total	-	1	-	1	3	330
	Male	-	1	-	1	1	240
	Female	-	-	-	-	2	90
AJLUN	Total	-	-	-	-	1	60
	Male	-	-	-	-	1	60
	Female	-	-	-	-	-	-
MAFRAQ	Total	1	-	-	-	2	230
	Male	1	-	-	-	1	200
	Female	-	-	-	-	1	30
RAMTHA	Total	-	-	-	-	2	100
	Male	-	-	-	-	2	100
	Female	-	-	-	-	-	-

04.090 According to Tables (1) and (2), the capacity of schools and vocational centers in 1985 is planned to be 1,800 male and 600 female students. Meanwhile, the expected students in 1980/81 already amount to 1,200 male and 600 female. This implies that the Region needs more numbers of schools and centers than those mentioned in Table (2). Such needs can be met in three ways as follows:

(1) Enlarging schools and centers cited in Table 2, to accommodate larger numbers of male and female students.

(2) Opening new vocational centers into accommodate the students in Table (1), when this policy is adopted geographical distribution of new centers should take account of sex and type of education necessary for each of the five districts of the Region. For example, Table (2) explicitly shows that Ramtha and Ajlun are deprived of female schools and centers and the rural areas in all districts are also deprived of such female centers. Such things must be taken into consideration since villagers, particularly, object to sending their daughters such an age to the city to continue their vocational education.

(3) Using one school building as a compound for various vocational trainings, particularly in small districts. One school, for example, may include commerce, nursing and sewing for girls, since their numbers are relatively small in each branch and by pooling them together, saving in construction works and effective services could be achieved.

4.3.4 Ongoing and Planned Projects in the Formal Education in the Study Area

a. General Education

04.091 The Ministry of Education has recently made public its new development plan specifically for the Irbid Governorate in order to expand the program envisaged in the current Five-Year Plan and to extend its implementation period up to 1982/83. According to this plan, which is titled School Construction Plan for Irbid Governorate 1978/79-1982/83, the following projects are proposed for the construction and expansion of general education facilities. It has to be pointed out that the listed projects do not include the Ghor area, where the Jordan Valley Authority has been implementing its own educational development projects.

Urban Areas			
(1) 35 Compulsory Schools (Total Cost JD 5.21 million)	Irbid	Male 7,	Female 9
	Jerash	Male 2,	Female 2
	Ramtha	Male 7,	Female 3
	Mafraq	Male 1,	Female 2
(2) 5 Secondary Schools (Total Cost JD 0.84 million)	Irbid		Female 2
	Mafraq	Male 1	
	Ajlun		Female 2
	Deir Abu Said		Female 1
(3) 42 Additional Rooms for Secondary Schools (Total Cost JD 0.315 million)	Jerash	Male 6,	Female 5
	Ramtha	Male 12,	Female 9
	Mafraq		Female 9
Rural Areas			
(1) Central Secondary Schools (Total Cost JD 4.24 million)		Male 17,	Female 16
(2) Additional Rooms for Central Secondary Schools (Total Cost JD 1.34 million)		Male 11,	Female 13

04.092 As seen from the above list, the main objectives of the plan are: (1) to construct school buildings for the compulsory educational cycle in the urban areas where the percentage of rented premises is very high; and (2) to construct central secondary schools in the rural areas where opportunities for secondary cycle education are less than in cities. The central secondary school system for rural areas was first proposed in the current Five Year Plan. The idea was to provide better and diversified teaching programs to students by pooling educational equipment and facilities in one central village rather than to distribute small-size secondary schools with inadequate facilities in scarcely populated rural areas. With concomitant provision of housing, the system is expected to attract qualified teachers who are at present reluctant to be posted in isolated villages.

04.093 The total cost for implementing these projects is estimated to be JD 12 million, a little over 50 percent of which will be financed by the MOE. The remainder will be shouldered by respective municipal and village councils (the prescribed percentage for these councils is 40 percent for villages and 50 percent for municipalities).

b. Vocational Training

04.094 In addition to the industrial secondary school and three vocational training centers which existed in 1977/78, the fourth vocational center has been recently established to start its operation in 1978/79, while another industrial secondary school for boys is now under construction at Mafraq. As for the second polytechnic in Jordan planned at El Husn, the bidding has been already completed and its construction is expected to start by the end of 1978 with IDA financing. Although the implementation is a little behind the schedule, the polytechnic will probably start enrolling students before the next Five Year Plan. In addition, two of the seven IDA financed vocational training centers for rural development are about to be implemented at Jerash (for girls) and Shajara (for boys). Although it is not meant for straightforward vocational training, a comprehensive secondary school for girls is expected to be established at Irbid.

04.095 According to the Construction Plan 1978/79 - 82/83, the following projects are proposed for vocational training, excluding those mentioned above.

(1) 2 Commercial Secondary Schools at Irbid (JD 0.29 million)

(2) Vocational Training Centers for boys at Deir Abu Said, Ramtha and Irbid(JD 0.161 million)

(3) Expansion of the Industrial Secondary School at Irbid (JD 0.15 million)

(4) 1 Comprehensive Secondary School for Boys at Irbid (JD 0.65 million)

The total cost for these projects are estimated to be about JD 1.25 million and will be fully financed by the Ministry of Education.

