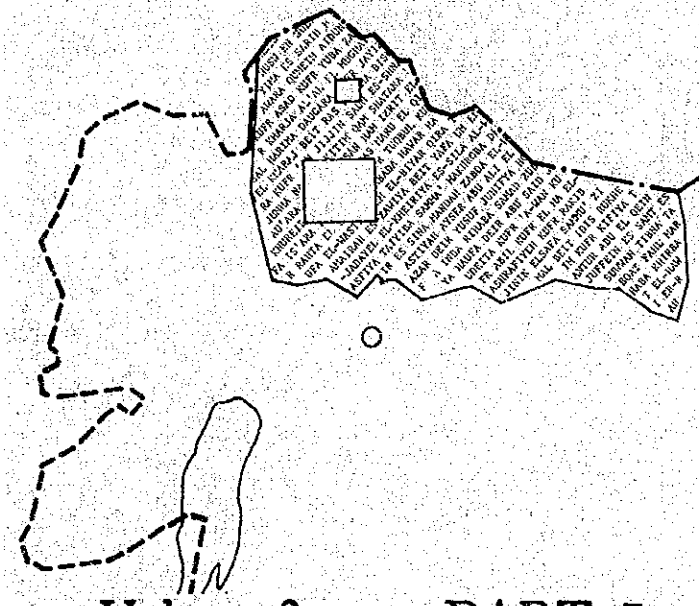
THE HASHEMITE KINGDOM OF
JORDAN

INTEGRATED REGIONAL DEVELOPMENT STUDY OF NORTHERN JORDAN

FINAL REPORT



Volume2: PART I, OVERALL INTRODUCTION
PART II, RESULT OF PHASE I STUDY
CHAPTERS I to III

March, 1980

JAPAN INTERNATIONAL COOPERATION AGENCY

TOKYO

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PART I

OVERALL INTRODUCTION

CHAPTER I

OVERALL INTRODUCTION

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OVERALL INTRODUCTION

1.1 Background

01.001 This is the Final Report on the Integrated Regional Development Study of the Northern Jordan (hereinafter referred to as the Study). The Study was undertaken in response to a request from the Government of the Hashemite Kingdom of Jordan (hereinafter referred to as the Government of Jordan) to the Japanese Government for technical assistance in development planning of the Northern Jordan. Accordingly, the Study was undertaken based on (1) the agreement entitled "Scope of Work for the Study of Integrated Regional Development of Northern Jordan" approved by the Government of Jordan and the Government of Japan on May 11 and 16, 1978 respectively, and (2) the Minutes of Discussion between the representatives of the Ministry of Municipal and Rural Affairs (MMRA)1/ and the Irbid Urban Regional Planning Group (IURPG) of the Jordan Government and the Japanese Delegation Team organized by the Japan International Cooperation Agency (JICA), which was signed on May 31, 1979.

01.002 His Majesty King Hussein and Her Highness the Queen of the Hashemite Kingdom of Jordan, visited Japan in March, 1976, having accepted an invitation from His Majesty the Emperor of Japan, rendered through the special envoy Mr. Z. Kosaka in the year of establishment of Japanese Embassy in Jordan in 1974.

01.003 Prior to that visit, His Highness Crown Prince Hassan visited Japan in May, 1974, and while in Tokyo suggested to Dr. Saburo Okita, then President of the Overseas Economic Cooperation Fund (OECF), that he visit Jordan.

1/ This ministry changed its name to the Ministry of Municipal, Rural and Environmental Affairs on December 19, 1979. However, based on the reasons stated in the footnote of the Acronyms and Abbreviations of this report, we use its old name, i.e., MMRA, throughout this Final Report.

01.004 Dr. Okita visited Jordan in July 1975 and again the next year, at which times he suggested several matters concerning Jordanian economic development, based on the Japanese experience. After returning to Japan he appealed to the relevant government ministries and concerned organizations for closer relations and cooperation between Jordan and Japan in the future.

01.005 As a result of his appeal, the Engineering Consulting Firms Association, Japan (ECFA), organized and dispatched two preliminary survey missions in cooperation with the International Development Center of Japan (IDCJ) in 1976. The Mission headed by Dr. Koichi Mera, professor of Tsukuba University, submitted a report entitled "Integrated Regional Development of the Northern Jordan" to the Government of Jordan in the following year.

01.006 The Hashemite Kingdom of Jordan is presently carrying out its Five-Year Plan (1976-1980) for development and is preparing the next Five-Year Plan (1981-1985). In order to accomplish the dynamic economic development envisaged by the current Five-Year Plan, a comprehensive regional development program which will coordinate the sectoral plans was recognized to be vital. The Government of Jordan, highly desirous of developing the Northern Region in balance with the rest of the Kingdom, requested the Government of Japan for technical assistance.

01.007 In response to the request of the Government of Jordan, the Government of Japan sent a preliminary mission, headed by J. Kano, through the Japanese International Cooperation Agency (JICA) in February 1978. After two weeks of discussions, the mission and the Jordanian representatives, composed of Dr. Hisham Zagha of the National Planning Council (NPC), and Dr. Sufyan Tell of the Ministry of Municipal and Rural Affairs, agreed upon the purposes and the scope of work for the Study which was envisaged to start in June 1978. These documents were later confirmed by their respective governments with only minor amendments, in May 1978.

01.008 The Scope of Work approved by the two governments is in an appendix of this Final Report, Volume 7. The Study defined by the Scope of Work was comprised of two studies: Phase I to be conducted in 1978 and Phase II to be conducted in 1979.

01.009 The Phase I Study was undertaken from June 19, 1978 through the end of October, 1978. As our highest privilege, His Highness Crown Prince Hassan led the conference at which the Phase I Draft Final Report was presented, on October 28, 1978. After the presentation, the Government of Hashemite Kingdom of Jordan made an effective and quite extensive effort to carry the Study forward. To cite several of the various facets of that effort, special note may be made here of the establishment and subsequent work of the Steering Committee, headed by H.E. the Prime Minister; other organizational measures, as well as the thoughtful provision of an office and related accommodations for the Irbid Urban Regional Planning Group; preparation of an Arabic edition of the Phase I Report and other key documents; cartography work done by

IURPG; preliminary discussion by Dr. Tell in Tokyo on the Phase II Study and comments to the Phase I Study; and preparation of formal comments and proposals in a letter dated May 15, 1979 signed by H.E. Minister for MRA, Mr. Ibrahim Ayoub.

01.010 Based on the formal comment dated May 15, 1979, the Japanese Team (hereinafter the Team) commissioned by the Japan International Cooperation Agency prepared the Additions and Amendment to the Phase I Draft Final Report on July 19, 1979. With this Additions and Amendment, the Team received approval of the Phase I Draft Final Report from concerned ministries and agencies on September 3, 1979.

01.011 The Phase II Study started in May 1979 and produced the Phase II Inception Report on June 3, 1979. Intensive field work in Jordan was performed from August 1 through October 10; the Team held an interim presentation meeting on 27 and 28 of August and presented the Tentative Draft Final Report on October 10, 1979.

01.012 Based on verbal comments made in October 1979 by concerned ministries and agencies and on studies made by the Team in Jordan, the Phase II Draft Final Report was produced and on November 30, 1979 was dispatched to the Government of Jordan from JICA. The presentation of this draft report was made to representatives of concerned ministries and agencies on January 16, 1980.

01.013 The approval of the Phase II Draft Final Report by the Steering Committee of the Jordan Government, with several comments, was received by the Team on January 24, 1980. Based on these comments, necessary changes were made in the Phase II Draft Final Report.

01.014 As the final step of the Study, combining above mentioned (1) Phase I Draft Final Report, (2) Additions and Amendment to the Phase I Draft Report, (3) Phase II Draft Final Report and (4) revisions to the Phase II Draft Report, the Study Team has produced this Final Report of the entire Study.

1.2 Projects and Project Areas

01.015 As previously stated, the Study was carried out in two steps: Phase I Study and Phase II Study. The Phase I Study is the project to prepare a development strategy for the Northern Jordan region, to formulate development policies, and to identify development projects and programs.

01.016 The project area for the Phase I Study (hereinafter referred to as the Study Area) was slightly changed from the original Scope of Work to the following new definition in response to the request of MMRA. The modified Study Area is the entire region north of the Zarqa River, east of the Jordan Valley, south of the Syrian border and west of the 36°50' line of east longitude.

01.017 The above-mentioned 1978 Scope of Work specified that in the Phase II Study there would be undertaken pre-feasibility studies of three development projects in the Study Area. As a result of discusiion between representatives of the Jordan Government and the Japan International Cooperation Agency, it was agreed to take up three projects for the Phase II Study. They are:

(1) Irbid Industrial Zone,
(2) Irbid Ring Roads, and
(3) Irbid Tourism Project: Jerash-Dibbin-Ajlun Tourism Project.

These three were then studied, with results as provided in this report.

01.018 In addition to these three studies, it was agreed upon by both parties that one expert would be provided by the Japanese Government as a member of the Phase II Team to assist the Irbid Urban Regional Planning Group (hereinafter IURPG) in preparing a land use plan but not to make the plan itself. For this, one urban planner joined the Team and helped the IURPG to successfully complete the following tasks for the Greater Irbid Region:

(1) Review and assessment of urban land expansion,
(2) Assessment of economic potential,
(3) Examination of agricultural land in view of urban expansion,
(4) Population projection,
(5) Projection of urban expansion, and
(6) Alternative projection of urban expansion.

01.019 As to the Irbid Industrial Zone, this word "Industrial Zone" was used by the representatives of the Jordan Government to mean "industrial estate" in terms of the United Nations definition. In order to avoid conceptual confusion, this Report uses the UN terminology and renamed the first project as "Industrial Estate of Irbid (IEI)." The outline of the Industrial Estate of Irbid, as proposed in the Phase I Draft Final Report, calls for IEI to be located in the outskirts of Irbid City, to encompass an area of about 20 hectares, and to be either an expansion of the existing industrial estate or a new estate. However, as a result of the Phase II Study, IEI is recommended to have a size of 26.6 hectares and to be a new estate near the existing industrial estate.

01.020 The Irbid Ring Roads was renamed as "Ring Roads of Irbid (RRI)" for the purpose of avoiding confusion with IRR (Internal Rate of Return) when it is written as an acronym. There are three planned ring roads in Irbid City: one new ring road around the Irbid Municipality which can tentatively be called "Outer Ring" and two other ring roads tentatively called Inner (First) and Boundary (Second) Rings. Through discussions between the Japanese Team and Jordan Government officials, it was agreed that the Boundary and Outer Rings be studied.

01.021 The Irbid Tourism Project is not suitable for pre-feasibility study but, rather, is suitable for a type of planning study, and consequently does not fit into the 1978 Scope of Work. Even so, it was studied in Phase II in accordance with the strong recommendations of the Government of Jordan. In accordance with the agreement, this Study covered the cities of Jerash and Ajlun, and their environs inclusive of Dibbin National Park, King Talal Dam, Wadi El Yabis and Ishtafina Tourist Park areas. This area is called "Target Area" in this Report. Since the result of this Study showed the importance of the Ajlun area in terms of tourism development, we renamed this project as "Ajlun-Dibbin-Jerash Tourism Plan (ADJ Tourism Plan)" in this Report.

1.3 Objectives and Products of the Study

1.3.1 Objectives of Phase I Study

01.022 The objectives of the Phase I Study are to provide a framework for and give a direction to the economic development of the Northern Jordan, to suggest the necessary investment activities by the Central Government and to provide inputs for use in preparing the next Five-Year Plan.

01.023 The objectives of the Northern Jordan development which were used as criteria in appraising alternative development strategies are as follows:

(1) Primary objectives are:
   1) Economic development,
   2) More equitable distribution of income and wealth, and
   3) More equitable sub-regional distribution of income and wealth.

(2) Secondary objectives are:
   4) Meeting basic human needs,
   5) Popular participation in the development process,
   6) Social stability, and
   7) Educational and cultural development.

1.3.2 Objectives of Phase II Study

01.024 The objectives of the Phase II Study is to give added momentum to the development activities in the Northern Jordan by identifying three highest priority projects and by providing more concrete and detailed study at pre-feasibility level of the three projects. The selected three projects are (1) the Industrial Estate of Irbid (IEI), (2) the Ring Roads of Irbid (RRI) and (3) the Tourism Development Plan for the Ajlun-Dibbin-Jerash area. The first two were intended to be studied at pre-feasibility level and the last was intended to be a plan-making effort.

01.025 The purpose of the pre-feasibility studies is to provide the Government and external lending agencies with information and guidelines necessary for them to determine, without expending unnecessary time and expense, that the projects are sound objectives of investments, for it would be a grave mistake to spend a large amount of money on a feasibility study if there existed serious impediments to successfully carrying out these tentative projects and those impediments could be detected by a brief, but efficient study, i.e., pre-feasibility study. The study, therefore, covered considerations on technical, institutional, financial and economic aspects, within suitably limited parameters.

01.026 As for the Ajlun-Dibbin-Jerash project, the study was carried out to prepare a general tourism development plan for the Target Area. The study is aimed at preparation of an appropriately phased long-term tourism plan and a more detailed first phase plan.

01.027 The specific objectives for the IEI project idetified in the Study are:

(1) IEI should accelerate industrial development in the Irbid Municipality, and consequently, in the Irbid Governorate, in order to reduce its income disparity as compared with the other Governorates;

(2) IEI should support and enhance the urban development of Irbid in order to reduce population outmigration from the Irbid Governorate to the Amman Municipality, through provision of employment opportunities;

(3) At the same time, IEI is expected to help reduce the congestion problem at the city center of Irbid, by relocating industries existing in the city center;

(4) IEI should be designed so that merits of industrial integration and conglomeration could be fully exploited;

(5) Necessary facilities including land plots, roads, water supply and sewerage, electricity, telephones, and access to housing should be fully secured for incoming industries; and

(6) IEI should fully exploit the resource potentialities of the Irbid Governorate such as the relatively abundant and inexpensive manpower, relatively rich agricultural production and good access to the international transportation network.

01.028 The major objectives of the RRI project are as follows:

(1) To mitigate traffic congestion in the center of the city by diverting the through-traffic to the Ring Road;

(2) To help develop the less-developed areas, by provision of a better transport facility; and

(3) To afford a framework to the city for a proper planning of land use, which will prevent unfavorable sprawl of the urbanized area.

01.029 As to the tourism project, based on the assessment of resource and other potentials and the development framework, the Study proposed to set the following development objectives for tourism in the Target Area:

(1) To attract foreign tourists into the Target Area to the maximum extent possible, thereby contributing to an improvement in the balance of payments of the country;

(2) To provide better and more recreational opportunities for the people of Jordan, thereby enhancing the people's quality of life; and

(3) To preserve and revitalize the historical and cultural assets of the country.

1.3.3 Products of Phase I Study

01.030 Major products of the Phase I Study are:

(1) An overall development strategy for the Northern Jordan toward year 2000;

(2) Identification of high priority projects and programs; and

(3) A public investment program for the Northern Jordan covering the period of the rest of the current Five-Year Plan and the entire period of the next Five-Year Plan.

1.3.4 Products of Phase II Study

01.031 The products of the pre-feasibility studies for the Ring Roads of Irbid project and the Industrial Estate of Irbid project are:

(1) Preliminary design of an appropriately selected project, based on comparison of alternatives;
(2) Cost estimate of the above designed project;
(3) Financial and economic evaluation, and
(4) Recommendation of arrangements for implementation.

01.032 The outputs of preparation of the tourism development plan are:

(1) An appropriately phased long-term tourism plan up to the year 2000,
(2) Detailed plans for development cores, and
(3) List of projects to be implemented, their cost estimates, and investment schedule.

1.4 Format of Final Report

01.033 This Final Report has 7 volumes. Volume 1 shows the summary of the result of the Phase I and II Studies. Volumes 2 to 4 cover Part I and Part II, Part I being the overall introduction to the entire Study and Part II being the final edition of the Phase I Report. Principal conclusions of the Phase I Study appear in Chapter III in Volume 4, and the appendices to Part II are attached to the end of Volume 4. Volumes 5 to 7 cover Part III, which is the final edition of the Phase II Report. Conclusions of the Phase II Study appear at the end of each volume, and the appendices to Part III are attached to the end of Volume 7. The appendices to the whole Study are attached to Volume 7.

1.5 Assumed Premises in Parts II and III

01.034 In reading this Final Report, there are some premises that should be remembered. Most of the premises are related to the data used and the time at which the text of Part II and Part III in the Report was written. They are:

(1) As a principle, Part II was written assuming that it had been finished in October 1978, the time which had been the end of the Phase I field work and was the submission date of the Phase I Draft Final Report; and

(2) Part III was written assuming that it was finished in November 1979, which was the submission date of the Phase II Draft Final Report.

These have some consequences, as follows: At first, new data made available after these dates were not taken into account in the respective parts of the Final Report, since the Team was supposed to utilize all the data available during its working period but was not supposed to take into account the data made available after those dates. For example, although the preliminary results of the Population Census held in November 1979 were made available on January 20, 1980, this was not taken into account in the main text of this Final Report. However, since the population is the important factor in plan making, the Team made a separate study on the likely consequences of this preliminary

result, as given in Appendix E in Volume 7. Secondly, the base years of various projections became different for Part II and Part III, being 1977 in Part II and 1978 in Part III, although the target years were the same in Part II and Part III being 1985 and 2000. Thirdly, although there were some changes in proper names after these two dates, these changes were not taken into account and old names used at the respective time were used in this Final Report. For example, the MMRA changed its name to the Ministry of Municipal, Rural and Environmental Affairs (MMREA) on December 19, 1979. But this Report does not use this new name and uses the old name, MMRA. Fourthly, the present tense used in Part II refers to a different time than that referred to by the present tense in Part III. That is, it means the present as of October, 1978 in Part II, and November, 1979 in Part III. So, it might happen that such a sentence as "this subject will be further studied in the Phase II in 1979" appears in Part II whilst such a sentence as "it was studied in the Phase I in 1978" appears in Part III.

PART II

RESULT OF PHASE I STUDY

CHAPTER I

OVERVIEW

CHAPTER I

OVERVIEW

1.1 Kingdom

1.1.1 Introduction

01.001 The Hashemite Kingdom of Jordan is one of the Arab countries and inhabited by about 2.8 million population within the total area of 97,740 square kilometers, including the occupied West Bank.

01.002 After the occupation of West Bank in 1967 and hence the potential uprise in 1970, this nation has had a precious peace period as a chance of economic development.

01.003 The climate is semi-arid and mediterranean, with some rainfall of average 100 to 600 mm a year. With other natural and social conditions necessary for the economic growth, this nation is now in the midst of intensive effort under the Five-Year Development Plan from 1976 to 1980.

1.1.2 National Economy

01.004 The national economy of the Kingdom is characterised by several features summarised in the following.

01.005 The economy of Jordan is, in principle, of a free economy, but the role of central government in economic development, especially industrial sector, is very important. In 1975 one fifth of the GNP was made by the industrial sector which, including construction, grew to the extent that its contribution is double that of agriculture.

01.006 As the main categories of mining and manufacturing there are phosphate rock, cement, petroleum refinery, metal processing, and food processing which are concentrated in relatively capital-intensive production plants.

01.007 Geographically, economic activities are greatly concentrated in the Amman-Zarqa belt, where there is 95.2 percent of the economic establishments employing five or more persons, and 95 percent of the non-farm work force.

01.008 GNP per capita in 1975 is about US$650, which is intermediate in international perspective and not confirmed because of unreliable data, but is thought to be lower in real terms than the level prior to the 1967 War. However, when it is recalled that the present GNP level has been attained without the West Bank, it is clear that Jordan has made extremely successful efforts for economic growth.

01.009 The export-import balance shows an overwhelming surplus of imports; the balance of trade in 1975 was a deficit of $570 million. The deficit was offset by foreign aid receipts and remittance of money to Jordan by Jordanians working abroad, which will be very important even in the future.

01.010 From these characters of the national economy, the fundamental objectives of the economic development are set up, having sufficient persuasion.

(1) Achievement of structural changes in the Jordanian economy through developing the commodity-producing sectors, increasing their share in GDP, strengthening the movement towards a self-sustained economy and expanding its productive capacity.

(2) Realization of high growth rates in GNP in real terms with a view to raising per capita income levels and narrowing the gap between income levels in Jordan and the developed countries.

(3) Achievement of a better and more equitable distribution of national income.

(4) Achievement of the highest possible level of employment, development of manpower capabilities and increase of productivity.

(5) Major reduction in the trade deficit, expansion and diversification of exports, and strengthening the balance of payments components related to factor income from abroad.

(6) Development of domestic revenues as the main source of public revenues, enabling them to cover recurring government expenditures and provide an increasing proportion of public capital expenditures.

(7) Distribution of economic activities, public services and ensuring gains on a more equitable basis among the various regions of the Kingdom.

1.1.3 The Current Five-Year Plan (FYP)

01.011 Development planning system in this country is now on the effective and influential stage, after preliminary efforts in the former Three-Year Development Plan, during 1973 to 1975. The current Five-Year Development Plan (hereinafter the current FYP) started in 1976, and now is in the midst of intensive implementation.

01.012 As an usual case of indicative and guideline character of economic plans in free market nations, the degree of attainment of the goals shown in the Plan may be under the some constraint. But under this sort of constraint, the Plan can be said well deviced and set up ambitiously, particularly in the growth target and the investment program.

01.013 Concerning the growth target (see Table 1.1), it aims at the high growth rate of annual 12 percent in real term of GDP, making the total GDP in the target year 1980 at JD.508 million, 75 percent higher compared with the base year of 1975. Particularly, the leading sector of manufacturing industry and mining aims at the goal of 2.2 times of basic year and the share must be enlarged to 44 percent in the total GDP from 35 percent in the previous year of starting.

