

**Achievement of Market-Friendly Initiatives and Results Program
(AMIR Program)**

Funded By U.S. Agency for International Development

**JIEC Market Demand Study
for Serviced Industrial Estates**

Final Report

**Deliverable for PSPI Component- Task No. 512
Contract No. 278-C-00-02-00201-00**

April 2002

Table of Contents

1 Executive Summary		
1.1	Introduction	1-1
1.2	Industrial Estate Competitiveness	1-1
1.3	Industrial Estate Investment Trends and Growth Projections	1-1
2	Introduction and Analytical Approach	2-1
2.1	Objectives of the Study	2-1
2.2	Analytical Report Structure	2-1
3	Industrial Estate Competitiveness	3-1
3.1	Overview	3-1
3.2	Competing Industrial Estates	3-1
3.3	Provision of Land and Standard Factory Buildings	3-5
3.4	Cost of Utilities	3-
	12	
3.5	Cost and Availability of Labor	3-
	16	
3.6	Transportation	3-
	22	
3.7	Risk Profile	3-26
4	Industrial Estate Investment Trends and Growth Projections	4-1
4.1	Overview	4-1
4.2	Availability of Serviced Land in Jordanian Industrial Estates	4-1
4.3	Historical Demand and Supply of Serviced Industrial Land in Jordan	4-6
4.4	Growth Trends in JIEC Industrial Estates	4-11
4.5	Slowdown in Local Demand for Serviced Industrial Estates	4-14
4.6	Character of Investment in JIEC Industrial Estates	4-20
4.7	Middle East Investment Trends	4-25
4.8	Effects of Trade Liberalization on Industrial Investment in Jordan	4-29
4.9	Projection of Demand for Land in Jordanian Industrial Estates	4-35
4.10	Growth Projections for JIEC Industrial Estates	4-38
4.11	Conclusions	4-42
5	Evaluation of JIEC Industrial Estate Sites	5-1
5.1	Guidelines for Evaluating Proposed JIEC Sites	5-1
5.2	Methodology for Ranking Sites	5-4
5.3	Review Matix	5-5
5.4	Ranking Results	5-11
5.5	Summary Discussion of Sites	5-11
5.6	Summary and Conclusions	5-17
6	Recommendations for Increasing Industrial Estate Tenants	6-1
6.1	Recommendations for an Aggressive Targeted Market Campaign	6-1
6.2	Recommendations for Capturing a Greater Share of Established Investment	6-2

List of Tables and Charts

Table 3.1: Rental and Sale Costs for Serviced Land and Standard Factory Buildings	3-6
Chart 3.2: Net Present Value of Serviced Land for Industry	3-7
Chart 3.3: Net Present Value of Standard Factory Buildings	3-8
Table 3.4: Rental and Sale Costs for Serviced Land and Standard Factory Buildings in Jordanian Industrial Estates and Free Zones	3-9
Chart 3.5: Net Present Value of Serviced Land in Jordanian Industrial Estates	3-10
Table 3.6: Net Present Value of Standard Factory Bldgs in Jordanian Industrial Estates	3-11
Table 3.7: Cost of Utilities in Middle East Industrial Estates	3-12
Table 3.8: Power Charges for Electronics Factory	3-13
Chart 3.9: Power Charges for Warehouse	3-13
Chart 3.10: Power Charges for Garment Factory	3-13
Chart 3.11: Water Charges for Electronics Factory	3-14
Chart 3.12: Water Charges for Warehouse	3-14
Chart 3.13: Water Charges for Garment Factory	3-15
Table 3.14: Cost of International Direct Dialing in the Middle East	3-15
Table 3.15: Cost of Leased Line to Amman from Jordan's Governorates (JD/month)	3-15
Chart 3.16: Monthly Unskilled Wage Rates	3-17
Chart 3.17: Monthly Skilled Wage Rates	3-17
Table 3.18: Distribution of Employment in Jordanian Governorates	3-18
Table 3.19: Calculated Labor Supply and Available Workers by Governorate	3-19
Box 3.20: Labor in the Karak Industrial Estate	3-20
Table 3.21: North Region Vocational Training Graduates (2000)	3-21
Table 3.22: Central Region Vocational Training Graduates (2000)	3-21
Table 3.23: South Region Vocational Training Graduates (2000)	3-22
Table 3.24: Sea Freight and Port Handling Charges	3-23
Table 3.25: Airfreight Rates	3-24
Chart 3.26: Overland Shipping to Aqaba	3-24
Chart 3.27: Overland Shipping to QAIA	3-25
Chart 3.28: Economic Risk Rating	3-26
Chart 3.29: Political Risk Rating	3-27
Table 4.4: Sahab Industrial Estate: Land Area Uptake and Tenant Occupancy	4-3
Table 4.2: Al Hassan Industrial Estate: Land Area Uptake and Tenant Occupancy	4-4
Table 4.3: Karak Industrial Estate: Land Area Uptake and Tenant Occupancy	4-4
Table 4.4: Summary of Serviced Land Availability in Jordanian Industrial Estates	4-5
Chart 4.4: Cumulative Net Land Area Uptake in JIEC and Private Industrial Estates	4-8
Chart 4.5: Supply and Demand for Serviced Land in Private Industrial Estates	4-10
Chart 4.6: Supply and Demand for Serviced Land in JIEC Industrial Estates	4-10
Chart 4.7: Sahab Industrial Estate Land Area Uptake Trend	4-11
Chart 4.8: Al Hassan Industrial Estate Land Area Uptake Trend	4-12
Chart 4.9: Karak Industrial Estate Land Area Uptake Trend	4-13
Chart 4.10: Vacated Land in JIEC Industrial Estates	4-14
Chart 4.11: Industrial Development Bank Loan Approvals	4-16
Chart 4.12: Commercial and Investment Bank Loans to Industry	4-16
Table 4.13: Profile of Investor Types	4-18
Chart 4.14: Nationality of New Investors in Sahab Industrial Estate	4-21
Chart 4.15: Nationality of New Investors in Al Hassan Industrial Estate	4-22
Chart 4.16: Activities of New Tenants in Abdullah (Sahab) Industrial Estate	4-23
Chart 4.17: Activities of New Tenants in Al Hassan Industrial Estate	4-25