04.096 Although not yet finalized, the Vocational Training Corporation is planning to establish one of its five prospective training centers at Irbid before the beginning of 1980s. The cost is tentatively estimated to be JD 0.35 million.

4.3.5 Needs and Project Recommendations in Vocational Training for the Study Area

a. General

04.097 In view of the Nationally felt needs for skilled manpower, the discussion in this section will be confined to technical and vocational training needs. For general education, recommendations are made in Chapter XII of Volume 4.

04.098 Taking into account the facilities which are already existing and the projects anticipated to be implemented in the near future, it is judged that the foundation of post-preparatory and post-secondary technical and vocational training facilities will be laid down more or less by the early 1980s in the Study Area. This is not, however, to say that the projects referred to in the preceding section will be sufficient for the Area's needs in 1980s. On the contrary, the Area will have needs for more diverse skilled manpower, when the overall development strategy indicated in the Volume 2 of this report begins to materialize toward later 1980s and thereafter. What is meant is simply that most of the primary and major secondary development centers in the Study Area will have vocational training facilities, with the Yarmouk University and the Polytechnic giving more advanced courses in technical and technological fields.

04.099 During the course of the interview survey conducted in the Municipality of Irbid, it is found that technical and vocational education is now eagerly sought by the parents of school-age children and those children themselves. It has to be pointed out that the social demand for more and higher education has been always strong in Jordan and that the return on education has been generally high, and made even higher in the last few years. Specifically in relation to industrial vocational training, it was not possible to find corroborating evidences of the often-voiced claim that the Arab value system tends to look down upon manual labour and jobs that require manual skills. Even conceding that the traditional cultural values in Jordan have such inclination, it has been strongly challenged by the reality that jobs which require skilled manual labours are in fact just as rewarding as, or even more rewarding than, white-collar jobs. The existing industrial secondary school and vocational training centers in the Study Area now receive two to three times more applicants than their capacities. It is also said that the competition was very high among the applicants for the full-time apprenticeship program organized by the Vocational Training Corporation.

04.100 The challenge obviously came from the sharply increased external demand on the skilled and trained manpower of Jordan in early 1970s. Although the population of Jordan appears to have had the "push" factor since 1960s, the outmigration of a sizable portion of the Jordanian labour force in 1970s has been primarily induced by the "pull" factor from the neighbouring oil-rich countries. The several-times higher salaries offered in these countries had a profound effect on the wage structure in Jordan. The wage levels of those jobs which were strongly in demand in the neighbouring countries consequently jumped, coupled with the increased demand for them in the economy of Jordan. Those jobs are, notably, engineers in various specialized fields and technicians, and skilled labour related to the construction sector. As already mentioned, nearly 90 percent of those who obtained certificates for working abroad in the Ibrid Governorate in 1975-77 held jobs related to construction industries. Moreover, skilled construction workers in the Municipality of Irbid can now earn as much as JD 150 a month, which is higher than the salary of a headmaster at a secondary school in the Municipality.

04.101 The three vocational training centers in the Study Area were all established after 1973, and, excluding the one in Irbid which utilizes well-stocked facilities of the industrial secondary school in the afternoon, they offer two courses: electrical works and central heating/plumbing. The new center in Anjara is also expected to offer these courses. The two specializations are said to be most popular among the students enrolled both at the industrial secondary school and the center at Irbid. The decision to give courses on these construction-oriented skills were sound, because they used to be (and still are) taught in informal ways like carpentry and black-smithing, and because they were and still are in strong demand both in and outside Jordan.

04.102 However, these centers will have to diversify the range of skills they teach, because construction industries in Jordan and neighbouring countries are not likely to expand at the present high rate in a long run and, more importantly, Jordan and these countries will need before long more diverse skilled manpower, once the physical foundations for further development are laid down. Thus, the projects recommended in the manpower sector aim, as shown later on, at diversifying post-preparatory vocational training available in the Study Area, as well as at improving, with provision of better equipment, the level of the skills which are now being taught at training facilities.

04.103 One more justification for revamping the existing and prospective post-preparatory vocational training facilities is in order. As already mentioned, Jordan is estimated to have had a very high rate of natural increase of population in recent years. With the high rate of inflation since early 1970s, the costs of higher education as well as of living soared,and the problem of marginal sons, to borrow the word of one Government official, is now getting manifest. Many parents cannot afford to send all of their sons to higher educational institutions, even though they know well that the return on higher, and preferably technical, education will be high. All of the educated young parents and prospective parents interviewed in the Municipality of Irbid professed that they would plan to limit the number of children from two to three, or four at most, because they wanted to give them higher and thus expensive education.