Table 1.1 Growth Rates of Economic Sectors During The Plan Period, 1976 to 1980

Sector	Overall Growth (percent)	Average Annual Growth Rate (percent)
Agriculture	40	7.0
Mining & Manufacturing	220	26.2
Construction	22	4.1
Electricity & Water Supply	120	17.1
Total Productive Sectors	161.8	21.1
Transport & Communications	65.4	10.6
Trade (Wholesale & Retail)	41.8	7.2
Financial Institutions	120	17.1
Ownership of Dwellings	76	12.0
Public Administration & Defence	40	7.0
Other Services	50	8.5
Total Services Sectors	51.1	8.6
GDP at Factor Cost	75.2	11.9
Indirect Taxes	57.5	9.5
Net Factor Income from Abroad	65.8	10.6
GNP at Market Prices	73.3	11.5

01.014 Assuming above figures in the plan having sufficient consistency, it looks to be one of the most ambitious national plans in the free world. Of ocurse, higher growth rate and investment share in a less developed economy are one of the most desirable targets for the long-range economic development purpose, at the premises of no any severe problems forecasted.

01.015 From the experience of economic planning in Japan, high growth of GNP of about 10 percent was maintained for about a decade and a half covering the entire period of the 1960's and the early 1970's. During this period the private sector responded well to the guidelines set by the Government. Often the actual growth exceeded the target growth set by the Government.

01.016 However, even in this favorable situation high growth was accompanied by a significant rate of inflation and environmental deterioration. Among them environmental deterioration should attract sufficient attention. In other words, it is very difficult to maintain a high rate of economic growth without paying substantial costs to some aspects of life which can hardly be measured by GNP.

01.017 In rererence to the Japanese experience mentioned above, it may be advisable for Jordan not to aim at a very high growth rate, but to aim at a moderate but sustained growth. For preparing the next national development plan, it would be worthwhile to pay greater attention to the factors efforts which would be needed for sound and sustained development.

1.1.4 Regional Structure of the National Economy

01.018 The length from north to south of the Kingdom is 380 kilometers and its width varies from 150 kilometers at its narrowest to 380 kilometers at its broadest. But the population and industry is distributed in extremely biased to the north-west corner of the territory, particularly in the case of excluding West Bank.

01.019 From the standpoint of economic agglomeration, two urban areas of Amman-Zarqa region and Irbid-Ramtha region are most important with their surrounding agricultural fields. These agglomerations, particularly Amman--Zarqa region, are internationally connected north to the Republic of Syria and east to Iraq and Saudi Arabia and south to many countries via the only sea-port of Aqaba.

01.020 Both agglomerations have about a half and a quarter of the national population and connected each other and with other main cities of the nation at distances listed in the following Table.

Table 1.2 Distances Between the Main Cities

							AQABA
						MA'AN	121
					AMMAN	216	335
				ZARQA	23	239	358
			JERASH	71	48	264	383
		AJLUN	24	94	73	290	409
	RAMTHA	75	40	110	87	304	422
MAFRAQ	40	64	40	49	72	289	407
IRBID 47	22	24	40	96	88	306	424

01.021 Too much concentration to the capital region of Amman--Zarqa has recently become one of the major issues of regional structure of Kingdom's national economy. Therefore, taking economic advantages of the second largest city of the East Bank, Irbid City and its surrounding area was selected to be one of the targets of urban and industrial discentralization. This target in economic policies will be most appropriate and reasonable in the course of national economic development.

01.022 Despite the character of this study, fully devoted to the above issues, it must be also noted that the two-eyes structure of connected Amman--Irbid area at only 88 kilometers' distance is of spontaneous growth and will gradually be an important problem to be discussed in the future. Amman--Suweilih--Jerash--Ajlun--Husn--Irbid will form one axis of urbanization and be introduced into a part of regional balance. In any case as it is matter of promotion or holding back, this nation cannot avoid to face in the course of approaching four million population before the year 2,000.

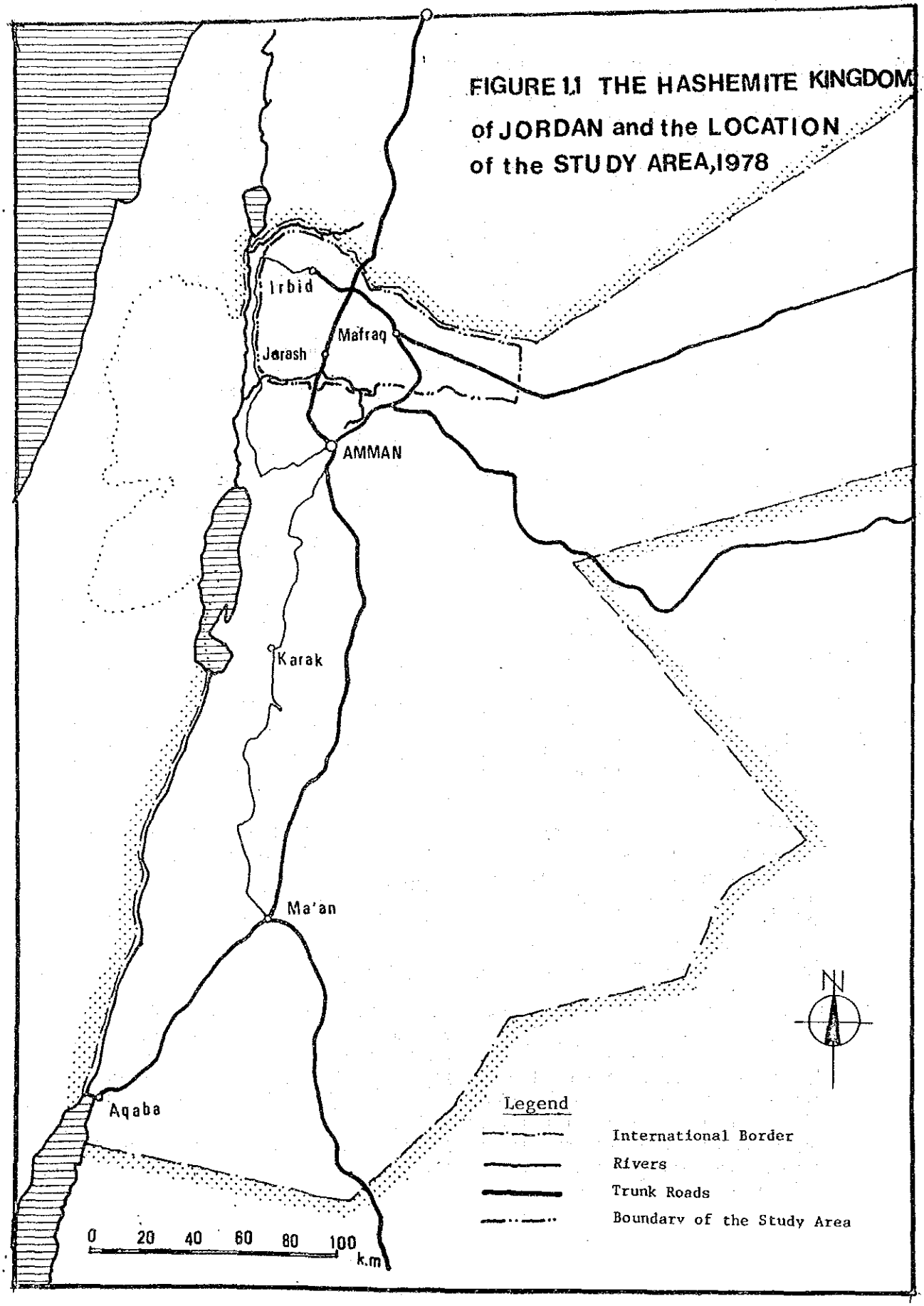


FIGURE 1.1 THE HASHEMITE KINGDOM of JORDAN and the LOCATION of the STUDY AREA,1978
Irbid
Mafraq
Jerash
AMMAN
Karak
Ma'an
Aqaba
N
Legend
International Border
Rivers
Trunk Roads
Boundary of the Study Area
0 20 40 60 80 100 k.m

1.2 Relative Position of the Study Area

1.2.1 General Setting of the Study Area

a. Definition

01.023 According to the Scope of Work signed between the Government of Jordan and the Government of Japan, the Study Area is defined as follows: the study will cover the entire region north of the Zarqa River, east of the Jordan Valley, south of the Syrian border and west of Um el Jimal. This was slightly modified after the discussion with a representative of the Government of Jordan. The new Study Area after modification is bounded by the Governorate of Irbid excluding Ghor Mutselfieh and the part to the east of 36.5 degree east longitude, which is shown in Figure 1.1. So, the Study Area is different from the Irbid Governorate but covers major part of the Governorate.

b. Location

01.024 The Study Area occupies the northest part of the East Bank and it is next to the Amman Governorate which is the capital region of the country. The Study Area takes about 4,494 square kilometers of land which is only 5.3 percent of the East Bank stretching about 100 kilometers east to west and about 70 kilometers north to south. The capital city of the Irbid Governorate is located in the north-western part of the Study Area and is about 70 kilometers to the north of the Amman Municipality or about 86 kilometers by road from the Amman, which is about one and a half hours drive from Amman.

01.025 The Study Area is bordering Syria on the north and the distance from the Irbid Municipality to Dera, the Syrian border town, is about 30 kilometers and that to Damascus, the cpaital city of Syria, is about 110 kilometers. Also, the Study Area has the direct access to Iraq through Baghdad Road.

1.2.2 Natural Condition

a. Rainfall

01.026 The climate of the East Bank is basically of dry-area. More than 90 percent of the land area is the desert with less than 200 millimeter rainfall. It has two seasons: the rainy season in winter from November to March, and the dry season in summer from April to October. According to the rainfall map from the Natural Resource Authority, the Irbid and Balqa Governorates is the best in terms of the annual rainfall having large areas with more than 300 millimeters rainfall. With respect to the Study Area, about the half of it has more than 300 millimiters rainfall. The Amman Governorate is the second in terms of rainfall but more than half of its area does not have the rainfall more than 300 millimiters. The Karak Governorate can be called a dry area and only the Karak Municipality area has the rainfall around

200 millimeters. The Ma'an Governorate is the worst of all, most of its area having the rainfall less than 50 millimeters. After all, the Irbid Governorate especially the Study Area is the best area in terms of rainfall availability.

b. Topography

01.027 Basically the East Bank is the high land area above 500 meters from the sea level except the Jordan Valley. The Municipalities of Amman, Irbid and Salt are almost on the same altitude of about 500 meters. and the Municipalities of Karak and Ma'an are on the altitude of about 1,000 meters. So, they all enjoy the relatively cool temperature in the summer, as compared to the municipalities in the Jordan Valley and Aqaba.

c. Agricultural and Forest Land

01.028 Although forestry can be found in many places in the Kingdom, large-scale forestry can only be found in the Governorates of Irbid, Balza and Karak among which the Study Area is particularly notable for its large forest area and the national park.

01.029 As for the agricultural land, different statistics show different figures. According to the Agricultural Census of 1975 the Irbid Governorate accounts for about 55 percent of the agricultural land in East Bank. Table 1.3 shows the agricultural land by governorate compiled by the Department of Statistics. According to the table, the Irbid Governorate accounts for about 34 percent of the total agricultural land. Although the figures are different each other, the Irbid Governorate is the top agricultural area in the East Bank followed by the Governorates of Amman and Karak.

Table 1.3 Agricultural Land Area, E.B., 1976

	Governorates					
	East Bank	Irbid	Amman	Balqa	Karak	Ma'an
Agricultural Area	8,712	2,935	2,386	856	1,862	674
Share (%)	100.0	33.7	27.4	9.8	21.4	7.7

Source: Dept. of Statistics, Statistical Yearbook 1976.

d. Mineral Resources

01.030 The major mineral and quarrying resources in the East Bank are phosphate, potash and limestone for cement. The Irbdi Governorate is not endowed with pohsphate or potash but is endowed with limestone for white cement production near Ajlun and Jerash and oil shale near Irbid. There is a project for white cement but the oil shale is said to be financially unfeasible at this moment. The Amman Governorate is endowed with both phosphate and limestones for cement and the Karak Governorate with phosphate, potash, oil shale and quartz for glasses. So, the Irbid Governorate is not so rich in terms of mineral resources as the Governorates of Amman and Karak. However, there is ongoing project of oil exploration in the Irbid Governorate. If this shows the successful result, the Governorate will become the most prospective region in the East Bank.

1.2.3 Population

01.031 Although the Study Area is not exactly identical to the Irbid Governorate, statistics are mainly available by governorate and, therefore, figures for governorate are referred to below. But, if you need to estimate the population in the Study Area, there is a clue. Table 1.4 shows the estimated population in the Study Area in 1975. As you see in the table, outside of the Study Area accounted for about 10 percent of the population of the Irbid Governorate. For this reason, the population in the Study Area can be estimated by deducting 10 percent from the population of the Irbid Governorate.

Table 1.4 Population in the Study Area, 1975

Area	Population	Share (%)
Irbid Governorate	563,490	100.0
Outside of Study Area	54,672	
a. Ghor	44,162	
b. Eastern Part of Mafraq	10,510	
Study Area	508,818	90.3

Source: Department of Statistics.

01.032 Table 1.5 shows the population in 1975 by governorate. The population in the table is based on the Statistical Yearbook from the Department of Statistics which is the estimated number and is said to be under estimating the true number of population. However, since we do not have more reliable source of population estimates, we use this statistics.

Table 1.5 Population by Governorate, East Bank, 1961 to 1975

Governorate	1961 Population	Share (%)	1975 Population	Share (%)
Irbid	273,976	30.4	563,490	28.9
Amman	433,618	48.1	1,098,477	56.3
Balqa	79,057	8.8	129,867	6.7
Karak	67,211	7.5	108,037	5.5
Ma'an	46,914	5.2	51,597	2.6
East Bank	900,776	100.0	1,951,968	100.0

Source: Department of Statistics, Statistical Yearbook 1967, 1968 & First Census of Population and Housing, 1961, 1964.

01.033 The Irbid Governorate is the second largest region in the nation in terms of population. In 1975, about 29 percent of the total population was estimated to have been in the Irbid Governorate. The Amman Governorate with about 56 percent of the Kingdom's population has been growing at the estimated rate of 6.7 percent per year since 1961. The Irbid Governorate is estimated to have been growing at slightly lesser rate of 5.3 per year. Since the natural population growth rate from 1961 to 1975 is estimated to be 3.2 to 3.4 percent per annum. These two regions alone appear to have absorbed immigrants. The three remaining regions had been growing more or less at the natural rate of population growth. The current population of the Irbid Governorate is estimated at about 600,000 out of the total Kingdom's population of 2.2 million.

01.034 It is also clear from the table that only the Amman Governorate has gained its share and the Irbid and other governorates all decreased their shares within the East Bank population.

01.035 The East Bank has 84,535 square kilometers with the population density of about 23 persons per square kilometer in 1975. On the other hand, the population density of the Study Area (not the Irbid Governorate)

in 1975 is 116 persons per square kilometer and that of Ghor area is 226 persons per square kilometer. This relatively high density in the Study Area is mainly attributable to the exclusion of the vast desert area from the Study Area, while the East Bank as a whole includes this desert area. Figure 1.2 shows the population density. Amman is the densiest and the Study Area is the seocndarily dense areas. Combined with the large population and high population density therefore, the Study Area is the one of the two best areas in terms of manpower availability.

1.2.4 Economy and Industrial Structure

a. Gross Regional Domestic Product

01.036 Table 1.6 shows the Gross Regional Domestic Product (GRDP) at market prices in 1977 estimated by the Study Team. The total GRDP in the East Bank is estimated to JD.471 million in 1977, of which the Irbid Governorate account for 21 percent of JD.99 million and the Amman Governorate for 64 percent or JD.299 million. With respect to the per capita GRDP, the average per capita GRDP fo the East Bank is JD.221, whereas that of the Irbid Governorate is about JD.165 in 1977.

01.037 This per capita GRDP of the Irbid Governorate is the lowest of all governorate, being about 75 percent of the National average and about 67 percent of that of Amman. If it is compared with the highest GRDP governorate which is the Karak Governorate, it is about 61 percent of Karak. The per capita GRDP of the Karak is the highest because of the phosphate mining. The Amman Governorate is the second exceeding the average by 11 percent. Nonetheless, the Irbid Governorate is the lowest income area in the East Bank. This seems to be caused by the large population, its heavy dependence upon agriculture and weak manufacturing sector.

01.038 In terms of the household income, the Amman Governorate was the highest and all other governorates were below the national average in 1973. The Irbid Governorate was not so bad among the other governorate but still is about 88 percent of the national average. Due to this low household income which seems to be caused by stagnant agriculture in the area, a number of workers are reported to be outside the country and sending remittance to their families in the Study Area. This feature is not peculiar to the Study Area but is shared by all regions.

b. Industrial Structure

01.039 Table 1.7 shows the industrial origin of the GRDP by governorate. With respect to the agricultural value added, the Irbid Governorate is dominant over others accounting for about 44 percent of the total agricultural value added in 1977. According to the Water Master Plan, Irbid is also the dominant governorate in terms of agricultural production in 1975 accounting for about 46 percent of the total agricultural

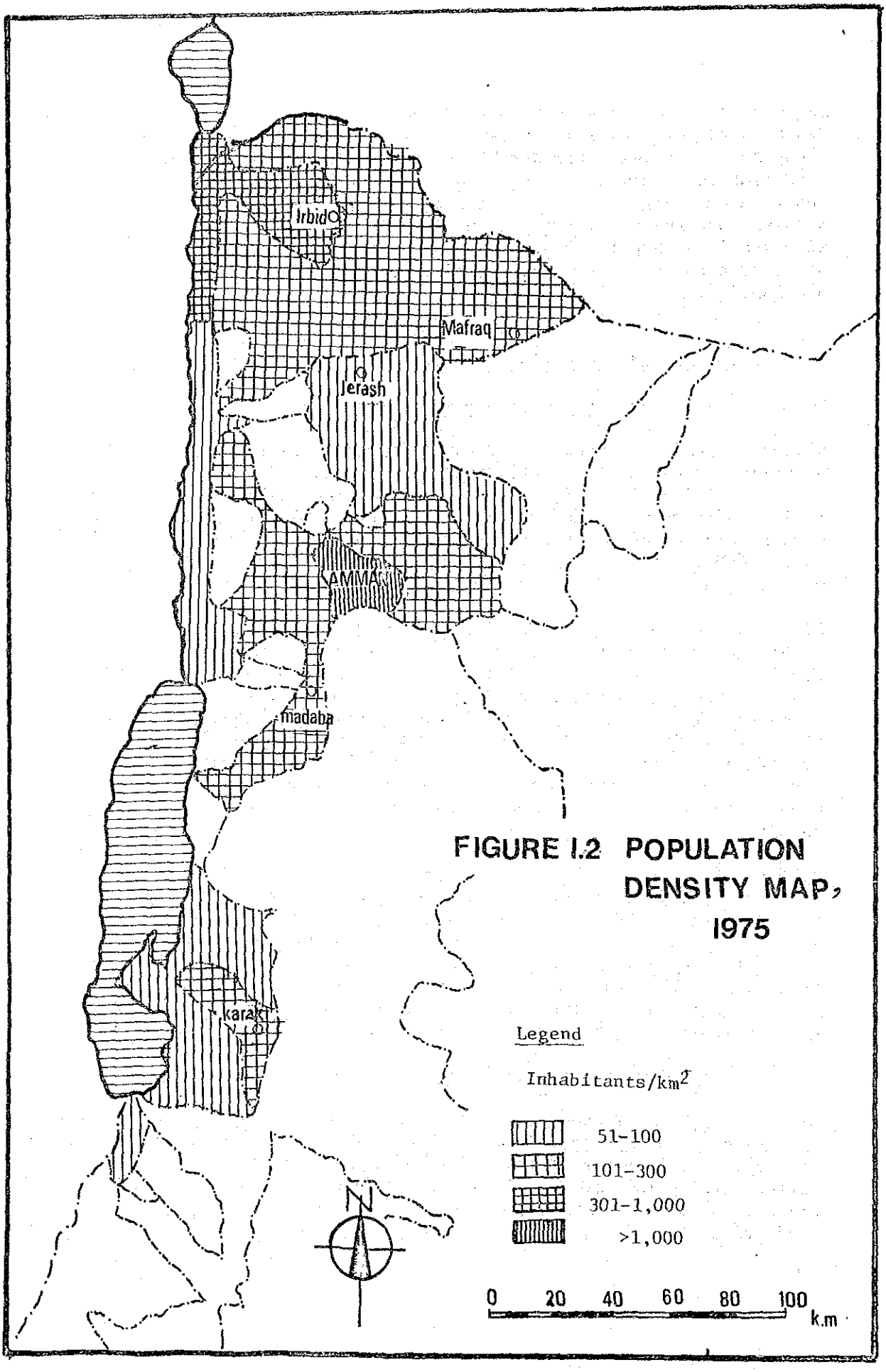


FIGURE I.2 POPULATION DENSITY MAP, 1975

Source: National Water Master Plan of Jordan

Table 1.6 GRDP and Household Income by Governorate, East Bank, 1977

Indicator	Unit	East Bank	Governorate				
			Irbid	Amman	Balka	Karak	Ma'an
GRDP at Market 1/ Price(1977)	(JD Mil.)	471	99	299	24	31	12
	(%)	100	21	64	6	7	2
Population (1977) 2/	(1,000 P.)	2,127	600	1,219	138	114	56
Per Capita GRDP at M.P. (1977)	(JD)	221	165	245	174	272	214
	(%)	100	75	111	79	123	97
Total Family Income (1973) 3/	(JD Mil.)	194	49	125	9	6	5
No. of Household (1973) 4/	(1,000 HH)	292.6	84.5	163.1	19.2	15.5	10.3
HH Income (1973)	(JD)	663	580	766	469	387	485
	(%)	100.0	87.5	115.5	70.7	58.4	73.2

Notes: 1/ Source: Study Team's estimation.