Chart 4.18: Net FDI Inflows to Middle East Countries	4-26
Chart 4.19: Net Flows of U.S. Direct Investment to Middle East Manufacturing Sector	4-26
Chart 4.20: Gaza Industrial Estate New Tenants (1998-2001)	4-27
Chart 4.21: Jebel Ali Free Zone New Tenants (1997-2001)	4-28
Chart 4.22: Jebel Ali Free Zone Tenants (February 2002)	4-28
Chart 4.23: Jebel Ali Free Zone Pending Applications (February 2002)	4-29
Table 4.24: Jordan's Trade Liberalization Commitments	4-30
Table 4.25: "Missed Opportunities": Declines in Market Share of Israel, Saudi Arabia, And UAE on the North American and Western European Markets	4-34
Chart 4.26: Projections of Demand for Land in Jordanian Industrial Estates	4-35
Table 4.27: Scenarios for Industrial Estate Demand from 2002 to 2007	4-36
Box 4.28: QIZ Investment Plateau	4-37
Chart 4.29: Growth Projections for Al Hassan Industrial Estate	4-39
Chart 4.30: Growth Projections for Al Hussien (Karak) Industrial Estate	4-40
Chart 4.31: Growth Projections for Aqaba International Industrial Estates	4-42
Table 5.1: Ranking of External and Internal Criteria for Evaluating Sites	5-5
Box 5.2: Calculation of the Weighted Site Score	5-5
Table 5.3: Evaluation Matrix: External Criteria	5-6
Table 5.4: Evaluation Matrix: Internal Criteria	5-9
Table 5.5: Technical Ranking of Proposed JIEC Industrial Estate Sites	5-11
Box 5.6: Land Rover Comes to Ma'an	5-14

1. Executive Summary

1.1: Introduction

This report discusses the market demand for serviced industrial estates in Jordan. It provides useful information for determining whether industrial estate developers in Jordan should commit additional resources to develop new industrial estates. Market factors are used to gauge Jordan's competitive position vis-à-vis competitors, formulate industrial estate growth projections, and evaluate proposed industrial estate sites for future development.

1.2: Industrial Estate Competitiveness

Jordan's industrial estates are moderately competitive compared to other industrial estates in the Middle East. Worker wages are high compared with those in Egypt, but competitive with those in Saudi Arabia and the UAE. Skilled labor, in particular, is very competitive in both availability and cost. Labor is abundant in Jordan's North and Central regions, but investors looking for opportunities in the South must train and assimilate workers into the assembly line workforce culture.