04.104 The vocational training centers and the VTC apprentice program put more stress on practical training than the industrial secondary schools and, therefore, cater to those preparatory school graduates who intend to enter the labour market immediately after training. The jumped applications to these centers and the program attest to the reality of marginal sons. Given the high percentage of the age group below 10 years in mid-1970, the demand for post-preparatory vocational training opportunities will surely increase in 1980s. Hence, the following projects are recommended.

b. Recommended Projects for 1981-85

i. Expansion of the Vocational Training Center at Irbid

04.105 The center currently offers courses on nine specializations, (1) TV and radio maintenance and repairs, (2) electrical works, (3) mechanical engineering (turning, shaving and milling), (4) arc and oxygen welding, (5) central heating and plumbing (6) automechanics (gasoline), (7) automechanics(diesel), (8) general carpentry and (9) typewriter maintenance, plus a general workshop for common basic skills. The diversity of skills taught at the center is due to the fact that it utilizes the facilities of the industrial secondary school which was established in 1960 with long-term assistance from West Germany and is at present the best equipped and staffed school of its kind in Jordan. The project proposes to open a new campus for the center. In addition to the already existing specializations of electrical engineering, mechanical engineering, metal fabrication and general carpentry, agricultural engineering and processing technology will be taught at the center to cater to the prospective development of agro-based industries in the Study Area. The agricultural processing will include experimental fructose extraction from artichoke as well as general food processing technologies. The addition of this specialization will conform to the prospective Polytechnic at Husn, which offer specialized courses on food technology, and therefore will be able to supply instructors to the center.

04.106 The estimated cost of the project is JD 1.5 million.

ii. Improvement of the Vocational Training Centers (Jerash, Mafraq, Anjara and Ramtha)

04.107 Of the four centers, the one at Ramtha was only listed in the School Construction Plan for Irbid Governorate 1978/79 - 82/83, and its implementation is not yet finalized. But assuming that the center will be established in the similar manner as the other centers, the improvement is proposed here. The project consists of (1) provision of better equipment for the existing workshops (electrical works and central heating/plumbing) and (2) establishment of two new workshops (mechanical engineering and metal fabrication) at each center. Taking account of the proximity to the international transportation routes, automechanics might be substituted for mechanical engineering at either Mafraq or Ramtha.

04.108 The estimated cost is JD 2 million.

iii. A Craft Center for Girls at Jerash

04.109 The project is to set up workshops for ceramics and wood carving, and is expected to contribute to the development of souvenir industries in the area. As for ceramics, technical cooperation from some foreign countries such as Japan will be ideal to adapt Jordan's traditional designs and mosaic pictures as well as to transfer sophisticated technology. This will make the finished products attractive to the visiting international tourists.

04.110 The estimated cost is JD 0.5 million.

c. Recommended Projects after 1985

04.111 After 1985, technical and vocational training facilities in the Study Area will have to be provided in such a way as to fit the industrial development envisaged at its major development centers. One possibility is to expand the Polytechnic at Husn, by adding--for example courses on printing and publishing technologies. Another possibility is to establish a management training school or schools for prospective entrepreneurs or managers so that they will be able to contribute to the development of large-scale enterprises in the Study Area.

CHAPTER V

WATER RESOURCES DEVELOPMENT

CHAPTER V

WATER RESOURCES DEVELOPMENT

5.1 Introduction

05.001 This sectoral study is aimed at examining possibilities of developing and allocating limited water resources in such a way as to maximize socio-economic welfare in the Study Area and at the same time to be consistent with the direction of development envisaged for the country as a whole. The study thus requires accurate information on the current conditions of various sectors and their development objectives and constraints on the national as well as regional levels. It is essential, in turn, that the study provides basic information necessary to identify a long-term development strategy for the Study Area up to 2000 years.

05.002 In the first place, the water resource endowment in the Study Area will be examined in reference to the information compiled in "National Water Master Plan: 1/ (the NWMP hereinafter), "Water Use Strategy Northern Jordan" 2/ (the STRATEGY hereinafter) and data in possession of such agencies as the Natural Resource Authority, Water Supply Corporation, Jordan Valley Authority and local institutions in the Study Area. Secondly, water demand projection shall be reviewed through the NWMP, STRATEGY and others if any.

05.003 After reviewing the water endowment and demand projection of the Study Area, an attempt will be made to identify an appropriate way to balance the potential demand and supply in order to expedite economic development and social betterment in the Study Area. All the potential demand will not be satisfied in near future, given the scarcity of development budget and staff who can manage planning and designing of water resources development. Therefore, it will be attempted to suggest an appropriate way of allocating the limited water supply to various sectors in terms of the average value of output per unit of water input.

1/ National Water Master Plan, Vol. I-Vol VII, by Agrar and Hydrotechnic with Natural Resource Authority, 1977.

2/ Draft Report, Water Use Strategy of Northern Jordan, by Howard Humphreys and Sons, 1978.

05.004 Lastly, taking into account those ongoing and planned projects and the objectives envisaged in them, identification will be made of water resource development requirements and project recommendations for the Study Area covering the next five year plan period (1981 - 1985) and thereafter till 2000 years. Sources of water in the Study Area are rivers and ground waters, and their respective exploitability will be examined in terms of comparative costs. In the process of project formulation, consideration will be given to the water resource development and allocation strategy on the national level.

5.2 General Features of the Study Area

5.2.1 Topography and Climate

05.005 The Irbid Governorate can be divided into three sub-areas with different topographic features and climatic patterns:

(1) Jordan Valley: This rift valley lies at minus 390 m to plus 200 m above sea level. Average annual rainfall is approximately 300 mm. Mean temperature varies from 28 °C in July (dry season) to 14 °C in January (wet season).