2/ Source: Unpublished mimeo from the Department of Statistics.

3/ This includes income in kind.
Source: Estimated by the Study Team based on Economics Department RSS, Income Distribution Study 1973, unpublished mimeo.

4/ Source: Estimated by the Study Team assuming the same family size for all governorates, the size which is assumed to 6.33 persons per household.

production. Following Irbid, Balqa and Karak are the agriculture oriented governorates. The other two, which are Amman and Ma'an are not agriculture oriented.

01.040 With regard to the mining and manufacturing, Amman is the dominant governorate accounting for about 76 percent of the total GRDP in mining and manufacturing. The next is Karak because of the phosphate mining. These two are the major governorate in this sector. Since Karak is mainly for mining, Amman is virtually the only one dominant area in terms of manufacturing. The performance of the Irbid Governorate is the poorest among governorates in this sector accounting for less than 2 percent.

01.041 In addition to the above, there are several large scale projects in mining and manufacturing to boost the economic development of their regions and the Country. A newly growing area in the industrial scene of this Country is Aqaba in Ma'an Governorate. There are many projects being under construction or under preparation for Aqaba. They are a chemical fertilizer plant, an integrated timber complex, a pharmaceutical plant, expansion of petroleum refining capacity by constructing the second refinery in Aqaba or Irbid, and expansion of the existing free zone in Aqaba. Combined with the availability of the water and the existence of a seaport, the Aqaba area in Ma'an will definitely grow toward the heavy and chemical type industrial area. As for Irbid, the following will be located in the area: (1) the Industrial Free Zone on the Syrian border, and (2) expansion of the Irbid industrial area. These will be good starting points for the industrialization of the Irbid area. In addition to the above, there was a plan to establish a white cement factory near Ajlun or Jerash, but the location was changed to the vicinity of Salt.

01.042 From Table 1.7 we can derive industrial structure of governorates. Amman is dominant over other governorates in all sectors except agriculture. But more specifically, the Amman governorate is specialized in (1) Banking and financing, (2) mining and manufacturing, (3) wholesale and retail trade, (4) electricity and water (energy and water), and (5) transport sectors. The Irbid Governorate is specialized in (1) first of all--agriculture, (2) then, --construction, (3) ownership of dwelling, (4) services, and (5) public administration. Balqa is specialized in (1) agriculture, (2) electricity and water, and Karaq is specialized in (1) agriculture, (2) mining and manufacturing. Lastly, Aqaba is specialized in (1) first of all--transport, (2) then, electricity and water (energy), and (3) construction and commerce.

c. Tourism

01.043 The Country is endowed with plenty of tourism assets for various target tourists. Amman, Aqaba and Petra are for the international tourists from Europe and the U.S.A. Karak is on the way between Amman and Aqaba, and as a consequence is also for Europeans and Americans. However, about 70 percent of the tourists from outside seem to be from Arab countries, and the Irbid Governorate is the best place for them. Thanks to cool temperatures in summer and relatively rich forest areas

Table 1.7 Industrial Origin of Gross Domestic Product, East Bank, 1977

(Unit: Thousand JD at Current Prices)

Sector		East Bank	Governorates				
			Irbid	Amman	Balqa	Karaq	Ma'an
1. Agriculture, Forestry & Fishing		41,700	18,200	9,200	8,500	5,200	600
	(%)		(43.6)	(22.1)	(20.4)	(12.5)	(1.4)
2. Mining & Manufacturing		70,000	1,300	53,300	5,200	9,000	1,200
	(%)		(1.9)	(76.1)	(7.4)	(12.9)	(1.7)
3. Construction		27,000	7,900	15,700	1,000	1,600	800
	(%)		(29.3)	(58.1)	(3.7)	(5.9)	(3.0)
4. Electricity & Water Supply		4,100	500	2,700	400	200	300
	(%)		(12.2)	(65.9)	(9.8)	(4.9)	(7.3)
5. Transport		42,000	9,200	26,300	2,000	2,000	2,500
	(%)		(21.9)	(62.6)	(4.8)	(4.8)	(6.0)
6. Wholesale and Retail Trade		63,100	14,400	42,600	2,300	1,900	1,900
	(%)		(22.8)	(67.5)	(3.6)	(3.0)	(3.0)
7. Banking & Finance		7,000	1,100	5,500	200	0	200
	(%)		(15.7)	(78.6)	(2.9)	(0)	(2.9)
8. Ownership of Dwellings		23,000	6,600	13,000	1,500	1,300	600
	(%)		(28.7)	(56.5)	(6.5)	(5.7)	(2.6)
9. Public Administration & Defence		73,000	20,100	42,100	3,700	5,100	2,000
	(%)		(27.5)	(57.7)	(5.1)	(7.0)	(2.7)
10. Services		45,000	12,900	25,400	3,000	2,500	1,200
	(%)		(28.7)	(56.4)	(6.7)	(5.6)	(2.7)
11. GDP at Factor Cost		395,900	92,200	235,800	27,800	28,800	11,300
	(%)	(100.0)	(23.3)	(59.6)	(7.0)	(7.3)	(2.8)

Sources: 1. For the East Bank, from the Central Bank of Jordan, Annual Report 1977, 1978.

2. For agriculture, estimated by the Study Team by utilizing Agricultural Statistical Yearbook & Agricultural Sample Survey 1977, 1978, Agricultural Census 1971, and Water Master Plan Vol VII by NRA.

3. For minig & manufacturing, Water Master Plan Vol. VII by NRA.

4. For construction; estimated by The Study Team by utilizing Dept. of Statistics, Multi-Purpose Household Survey 1974.

5. For electricity and water supply, estimated by the Study Team by utilizing Dept. Statistics, Natinal Account 1975, and NRA, Water Master Plan Vol. VII.

6. For transport, wholesale & retail trade, banking & finance, and public administration & defence, estimated by the Study Team by utilizing Dept. of Statistics, Multi-Purpose Household Survey 1974.

7. For ownership of dwellings and services, estimated by the Study Team based on the population in 1976 compiled by Statistical Yearbook 1976.

with good sceneries, the Governorate is and will be a good summer resort area for the family-type, which is used against individual tourists from Arab states. Also for the domestic outgoers, the Irbid Governorate is the best place to go.

1.2.5 Infrastructures

a. Water Supply

01.044 In municipalities in Jordan as a whole, 28.7 million cubic meters (MCM) of water were produced to serve a population of 1.55 million in 1975. Average supply per capita, including the supply to commercial and small industrial establishments, amounted to 51 liters per day in major municipalities without assuming distribution losses. Water production in the Northern District System in 1975 is estimated as 3.6 MCM. This is about 13 percent of the total production mentioned above. This is too samll as compared to the population share of the Irbid Governorate within the Country, which is about 29 percent in 1975. In terms of water production, the Irbid Governorate is said to be the worst among governorates at this moment in terms of domestic, industrial and commercial uses of water as well as irrigation uses of water. The most serious problem is the domestic water shortage. Throughout the Governorate the water shortage is felt gravely. In the Irbid Municipality, piped water is supplied only for a few hours in a week.

01.045 However, the Irbid Governorate has the Yarmouk River on its north, which has the largest quantity of stream water, and there is a proposed project to pump up water from the Yarmouk River to the Irbid Governorate especially to the Municipality of Irbid.

01.046 When this project will have been implemented, the water supply conditions of the Irbid Governorate will be substantially improved. According to our crude calculation, actually the water cost in the Irbid Municipality will be lower than the cost of water in the Amman-Zarqa area after about 10 years, if the pumping project is completed by that time. So, the future prospects of the Irbid Governorate in terms of water supply seems to be encouraging.

b. Power

01.047 Table 1.8 shows the power consumption by the governorate. The annual per capita consumption in the East Bank is about 241 kWh in 1977, whereas that in the Irbid Governorate is only 85 kWh which is about 35 percent of the East Bank. This is the lowest among governorates. Actually, the Governorate is plagued by the shortage of electric power. However, if we look at the share of the Irbid Governorate within the East Bank in terms of total power consumption, it has been growing year by year. This suggests that although it is slow the Irbid Governorate is growing faster than the other governorates in terms of electricity consumption.

Table 1.8 Power Consumption by Governorate, East Bank, 1977

(Unit: GWh)

	Governorate				
	East Bank	Irbid	Amman Balqa	Karak	Ma'an
Power Consumed	513	51	421	24	17
Share (%)	100.0	9.9	82.1	4.7	3.3
Population in 1977 (1,000 persons)	2,127	600	1,357	114	56
Per Capita Consumption (kWh)	241	85	310	210	304
Ratio (%)	100.0	35.3	128.6	87.1	126.1
Share in 1974	100.0	5.9	87.3	3.9	2.9
" 1975	100.0	7.6	84.8	4.5	3.1
" 1976	100.0	8.8	82.4	5.3	3.5
" 1977	100.0	9.9	82.1	4.7	3.3

Source: JEC, Annual Report 1977.

c. Highways and Transportation

01.048 With respect to transportation, Aqaba is the most important since it is the only one seaport. Aqaba will grow as a port town with a heavy and petro-chemical industrial area. Amman has the only international airport in the East Bank and is the center of all transportation modes. The Irbid Governorate is the only one with an entrance from and exit to the Mediterranean Sea and Europe through Syria and Lebanon, as well as from and to Iraq. So, the Governorate can play a significant role as a entrance region from the north and the east.

01.049 As for the highways, Table 1.9 shows the length of roads. The total length of the national roads in the East Bank was about 6,000 kilometers in 1977 and an additional 200 kilometers is now under construction. The total length of the national roads in the Irbid Governorate is about 200 kilometers or 30 percent of the East Bank Comparing this with the population and the land area of the Governorate, the highways in the Governorate can be said to be relatively well developed. One notable feature of the Governorate is closeness to the

capital region of Amman; the Irbid Municipality is located only one and a half hours away from Amman by highway.

Table 1.9 Length of National Roads, East Bank, 1977

(Unit: km)

	East Bank	Irbid Gov.
National Road (km)	6,332	1,927
Share (%)	100	30
Area (km^2)	89,206	22,654
Share (%)	100	25
Population (1975) (1,000 persons)	1,952	564
Share (%)	100	29

Source: Dept. of Statistics.

1.2.6 Social Facilities

a. Housing

01.050 There is no housing stock data, and what is available is the data on the issued number of the building licenses in major population centers. According to our analysis in housing construction sector, the municipalities in the Amman Governorate seems to have better quantity and quality (floor area per building) than those in the other governorates in terms of newly constructed residential buildings per population. Based on the same indicator as above, the municipalities in the Irbid Governorate have less quantity and quality than the National average. The same comment can be made on those in other three governorates except one that the average floor area per building in municipalities in the Ma'an Governorate is about the national average.

b. Educational Facilities

01.051 For the higher education facilities at the level of or above secondary schools, Amman surpasses by far the other governorates. For the lower education below secondary schools, Amman is the worst among governorates in terms of numbers of schools. Among other governorates than Amman, the Irbid Governorate seems to be not in a good position in terms of number of schools per population at the level lower than secondary schools.

1.2.7 Relative Position of the Study Area Within the East Bank

01.052 To show the relative position of the Study Area within the country, major industrial characteristics at present are summarised below:

Region	Major Industrial Characteristics
Study Area	Rainfed Agriculture, Distribution, and Service
Amman Gov.	Administration, Banking and Finance, Commerce, Industry, Energy Generation, Education and Culture
Balqa Gov.	Rainfed Agriculture
Ghor Area	Irrigated Agriculture
Karak Gov.	Phosphate Mining, Tourism
Ma'an	Port, Heavy and Petro-chemical Industry, Energy Generation, Tourism

1.3 The Study Area

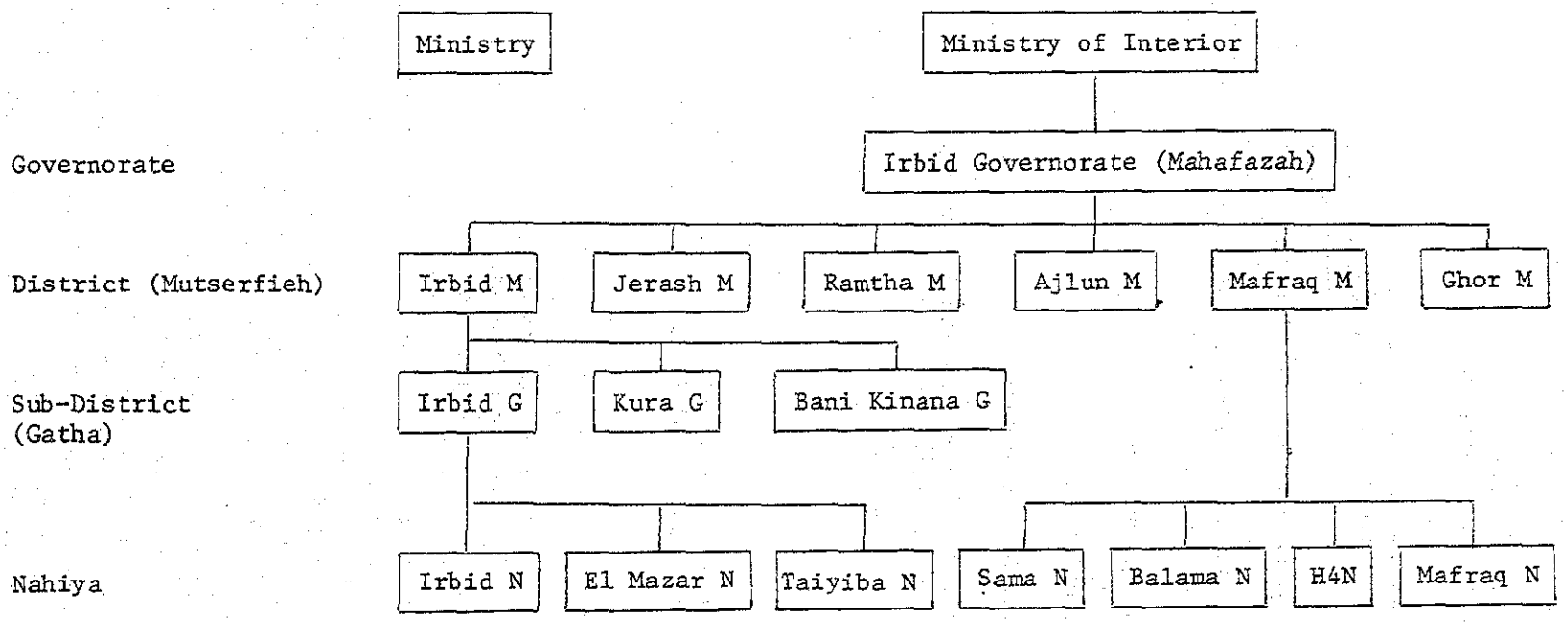
01.053 In this section, the Study Area will be briefly introduced for the purposes of providing the general framework of the Area.

1.3.1 Administrative Division

01.054 In the Jordanian system of government administration, there are only two levels of administration: the Central Government and the local semi-autonomous bodies, which are either municipalities or villages-with-council. Only municipalities and villages-with-council have their own autonomous power except for the direct intervention by the Central Government. Between the local semi-autonomous bodies and the Central Government, the Central Government or the Ministry of Interior has its administrative apparatus which is functioning as branch offices of the Central Government. The administrative apparatus in the Irbid Governorate is delineated in Figure 1.3. It has four levels under the Ministry of Interior: Governorate (Mohafazah), Mutserfieh (District), Gatha (Sub-District) and Nahiya. The geographic division of the Study Area by these apparatus is presented in Figure 1.4.

01.055 Table 1.10 shows the numbers of localities. In 1978, there are 42 municipalities, 103 villages-with-council and 152 villages. Definition of municipality is not simple but it should have the population more than 2,500 according to an official in the MMRA.

Figure 1.3 Administrative Hierarchy in the Irbid Governorate, 1978



Source: Ministry of Municipal and Rural Affairs.

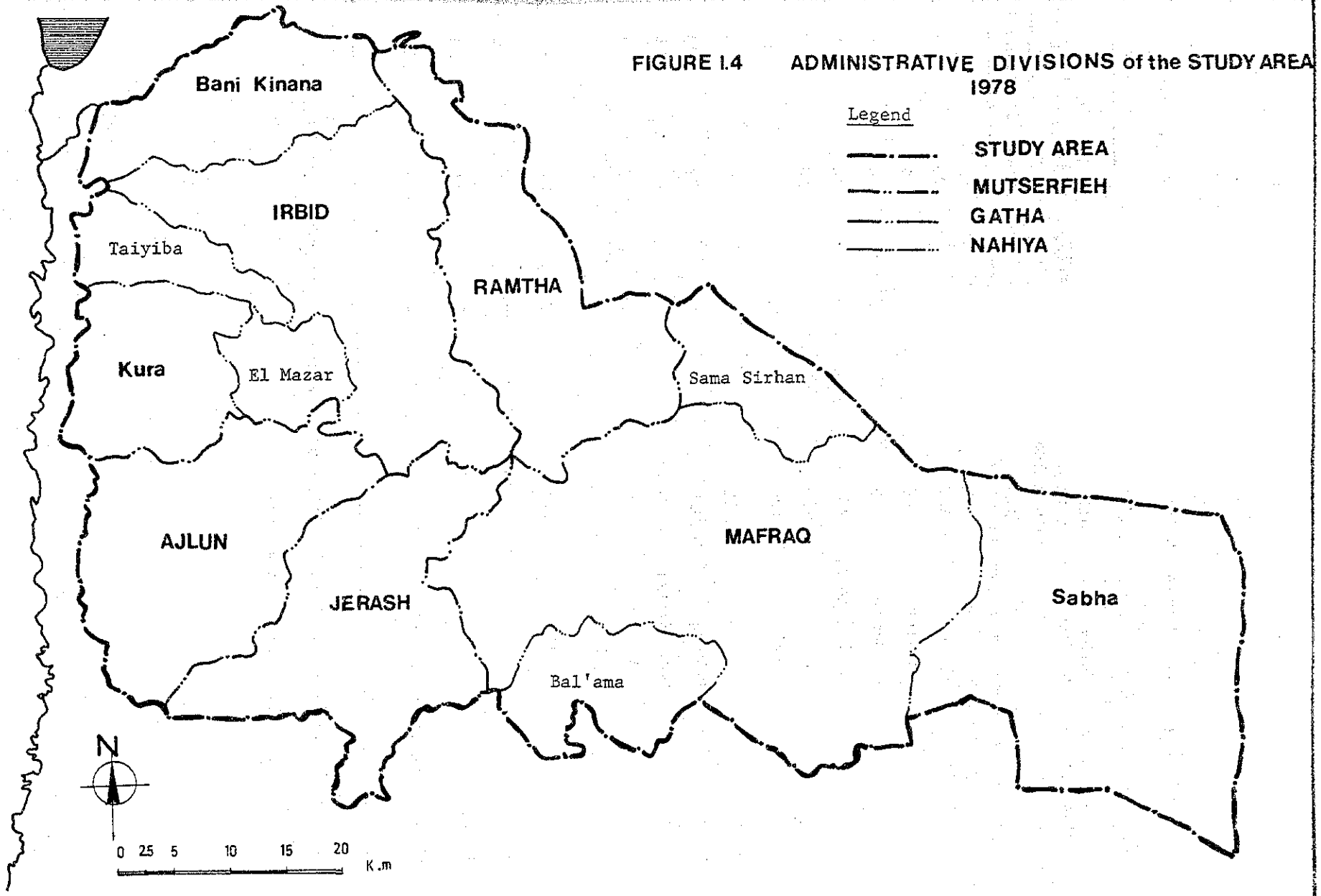


FIGURE I.4 ADMINISTRATIVE DIVISIONS of the STUDY AREA 1978

Legend

- STUDY AREA
- MUTSERFIEH
- GATHA
- NAHIYA

Source : Department of Land & Survey

Table 1.10 Basic Data on Administrative Division, Study Area, 1978

Musterfieh	Gatha or Nahiya	Land Area in the Study Area Km^2	Number of Municipalities	Number of Village with Council	Number of Village without Council
Irbid	Irbid	507	10	25	17
	Taiyiba	88	2	2	3
	El Mazar	86	2	4	3
	Bani Kinana	235	4	10	4
	Kura	210	2	10	7
	Total	1,126	20	51	34
Ramtha		422	4	7	7
Mafraq	Mafraq	1,010	4	22	38
	Sama Sirhan	114	2	2	3
	Sabha	901	2	3	0
	Bal'ama	98	1	4	11
	Total	2,123	9	31	52
Ajlun		412	7	3	39
Jerash		411	2	11	33
Total Study Area		4,494	42	103	162

Source: Interviews to MMRA, Ministry of Interior, Department of Statistics, and Irbid Governorate Office.

1.3.2 Geography

01.056 Figure 1.5 shows the geography of the Study Area. The western part of the Study Area is the hilly area with altitude varying from 500 to more than 1,000 meters from the sea level. The highest peak in this part is 1,247 meters. This part has the highest annual rainfall in the Country ranging from 400 millimeters to 600 millimeters per annum. The eastern part of the Study Area, which is roughly speaking east to Mafraq, is a flat semi-arid area with altitude around 600 meters and with annual rainfall less than 200 millimeters. The middle part of the Study Area is a gradually rolling area with the annual rainfall from 200 to 400 millimeters.