Electricity tariffs in Jordan are competitive for low energy-intensive industries, but less so for industries requiring high capacity power. Jordan's industrial estates are very competitive in terms of water costs with other regional IEs. Only Port Said offered significantly lower water tariffs for large water-consuming industries.

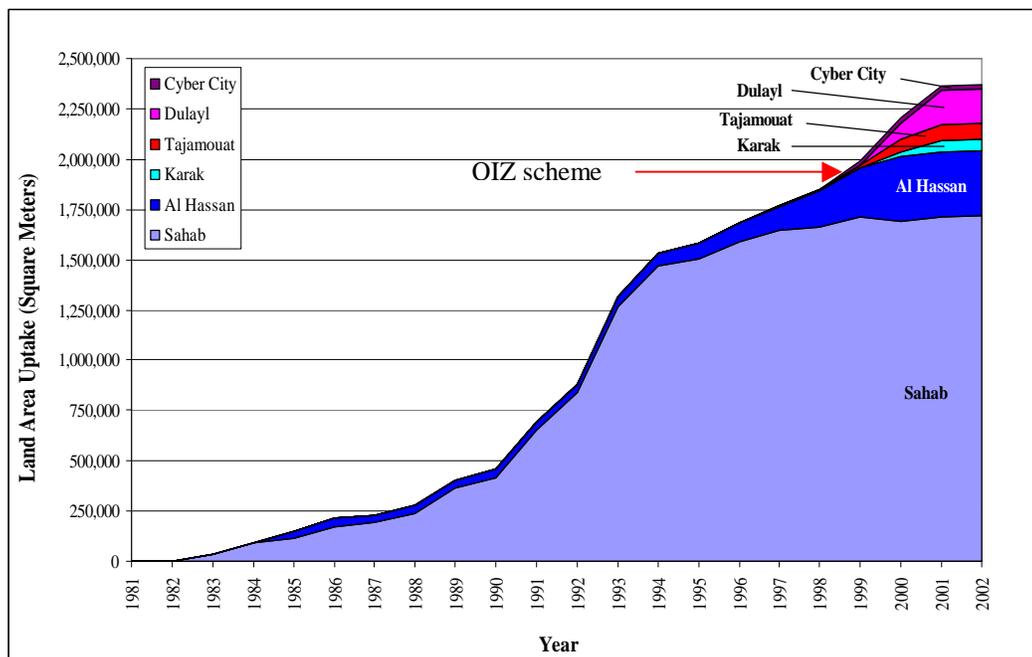
The Jordanian Industrial Estates Corporation (JIEC) maintains high standards of infrastructure in its industrial estates, and consistent application of procedures and service delivery. They are very competitive with private industrial estates in terms of cost of land and buildings.

Investors in Jordan's industrial estates are constrained by relatively high transportation costs, delays, and infrequent shipping schedules in both Aqaba and Haifa ports. This is a disincentive for companies requiring fast transit times for the import and export of raw materials and finished products.

Political tensions in the region have slowed investment in Jordan's industrial estates. Jordan's political risk rating, however, is near the lowest in the region. Investors familiar with the Middle East will continue to find Jordan a stable investment platform.

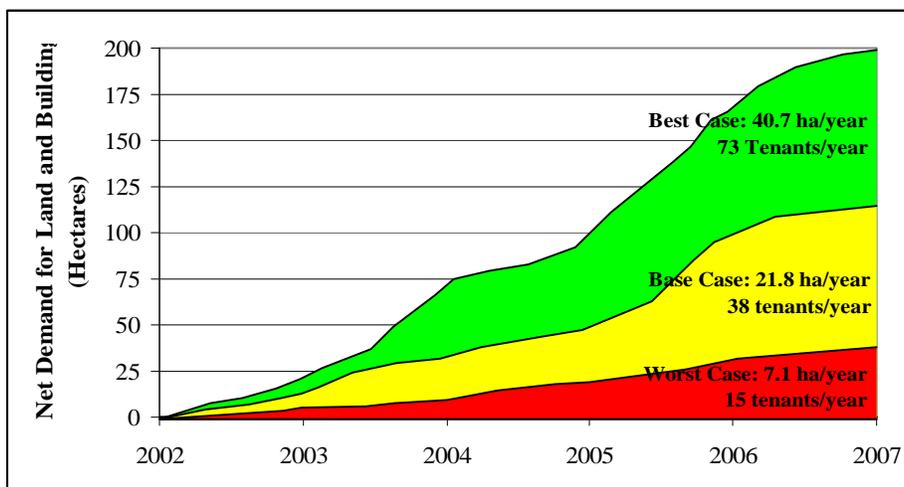
1.3 Industrial Estate Investment Trends and Growth Projections