(2) Hilly Area: The area ranges in altitude from 500 m to more than 1,000 m and covers most of the Study Area. The peak mountain is 1,247 m above sea level. Average annual rainfall varies from 600 mm to 200 mm, decreasing from the western hilly area to the eastern semi-arid zone. Mean temperatures in July and January are approximately 25 °C and 10 °C respectively. The hilly area generally has a more moderate climate compared with the semi-arid area to the east.

(3) Semi-arid Desert: The border line between the hilly area and this area lies on an isohyet of 200 mm annual rainfall, which passes from Mafraq to Dhuleil (see Figures 5.1 and 5.2).

5.2.2 Catchment Area

05.006 The Study Area belongs to the Jordan River basin with a total catchment area of approximately 18,000 km^2, of which 13.000km^2 lies on the East Bank and the Syrian territory. The Yarmouk River is the largest tributary to the Jordan River and has a drainage area of 6,790 km^2, with 4,790 km^2 lying in the Syrian territory. The total catchment area of the Jordan River on the East Bank territory of Jordan therefore comes to approximately 8.200 km^2 (Table 5.1 and Figure 5.3).

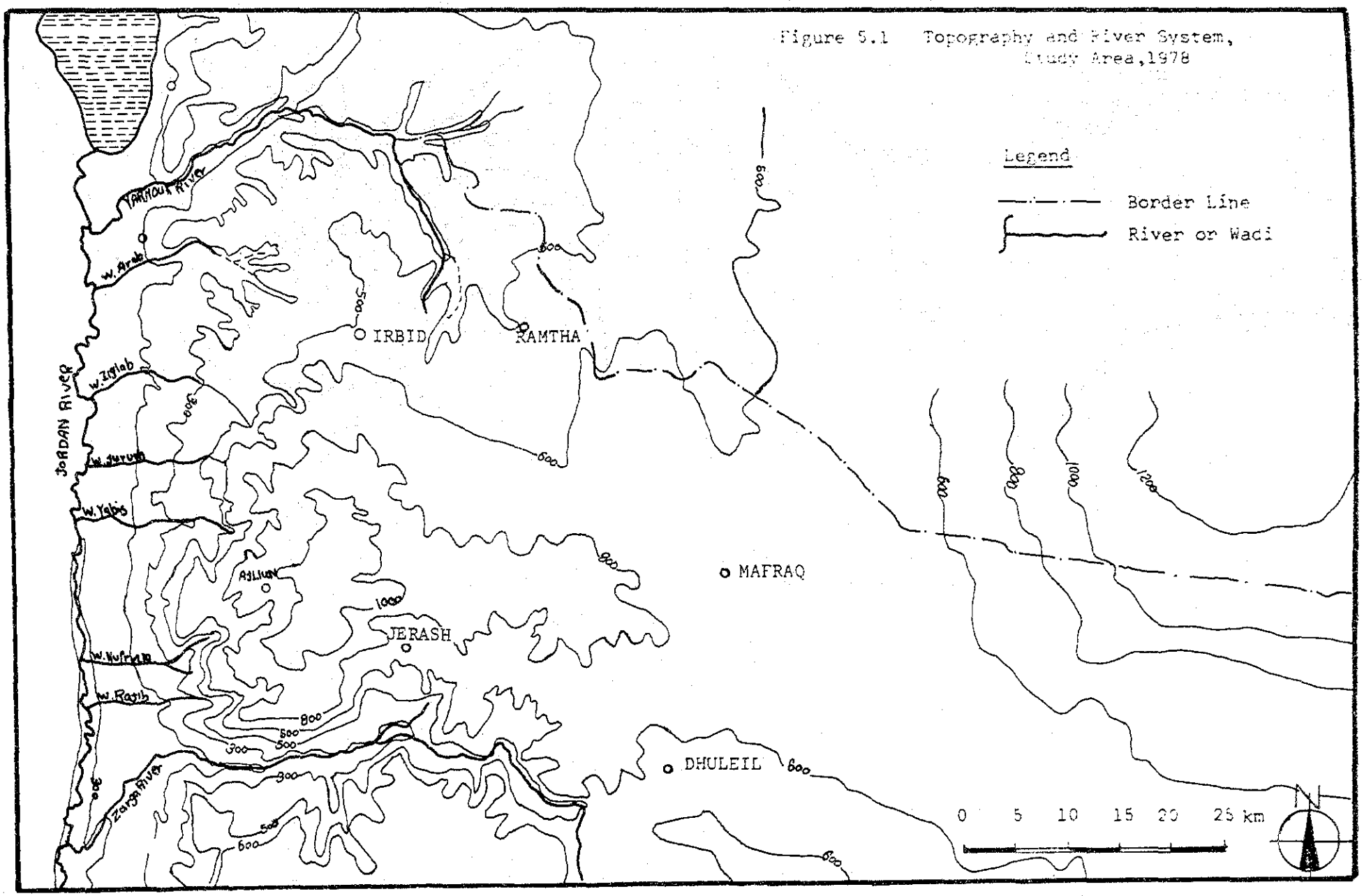


Figure 5.1 Topography and River System, Study Area, 1978

Source: NWMP

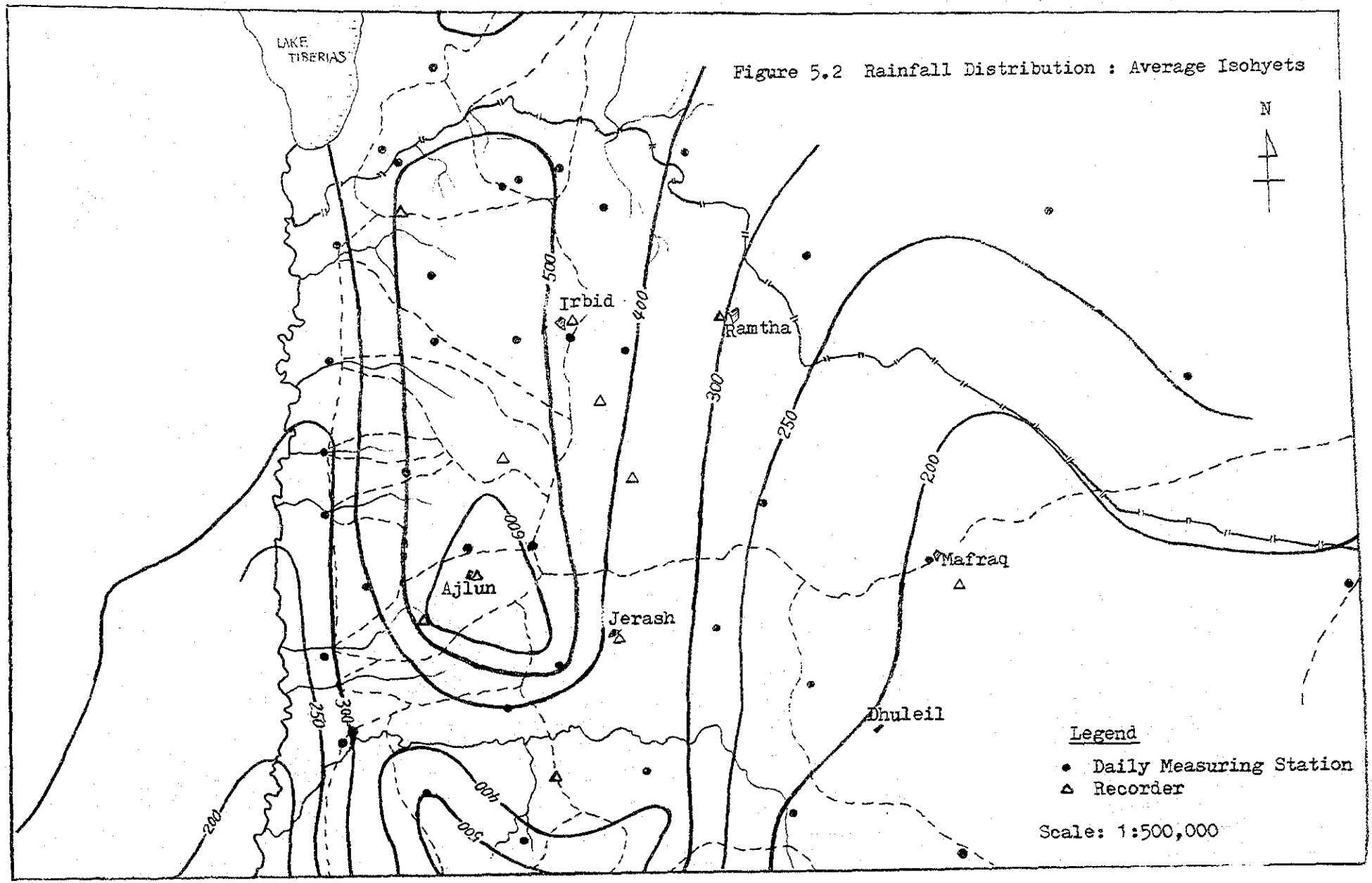
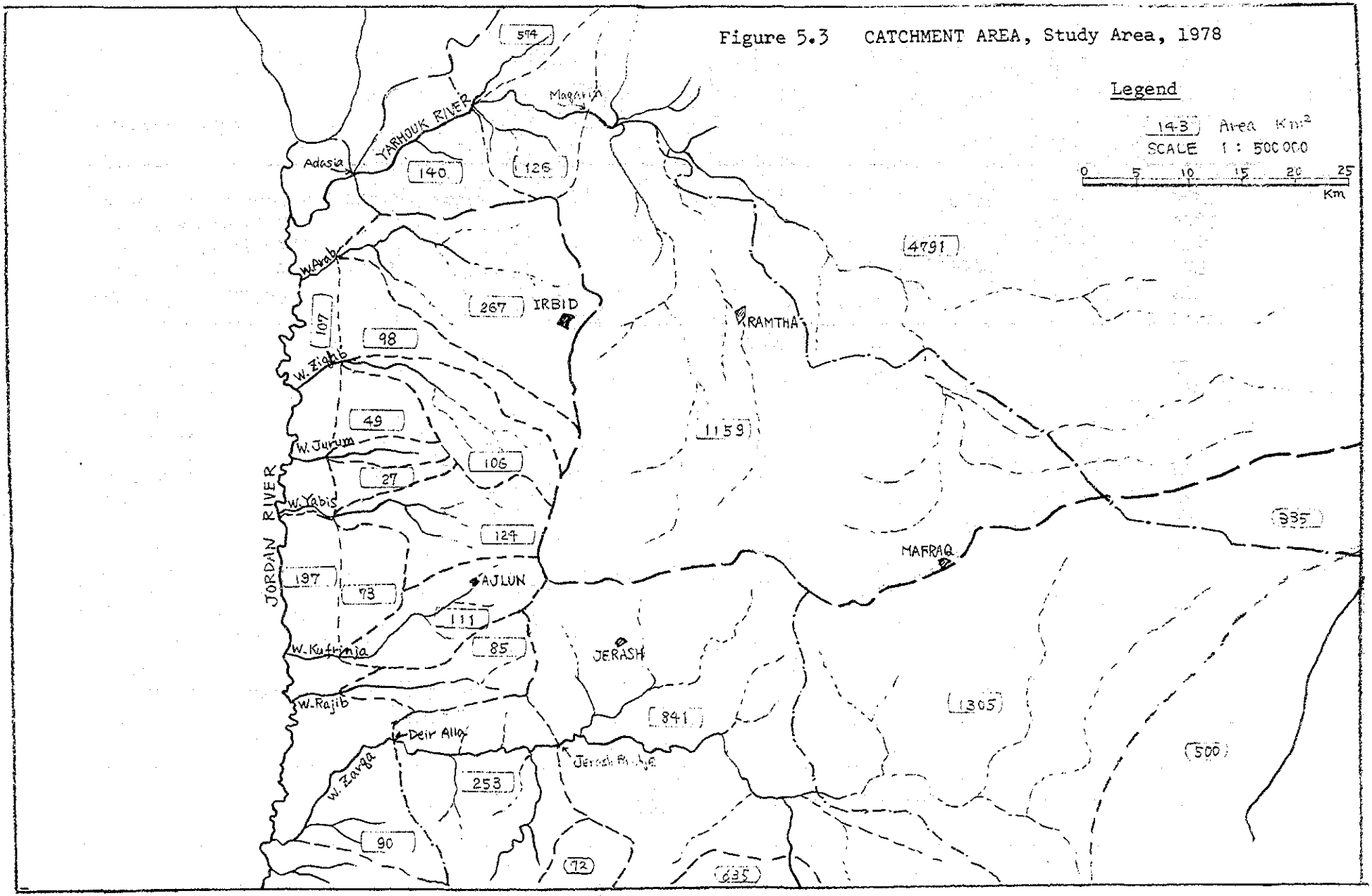