01.057 The Study Area belongs to the Jordan River basin and is roughly divided into three catchment areas: the Yarmouk River catchment area on the north, the Zarqa River catchment area on the south and the Jordan River catchment area on the west.

1.3.3 Population and Labor Force

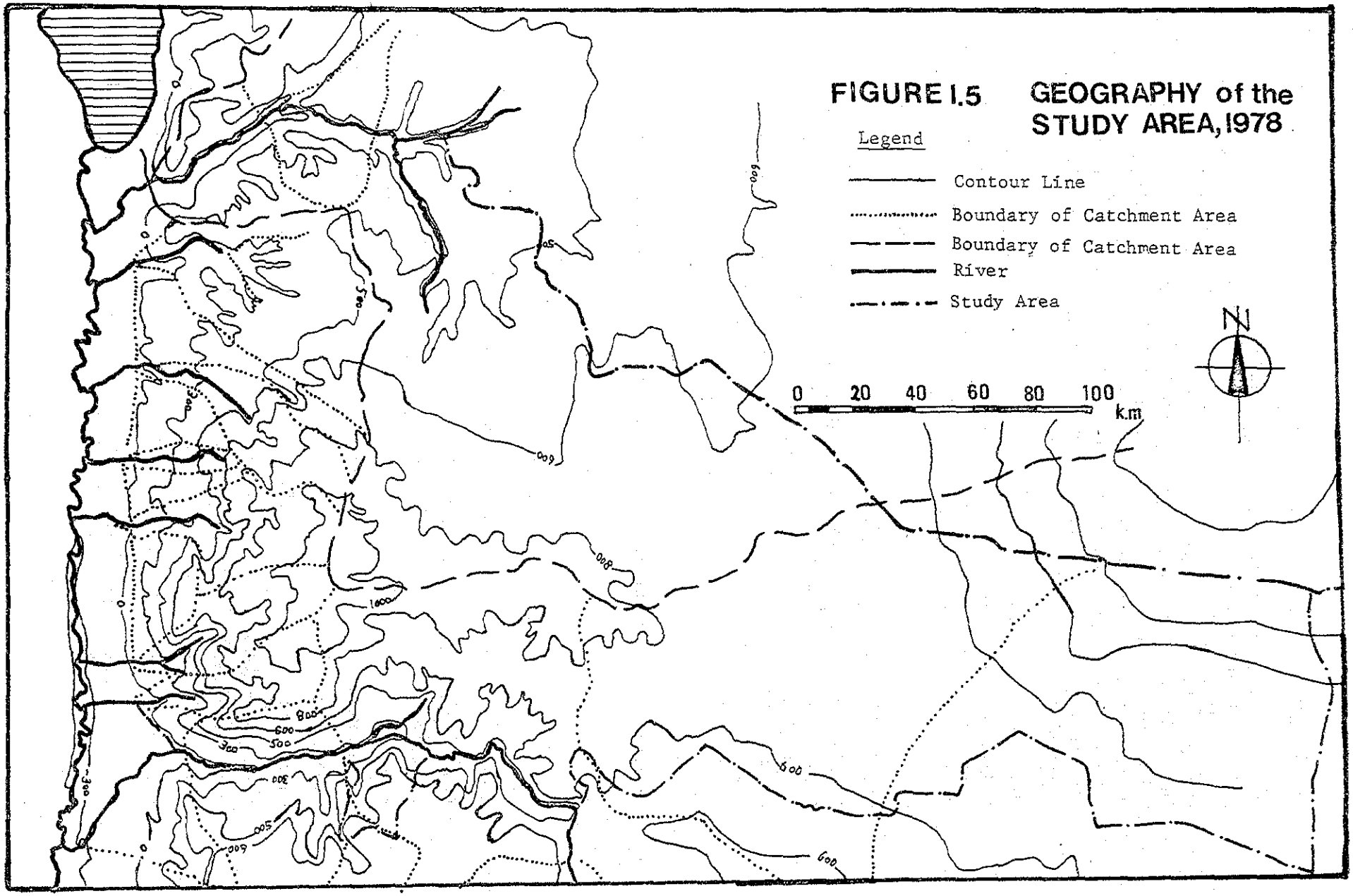
01.058 Table 1.11 shows the population by Mutserfieh in the Irbid Governorate. The population of the Irbid Governorate increased its population from 274,000 in 1961 to 564,000 in 1975 at 5.3 percent per annum. This high growth rate is due to the estimated gradual rise of the natural increase rate from 3.2 to 3.4 percent and to the influx of refugees from the West Bank in late 1960s.

Table 1.11 Population by Mutserfieh, Irbid Governorate, 1961 to 1975

Area	Population		
	1961	1975	
	Number	Number	Share (%)
Irbid Governorate	273,976	563,490	100
Irbid Mut.	132,497	310,221	55
Ajlun Mut.	26,093	45,073	8
Jerash Mut.	23,377	61,343	11
Ramtha Mut.	19,175	42,009	7
Mafraq Mut.	25,314	60,682	11
Aghwar Shamaliya	29,357	44,162	8
Tent Dwellers & Nomads	18,163		

Source: 1. Department of Statistics.

2. For 1961, First Census of Population and Housing, 1961, 1964.



Source: National Water Master Plan of Jordan

01.059 As for the urbanization, the population living in communities with a population more than 1,000 accounted for 44 percent in 1975 as compared to 23 percent in 1961. If we take the communities with population more than 5,000, they will account for 52 percent of the total population in 1975. Table 1.12 shows the population of major municipalities in the Study Area. The largest urban center is the Irbid Municipality which has 128,000 persons in 1975 accounting for about 23 percent. The second large municipality is Ramtha but it has only 25,000 persons accounting for 5 percent of the total population of Irbid Governorate in 1975.

01.060 As for the population in the Study Area, we can derive it from the population of the Irbid Governorate by deducting about 10 percent from it, the reason for which is discussed in the previous section on inter-regional comparison of the population (see Table 1.4).

01.061 As for the employment structure, Table 1.13 presents the estimated number of the employment in the Irbid Governorate. Agriculture accounts for 24 percent of the total population but it is said to be a lower estimate. Manufacturing accounts for only 5 percent, but the construction accounts for 8 percent. The largest sector is obviously the governmental employees which accounts for 41 percent of the total emoloyment in 1974.

Table 1.12 Population by Municipality, Study Area, 1975

Municipality	1975 Number	Population Share (%)
Irbid Gov. (1975)	563,490	100
Irbid M.[1/]	128,000	23
Ramtha M.	24,012	5
Mafraq M.	16,094	3
Jerash M.	10,504	2
Ajlun M.	4,087	1

Source: Department of Statistics.

Note: 1/ Source: Human Resource Sector of this report.

1.3.4 Economy

01.062 Table 1.7 shows the economic structure of the Irbid Governorate in 1977. Total GRDP at factor cost of the Irbid Governorate is about JD.92 million or about JD.154 per capita per annum. As for the sectoral structure, the dominant sectors are the public administration and the agriculture accounting for about 22 and 20 percent respectively. The secondarily large sectors are the commerce and the service accounting for 16 and 14 percent respectively. The mining and manufacturing sector is really small accounting for only 1.4 percent of the total value added and this seems to be under estimate. So, the major productive sector in the Irbid Governorate is still the agriculture, and then might be the construction sector. And it seems that the manufacturing sector has not yet grown in this Governorate.

Talbe 1.13 Employment by Sector, Irbid Governorate 1974

Sector	Employment in 1974	
	Number	Share (%)
Total Employment	103,900	100
Agri., Livestock, Fish	25,500	25
Min. & Quarrying	500	1
Manufacturing	4,700	5
Construction	8,600	8
Elect., Gas, Water	700	1
Commerce	14,100	14
Transp. Storage	5,700	5
Finance	1,000	1
Community Service Public Admin.	42,100	41
Total Population in 1974	1,890,000	

Source: Estimated by the Study Team based on Dept. of Statistic, Multi-Purpose Household Survey 1974.

1.4 General Assessment of Development Potentialities

1.4.1 Resource Potentialities

01.063 As discussed in the section 1.2 on inter-regional comparison, mineral resources are relatively scarce in the Study Area. However, the Area can avail itself of the following endowments for future development. First of all, the Study Area is endowed with relatively abundant human resources. In 1976, it had an estimated population of 523,000 or 90 percent of the total of Irbid Governorate whose demographic size was only next to that of Amman Governorate (1.1 million). In addition, the wage level is generally lower than in Amman Governorate, a definite advantage to industries.

01.064 Second, the Area is endowed with plenty of flat land available at a cheaper price. Availability of inexpensive land itself is in fact common to all the regions in this country except Amman Governorate, but what is important is that the Study Area is within one and a half hours drive from Amman, by far the largest consumption and distribution center of the country. One entrepreneur, when interviewed by one of the Japanese Team members, explicity stated that he had established his firm of a sizably scale two years ago in the Municipality of Irbid rather than in Amman because of lower wages and cheaper land.

01.065 Third, the Study Area is blessed with relatively heavy rainfall (300 to more than 500 millimeters per annum), and thus endowed with natural forests and better rainfed arable land, in the western highlands. This means that the Area can pursue extensive agricultural and forestry development (e.g., planting of olive and other cash crops and afforestation), which is largely denied in the other regions.

01.066 Fourth, with better availability of water assured by relatively heavy precipitation, the Area can sustain a larger agglomeration of population and economic activities. Yarmouk River, the most important source of water in the north, will be able to supply domestic and industrial water to the Area at lower cost than to Amman, when its stream water is harnessed by the planned construction of Maqarin Dam.

01.067 Fifth, the western highlands, rising from around 600 to 1,000 meters from sea level, is suitable for summer resort and residential development, with its cooler temperature, verdant scenery and accessibility from Amman.

01.068 Sixth, the Study Area is endowed, as elsewhere in the country, with many historical ruins and other attractive natural resources. These resources could be further harnessed to play an important role in the national strategy of tourism development.

01.069 Finally, the Area is strategically located with its direct or closer access to Syria and iraq, two of the major potential markets for future industrial products of Jordan.

1.4.2 Infrastructural Potentialities

01.070 The Area will soon be equipped with sufficient infrastructure to be able to compete equally with the Amman-Zarqa metropolitan complex. There are a number of infrastructural development efforts currently under way for the Area. Among those, it is considered that the following will definitely be implemented in the near future:

(1) 2-lane highway linking Irbid to Zarqa
(2) Power transmission from Zarqa to Irbid
(3) Maqarin Dam
(4) Increased telephone communication capacity between Irbid and Amman
(5) Yarmouk University at its permanent site, and
(6) Yarmouk River-Irbid Water Supply Project

01.071 Concerning the last project, alternatives are proposed for the more immediate future in this report, but the project is necessary and will have to be implemented toward the end of the next Five-Year Plan.

01.072 These projects will certainly boost the relative position of the Area. In particular, if the Yarmouk River-Irbid Water Supply Project (and the alternative water supply projects proposed in this report) is completed, the supply of water to the Municipality of Irbid will be increased substantially. When, in addition, Maqarin Dam is put into full use, the Study Area will be in a more desirable position than the Amman Region in terms of availability of water. Improvement in telephone services, power supply and accessibility to the Amman-Zarqa complex will further raise the infrastructural capabilities of the Study Area for development.

1.4.3 Labor Productivity by Sector

01.073 Table 1.14 gives the estimated labor productivity by sector in Irbid Governorate. Due to the inadequacy of the base data used for estimation, however, the sectoral figures must be interpreted with due caution. The average labor productivity in the Governorate was JD 817 per labor force in 1977. The transportation sector has the highest labor productivity of JD 1,484, followed by JD 1,000 of banking and insurance, JD 941 of commerce and JD 849 of construction. These sectors with their productivity higher than the average seem to have a higher absorptive capacity. An obvious anomaly is the lowest productivity indicated for the mining and manufacturing sector, which should normally have higher, if not highest, labor productivity. It seems most likely that there is some flaws in the value added figures or employment data. Nonetheless, the labor productivity of the mining and manufacturing sector in the Governorate cannot be very high, considering the current stage of its development.

Table 1.14 Labor Productivity by Sector, Irbid Governorate

	Value Added 1977 JD 1,000 [1/]	Employment 1977 (1,000 persons) [2/]	1977 JD/Labor
Agriculture	18,200	27.7	657
Mining & Manufacturing	1,300	6.7	194
Construction	7,900	9.3	849
Electricity, Water & Gas	500	0.8	625
Transportation	9,200	6.2	1,484
Wholesale & Retail	14,400	15.3	941
Banking and Insurance	1,100	1.1	1,000
Public Administration	20,100	45.7	722
Service	12,900		
GDP (Factor Cost)	92,200	122.9	817

Sources: Table 1.7 and Table 1.13 of Volume

Notes: 1/ Table 1.7 of Volume 2.

2/ Derived from the population estimate for 1977 and the labor participation rate and the sectoral composition indicated in the Multipurpose Household Sample Survey of 1974.

1.4.4 Sectoral Potentialities (With Geographic Consideration)

01.074 In agriculture, wheat is one of the major traditional crops in the Study Area and will continue to be so in the future. However, its relative importance is expected to decline gradually, due to generally low and unstable productivity of land where the crop is grown and is likely to be grown in the future, and to the expected increase of farm land under other cash crops. Tree crops, notably olive, are likely to boost the largely rainfed agricultural production in the Study Area. Olive trees, of which the government-subsidized planting campaign is now apace in the northern and western parts of the Area, will soon become a stable and profitable source of income for the farmers.

01.075 Livestock is expected to contribute more to the rural economy in the future. It was found during the course of field trips that an increasing number of farmers have been taking up poultry raising as both individual and collective undertakings. The trend will continue more rapidly as urbanization of the population proceeds not only in the Study Area but in the country as a whole. Sheep raising was found to be another highly profitable source of farm income in the Study Area. The size of flocks could be increased considerably, provided that sufficient range land is made available in the Area and managed so as not to damage the forested areas, on the one hand, and productive orchards and arable land, on the other.

01.076 Two new possibilities can be suggested for the Study Area. Jerusalem artichoke, a tuber crop which yields fructose, can be grown under rainfed conditions, and, if the experiment proves successful, will serve to reduce Jordan's total independence on imported sugar. Another possibility is fish farming near Yarmouk River, where water temperature could easily be maintained at an ideal level for culturing several fresh water fauna which have marketability.

01.077 The Study Area with its limited mineral resource endowments is not suitable for developing chemical industries. However, the Area has several notable industrial development potentials, agro-processing industries account for a large part of the current industrial production in the Area and will continue to play a major role in localities where raw materials such as olive, frutis, vegetables, and possibly Jerusalem artichoke are produced in increased quantity. Labor-intensive manufacturing such textile apparels and leather goods industries has reasonable possibilities around Irbid City. As construction activities grow apace with expected urbanization and development in the Study Area, construction material industries which use or manufacture bulky and heavy raw materials or final goods will have greater development possibilities. Furniture industries which have been emerging in the Area for the last few years will be concomitantly stimulated for further expansion in the process. Another possibility is sourvenir handicraft industries around Ajlun and Jerash to take advantage of the tourism resources in the area.

01.078 There are, moreover, two projects which will have decisive long-term influence on the future course of industrial development in the Study Area. One is the expected opening of Yarmouk University at its permanent site with its related facilities. Technology or knowledge-intensive manufacturing such as precision tools and machinery and printing could be developed in the vicinity of this self-contained complex of higher learning, professional service industries like architectural design and engineering could be established as well. The other is the joint Free Trade Zone planned on the border with Syria. Processing and assembly industries catering to the neighbouring oil-rich Arab countries as well as to the two countries concerned will have possibilities at its full development.

01.079 Of the many tourism resources located within the Study Area, historic ruins at Jerash, Um Qeis and Um El Jimal and Rabad Castle have a high potential for further tourism development. The forested area around Ajlun can be developed as a summer resort area catering to people from neighbouring Arab countries as well as Jordanian nationals. In the north, the hot spring and verdant scenery at Hemma could attract more visitors. In addition, the area around Maqarin Dam can offer water-front recreational facilities.

01.080 Some notable development possibilities can be expected in sectors other than those indicated above. Construction will be among the rapidly growing industries, as the development in the Study Area picks up its momentum. Distribution industries will be stimulated by the opening of the proposed inter-Arab highway connecting Jordan to Syria and Lebanon in the north and oil-rich Arab countries to the west. Yarmouk University at its full development will contribute to expansion and sophistication of local commercial and service industries.

1.4.5 Economic Prospects

01.081 In order to know the economic prospects of the Study Area in the future, the Gross Regional Domestic Product (GRDP) was estimated for the period from 1978 to 2000, using two methods, i.e., methods based on (1) ICOR calculation and (2) the recent trend in GDP (see Table 1.15).

01.082 The first method. Assuming (1) that the Basic Projection[1/] of the public development expenditure will be achieved, (2) that the overall incremental capital output ratio (ICOR, see Appendix C in Volume 4) will be 3, and (3) that private capital investment will amount to approximately 80 percent of the public development expenditure, the GRDP of the Study Area by the first method will grow from JD 86 million in 1977 to JD 120 million in 1980 and JD 223 million in 1985 at 1977 constant prices. In other words, a fairly high annual growth rate of a slightly over 12 percent will be maintained until the end of the next Five-Year Plan. As for the period from 1985 to 2000, the GRDP will grow at 12 percent if the above assumptions are equally applied, reaching JD 1,221 million in the year 2000. However, no country has ever maintained its economic growth at a high rate of 12 percent for more than 20 years, and a possibility of such high long-term economic development appears much less in any particular country. Therefore, it is unlikely that the GRDP of the Study Area will continue to grow at more than 12 percent during the period concerned. For these reasons, these figures were not adopted.

01.083 By the second method which is based on the recent economic achievement in Jordan, the estimated growth rate of GRDP till 1985 was reduced further at the level of 10 percent, and the rate after 1985 8 percent. The estimation based on these rates are shown at the bottom of Table 1.15.

1/ For the definition of the Basic Projection, see Section 2.1 of Chapter II in the Volume 2.

Table 1.15 Projected GRDP of the Study Area, 1977 to 2000

(Unit: JD Million at 1977 Prices)

		Preliminary Actual 1977	Estimates based on 16% growth of (1) 1978	1979	1980	1981	1982	1983	1984	1985	Estimates based on 10% growth of (1) 1986	1990	1995	2000
Public Investment 1/	(1)	17	19	21	25	29	34	39	45	52	58	84	136	219
Private Investment (1)x0.8	(2)=	14	15	18	20	23	27	31	36	42	46	67	109	175
Total Investment (1)+(2)	(3) =	31	34	38	45	52	61	70	81	94	104	151	245	394
Cumulative Investment (from 1977 to the preceding year)	(4)	0	31	65	103	148	200	261	331	412	506	989	1,911	3,406
ICOR = 3.0	(5)													
Incremental GRDP (4) ÷ (5)	(6) =	0	10	22	34	49	67	87	110	137	169	330	637	1,135
Estimated GRDP 86 + (6)	(7) =	86	96	108	120	135	153	173	196	223	255	416	723	1,221
Growth Rate	(8)	←				12.6%/Year				→	←		12.0%/Year	→
Estimated GRDP Based on Second Method	(9)	86	95	104	114	126	139	152	168	184	199	271	398	585
Assumption of Second Method (Growth Rate)	(10)	←				10.0%/Year				→	←		8.0%/Year	→

Source: 1. Team Estimate.

Notes: 1/ Up to 1985, data from Table 2.5 were used, while after 1985 10% growth rate was assumed.

Although some officials pointed out that even these figures seem to be higher than their intuitions, we regarded them appropriate when considering initial and underdeveloped conditions of the Study Area. By this method, GRDP will reach JD 184 million in the year 1985, and JD 585 million in the year 2000. We used these figures as a basic economic prospect of the Study Area. These figures are particularly utilized in Part II.

1.4.6 Potential Role of the Study Area Within the Country

01.084 Summing up the result of the analyses on development potentialities, the Study Area has good potential for industrial, educational, touristic and agricultural development. Based on these, the relative position of the Study Area within the Country which is discussed in Section 1.2.7 can be revised for the purpose of showing the potential role of the Study Area within the Country in the future. This potential role of the Study Area as well as the role of the other regions can be summarized as follows:

Potential Role of the Study Area Within the Country in the Future

	Major Role	Urban Area's Role	Rural Area's Role
Study Area	Secondary National Center	1. Education, Culture and Service 2. Light Industry, Distribution	1. Rainfed Agriculture 2. Tourism 3. Forestry
Amman Gov.	Primary National Center	1. Administration, Banking & Finance, Commerce 2. Industry, Distribution 3. Education and Culture	n.a.
Balqa Gov.	Satelite Town	1. Residential	1. Rainfed Agriculture
Ghor Area	Non-Urban	n.a.	1. Irrigated Agriculture
Karak & Ma'an Gov.	Rural Centers	1. Rural Distribution Center 2. Tourism Center	1. Phosphate Mining 2. Tourism
Aqaba Area	Port City	1. Port 2. Heavy and Petro-Chemical Industries	1. Tourism

1.4.7 Potential Role of the Study Area to the Neighboring Regions

a. Its Potential Role to the Amman Region

01.085 The Study Area has the closest relationship with the Amman Region. The Study Area will be the secondary national center to the Amman Region. In terms of urban activities, the Study Area has a potential to be an educational, cultural and distribution centers as compared to administrative, banking and financing centers of Amman. In terms of industry, the Study Area will have small and light industries as compared to large and heavy industries in Amman. In addition, the Study Area will be the best place for expansion and relocation of industries existing in Amman. In terms of agriculture, the Study Area is the supplier of agricultural produces, particularly wheat, fruits and olive, to the largest consumption center of Amman. On the other hand, the Study Area is the largest consumption center except Amman of daily-consumption goods manufactured in Amman.

b. Its Potential Role to Ghor Area

01.086 The Study Area also has closest relationship with the Ghor Area. At first, the Study Area is the second largest consumption center in the country of agricultural produce in Ghor Area. Everyday, numbers of trucks come from the Valley to the agricultural market in the Irbid City. Also, large amount of agricultural produce from the Valley is processed and packed in the Irbid City. On the other hand, the Study Area supplies large amount of seasonal labors to the valley for the agricultural work.