Jordan's industrial estates have a sufficient supply of developed land to meet all scenarios of demand for land and buildings over the next five years. JIEC and private industrial estates, and Zarqa Free Zone, currently have over 500 hectares of land available for sale or lease. An additional 840 hectares of land is available for expansion of these operational IEs, if demand justifies such. Industrial estate expansions or new developments are not recommended at this time.



The graph above illustrates the demand for space in JIEC and private industrial estates from 1981 to 2002. During the largest period of growth in the mid-1990s, an average of 44 tenants demanded 26.9 hectares of land and buildings each year. The last four years also saw an increase in the growth of industrial estate demand.

Between 1998 and 2001, nearly one-third of the net number of tenants each year were international companies taking advantage of market access opportunities offered through the QIZ scheme. The period was also marked by some failing domestic enterprises, which vacated their land and buildings, and slowed the overall net growth of Jordan’s industrial estates.



The above table summarizes three potential scenarios for future demand for serviced land and buildings in JIEC and private industrial estates and free zones. The most likely ‘Base Case’ scenario assumes that Jordan will remain a stable low-risk investment location that attracts an average net of 38 tenants each year.

Aggressive marketing is paramount to achieving the ‘Best Case’ growth scenario of 73 net tenants per year. Targeted promotion efforts are necessary to sustain international interest in investing in Jordan, and educate domestic investors about the opportunities available in Jordan’s industrial estates.

Evaluation of JIEC Industrial Estate Sites

The Jordan Industrial Estates Corporation has purchased or reserved land at eleven sites throughout Jordan in anticipation of developing additional industrial estates. Current demand for additional serviced industrial land and buildings does not warrant construction of any of these sites at the moment.

When there is sufficient demand, an expansion of Al Hassan or development of Al Muwaqer would be the best options from a site-specific technical and demand point of view. That conclusion is based on the highest concentration of demand in the North and Central regions of Jordan, and the high technical evaluation rankings given the Al Hassan and Al Muwaqer sites.

2. Introduction and Analytical Approach

This study assesses the market demand for serviced industrial estates in Jordan. It was prepared in close cooperation with the Jordan Industrial Estates Corporation, which provided full access to its investor data and site locations. The report will be utilized by the JIEC and other organizations to better plan, develop, and market industrial estates in Jordan.

2.1: Objectives of the Study

The demand for serviced industrial land and building grew rapidly throughout the 1990s. The JIEC and private industrial estates responded to this demand by expanding existing and developing new industrial estates predominately in Jordan's North and Central regions. There are now 500 hectares of serviced land available for rent or sale in industrial estates and free zones in Zarqa, Irbid, Amman, Karak, and Aqaba.

The JIEC is analyzing the future demand for industrial land and buildings before it commits additional resources to develop new industrial estates. This study assists the JIEC with this task, and addresses the following important objectives:

- Outlines factors that impact the location decisions of investors
- Assesses the current supply and demand for industrial estate space in Jordan
- Proposes scenarios for future demand in Jordan's industrial estates
- Evaluates proposed JIEC industrial estate development sites
- Recommends aggressive targeted promotion techniques as means of attracting greater investment in Jordan's industrial estates

2.2: Analytical Report Structure

This section provides an analytical overview of the four main components of the study and report.

Industrial Estate Competitiveness

Chapter 3 discusses the competitive attributes of the JIEC's three operational industrial estates vis-à-vis six competitors in the Middle East and six competing industrial estates within Jordan. The report analyzes factors that affect the cost of doing business from a site-seeker's perspective. Discussion focuses on the following factors:

- Availability and cost of serviced land and buildings
- Cost of utilities
- Availability and cost of labor
- Availability and cost of transportation
- Economic and political investment risk

Data associated with the above factor availability and costs were obtained from the JIEC, private Jordanian industrial estates, public free zones, competing regional industrial estates,

utility companies, freight forwarders, Ministry of Labor vocational training schools, and the Jordan Department of Statistics.