Figure 5.2 Rainfall Distribution : Average Isohyets

Figure 5.3 CATCHMENT AREA, Study Area, 1978



Source: NWMP

Table 5.1 Catchment Area of the Study Area, 1978 (Unit: km^2)

Catchment Area	Rank and Size of Area 1	2	3	4	5	Cord Name
Jordan River Basin	18,194					A
- Upper Jordan Catchment to Lake Tiberias Outlet		2,823				AA
- East Bank Drainage Areas		13,027				
- Small Drainage Areas			1,017			AB
- Yarmouk River Basin (incl. Syrian Territory)			6,790			AD
- Wadi Arab			267			AE
- Wadi Ziglab			106			AH
- Wadi Jurum			22			AG
- Yadis			124			AH
- Wadi Rajib			111			AJ
- Wadi Kufrinja			85			AK
- Zarqa River			4,056			AL
- Wadi Shueib			178			AM
- Wadi Kafrein			189			AN
- Wadi Hisban			82			AP
- West Bank Drainage Areas		2,344				
Yarmouk River Basin			6,790			AD
- Upstream of Maqarin Station				5,950		AD5
- Syrian Territory					4,791	AD51
- Jordan Territory					1,159	AD52
- Catchment between Maqarin and Adasia				840		AD2

Source: NWMP

5.3 Water Resource Endowment

5.3.1 General

05.007 Annual precipitation obviously determines the availability of water over a certain tract of land. Part of the precipitation evaporates or evapotranspires into the air and the remaining part either directly discharges over the land surface (flood) or seeps underground. Water reaching underground collects in aquifers to supply the baseflow of rivers or to be welled. The mechanism of such water movement widely varies from locality to locality and from time to time, depending on topographic, geological, pedological and vegetational characteristics, which are, in turn, constantly affected by the patterns of human activities. Therefore, it is not an easy matter to estimate the availability of water solely on the basis of precipitation.

05.008 This study relies, to a large extent, on the information in the NWMP which has calculated run-off co-efficients (the relationship between rainfall and flow dischange) for each river basins in the Study Area. And also, this study makes use of the information compiled in the STRATEGY especially with regard to ground water resources in the Study Area.

5.3.2 Surface Water

05.009 The total annual rainfall in the east bank of the Jordan River (including Syrian territory) is approximately 8,065 million cubic meters (MCM hereinafter) on average, of which 75 percent or 6,049 MCM falls on the Jordanian territory. Corresponding to the precipitation of 8,065 MCM, the annual streamflow totals approximately 880 MCM, with the run-off ratio coming to 0.11. The Yarmouk River has 285 MCM at Maqarin which are largely caught in the Syrian Basins.

05.010 The total run-off in the Study Area is estimated to amount to 520 MCM, of which 60 percent is considered as base flow (Table 5.2).