01.087 In addition to this, there is a high potentiality of inter-regional cooperation in the field of tourism. The Study Area has a high potential for summer resort and the Valley has high potential for winter resort. If these two are combined, tourists can be expected all year round, and at the same time, swapping of manpowers and mobile facilities between two regions will reduce the costs for tourism services.

CHAPTER II

DEVELOPMENT STRATEGIES

CHAPTER II

DEVELOPMENT STRATEGIES

2.1 Resource Availability

2.1.1 Introduction

02.001 Alternative development strategies to be proposed for the Study Area must be consistent with budgetary limitations of public finance. In order to estimate the amount of public financial resources available in the future for the Study Area, it is necessary first to know the expected magnitude of the current account surplus of the central government, on the one hand, and the expected availability of external financing, of which the Government of Jordan can mobilize in the form of foreign grants and loans, on the other. The procedure which will be followed here is to make a projection of national development expenditures by the central government up to the year 2000 primarily on the basis of the past performance, allowing for some modifications in accordance with the informed estimates and judgments by Jordanian specialists and the Study Team. Given this national budgetary frame, a similar procedure will be followed to project the amount of public financial resources available for the Study Area over the same time span. On the basis of this projected public development expenditure for the Study Area, or of what is called the Basic Projection, high and low estimates will be projected in order to allow for a possible range of variation.

2.1.2 Central Government Development Expenditure

02.002 Table 2.1 shows the development expenditures by the Central Government over the period from 1971 to 1978. Reflecting the economy's recovery from the domestic disturbance in 1970-71 and the subsequent implementation of the Third-Year Plan, the development expenditure increased rapidly in the earlier half of the 1970s and the trend continued through 1977. At 1977 constant prices, it is estimated it grew at the rate of 26 percent per annum over the period. Whether this fairly high growth rate will be maintainable in the 1980s and thereafter is another matter, and it is necessary to examine the expected availability of various sources for development financing.

Table 2.1 Central Government Development Expenditure, East Bank, 1971 to 1978

(Unit: JD 1,000)

	Estimated		Actual				Preliminary Actual	Budget
	1971	1972	1973	1974	1975	1976	1977	1978
Central Government Development Expenditure at Current Prices	9,903	19,453	25,150	39,172	67,084	70,288	109,299	152,424
Deflater	53.19	55.99	63.17	71.55	81.29	93.62	100.00	103.87
Central Government Development Expenditure at 1977 Constant Prices	18,618	34,744	39,813	54,748	82,524	75,078	109,299	146,745
Annual Growth Rate				25.8/year				

Source: Budgets 1971 to 1978.

Note: 1/ (1) Loan Repayment, (2) Loans & Investment in Public Corporations, and (3) Some non-capital expenditures such as Emergency Expenditures, and including foreign loans are deducted.

02.003 Sources of the central government development expenditures consist of (1) surplus on current account, including external budget support, (2) foreign grants, (3) foreign loans and (4) domestic borrowings. The net available resources for public development financing can be obtained by subtracting from the total of the above components (1) repayment of foreign and domestic loans and (2) the central government loans and grants to the private sector. The balance is the public expenditure on gross capital formation.

02.004 Table 2.2 presents the past trends of the sources for the central government development financing. As shown on the table, the expenditures on gross capital formation grew from JD.32 million in 1971 to JD.110 million in 1977 at 1977 constant prices, or at the rate of approximately 22 percent per annum. A discrepancy exists between this rate and the one shown on Table 2.1, but it is small and probably due to the different procedures used for calculation.

2.1.3 Projected Public Development Financing

02.005 On the basis of the past trends of the above-mentioned components, it is possible to estimate the future availability of resources for public development financing. As shown on Table 2.2, the surplus on current account has been one of the major development financing sources for the central government. The salient feature of Jordan's current account is the existence of the external budget support, which was kept at a roughly stable level of about JD.60 million at 1975 prices in the last seven years. It seems reasonable to extend a constant supply of budget support amounting to JD.61 million, the figure envisaged in the current Five-Year Plan, through the year 2000. As for domestic revenues, the past growth rate of 16.5 percent per annum is assumed up to 1985, taking account of the possible effects of various revenue raising measures which the Government has been contemplating in recent years. The ratio of public savings (ratio of current account surplus to current revenue) in recent years was approximately 30 percent, except in 1976 when it dropped to minus due to the irregular decrease of the external budget support. Therefore it is assumed that the public savings ratio will remain at 30 percent up to 1985.

02.006 The foreign grants neither showed appreciable increase nor amounted to much in recent years and it seems that this trend will persist in the future. On the contrary, foreign loans recorded a remarkable increase, growing by 24.3 percent per annum from 1972 to 1976. The rapid increase notwithstanding, the total receipts of foreign loans in recent years were far below the level expected in the current Five-Year Plan. The shortfall appears to have been due to the delay in project implementation. Since a good number of these delayed projects are well-prepared, their eventual implementation is certain. Therefore, it is assumed that foreign loans will continue to grow at the same annual rate of 24 percent until the end of the current Five-Year Plan. Then the rate of increase is assumed to decline to 10 percent up to 1985, as the number of well-prepared and highly feasible projects are expected to decrease. For the period after 1985, the growth is assumed to be zero, or remain constant in real terms.

Table 2.2 Actual Expenditure on Gross Capital Formation by Central Government, 1971 to 1977

(Unit: JD Million at 1975 Prices)

		Re-estimated Actuals						
		1971	1972	1973	1974	1975	1976	1977
Domestic Revenue (Central Govt.)	(1)	55	55	59	75	88	96	118
External Budget Support	(2)	57	69	60	60	98	41	98
Current Revenue	(3) = (1) + (2)	112	119	119	135	186	137	216
Surplus on Current Account	(4)	18	21	17	17	61	-22	68
Foreign Grants	(5)	0	0	0	5	3	3	3
Foreign Loans	(6)	8	13	17	19	27	31	47
Government Bonds	(7)	0	7	3	7	0	55	0
Borrowing from Banking System	(8)	18	10	14	10	13	11	12
Total Revenue for Capital Expenditure	(9) = (4) through (8)	44	51	51	58	104	78	130
Repayment of loans	(10)	9	6	10	8	10	6	9
Loans and Grants to Private Sector	(11)	3	4	3	3	11	10	11
Expenditure on Gross Capital Formation	(12) = (9) minus (10) & (11)	32	41	38	47	83	62	110
Growth Rate					21.8% p.a.			

Sources: 1. Budget 1971 - 1978.

2. Five Year Plan 1975 - 1980.

02.007 The receipts from sales of government bonds showed wide fluctuations in the past, precluding the possibility of estimating the future trend on this basis. However, as the Government has indicated a policy of mobilizing private resources as much as possible, the revenue from government bonds is expected to increase in the future. Taking note of the figure of JD.12 million envisaged in the current Five-Year Plan for 1977, it is assumed that the receipts will grow at the same rate as domestic revenues to keep the amount from exceeding the manageable size.

02.008 Government borrowings from the domestic banking system stayed at the level of approximately JD.10 million in the past. Since the government has no intention to increase the amount, JD.10 million is assumed for the future as well.

02.009 Repayments of foreign and domestic loans showed no appreciable change in the past, but it is sure to increase in the future, because the receipts of foreign loans have considerably increased in recent years. The rate of increase can be estimated accurately, if, given the interest rates and amortization periods, one is to follow the complicated procedure of first calculating the amount of repayment on the current-price basis and converting it to the constant-price basis for the future. However, it is considered sufficient for the present purpose to assume that the repayment will increase at the same rate as the receipts of foreign loans on the constant-price basis, allowing for the grace period of five years.

02.010 Loans and grants to the private sector showed a discrete increase in 1975. Because it will become increasingly necessary for the Government to stimulate the private sector activities through loans and equity participation, it is assumed that this item will grow at the same rate as the domestic revenues in the future.

02.011 The central government expenditures on gross capital formation expected for the future can be derived from the foregoing projections. As shown on Table 2.3, the gross capital formation by the central government will grow at the rate of 10.3 percent up to 1985, and at 8.9 percent thereafter until 2000. These future growth rates are considerably lower than the past trend of 22 to 26 percent, mainly due to the lower growth assumed for foreign loans and the higher growth assumed for loan repayments.

2.1.4 Development Expenditure for the Study Area

02.012 Table 2.4 shows the central government development expenditures in Irbid Governorate and in the Study Area over the last seven years. The development expenditure for the Study Area is estimated to have increased from JD.1.8 million in 1971 to JD.12.8 million in 1977 at current prices. The average annual growth rate in real terms is estimated to have been 16.2 percent, which is substantially lower than the national average of 22 to 26 percent. This means that the Study Area has been losing its share in the national development expenditure and also implies that the relative scale of the gross regional development product in the Study Area has been declining.

Table 2.3 Projected Gross Capital Formation by Central Government, 1977 to 2000

(Unit: JD Million at 1975 Prices)

	Base Year 1977	Assumptions for Projection	Projections 1979	1980	1981	1985	1986	2000
Domestic Revenue	118	16.5% increase p.a. upto 1985 and thereafter 12%	160	187	217	400	448	2,189
External Budget Support	98	Constant	61	61	61	61	61	61
Current Revenue	216		221	248	278	461	509	2,250
Surplus on Current Account	68	30% of Current Revenue upto 1986 and thereafter 40%	66	74	83	138	153	900
Foreign Grants	3	Slight increase	4	4	5	5	6	6
Foreign Loans	47	24% increase p.a. upto 1980, 10% for 1980-1985 and thereafter 0%	72	90	99	145	145	145
Government Bonds	0	5% increase p.a. upto 1985 and thereafter 12%	15	17	20	35	39	192
Borrowing from Banking System	12	Constant	10	10	10	10	10	10
Total Revenue for Capital Exp.	130		167	195	217	333	353	1,253
Repayment of Loans (Foreign & Domestic)	9	24% increase p.a. upto 1985 and thereafter 10%	14	17	21	50	55	209
Loans & Grants to Private Sector	11	15% increase p.a. upto 1985 and thereafter 12%	15	17	19	35	38	192
Expenditure on Gross Capital Formation	110		138	161	177	248	260	852
Growth Rate		←	10.3% p.a.			→	8.9% p.a.	→

Sources : 1. Team estimates.

2. Table 2.2.

Table 2.4 Central Government Development Expenditure for the Study Area, 1971 to 1978

(Unit: JD 1,000)

	1971	1972	1973	1974	1975	1976	Preliminery Actual 1977	Budget 1978
1) Capital Expenditure in Irbid Gov.	2,717	4,922	3,720	8.234	14,031	14,920	26,172	39,040
2) Minus Loans & Investment in Public Corporations	639	984	723	935	3,178	3,459	3,658	2,378
3) Minus Exp. Outside the Study Area 1/.	176	329	405	451	3,519	3,692	8,856	12,395
a) by Min. of Finance	0	3	21	30	63	75	116	203
b) by NPC	20	74	225	0	1,425	1,042	5,167	5,976
c) by JVA	25	58	13	230	1,652	2,224	2,892	5,322
d) by Other Ministries	131	194	146	191	379	341	681	894
4) Minus Ordinary Capital Exp. in the Study Area 2/.	124	235	168	445	477	505	888	1,577
5) Development Exp. in the Study Area 3/.	1,778	3,337	2,424	6,403	6,857	7,264	12,770	
6) Deflater	53.19	55.99	63.17	71.55	81.29	93.62	100.00	103.87
7) Develop. Exp. in the Study Area at 1977 Const. Prices 4/	3,343	6,026	3,837	8,949	8,435	7.759	12,770	
8) Growth Rate	←			16.2 % p.a.			→	

Notes: 1/ 10% of the expenditures by the Min. of Finance.

2/ (4) = (1) - (2) - (3) x (6.5%)

3/ (5) = (1) - (2) - (3) - (4)

4/ Excludes loan repayments and loans and investments in public corporations and includes foreign loans.

02.013 Table 2.5 presents the Basic Projection of the future development expenditures by the Central Government and the municipalities in the Study Area. The Basic Projection envisages, as shown on the table, a growth rate of 16 percent for the Central Government development expenditure in the Study Area up to 1985. That is, it is assumed that the relative allocation from the national development budget to the Study Area will steadily increase, because the Central Government expenditure as a whole is expected to grow at 10 percent over the same period. On the basis of the past trend, the development expenditure by the municipalities in the Study Area is assumed to be equivalent to approximately 25 percent of the Central Government expenditure. The expected total capital expenditure over the next Five-Year Plan period (1981-85) will amount to approximately JD.200 million, with JD.160 million made available from the Central Government and the remainder expended by the municipalities.

02.014 For the period from 1985 to 2000, a growth rate of 8 percent is assumed for the Central Government development expenditure, while the relative size of the municipal spending is to remain at 25 percent. The total development expenditures in the Study Area over the period will thus come to approximately JD.2,000 million.

02.015 When the range of variation is assumed to be 50 percent around the Basic Projection, the following sets of high and low estimates can be obtained:

Development Expenditures by the Central Government to the Study Area

	1981-85 JD. Million	1986-2000 JD. Million
High Projection	240	1,800
Basic Projection	160	1,200
Low Projection	80	600

Development Expenditures by the Central Government and the Municipalities to the Study Area

High Projection	300	2,250
Basic Projection	200	1,500
Low Projection	100	750

Table 2.5 Basic Projection of Public Development Expenditures in the Study Area, 1979 to 2000

(Unit: JD 1,000 at 1977 constant prices)

	Base Year 1977 Preliminery Actual	1979	1980	1981	1982	1983	1984	1985	1986	2000
1) By the Central Govt. 1/	12,770	17,183	19,933	23,122	26,821	31,113	36,091	41,865	45,214	132,821
2) By Municipalities 2/	4,263	4,296	4,983	5,781	6,705	7,778	9,023	10,466	11,303	33,205
3) Total	17,033	21,479	24,916	28,903	33,526	38,891	45,114	52,331	56,517	166,026

Sources: 1. Budget 1971 to Budget 1978

2. RSS Economic Indicators

Notes: 1/ 16% increase per annum up to 1985 and 8% thereafter.

2/ 25% of the central government development expenditures.

2.2 Development Objectives

02.016 The following two will be considered as major objectives:

(1) Economic Development
(2) More equitable distribution of income and wealth

and the following four will be considered as secondary objective:

(3) Meeting basic human needs
(4) Popular participation in the development process
(5) Social stability, and
(6) Educational and cultural development.

The first two objectives are always the principal objectives in economic planning and appear in most of the national economic development plans both in developed and developing countries. Thus, they can reasonably be conceived as primary objectives. Each of the above will be further explained below.

(1) Economic Development

This is interpreted to be a long-term increase in per capita income without sacrifice to the quality of environment and other non-monetary quality of life. A higher rate of increase is naturally more preferable.

(2) More Equitable Distribution of Income and Well-being

This mainly refers to the distribution among various income groups. A related objective is to increase social mobility.

(3) Meeting Basic Human Needs

This objective may be interpreted in many ways, and it is related to the second objective. Therefore, this objective refers to the minimum basic human needs. Water supply, housing and access to education and medical services are major subjects.

(4) Popular Participation in the Development Process

This implies that development planning dicisions should be made through popular participation and the development itself should be achieved through popular participation.

(5) Social Stability

Social instability can be caused by war, inflation massive unemployment and rampant crimes. These should be prevented.

(6) Educational and Cultural Development

To attain a higher level of education itself is an objective and to develop unique culture on the nation's heritage is also desirable.

2.3 Major Development Concepts

02.017 The industries which could contribute to the development of the Study Area include:

(1) Agriculture (including livestock and fishery)
(2) Manufacturing
(3) Professional Services
(4) International and Domestic Trade and Distribution
(5) Tourism

02.018 As for agriculture, potential development areas and types of development efforts therein are primarily determined by water resource availability, soil and climatic conditions. Therefore, there is little scope for choosing alternative location contrary to the dictates set by these natural endowments.

02.019 With regard to manufacturing, there is a far wider range of alternatives. Emphasis may be placed on (1) agro-processing based on local materials such as oil extraction from olives, (2) labor-intensive processing and manufacturing such as ball-point pen and apparel production, (3) skill- or knowledge-intensive manufacturing such as provision-machinery and printing and publishing, or (4) manufacturing oriented to local demands such as concrete block and tile production. The first and fourth alternatives have definite prospects and should be promoted in any way, but choice exists for the second and the third. The second type of manufacturing could be located near Irbid City and other urban centers, or perhaps at an industrial free zone proposed on the border with Syria. The third type of manufacturing should best be considered in relation to the forthcoming Yarmouk University. Its engineering and medical faculties will have substantial influence on the development of precision-machinery and electronic industries, while printing and publishing activities will be supported by the entire university group.

02.020 Professional services such as engineering, architectural design, development consultation, education, legal and medical services could be developed aiming at a wider clientele in the Arab region. The degree of encouragement to be given to these activities is a matter of policy decision.

02.021 Promotion of trade and distributive activities is another policy issue. The relative importance of the Region, if these industries be located, could be greatly strengthened, possibly at the expense of the Amman Region, thus expediting more equitable regional distribution of development.

02.022 The Study Area is endowed with high potential tourism resources such as historic relics, cool weather and beautiful scenery. Although their location are fixed and cannot be relocated as a planner wants, they are the one sector to contribute to the development of the Study Area and should be incorporated into development concept.

02.023 Overall spatial distribution of these various industries is an important issue for policy makers. An even distribution of productive activities within the Region will provide access for all the inhabitants in the Region to the benefits of development, although the aggregate regional development may not proceed as fast as otherwise. A more centralized pattern of development would probably achieve a greater growth of the regional product due to economies of agglomeration.

02.024 Within the centralized development pattern, there are alternatives with respect to the location of the cetner. The Municipality of Irbid is a natural candidate for the center because it has the largest population concentration and is thriving as the largest commercial and administrative center of the Region. Another alternative location is the area where Yarmouk University will be established. The latter alternative will in fact contain two centers, existing center at Irbid City and a new center around Yarmouk University.

02.025 It is possible to conceive further a triple-center development pattern having centers along the present Bagdad road at Irbid, the Yarmouk University site and Mafraq.

2.4 Major Development Alternatives

02.026 On the basis of the concepts presented above, four long-term alternative patterns of development could be indicated for the Region: viz; (1) Decentralized Pattern, (2) Mono-centric Pattern, (3) Duo-centric Pattern and (4) Tri-centric Pattern (Figs. 2.1 through 2.4). Major characteristics of these patterns are summarized on Table 2.6, and possible development projects necessary for each of the alternatives are indicated on Table 2.7.

2.5 Comparative Evaluation of Alternative Development Strategies

02.027 In accordance with the evaluation methodology presented in Inception Report, the four alternatives will be evaluated below for two reference years of 1985 and 2000. The investment projects listed in Table 2.7 are assumed to be implemented by the end of 1985. Therefore, the development up to 2000 cannot be adequately predicted for each pattern. The evaluation for the year 2000 is made on the basis of the nature of development which can be anticipated from the foundation laid out for each pattern by 1985. The results of evaluation are presented in Tables 2.8 through 2.10.