The benchmarking exercise establishes Jordan's relative advantage over its competitors in terms of skilled labor availability and cost, serviced land prices, and political investment risk.

Industrial Estate Investment Trends and Growth Projections

Chapter 4 provides an overview of the historical growth patterns of JIEC and private industrial estates and free zones. Five-year growth projections based on "Worst," "Base," and "Best Case" scenarios are presented at the end of the chapter. The projections take the following factors into consideration:

- Historical growth rates for various types of investors
- Health of local Jordanian companies, including loan performance and industrial estate vacancy rates
- Net foreign direct investment flows to the Middle East
- Trade flows between the Middle East and industrially developed countries
- Jordan's market access opportunities

JIEC and private industrial estates provided the primary data for this analysis. Statistics were also collected from Jordanian financial institutions, the International Monetary Fund, U.S. Department of Commerce, and Can2000 trade database.

The growth projections suggest that there exists sufficient supply of industrial estate land to meet the likely demands over the next five years.

Evaluation of JIEC Industrial Estate Sites

Chapter 5 provides an evaluation of 11 proposed JIEC industrial estate sites. The report considers two types of factors for evaluating the sites. "External Criteria" relate to the wider geographical location of the site, including the infrastructure, labor, and supporting industries in the area. "Internal Criteria" refer to the on-site characteristics of each proposed location, similar to those used by an investor when selecting a site for his or her enterprise.

Most of the data used for the site evaluation were provided by the JIEC. The Jordan Electricity Company and Jordan Water Authority also provided information about the offsite infrastructure available to each site.

Recommendations for Increasing Industrial Estate Tenants

The report establishes that Jordan can increase the demand for investment in its industrial estates through aggressive targeted marketing. Chapter 6 highlights some ways in which the JIEC and private industrial estates could improve their marketing techniques. It also discusses ways in which Jordan's industrial estate developers can capture greater investment by enterprises that normally do not locate in IEs.

3. Industrial Estate Competitiveness

The JIEC industrial estates are moderately competitive compared with other industrial estates in the Middle East. Wages for low value-added assembly are high compared to competing countries like Egypt and China, and electricity rates are not particularly competitive for high capacity users. Water is reasonably priced, though scarce. Labor is abundant in Jordan's North and Central regions, but investors looking for opportunities in the South must train and assimilate workers into their workforce culture. The ability to export goods quota and duty-free to the U.S. market through the QIZ scheme is an attractive reason to locate in the Kingdom. The JIEC industrial estates are very competitive with private industrial estates in Jordan in terms of cost of serviced land and buildings. Investors have the advantage in the JIEC of the option to buy or lease land or buildings, which include the necessary infrastructure to quickly commence operations.

3.1 Overview

This chapter discusses the competitive attributes of the JIEC's three operational industrial estates vis-à-vis six competitors in the Middle East and six competing industrial estates within Jordan. Factors were analyzed from a corporate site seeker's perspective in order to aid the JIEC in understanding the competitive position of its industrial estates in attracting investment from both Jordan and abroad.

Specific factors important to investors vary across industrial sectors and individual companies. Garment manufacturers located in Jordan's Qualifying Industrial Zones (QIZs), for instance, place a greater premium on market access to the United States than lower wages offered by competitors. Transshipment warehouses, on the other hand, value efficient port facilities and low shipping tariffs. In many cases, small differentials in wages or utility rates may have only a marginal impact on investor decision-making when compared to the effects of a burdensome regulatory regime or opaque investment procedures.

This analysis focuses on the factors considered important to most companies seeking to expand or located operations in an industrial estate. They include:

- Availability and cost of serviced land and factory buildings
- Cost of utilities, including power and water
- Availability and cost of labor
- Availability and cost of transportation
- Economic and political investment risk

3.2 Competing Industrial Estates

This section introduces the twelve industrial estates against which the JIEC sites are compared. Six are located in the surrounding Middle East countries; six compete directly with the JIEC industrial estates in Jordan.

Regional Industrial Estates

Aegean Free Zone (Turkey)

The Aegean Free Zone (AFZ) is located in Gaziemir, near Izmir, Turkey. Izmir is Turkey's second largest commercial center, after Istanbul, and is situated on the Aegean Sea. The Aegean Free Zone is the first privately developed and operated free zone in Turkey. The

Aegean Free Zone Development and Operating Company (ESBAS) is the U.S.-based (96.4 percent foreign capital share) private company that was established in June, 1989, and granted the opportunity to develop the Aegean Free Zone. To date, ESBAS has developed 50 hectares of the zone and plans to expand by 150 hectares within five to seven years.