Table 5.2 Annual Average Rainfall and Stream Flow, Study Area

Name of Basin	Catchment Area(Km^2)	Average Rainfall (mm)	Average Stream Flow(MCM)	Estimated Base flow (MCM)
Yarmouk at Adasia	6,790	369 1/	387 2/	218
at Maqarin	(5,950)	353	(285)	(163)
Zarqa at Deir Alla	3,941	430	71	48
at Jerash Br.	(3,616)	(272)	(56) 3/	(32)
Wadi Arab	267	467	29	25
Wadi Ziqlab	106	515	10	8
Wadi Jurun	22	430	11	12
Wadi Kufrinja	111	541	6	6
Wadi Yabis	124	527	3	6
Wadi Rajib	85	n.a.	4	3
Total	11,446		522	326

Source: NWMP

Notes: 1/ Estimated by Tiessen Method.
2/ The STRATEGY Estimates 363 MCM/year.
3/ The STRATEGY Estimates 53 MCM/year.

05.011 Out of the total available surface water of 520 MCM, 450 MCM is attributed to the Yarmouk and Zarqa Rivers. Other tributaries to the Jordan River are not significant, primarily because their streamflows are almost utilized or earmarked for irrigation development in the Jordan Valley. Moreover, it seems economically unfeasible to convey water from minor tributaries to the expanding centers of the Irbid Governorate in the east highland. The Zarqa River, on the other hand, is expected to supply water to the lower Zarqa basin (Zarqa triangle irrigation project) and to the Amman-Zarqa metropolitan area. Therefore, the Yarmouk River is virtually the only source of surface water which has an important bearing on the future development of the Study Area.

a. Water Resource in Yarmouk River

05.012 The Yarmouk River has a total drainage area of 6,790 km^2 at Adasia. The catchment area upstream of the gauging station at Maqarin is 5,950 km^2, of which 4,791 km^2 (80 percent) lies in the Syrian territory and the remaining 1,159 km^2 (20 percent) in the Jordanian territory. Annual average flows at Adasia and Maqarin are 387 MCM and 285 MCM, respectively.

05.013 Provided that the Maqarin Reservoir will be completed by 1985, an annual average flow of 285 MCM would be controllable at the Reservoir. Not all of the controlled water could be used for Jordan, because it is necessary to allow for the water right accruing to Syria (estimated to be 5 percent by NWMP), on the one hand, and for the minimum discharge requirement for the maintenance of the river downstream, on the other.

5.3.3 Ground Water

05.014 First, it is necessary to explain briefly what is meant here by "exploitable" or "potential" ground water resources. Both words basically mean the same thing, viz., that particular ground water resources can be harnessed for various uses at a reasonable cost and by application of reasonable technology. All the ground water resources which are known to exist are therefore not necessarily considered as exploitable or potential water resources, because some of them would require a high outlay of capital and application of advanced, and thus costly, technology.

05.015 The Study Area is inclusively covered by the following three ground water basins: (1) the Yarmouk basin, (2) the Zarqa River basin, and (3) Azraq (see Table 5.3). In the Yarmouk ground water basin confined within the Study Area, there is about 10 million cubic meter per annum (hereinafter MCM/a) 3/ of resources exploitable in the Sumaya (Samasdoud) area, of which 2 MCM/a is now utilized for domestic water supply and 4 MCM is pumped for local private irrigation purposes. Therefore, about 4 MCM/a more of ground water in this area can be pumped up.

05.016 In Dhuleil of the Azraq basin, the estimated exploitable yield is about 20 MCM/a. The current abstraction is of the order of 40 to 50 MCM/a, of which only 3 to 4 MCM/a is for domestic supply. Obviously, Dhuleil well-fields are at present over-abstracted, and there is no room for additional exploitation for municipal water supply, unless the current use of water for irrigation in this area is reduced in the future.

05.017 In Azraq, it is estimated that about 20 to 30 MCM/a is exploitable. However, a very costly and extensive investigation would be needed to prove the reliability of the yield estimates. At present 8 MCM/a is being locally used mainly for irrigation, and additional 2 MCM/a is being transferred to the Northern District Water Supply System.

3/ See STRATEGY VOL 5, p 22.

Table 5.3 Ground Water Availability in the Study Area, 1978

(Unit: MCM/year)

Source	Known Exploitable Yield (MCM/a)	Present Abstraction	Uncommitted
Samasdoud	10	6	4
Dhuleil	20	50	-
Azraq	20	10	10

Source: STRATEGY

5.3.4 Quality of Water

05.018 Water resources should be assessed in terms of quality as well as quantity. According to NWMP, the salinity of water (TDS: Talal Dissolved Solid) in the major river flows varies from 400 ppm to 600 ppm, except in the Zarqa River where it goes up to around 1000 ppm measured at Jerash Bridge (see Table 5.4). These figures suggest that the surface water available in and for the Study Area is on the whole acceptable for domestic and irrigation purposes.

05.019 The salinity of ground water ranges from 500 ppm to 1500 ppm from place to place. Especially the lower Zarqa and Azraq basins are poor in quality. The quality of ground water in Dhuleil has been deteriorating in the past few years, and it is substantially affected by irrigation flows on the surface. In addition, there are some traces of domestic waste and sewerage pollution in the ground water in such areas as Jerash and Irbid.