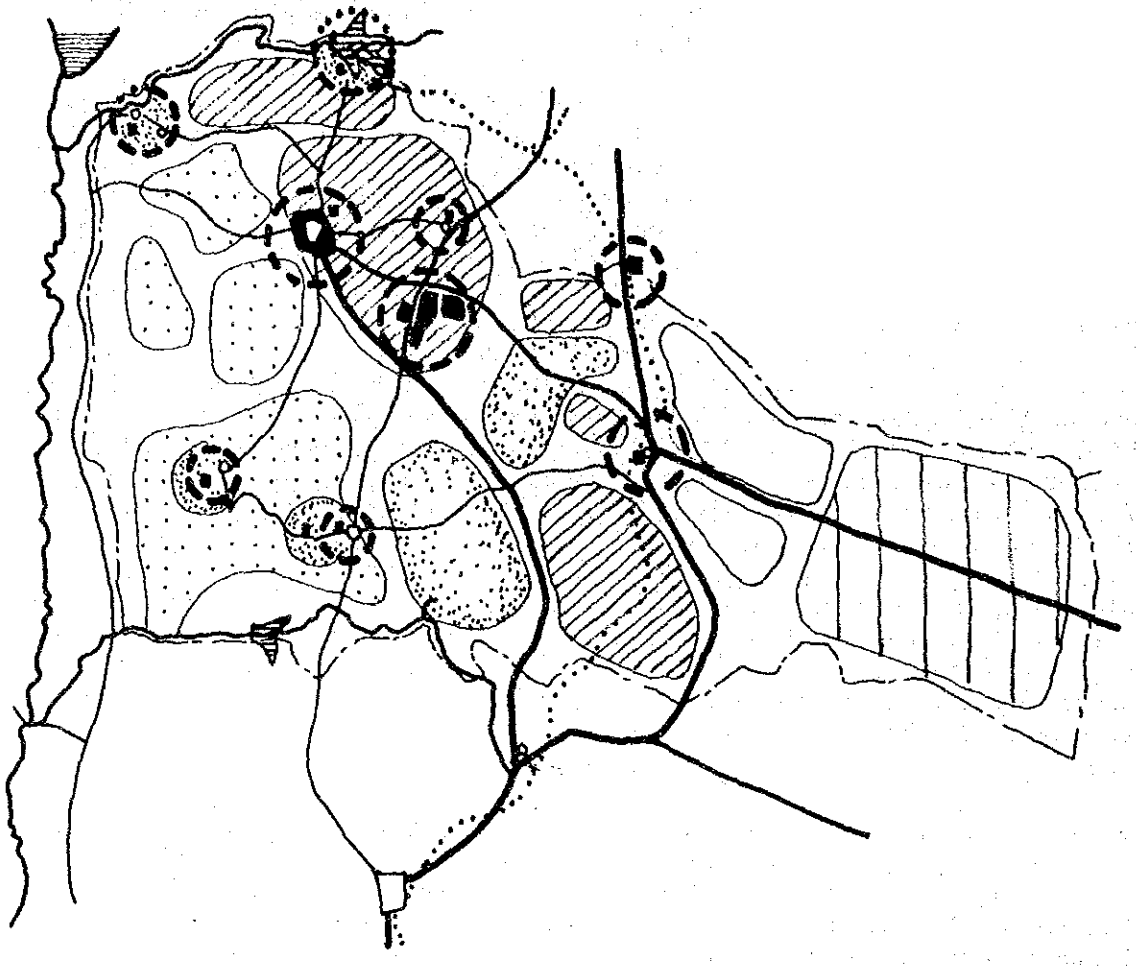
02.028 The full scale evaluation is presented for the Decentralized Pattern in Table 2.8. The table shows relatively high scores for water and utility projects. Many of tourism projects are valued for their implication for cultural development.

02.029 Table 2.9 presents the evaluation of those projects which appear in all alternatives. Although the performance of these projects would be affected by the presence or absence of the projects not listed on the table (variable project) to some extent, these variations are neglected. In general, these common projects are of high priority and the average score per unit weight (investment of JD 1 million) is high.

02.030 Table 2.10 presents the evaluation of the variable projects, i.e., those projects the inclusion of which depends upon the alternative. These projects constitute a body of projects which define the strategy. Due to the largest scale of investment, the Duo-centric Pattern scores highest both for 1985 and 2000. In terms of the average score per unit weight for the variable projects, the Mono-centric Pattern scores highest for 1985, but the Duo-centric Pattern achieves the highest score for 2000. This implies that if a switch in the strategy can be made at around 1985 without cost to the economy, then the best strategy becomes the development along the Mono-centric Pattern to 1985 and then a switch to the Duo-centric Pattern. In reality, however, investments are irreversible. Therefore, our choice must be based on the long-run evaluation of the strategies. Consequently, on the basis of the evaluation method presented here, the Duo-centric Pattern is recommended to be the development strategy for the Northern Region, based on this evaluation method.

02.031 Table 2.10 presents the evaluation of the variable projects, i.e., those projects the inclusion of which depends upon the alternative. These projects constitute a body of projects which define the strategy. Due to the largest scale of investment, the Duo-centric Pattern scores highest both for 1985 and 2000. In terms of the average score per unit weight for the variable projects, the Mono-centric Pattern scores highest for 1985, but the Duo-centric Pattern achieves the highest score for 2000. This implies that if a switch in the strategy can be made at around 1985 without cost to the economy, then the best strategy becomes the development along the Mono-centric Pattern to 1985 and then a switch to the Duo-centric Pattern. In reality, however, investments are irreversible. Therefore, our choice must be based on the long-run evaluation of the strategies. Consequently, on the basis of the evaluation method presented here, the Duo-centric Pattern is recommended to be the development strategy for the Northern Region, based on this evaluation method.

Figure 2.1 Decentralized Pattern



Legend

- Growth Center
- Area for Future Development
- Area Agricultural Development
- Afforestation Area
- Forested Area
- Grazing Area
- Civil Purpose Use
- National & International Arterial Road
- Intercity Highway
- Distributer Road

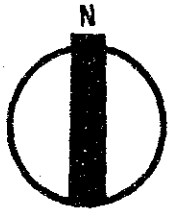
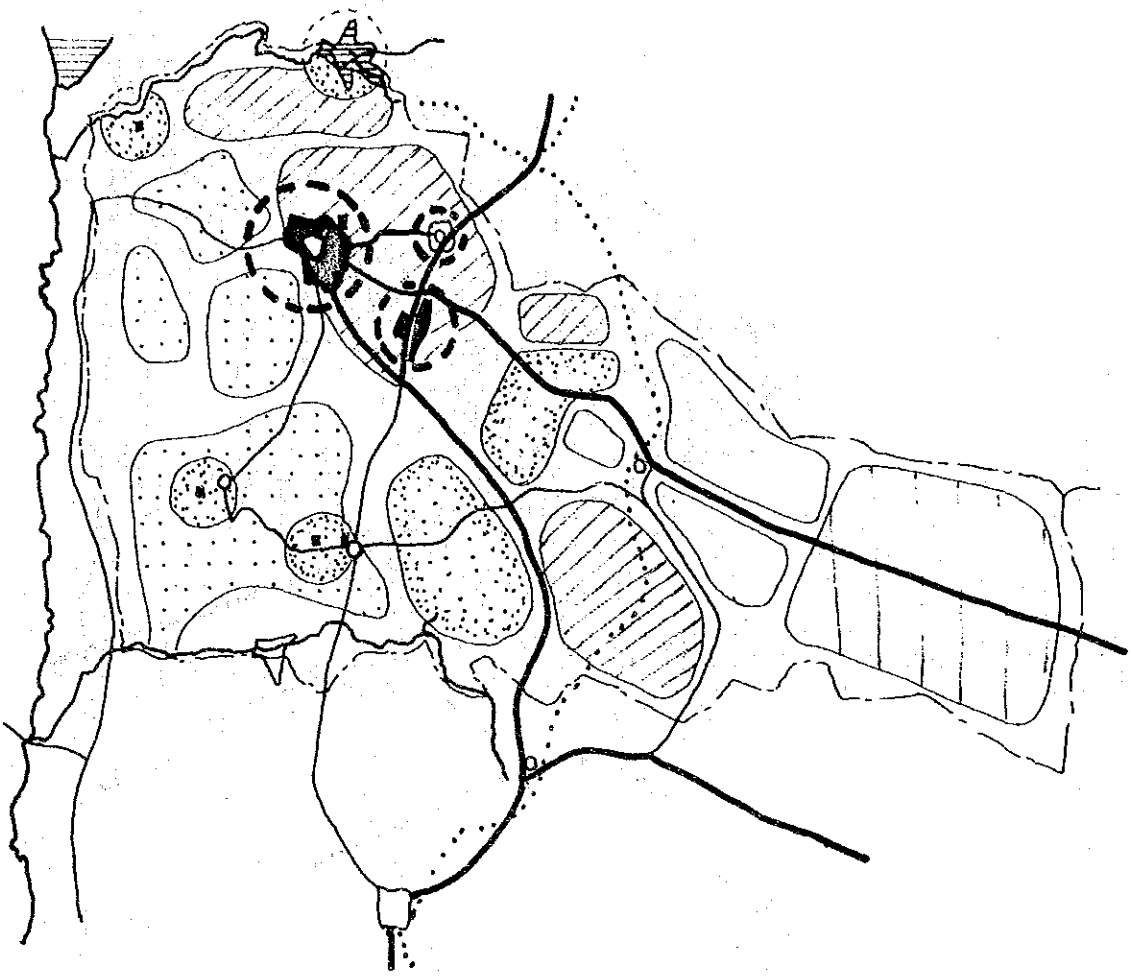
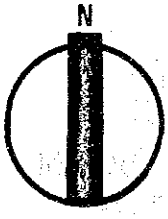


Figure 2.2 Mono-Centric Pattern



Legend

- Growth Center
- Area for Future Development
- Area Agricultural Development
- Afforestation Area
- Forested Area
- Grazing Area
- Civil Purpose Use
- National & International Arterial Road
- Intercity Highway
- Distributer Road



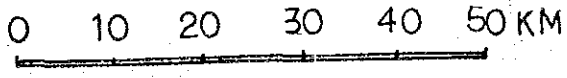
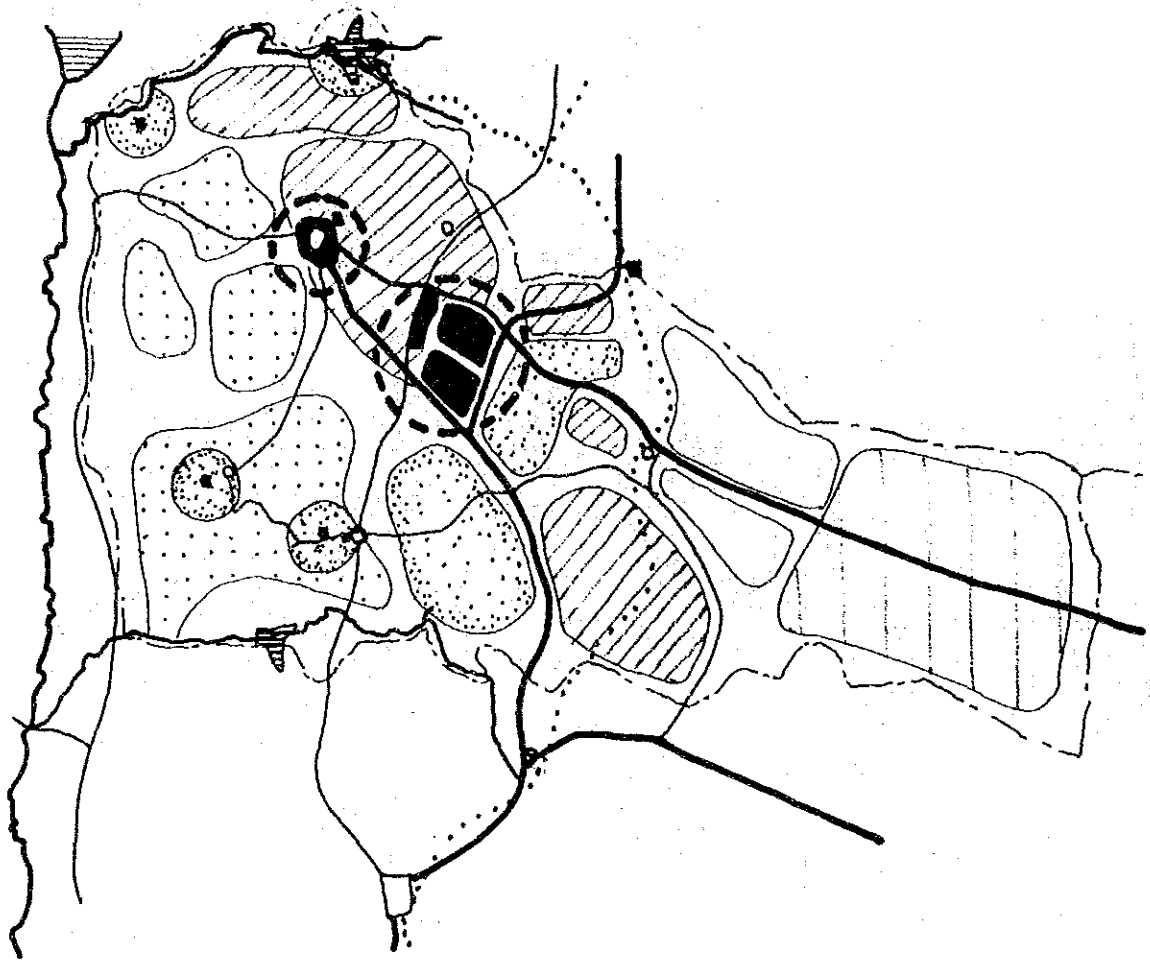
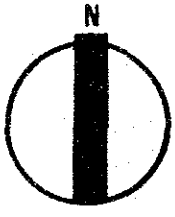


Figure 2.3 Duo-Centric Pattern



Legend

- Growth Center
- Area for Future Development
- Area Agricultural Development
- Afforestation Area
- Forested Area
- Grazing Area
- Civil Purpose Use
- National & International Arterial Road
- Intercity Highway
- Distributer Road



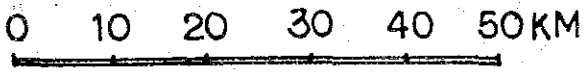
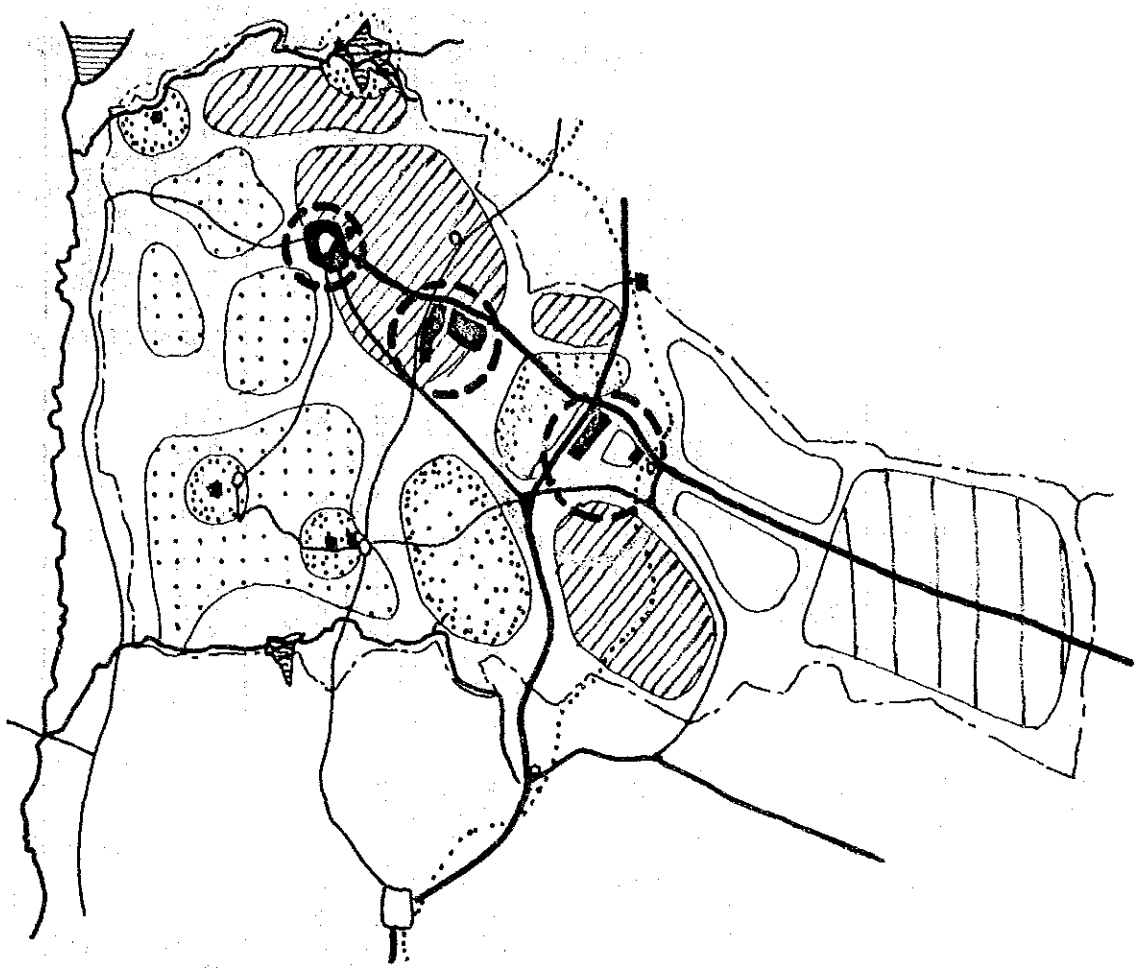
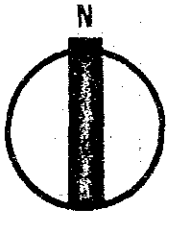


Figure 2.4 Tri-Centric Pattern



Legend

- Growth Center
- Area for Future Development
- Area Agricultural Development
- Afforestation Area
- Forested Area
- Grazing Area
- Civil Purpose Use
- National & International Arterial Road
- Intercity Highway
- Distributer Road



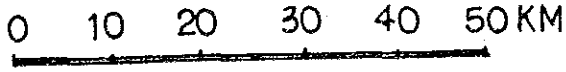


Table 2.6 Major Characteristics of Alternative Patterns

	(1) Decentralized Pattern	(2) Mono-Centric Pattern	(3) Duo-Centric Pattern	(4) Tri-Centric Pattern
Agriculture	Each center will serve as a distribution center	Not much emphasis	Preservation of rain-fed wheat areas	Preservation of rain-fed wheat areas
Manufacturing	Agro-processing and market oriented industries in each center A border Industrial Free Zone envisaged	All important manufacturing plants in and around Irbid City. Emphasis on labor-intensive type No Border Industrial Free Zone envisaged	All new plants in Yarmouk New Town. Emphasis on skill- and knowledge-intensive industries A Border Industrial Free Zone envisaged	Labor-oriented industries in Mafraq and skill- and knowledge-intensive industries in Yarmouk New Town A Border Industrial Free Zone envisaged
Professional Services	Low-level specialization but good access to all	Centralized and specialized services	Science and engineering oriented services in Yarmouk New Town	Specialized services in the three centers
Trade and Distribution	No major role at any center	Slower growth than (3) or (4)	Phenomenal growth at Yarmouk New Town	Phenomenal growth at the intersection of the international road and the present Baghdad road

Table 2.7 List of Possible Projects, 1980 to 1985

Sector	Project Name	Cost JD Mill	Alternative Pattern 1	2	3	4
Water Resources	1. Yarmouk-Irbid Water Supply	5.0	+	+	+	+
	2. Samasdoud Wells	3.7	+	+	+	+
	3. Water Import from Syria (Muzeirib)	2.4	+	+	+	+
	4. Maqarin Dam	63.0	+	+	+	+
	5. Irbid Water Distribution Improvement	8.0	+	+	+	+
	6. Wadi Warran Experimental Dam	0.3		+	+	
Agriculture	7. Afforestation (5,000 ha)	1.0	+	+	+	+
	8. Jerusalem Artichoke Exp. Field	0.3	+	+	+	+
	9. Agricultural Service Road	2.0	+	+	+	+
	10. Land Reclamation	0.2	+	+	+	+
	11. Livestock Promotion	3.5	+	+	+	+
	12. Olive Promotion	1.0	+	+	+	+
	13. Fish Culture Exp. Center	1.0	+	+	+	+
Manufacturing	14. Border Industrial Free Zone Phase I (100 ha)	2.5	+		+	+

(To continue)

Table 2.7 (Continued)

Sector	Project Name	Cost JD Mill	Alternative Pattern 1	2	3	4
Manufacturing	15. Industrial Estates at three cities (15 ha)	0.6	+			
	16. Industrial Estate at Irbid (60 ha)	2.4		+		
	17. Industrial Estate at Irbid (20 ha)	0.8			+	+
	18. Industrial Estate at Yarmouk New Town (150 ha)	3.8			+	
	19. Sugar Factory at Irbid	2.7	+	+	+	+
	20. Industrial Estate at Mafraq (200 ha)	5.0				+
Tourism	21. Jerash Tourism Development	0.8	+	+	+	+
	22. Dibbin National Park Development	1.2	+	+	+	+
	23. Ajlun Tourism Development	0.6	+	+	+	+
	24. Irbid Improvement	0.2	+	+	+	+
	25. Irbid Park System	3.0		+	+	
	26. Ramtha Tourism Development	0.2	+	+		
	27. Um Qeis Excavation	1.6	+	+	+	+
	28. Forest Parks	1.2	+			
Transportation	29. New Road: Rihab-Route 15 (18 km)	1.4	+	+	+	+

(To continue)

Table 2.7 (Continued)

Sector	Project Name	Cost JD Mill	Alternative Pattern 1	2	3	4
Transportation	30. Village Roads (New 41.5. Pavement 198 km)	1.1	+	+	+	+
	31. Route 16 (Irbid-Mafraq) and 15(near Jerash) Improvement	0.5	+	+	+	+
	32. Jerash Bypass (10 km)	1.1	+	+	+	+
	33. Irbid Ring Road	0.5		+	+	
	34. New Road: Free Zone-Mafraq/Route 11	2.0	+		+	+
	35. Irbid Bus	0.2	+	+	+	+
Telecom-munication	36. Expansion Works in Irbid City	4.5	+	+	+	+
	37. Expansion of 5 Towns' System	5.0	+	+	+	+
	38. Irbid-Amman Route Extension	0.5	+	+	+	+
	39. Rural Telecom-munication	4.2	+	+	+	+
Education	40. Yarmouk University (Phase I & II)	50.0	+	+	+	+
Training	41. Irbid Vocational Training Center	1.5	+	+	+	+
	42. 4 Vocational Training Centers	2.0	+			

(To continue)

Table 2.7 (Continued)

Sector	Project Name	Cost JD Mill	Alternative Pattern 1	2	3	4
Training	43. Jerash Craft Center	0.5	+	+	+	+
Urban Development & Community Facilities	44. Housing Site at Irbid (1,000 ha)	12.4	+	+		
	45. New Town at Irbid (3,300 units)	19.8		+		
	46. Housing Site at Yarmouk New Town (450 ha)	5.0			+	+
	47. New Town at Yarmouk (4,000 units)	25.0			+	
	48. New Town at Mafraq (4,000 units)	25.0				+
	49. Educational Facilities	12.4	+	+	+	+
	50. Health Facilities	8.1	+	+	+	+
	Total Investment		210.1	227.8	232.1	229.5

Note: + indicates that the project will be included in the respective alternative patterns of development.