As of January 30, 2002, 350 companies operate in the zone, 75 of which engage in manufacturing, and 275 of which engage in trading and other non-production activities. Electronics assembly, textiles, and automotive components comprise the largest share of manufacturing ventures. 280 of the companies are Turkish, while the remaining 70 are foreign. The zone serves markets primarily in Turkey, the European Union, Russia, Ukraine, Central Asia, and the Middle East.

Jebel Ali Free Zone (United Arab Emirates)

Jebel Ali is a 10,000-hectare free zone located 35 kilometers from the center of Dubai in the United Arab Emirates. Of the registered companies in the Jebel Ali Free Zone, 70 percent are active in trade and distribution, 25 percent in manufacturing, and 5 percent in services. Most of the companies located in the zone conduct business related to the consumer products industry. Jebel Ali also serves as a reexport center of cotton and base metals from former Soviet countries and the Indian subcontinent. In the Gulf states, demand exists for foodstuff, high technology equipment, and luxury products. However, through its reexport trade, Jebel Ali reaches an outer ring of less prosperous markets. Thus, opportunities exist for manufacturers of upscale high-tech items as well as mass production of low-end consumer goods. It is thus a formidable competitor for investors interested in Middle East markets and transshipment opportunities.

Port Said Public Free Zone (Egypt)

Opened in 1976, the 80-hectare free zone is located at the mouth of the Suez Canal. Port Said Public Free Zone is privately managed, with governmental supervisory and regulatory oversight. As of February 2000, there were 104 investors. 70 percent of companies are Egyptian; 20 come from other Arab countries, and 10 percent are from outside the Arab world (particularly from the U.S., U.K., and Italy). Approximately 60 percent of the companies located in Port Said are engaged in warehousing. Garment manufacturing comprises half of the 40 companies engaged in industrial activities. The remainder is split between chemicals, gases, metals, foodstuff, and other industries. Port Said Public Free Zone is now fully occupied, and demand is now being absorbed by public free zones projects in Ismailia.

Jeddah Industrial City (Saudi Arabia)

Jeddah is Saudi Arabia's principal seaport and largest city in the Western Province. The government-subsidized Jeddah Industrial City has transformed the area into an industrial enclave, and contributed to the diversity of Saudi exports. The artificially low cost of land in Saudi industrial cities has caused the demand for serviced industrial space to far outweigh the supply. Thus, the Jeddah Industrial City, and others like it, is currently filled to capacity, with a waiting list of 300 applicants.

The 1,200-hectare industrial estate has 328 active factories, with 79 additional under construction, and about 10 percent of the companies are foreign owned. Approximately one third of the factories engage in the manufacture of chemical or plastic products and one

quarter manufacture metal, machinery, or heavy-duty equipment. Food and beverage product manufacturing is also well represented in the Jeddah Industrial City.

Gaza Industrial Estate (Gaza, Palestinian Territory)

The Gaza Industrial Estate (GIE) opened for investment in 1998. USAID provided some support for onsite infrastructure and technical assistance for the operation of the GIE. The industrial state is privately managed under supervision of the Palestinian Industrial Estates Corporation (PIEFZA). Forty-one companies are located in the industrial estate. However, given the recent political instability and occupation of Gaza, only 19 of the companies are currently operational. About half of the companies in the GIE engage in garment or textile manufacturing. Electrical assembly, foodstuffs, distribution, and computer programming comprise the balance of industries. The Palestinian Territories enjoy free trade with the United States, and therefore compete with Jordan's QIZ scheme.

Palestinian Municipal Industrial Units (Proposed), Palestinian Territories

The Palestinian Industrial Estate and Free Zones Corporation (PIEFZA) has proposed developing and operating small local industrial estates in several locations throughout the Palestinian Territories. These industrial complexes would provide the necessary infrastructure for small local industrial ventures, but on a much smaller scale—and cheaper cost—than a large industrial estate. Although these industrial units would not compete with the JIEC for investment, they are mentioned here as a legitimate avenue to attract and nurture small local industrial ventures.

Jordanian Industrial Estates

Within Jordan, the JIEC competes for investment with private industrial estates and public free zones, as well as private landowners and “industrial areas” such as Al Qostal and Al Muwaqer. Despite the QIZ status of Al Zey and United Textile in Al Qostal, they were not included in this benchmarking exercise because they are single factories, not industrial estates that charge a uniform rent to all tenants.