Table 5.4 Salinity of Water, Study Area, 1977

(Unit: ppm)

Name of River/Well	Salinity(ppm: TDS)
River	
Yarmouk River at Adasia	400
Zarqa River at Jerash	1000
Wadi Arab	500
Wadi Ziqlab	500
Wadi Jurum	550

(To Continue)

Table 5.4 (Continued)

(Unit: ppm)

Name of River/Well	Salinity (ppm: TDS)
Well	
Sammaya (upper Yarmouk basin)	750
Dhuleil (Zarqa basin)	less than 500
Azraq	500 - 1000

Source: NWMP

5.4 Water Production and Consumption

5.4.1 Water Production and Consumption in the Kingdom

05.020 Water requirements in the Kingdom largely accrue from domestic, irrigation and industry uses. River transportation and fishery is of no significance. The Yarmouk River has the highest hydro-power potential. It is expected that the Maqarin Dam will generate a total energy of 58 giga-watt-hour per year (hereinafter GWh/year) (the installed capacity: 20,000 kW) after its completion in 1985. In addition, it is planned that the King Talal Dam on the Zarqa River will produce 8.7 GWh/year (the installed capacity: 1,000 kW).

a. Domestic and Industrial Water Supply

05.021 In Jordan as a whole, the annual water production in 1975 primarily from ground water resources for domestic and industrial water uses amounted to the order of 46 MCM, of which about 10 MCM was used for industrial purpose. However, this does not mean that the production can meet the demand for water. In fact, domestic water in most areas in the Kingdom is supplied only one or two days a week so that the people are obliged to keep water in tanks put on the roof of their houses.

05.022 In 1975, about 80 percent of the total population of 1.95 million inhabitants, living in about 800 communities, was serviced by the public water supply systems, and the remainder depended on nearby springs or wells.

05.023 The water supply systems in municipalities utilize ground water pumped from either wells or springs. The water is stored in small reservoirs constructed near the water sources and major consumption centers. At present, raw water is conveyed without any treatment to those reservoirs where it is only chlorinated. Due to the inadequency of treatment, piped water sometimes gets unpalatable at the consuming end. The following Table 5.5 shows major municipal water supply in 1975 and 1977.

05.024 In municipalities in Jordan as a whole, 28.7 MCM of water was produced to serve a population of 1.55 million in 1975. The average supply per capita, including the supply to commercial and small industrial establishments, amounted to 51 liters per capita per day (hereinafter l/c/d) in major municipalities. If an account is taken of a distribution loss of about 20 - 35% (differences between the production and the supply to consumers estimated from the paid bills), the average daily consumption would drop to about 40 liters per capita.

Table 5.5 Major Municipal Water Supply, Irbid and Amman, 1975 and 1977

Municipality	Estimated Population served (1,000 persons)		Water Production (MCM/year)	
	1975	1977	1975	1977
Amman Zarqa District	791	n.a.		
Amman (AWSA)			15.3	20.5
Zarqa Municipality			3.2	4.0
Private Wells			n.a.	5.5
Northern District	367	n.a.	3.6	8.0
Irbid, Mafraq, Ramtha, Others				

Source: NWMP and STRATEGY

5.4.2 Water Production and Consumption in the Study Area

05.025 Water utilization in the Study Area is mainly confined to domestic and irrigation purposes, amouting to 4.6 and 5.7 MCM respectively in 1975. In 1977, the production increased to about 8 MCM and 9 MCM respectively. Because there are only a few industrial establishments in the Study Area, industrial water consumption is negligibly small at present. In the future, however, the Yarmouk University and the Industrial Free Zone projects will require a sizeable supply of water. The Yarmouk University will require about 2,000 - 3,000 m^3/day after its full enrolment. At present, the University is trying to extract ground water near the campus. The proposed Industrial Free Zone project will also require some amount of water, part or all of which will be met by recently-bored wells inside the Syrian territory, which reportedly reach approximately 240 - 330 m deep and are capable of producing 500 m^3/hour.

a. Water Supply System

05.026 A brief explanation of the current water supply systems in the Study Area is in order. The Municipalities of Irbid, Mafraq and Ramtha and their surrounding communities are served by the Northern District System of the Water Supply Corporation (WSC) (see Figure 5.4). The system pumps up water from the springs at Azraq and wells bored in Sammaya and Dhuleil, and after supplying water to small villages around these water sources, distributes water to the west via a booster station at Zaatary. WSC, in addition, operates tank lorries to supply water to small scattered communities in the Study Area. The towns of Jerash and Ajlun are supplied from the springs nearby which are under the management of the respective municipal authorities. As mentioned above, the water production in the Northern District System in 1975 and 1977 are estimated at 3.6 MCM and 8 MCM respectively. Although the production figures show a rapid increase in the past three years, per capita consumption in the Northern District is estimated to be around 38 l/c/d (assuming distribution losses of 30 percent) in 1977, while that of Amman-Zarqa District is estimated to be around 60 l/c/d in the same year. Jerash and Ajlun which are out of the System are supplied domestic water at the rates of 67 l/c/d and 74 l/c/d respectively by their own supply sources in 1975. Therefore, the Northern District is especially in need of domestic water supply as seen in its per capita consumption lower than the National average.

Figure 5.4 Illustration of Northern District Water Supply System