Table 2.8 Evaluation of the Decentralized Pattern, 1985/2000

Project	JD Mil.	OBJECTIVES							SCORE
		Weight 2		Weight 1				Unit Score	
	Wght	Ec.Dev.	Dist	BHN	Part	Stab.	Ed. & Cult		
Yarmouk-Irbid W.S.	5.0	3	2	3	1	3	1	18	90
Samasdoud Wells	3.7	3	2	3	1	3	1	18	66.6
W.S. from Syria (Muzeirib)	2.4	3	2	3	1	3	1	18	43.2
Maqarin Dam	63.0	3	2	3	1	2	2	18	1,134
Irbid Water Distribution	8.0	3	3	3	2	3	1	21	168
Afforestation	1.0	0/3	1	1	1	2	3	9/15	9/15
Artichoke Exp. Field	0.3	3	2	1	0	2	0	13	3.9
Livestock Promotion	3.5	3	2	2	1	1	1	15	52.5
Reclamation of Land	0.2	3	2	2	1	2	1	16	3.2
Agricultural Service Road	2.0	3	2	2	1	2	1	16	32
Olive Promotion	1.0	3	1	2	2	1	1	14	14
Fish Culture Exp. Center	1.0	3	1	0	1	2	0	11	11
Border Industrial Free Zone	2.5	2/3	1	0	0	0	0	6/8	15/20

(To continue)

Table 2.8 (Continued)

Project	JD. Mil. Wght	OBJECTIVES Weight 2 Ec.Dev.	Dist	Weight 1 BHN	Part	Stab.	Ed.& Cult	Unit Score	SCORE
I.E. at 3 Cities	0.6	2/3	2/3	1	0	0	0	9/13	5.4/7.8
Sugar Factory at Irbid	2.7	3	1	2	0	0	0	10	27
Jerash Tourism	0.8	3	0	0	0	0	3	9	7.2
Dibbin Park	1.2	2	1	0	0	0	3	9	10.8
Ajlun Tourism	0.6	2	1	0	0	0	3	9	5.4
Irbid Improvement	0.2	2	0	0	0	1	3	8	1.6
Ramtha Tourism	0.2	2	0	0	0	0	2	6	1.2
Um Qeis Excavation	1.6	2/3	0	0	0	0	3	7/9	11.2/14.4
Forest Parks	1.2	1	0	1	0	2	3	8	9.6
New Road: Rihab. R 15	1.4	3	1	1	1	0	0	10	14
Jerash Bypass	1.1	3	0	0	0	0	3	9	9.9
Road Improvements	0.5	3	0	0	0	0	0	6	3.0
New Road F.Z. to Mafraq	2.0	3	0	0	0	0	0	6	12.0
Village Roads	1.1	2	3	3	2	2	1	18	19.8
Irbid Bus	0.2	2	2	2	0	1	0	11	2.2
Tel.(Extension works in Irbid City)	4.5	3	2	2	0	2	0	14	198.8
(Expansion of 5 Towns System)	5.0	3	2	2	0	2	0	14	

(To continue)

Table 2.8 (Continued)

Project	JD Mil. Wght	OBJECTIVES Weight 2 Ec.Dev.	Dist	Weight 1 BHN	Part	Stab.	Ed.& Cult	Unit Score	SCORE
Tel.(Irbid-Amman Route Extension)	0.5	3	2	2	0	2	0	14	
Rural Telecom-munication)	4.2	2	2	3	0	2	1	14	
Yarmouk University	50.0	2	1	0	2	0	3	11	550
Irbid Voca-tional Train-ing Centers	1.5	3	3	0	1	0	0	13	19.5
4 Vocational Train. Centers	2.0	3	3	2	1	1	0	16	32.0
Jerash Craft Center	0.5	3	3	1	1	0	1	15	7.5
Housing Site Irbid	12.4	2	2	2	0	0	2	12	148.8
Educational Facilities	12.4	2	3	2	1	1	2	16	198.4
Health Facilities	8.1	1	1	3	0	2	1	10	81
Total	210.1								3018.7/ 3035.3
Average score per unit weight									14.37/ 14.45

Note: Where the score is a combination of two figures represented by X/Y, X refers to the expected achievement by 1985 and Y refers to that by 2000. If the score is represented by a single figure, it refers to the expected achievement both by 1985 and 2000.

Table 2.9 Evaluation of the Project Common to All Patterns by 1985/2000

Project	Wght	OBJECTIVES Weight 2 Ec.Dev.	Dist	Weight 1 BHN	Part	Stab.	Ed.& Cult	Unit Score	SCORE
Yarmouk-Irbid W.S.	5.0	3	2	3	1	3	1	18	90
Samasdoud-Wells	3.7	3	2	3	1	3	1	18	66.6
W.S. from Syria	2.4	3	2	3	1	3	1	18	43.2
Maqarin Dam	63.0	3	2	3	1	2	2	18	1,134
Irbid Water Distin	8.0	3	3	3	2	3	1	21	168
Afforestation	1.0	0/3	1	1	1	2	3	9/15	9/15
Artichoke Exp. field	0.3	3	2	1	0	2	0	13	3.9
Livestock Promotion	3.5	3	2	2	1	1	1	15	52.5
Reclamation of Highland	0.2	3	2	2	1	2	1	16	3.2
Agr. Service Road	2.0	3	2	2	1	2	1	16	32
Olive Promotion	1.0	3	1	2	2	1	1	14	14
Fish Culture Exp. Center	1.0	3	1	0	1	2	0	11	11
Sugar Factory at Irbid	2.7	3	1	2	0	0	0	10	27
Jerash Tourism	.8	3	0	0	0	0	3	9	7.2

(To Continue)

Table 2.9 (Continued)

Project	Wght	OBJECTIVES Weight 2 Ec.Dev.	Dist	Weight 1 BHN	Part	Stab.	Ed.& Cult	Unit Score	SCORE
Dibbin Park	1.2	2	1	0	0	0	3	9	10.8
Ajlun Tourism	.6	2	1	0	0	0	3	9	5.4
Irbid Improvement	.2	2	0	0	0	1	3	8	1.6
Um Qeis Excavation	1.6	2/3	0	0	0	0	3	7/9	11.2/ 14.4
New Road: Rihab .R. 15	1.4	3	1	1	1	0	0	10	14
Jerash Bypass	1.1	3	0	0	0	0	3	9	9.9
Road Improvement	.5	3	0	0	0	0	0	6	3.0
Village Roads	1.1	2	3	3	2	2	1	18	19.8
Tel.(Extension works in Irbid City)	4.5	3	2	2	0	2	0	14	198.8
(Expansion of 5 Towns System)	5.0	3	2	2	0	2	0	14	
(Irbid-Amman Route Extension)	0.5	3	2	2	0	2	0	14	
(Rural Telecom-munica-tion	4.2	2	2	3	0	2	1	14	
Yarmouk University	50.0	2	1	0	2	0	3	11	550

(To continue)

Table 2.9 (Continued)

Project	Wght	OBJECTIVES Weight 2 Ec.Dev.	Weight 2 Dist	Weight 1 BHN	Weight 1 Part	Weight 1 Stab.	Weight 1 Ed.& Cult	Unit Score	SCORE
Vocational Training at Irbid	1.5	3	3	0	1	0	0	13	39
Jerash Craft Center	0.5	3	3	1	1	0	1	15	7.5
Educational Facilities	12.4	2	3	2	1	1	2	16	198.4
Health Facilities	8.1	1	1	3	0	2	1	10	81
Total	189								2812/ 2821.2
Average score per unit weight									14.88/ 14.93

Table 2.10 Comparative Evaluation of Alternatives Based on Variable Projects by 1985/2000

Alt.	Project	WGT	OBJECTIVES							SCORE
			Weight 2		Weight 1					
			Ec Dev.	Dist	BHN	Part	Stab	Ed. & Cult	Unit Score	
1)	Decentralized									
	Industrial Free Zone	2.5	2/3	1	0	0	0	0	6/8	15.0/20.0
	IE. at 3 Cities	0.6	2/3	2/3	1	0	0	0	9/13	5.4/ 7.8
	Ramtha Tourism	0.2	2	0	0	0	0	2	6	1.2
	New Road: F.Z. to Maf.	2.0	3	0	0	0	0	0	6	12.0
	4 Vocational Training Centers	2.0	3	3	2	1	1	0	16	32.0
	Irbid Bus	0.2	2	2	2	0	1	0	11	2.2
	Housing Site - Irbid	12.4	2	2	2	0	0	2	12	148.8
	Forest Parks	1.2	1	0	1	0	2	3	8	9.6
	Total	21.1								226.2/233.6
	Average Score per Unit Weight									10.72/11.07
2)	Mono-Centric									
	Wadi Warran Exp. Dam	0.3	2	1	1	1	1	2	11	3.3
	Irbid Ind. Est.	2.4	2/3	2	1	0	0	0	9/11	21.6/ 26.4
	Ramtha Tourism	0.2	2	0	0	0	0	2	6	1.2
	Irbid Ring Road	0.5	2/3	1	2	0	0	0	8/10	4.0/ 5.0
	Irbid Bus	0.2	3	2	2	0	1	1	14	2.8

(To Continue)

Table 2.10 (Continued)

Alt.	Project	WGT	OBJECTIVES							SCORE
			Weight 2		Weight 1					
			Ec Dev.	Dist	BHN	Part	Stab	Ed & Cult	Unit Score	
2)	Mono-Centric									
	Housing Site Irbid	12.4	3	2	2	0	0	2	14	173.6
	Irbid Park System	3.0	1	0	1	0	2	3	8	24.0
	New Town Irbid	19.8	2	1	1	0	1	2	10	198.0
	Total	38.8								428.5/434.3
	Average score per unit weight									11.04/11.19
3)	Duo-Centric									
	Wadi Warran Exp. Dam	0.3	2	1	1	1	1	2	11	3.3
	Industrial Free Zone	2.5	2/3	1	0	0	0	0	6/8	15.0 / 20.0
	Irbid I.E.	0.8	2	1	1	0	0	0	7	5.6
	Yarmouk I.E.	3.8	1/3	1	0	0	0	2/3	6/11	22.8 / 41.8
	Irbid Ring Road	0.5	2	1	2	0	0	0	8	4.0
	New Road: F.Z. to R.11	2.0	3	0	0	0	0	0	6	12.0
	Irbid Bus	0.2	3	3	2	0	1	1	16	3.2
	Irbid Park System	3.0	1	0	1	0	2	3	8	24.0
	Housing Site Yarmouk	5.0	2	2	2	0	1	3	14	70.0
	New Town Yarmouk	25.0	1/3	2	2	0	1	3	12/16	300.0/400.0
	Total	43.1								459.9/583.9
	Average Score per Unit weight									10.67/13.55

(To continue)

Table 2.10 (Continued)

Alt.	Project	WGT	OBJECTIVES							SCORE
			Weight 2		Weight 1					
			Ec Dev.	Dist	BHN	Part	Stab	Ed & Cult	Unit Score	
4)	Tri-Centric									
	Industrial Free Zone	2.5	2/3	1	0	0	0	0	6/8	15/20
	Irbid I.E.	0.8	1	1	1	0	0	0	5	4.0
	Mafraq I.E.	5.0	1/2	1	0	0	0	0	4/6	20.0/30.0
	New Road: F.Z. to Maf.	2.0	3	0	0	0	0	0	6	12.0
	Irbid Bus	0.2	3	3	2	0	0	0	14	2.8
	Housing Site Yarmouk	5.0	2	2	2	0	1	2	13	65.0
	New Town Mafraq	25.0	2	1	1	0	1	2	10	250.0
	Total	40.5								368.8/383.8
	Average Score Per Unit Weight									9.11/9.48

CHAPTER III

RECOMMENDED DEVELOPMENT STRATEGY AND PROSPECTS

CHAPTER III

RECOMMENDED DEVELOPMENT STRATEGY AND PROSPECTS

3.1 Revised Evaluation of the Alternative Development Strategies

03.001 In order to review the outcome of the comparative evaluation of the alternative development strategies, one presentation was held for the relevant high officials of the Central Government of Jordan on September 7, 1978. At the meeting, many officials stressed the importance of distributional consideration among sub-areas within the Study Area, i.e., the importance of Decentralized Pattern of development. In response, another primary objective of more equitable sub-regional distribution was incorporated into the objective system to evaluate the alternative strategies, and the result of the revised evaluation is presented on Table 3.1. As can be expected from the objective, the Decentralized Pattern scores highest for 1985 in terms of the average score per unit weight for the variable projects. But for the year 2000, the Duo-Centric Pattern still gets the highest score among the alternatives. This implies that a combination of the Decentralized and the Duo-Centric Patterns will be the best development strategy. The Combined Pattern is henceforth recommended for adoption by the Government of Jordan for the development in the Study Area.

3.2 Recommended Development Strategy

3.2.1 Overall Strategy

03.002 As a result of the revised comparative analysis of the alternative strategies in the preceding section, a combined pattern is recommended as the development strategy for the Study Area and presented on Figure 3.1. The Study Area can be classified into nine development areas, each with its development center, and the remaining areas, composed of farm land, grass land and deserts. Irbid and New Yarmouk University areas will be the primary development centers in the Study Area (Table 3.2).

Table 3.1 Revised Evaluation of Alternatives Based on Variable Projects by 1985

Alt.	Project	Wgt.	Additional Objective (Weight 2) Sub-Reg. Dist.	Unit Score	Score	Score by Original 6 Obj.	Revised Score
(1)	Decentralized						
	Industrial Free Zone	2.5	3	6	15.0		
	Ind. Estates at 3 Cities	.6	3	6	3.6		
	Ramtha Tourism	.2	1	2	.4		
	New Road I.F.Z. to Mafraq	2.0	2	4	8.0		
	Irbid Bus	.2	0	0	0		
	Housing Site Irbid	12.4	0	0	0		
	4 Vocational Training Centers	2.0	3	6	12.0		
	Forest Parks	1.2	3	6	7.2		
	Total	21.1			46.2	226.2/233.6	272.4/279.8
	Average Score per Unit Weight						12.91/13.26
(2)	Mono-Centric						
	Exp. Dam	.3	0	0	0		
	Irbid Ind. Estates	2.4	0	0	0		
	Ramtha Tourism	.2	1	2	.4		
	Irbid Ring Road	.5	0	0	0		
	Irbid Bus	.2	0	0	0		
	Housing Site Irbid	12.4	0	0	0		

(To Continue)

Table 3.1 (Continued)

Alt.	Project	Wgt	Additional Objective (Weight 2) Sub-Reg. Dist.	Unit Score	Score	Score by Original 6 Obj.	Rivised Score
(2)	Mono-Centric						
	New Town Irbid	19.8	0	0	0		
	Irbid Park System	3.0	0	0	0		
	Total	38.8			.4	428.5/434.3	428.9/434.7
	Average Score per Unit Weight						11.05/11.20
(3)	Duo-Centric						
	Exp. pam	.3	0	0	0		
	Free Trade Zone	2.5	3	6	15		
	Irbid Ind. Estate	.8	0	0	0		
	Yarmouk Ind. Estate	3.8	0	0	0		
	Irbid Ring Road	.5	0	0	0		
	New Road I.F.Z. to R.11	2.0	0	0	0		
	Irbid Bus	.2	0	0	0		
	Housing Site Yarmouk	5.0	0	0	0		
	New Town Yarmouk	25.0	0	0	0		
	Irbid Park System	3.0	0	0	0		
	Total	43.1			15	459.9/583.9	474.9/598.9
	Average Score per Unit Weight						11.02/13.90

(To Continue)

Table 3.1 (Continued)

Alt.	Project	Wgt.	Additional Objective (Weight 2) Sub-Reg. Dist.	Additional Unit Score	Additional Score	Score by Original 6 Obj.	Revised Score
(4)	Tri-Centric						
	Industrial Free Zone	2.5	3	6	15		
	Irbid I.E.	.8	0	0	0		
	Mafraq I.E.	5.0	2	4	20		
	New Road I.F.Z. to Mafraq	2.0	2	4	8		
	Irbid Bus	.2	0	0	0		
	Housing Site Yarmouk	5.0	0	0	0		
	New Town Mafraq	25.0	1	2	50		
	Total	40.5			93	368.8/383.8	461.8/476.8
	Average Score per Unit Weight						11.40/11.77

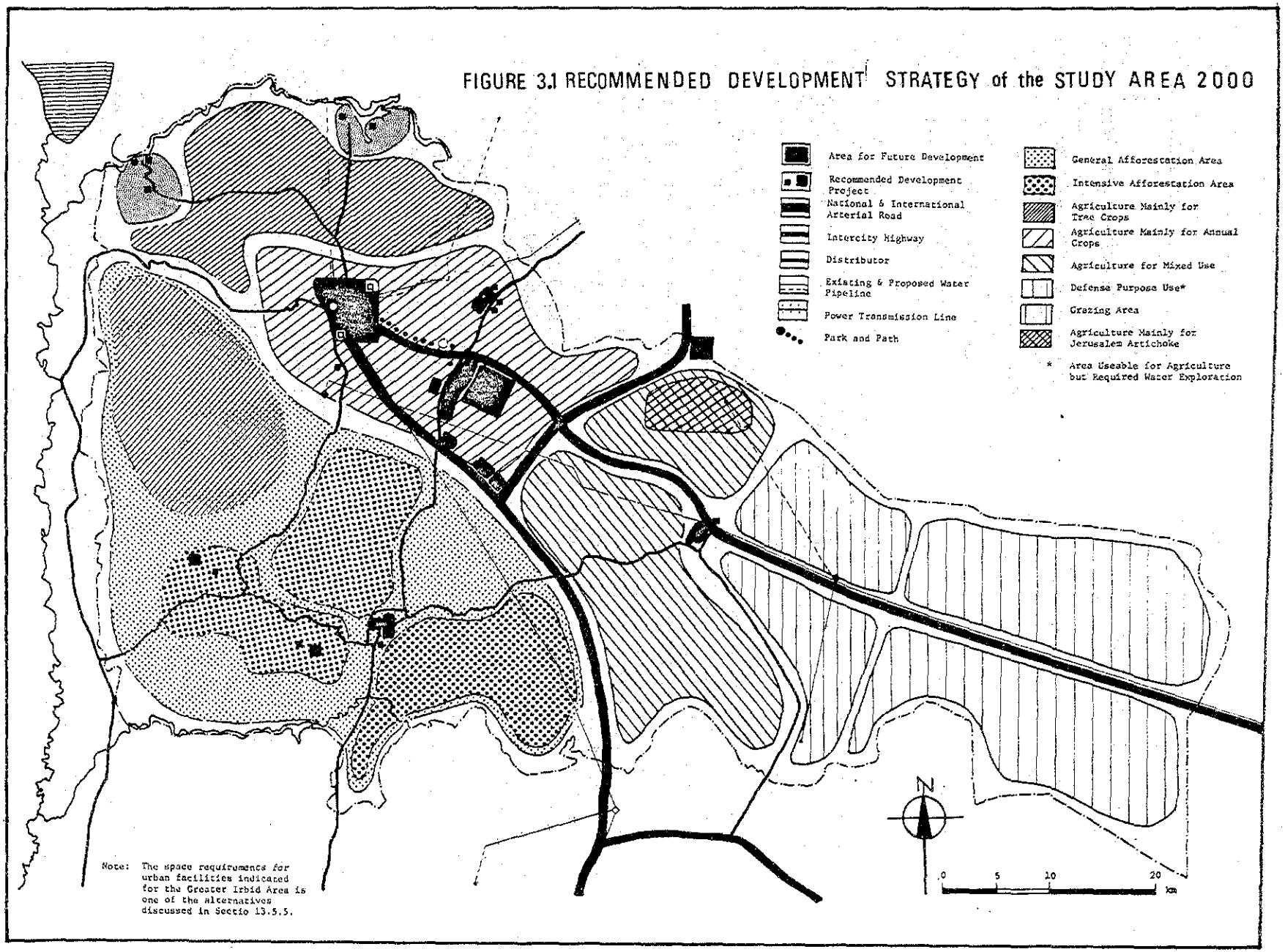


FIGURE 3.1 RECOMMENDED DEVELOPMENT STRATEGY of the STUDY AREA 2000
Area for Future Development
Recommended Development Project
National & International Arterial Road
Intercity Highway
Distributor
Existing & Proposed Water Pipeline
Power Transmission Line
Park and Path
General Afforestation Area
Intensive Afforestation Area
Agriculture Mainly for Tree Crops
Agriculture Mainly for Annual Crops
Agriculture for Mixed Use
Defense Purpose Use*
Grazing Area
Agriculture Mainly for Jerusalem Artichoke
* Area Useable for Agriculture but Required Water Exploration
N
0 5 10 20 km
Note: The space requirements for urban facilities indicated for the Greater Irbid Area is one of the alternatives discussed in Sectio 13.5.5.

Table 3.2 Nine Development Areas and Agricultural Areas

Nine Dev. Areas	Primary Development Areas	Irbid Area New Yarmouk University Area
	Secondary Development Areas	Ramtha Area Mafraq Area Jerash Area Ajlun Area Industrial Free Zone Area Maqarin Dam Area Um Qeis Area
Agr. Areas	Agricultural Land and Natural Reserves	The Rest of the Study Area

03.003 The development of the Study Area should aim at achieving the afore-mentioned three primary and four secondary objectives. To achieve the objective of economic development, the two primary development areas will play a crucial role, by absorbing a large share of the available development resources. Special attention must be drawn to the New Yarmouk University area, which is expected to develop into a major center for specialized industrial activities as well as for higher learning and cultural activities, eventually catering to the national, and perhaps international, clientele. The Irbid area will continue to grow as another primary cetner for regional administration, and commercial and industrial activities.

03.004 To achieve the other primary objectives of more equitable distribution of the benefits of economic development among various income groups, on the one hand, and among the sub-regions on the other, the development of seven secondary centers will have to be promoted. Four municipalities of Ramtha, Mafraq, Jerash and Ajlun are expected to grow as a center for collection, processing and distribution of agricultural products and inputs and various consumer goods. The growth of agro-processing industries is expected in these four secondary centers, primarily utilizing the locally available products. In addition, Ramtha and Mafraq will emerge as centers of distribution due to their strategic access to the domestic and international transportation networks, while Jerash and Ajlun will develop as major tourism and resort areas. The four municipalities will need the expansion of the available vocational training facilities to meet the increasing local demand. The Industrial Free Zone on the border with Syria will develop as a secondary center with its processing and assembly industries and consequent distribution function. The Maqarin Dam area should be developed as one of the few water front resort areas of the country, with large-scale land subdivision for resort villas. Um Qeis with its

Greco-Roman ruins and attractive landscape should be developed as one of the major tourist attractions and recreation centers.

03.005 Another aspect of the distribution objectives concerns the provision of community services. For this purpose, a hierarchy of communities in the Study Area is proposed as shown on Figure 3.2. The primary centers of the Area's community services are to be the Irbid area and though to a lesser extent, the New Yarmouk University Area. The secondary centers are Irbid, Jerash, Ajlun, Mafraq and Ramtha, and the tertiary centers are Irbid, Samar, Kufr Asad, Deir Abu Said, Jerash, El Kufeir, El Kitta, Ajlun, Anjara, Mafraq, Mughaiyir, Rihab, Balama, Ramtha and Buweida.

03.006 As for agriculture, the Study Area can be very roughly divided into three areas as shown on Figure 3.3 on the basis of the present land use pattern. Area A basically consists of high and hilly terrains, with relatively heavy rainfall, and is used for forests and tree crops. Area B is mildly undulating high land with some wadis and, with rainfalls ranging from 200 to 400, mainly used for cultivation of rain-fed wheat and vegetables. Area C_1, which generally has the same good soil as Area B but with an annual precipitation of less than 200 millimeters, and Area C_2 an arid tract of sands and gravels, do not sustain any form of agricultural undertakings without some artificial irrigation. For Area A, the planting of olive trees and afforestation should be promoted further. The increased vegetational cover will improve the quality and water retaining capacity of the soils, thus feeding the base flows of rivers and wadis in the area. For Area B, the northern part and the area around Irbid City will be suitable for Olives, while the area around Mafraq and Dhuleil can grow more vegetables using available ground water. In the hilly area between the New Yarmouk University area and Mafraq, afforestation should be promoted partly to feed the baseflows of Zarqa and Yarmouk Rivers and partly to improve the pedological and micro-climatological conditions. The rest of Area B can only be used for cultivation of wheat as before. Agricultural development in Areas C is not advisable except in some isolated spots where the availability of ground water resources warrants it.

3.2.2 Development Areas and Instrumental Projects

03.007 Public investment Projects which are instrumental to achieve the development strategy described in the previous section are listed on Table 3.3 by development area. Strategies for the respective development centers will be discussed below.

a. Irbid Area

03.008 The Municipality of Irbid is the growth center for the Irbid development area and should continue to grow as a foremost administrative, trade-and-commercial and industrial center for the Study Area. The administrative function is probably most important for the Municipality, though its distribution function is expected to become increasingly

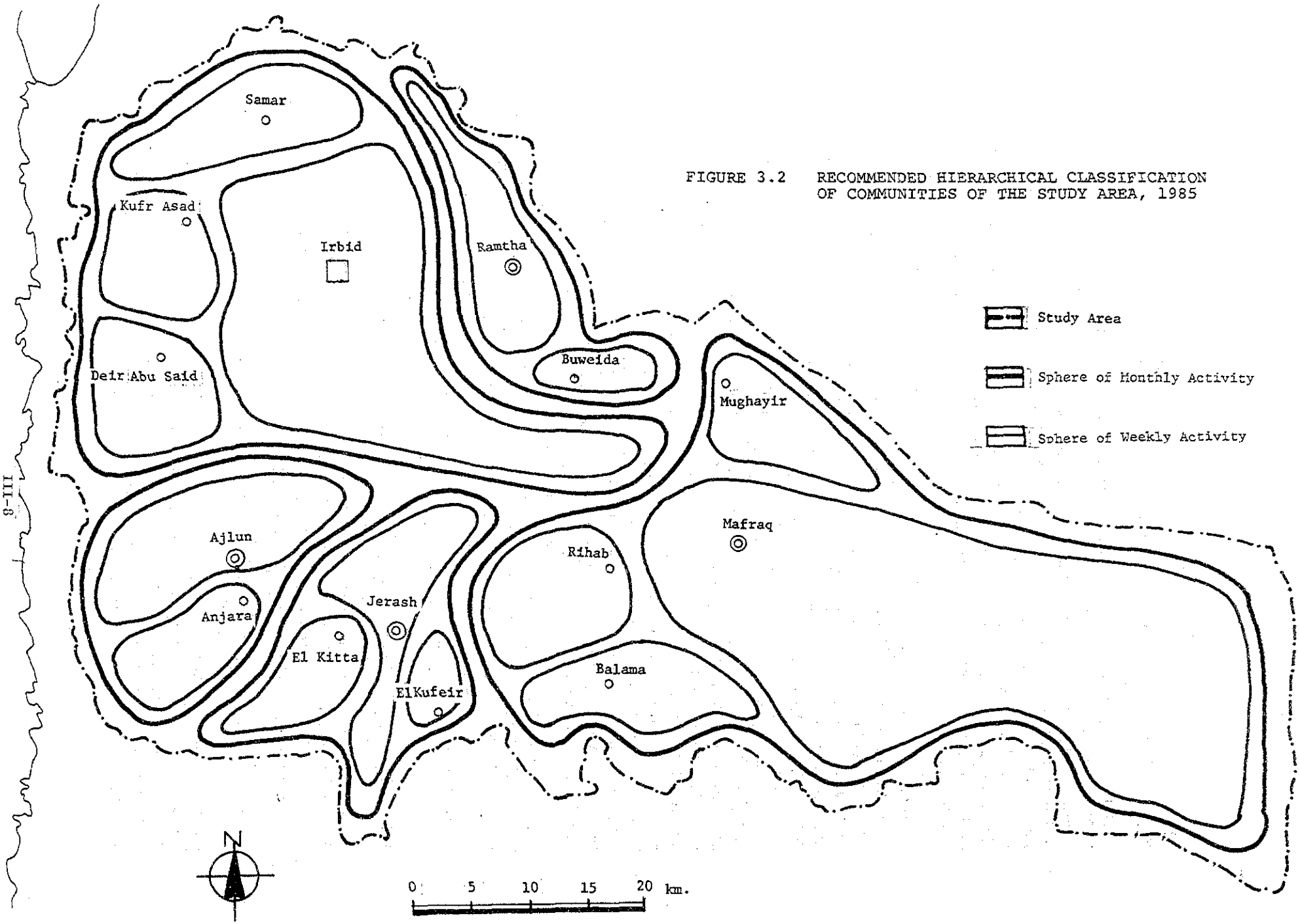


FIGURE 3.2 RECOMMENDED HIERARCHICAL CLASSIFICATION OF COMMUNITIES OF THE STUDY AREA, 1985

Figure 3.3 Division of the Study Area by Land Use, 1978

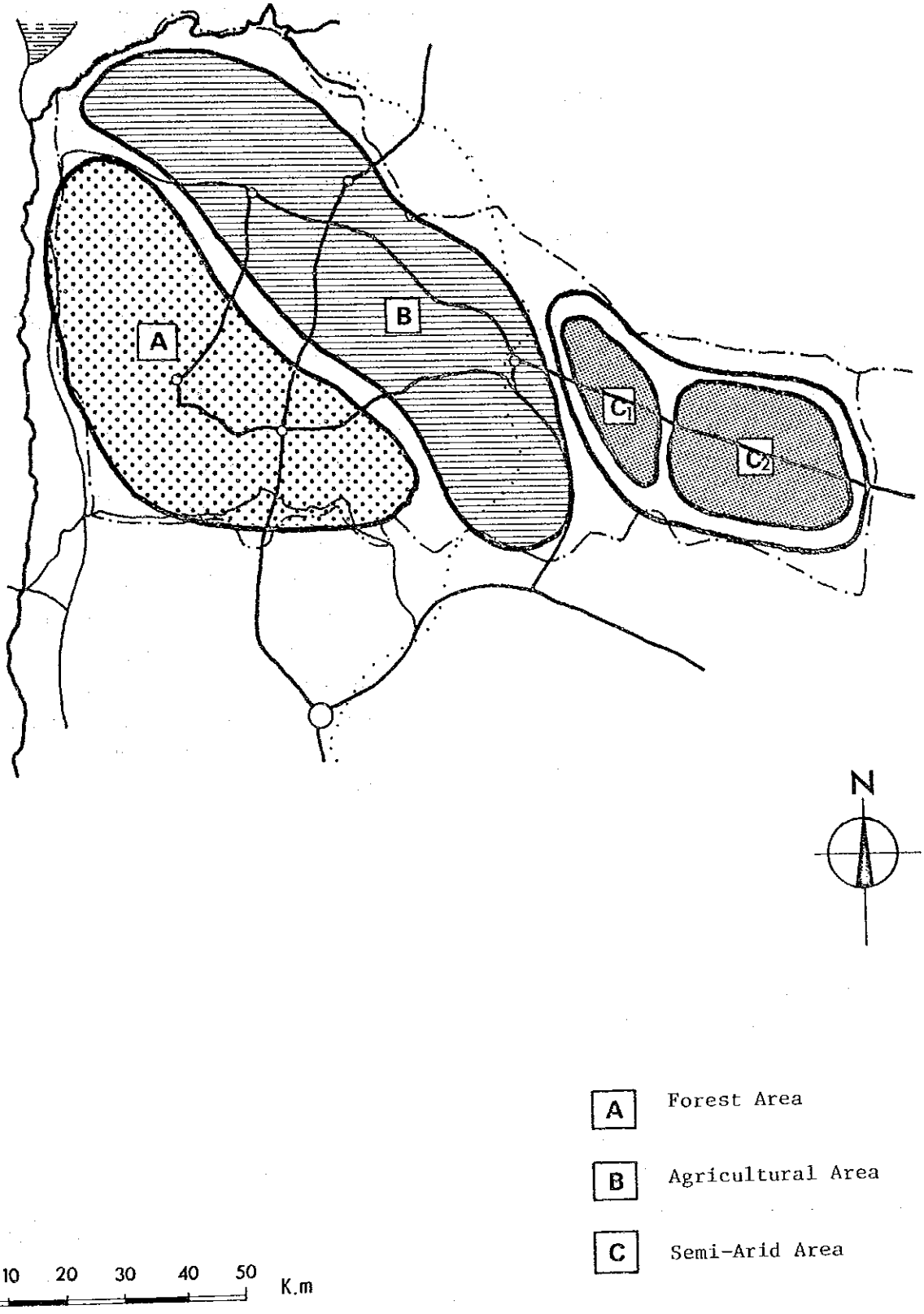


Table 3.3 Areal Distribution of Public Investment Projects

Area	Sector	Projects 1981-85
Development Area		
a) Irbid Area	Manufacturing	1. Irbid Ind. Estate (20 ha)
		2. Sugar (Fructose) Factory
	Agriculture	1. Olive Promotion
	Tourism	1. Irbid Touristic Improvement
		2. Irbid Park System
	Infrastructure	1. New Road: Route 11 from Rihab to R. 15.
		2. Irbid Ring Road
		3. Irbid Bus
		4. Samasdoud Wells
		5. Water Supply from Syria
		6. Yarmouk-Irbid W.S.
		7. Irbid Water Distribution
		8. Irbid Sewerage System Project
		9. Amman-Irbid Tel. Route Extension
		10. Expansion of Irbid Tel. System (Additional 5,000 lines)
		11. Expansion of Husn Tel. System
	Housing	1. Irbid New Town (2,000 units)
		2. Irbid Housing Site
	Training	1. Expansion of Irbid Vocational Training Centre
b) New Yarmouk University Area	Education	1. Yarmouk University
	Manufacturing	2. Yarmouk Ind. Estate (150 ha)
	Agriculture	1. Experimental Dam
	Infrastructure	1. New Road: Autostrada from Free Zone to R. 11

(To Continue)

Table 3.3 (Continued)

Area	Sector	Projects 1981-85
	Housing	1. Yarmouk New Town (2,000 units)
		2. Yarmouk Housing Site
c) Jerash Area	Tourism	1. Jerash Tourism
		2. Dibbin Park
	Manufacturing	1. Jerash Ind. Estate (5 ha)
	Infrastructure	1. Jerash By-pass
		2. Expansion of Telecommunication
	Training	1. Improvement of Jerash Vocational Training Centre
		2. Jerash Craft Center
d) Ajlun Area	Tourism	1. Ajlun Tourism
	Training	1. Impr. of Anjara Vocational Training Centre
	Infrastructure	1. Expansion of Telecommunication
e) Ramtha Area	Manufacturing	1. Ramtha Ind. Estate (5 ha)
	Training	1. Impr. of Ramtha VTC
	Tourism	1. Ramtha Tourism
	Infrastructure	1. Expansion of Telecommunication
f) Mafraq Area	Manufacturing	1. Mafraq Ind. Estate (5 ha)
	Training	1. Impr. of Mafraq VTC
	Agriculture	1. Artichoke Exp. Field
	Infrastructure	1. Expansion of Telecommunication
g) Industrial Free Zone Area	Manufacturing	1. Industrial Free Zone
h) Maqarin Area	Infrastructure	1. Maqarin Dam

(To Continue)

Table 3.3 (Continued)

Area	Sector	Projects 1981-85
i) Um Qeis Area	Tourism	1. Um Qeis Excavation
	Agriculture	1. Fish Culture Exp. Center
Rural Area		
a) Jerash, Ajlun, Kura, Taiyiba	Agriculture	1. Livestock Promotion
b) Kura, Taiyiba	Agriculture	1. Reclamation by Gravel Removal
		2. Agricultural Service Road
General Area		
a) General	Agriculture	1. Afforestation
	Tourism	1. Small Forest Parks
	Infrastructure	1. Arterial Road Improvement
		2. Village Road Improvement
		3. Rural Telephone Project
	Social	1. Educational Facilities
		2. Health Facilities

important. As for industry, agro-processing such as food, beverage and tobacco industries, manual-labor oriented manufacturing such as textile, apparels and leather industries, construction and its materials industries catering to the local demands, and medium- and small-scale manufacturing such as furniture and teaching materials industries will be suitable for development in the area. In addition, agro-processing such as cereal and canning industries seem to have an advantage relative to other regions since the Study Area is the main wheat producing area in the Country and since the Area is close to the Jordan Valley which is the main vegetable and fruits producing area. However, relative locational advantage of canning industries between the Study Area and the Jordan Valley should be carefully studied.

03.009 To promote such developments, substantial improvement is required of infrastructure. Public investment should be directed to such projects as development of new water sources for domestic and industrial use, expansion of power supply and distribution networks and telephone services and provision of industrial estates. Also, improved transportation is indispensable for industrial estates. The Natinal Highway Route 11 should be completed as early as possible, and the Irbid Ring Road should be constructed at the same time. In addition, a Irbid bus system should be set up in order to alleviate the traffic congestion in the down-town area of the city and to provide inexpensive commuting services to the people who will work in the outskirts, such as in the industrial estate.

03.010 In addition to the three major sectors mentioned above, tourism and recreation projects should be promoted in the Municipality of Irbid to improve the attractiveness of the city itself. In agriculture, the area to the north of the city and the area between the city and New Yarmouk University should be planted to olive trees, the former by private farmers' initiative with government assistance and the latter as a public undertaking. Also, it is recommended to construct two small dams in tandem on Wadi Warran for experimenting agricultural development and at the same time for providing a green zone lacking in this area. The existing vocational training center in Irbid should be expanded to have its own campus at Sal to the north-east of Irbid City and to offer additional training in food technology. If the experimentation of Jerusalem artichoke shows its cultivation feasible in the Study Area, a fructose extration factory should be constructed, possibly with the government equity participation, in one of the two proposed industrial estate sites.

03.011 In order to absorb the expected natural and social increase of the city population, a sufficiently large land area should be secured for housing development at the earliest opportunity. Part of the housing site should be developed fully as a new town in order to improve on the amenity of the city, while the remainder should be provided with basic infrastructural facilities.

b. New Yarmouk University Area

03.012 This area should be developed as an inter-Arab educational and cultural center as well as a specialized industrial center. Establishment of New Yarmouk University at its permanent site is the spring board for the development of this area. A new industrial estate should be developed with associated infrastructural facilities for knowledge-intensive industries such as precision tools and machinery and printing and publishing. The area may attract trucking industries, provided that the proposed new Inter-Arab Highway from Damascus be routed to touch this area and thereby give direct access to the development corridor expected to develop along the Highway. Immediately to the west of New Yarmouk University, the Ministry of Agriculture has a plan to establish an experimental Station. In order to accommodate for the faculty, students and employees of New Yarmouk University, sufficient land should be secured for the establishment of a model new town, on the one hand, and for site preparation for housing. This area is suitable for urbanization according to our land use analysis in Chapter XIII of Volume 4 (see Table 13.7 and Figure 13.17). Although the soil in this area is of good-quality in itself, the area lacks sufficient rainfall. Consequently, the productivity of the area in terms of annual crops is not so high. In addition, by concentrating forthcoming urban development into this area, the urbanization of Irbid area will be slowed-down, consequently saving the more productive agricultural land around Irbid Municipality.

c. Jerash Area

03.013 The first priority for this area should be assigned to tourism development. The Roman ruins at Jerash are the best tourism asset in the Study Area and will attract international tourists. A light-and-sound project has been already identified for the ruins and will be financed by the IBRD. Further development, such as opening of a hotel and a folklore village, is recommended. At the same time, a by-pass of Route 15 skirting around Jerash Town should be constructed in order to keep out the through traffic from the access road to the ruins. The forest area of Dibbin is another tourism asset of the Jerash area and should be improved by further afforestation and provision of recreational facilities primarily to attract domestic visitors. For industry, tourism-related industries such as souvenir manufacturing and agro-processing industries utilizing local products have potentials in this area. Development of a small industrial estate and expansion of the existing vocational training center and a craft center are accordingly recommended. In agriculture, vegetable growing and livestock and poultry raising are promising in addition to fruits and tree crops. For this, water supply to the area should be improved.

d. Ajlun Area

03.014 This area should emphasize recreational tourism development, because it is endowed with verdant forests, beautiful rolling landscape comfortable climate and several historic ruins notably Rabad Castle. The area should be able to capitalize on these assets which are lacking elsewhere in the country and develop as one of the major summer resorts

not only for Jordanian nationals but for people from neighboring Arab countries. In industry, agro-processing industries, such as olive oil extraction, should be strengthened and diversified. The newly opened vocational training center in Anjara will have to be expanded to meet the diversifying demand for trained manpower. In agriculture, further afforestation and forests conservation are essential for developing tourism and improving the water-retaining capacity of the soils. More intensive vegetable growing and poultry raising should be promoted in addition to tree crops.

e. Ramtha Area

03.015 This area should be developed as a distribution and agro-processing-oriented industrial center. Although its importance as a gate city for Europe, Lebanon and Syria is expected to decline when the new Inter-Arab Highway is completed, it will remain as a point of entry and departure for local products and local people in the Study Area and the southern part of Syria. In agriculture, the area is and will be mostly used for wheat cultivation. Where the rainfall is sufficient, such as in the northern part, fruits may have some potential.

f. Mafraq Area

03.016 This area should aim at developing commercial and distribution activities for local inhabitants and nomadic people, by taking advantage of its access to the railway and highway networks. In addition, a small industrial estate should be set up to promote supportive industries for the expected Industrial Free Zone, such as repair and parts industries. In agriculture, vegetable growing is promising in the area farther north from Mafraq Town where underground water is available. Also, experimental cultivation of Jerusalem artichoke will be started in this area. Vegetable growing can be expanded in the Dhuleil area south of the town, by introducing more efficient mehtods of water utilization, such as drip irrigation.

g. Industrial Free Zone Area

03.017 The development strategy of the area is obvious from the nomenclature. The advantage of the area is in its good access to markets in Syria and other Arab-countries, when the proposed Autostrada, or the Inter-Arab Highway, is completed. Processing and assembly industries might be developed in the Zone in view of the wider market available. However, a special attention should be paid to prevent the pollution from the industries, since the waste water from this Zone will eventually goes into the Yarmouk River and the proposed Maqarin Dam which are the sources for future water supply in the Study Area. Industries must be selectively invited to exclude any polluting industries and also a waste-water treatment plant must be installed to clean the waste water up to an acceptable standard.

h. Maqarin Dam Area

03.018 This area should aim at resort development by capitalizing on the large water surface of the reservoir. Since the Dam is expected to