In the late 1990s, private industrial estates grew from the demand created by the QIZ scheme. At the time, the JIEC had little space in its Sahab and Al Hassan Industrial Estates, so the demand for QIZ space between 1999 and 2001 was filled primarily by Al Tajamouat and Al Dulayl Industrial Estates. In 2001, however, more QIZ space became available from the JIEC with the opening of Karak Industrial Estate and expansion of Al Hassan. This section profiles the private industrial estates with which the JIEC—as a landlord and developer—will compete for tenants.

Al Tajamouat Industrial City (Amman)

Al Tajamouat is a 42-hectare industrial estate located in southeast Amman. Phase I (30 hectares) opened for investment in 1995, and Al Tajamouat obtained QIZ status in 1999. Recently, an \$ 8 million IFC loan was approved for the development of an additional 8.8 hectares. There are approximately 80 companies located in the industrial estate, 20 of which produce garments under the QIZ scheme. Al Tajamouat also contains over 15 investment services companies, and several firms that produce spare parts for sewing machines, automobiles, and other industrial machinery.

The industrial estate leases or sells standard factory buildings (SFBs), but not serviced land. The necessary road, water, and power infrastructure is provided to all locators. Companies have the option of rent-to-own.

Al Dulayl Industrial Park

The 65-hectare Al Dulayl Industrial Park is located in Zarqa Governorate, where it opened as a QIZ in March 2000. Since then, the industrial estate has attracted about 10 companies from Pakistan, Sri Lanka, UAE, Hong Kong, and Jordan. The Jordanian firm is engaged in food processing, while the other tenants produce garments for the U.S. market. The industrial estate does not lease land or buildings. Sale of land and SFBs are the only options for investors. Currently 25 percent of Phase I's 39 hectares have been sold. While there is no immediate demand for additional space, Al Dulayl is studying the requirements for developing a 20-hectare Phase II expansion.

Cyber City Industrial Estate (Irbid)

The 400-hectare Cyber City is located adjacent to the Jordan University of Science and Technology in Irbid. Phase I (100 hectares) opened in 1999, and the industrial estate was certified as a QIZ in 2001. Since then, 2 companies have located in Cyber City. Administrated by Boscan, Cyber City offers both sale and lease of serviced land and SFBs.

Al Moushata Industrial Estate (Amman)

Al Moushata is located in Giza Municipality just next to Queen 'Alia International Airport, and will be certified as a QIZ. Shareholders include the Housing Bank and Arab Bank. The first 60 hectares of the 400-hectare industrial estate are now under development. The industrial estate is scheduled to open for investment by the end of 2002, and will target investors from the Gulf, East Asia, and the United States.

Investors will have the option to purchase land or buildings from Al Moushata, or rent land or buildings under one of two lease agreements. The operating lease will allow for the standard rental of land or buildings; the capital lease will allow for the option to purchase the plot of SFB at 25 percent the sale price at the end of the five-year lease period. Because of Al Moushata's close connections to the banking community, it will negotiate preferential and flexible financing terms for investors locating in its industrial estate. This it sees as a marketing niche not provided by competing industrial estates in Jordan.

Gateway Industrial Estate and Free Zone (Irbid)

When completed, the 160-hectare Gateway Industrial Estate will straddle the Jordan-Israel border in the North Ghor region of Irbid. By July 2002, Gateway estimates that all infrastructure will be complete in its 60-hectare Phase I. Gateway will sell and lease 1,300-square meter semi-finished SFBs. However, the purchase and rent of serviced land will not be an option.

Eleven investors have already signed contracts with Gateway, and will begin locating in the industrial estate in July 2002. Six of the Investors are Israeli, and will produce garments, medical equipment, and jewelry. Two American companies will produce garments, a European company will design high-tech software, and two Jordanian companies are interested in manufacturing foodstuff and construction material. Twenty-five additional

investors, 60 percent of whom are Israeli, have expressed serious interest in Gateway. Half of these pipeline investments are textiles or garments. The remaining are interested in high tech software and hardware and medical equipment. Gateway has also achieved offshore registration status for the industrial estate, and will build office buildings in anticipation of demand for offshore companies.

Gateway has permission to build a bridge over the Jordan River, linking the Jordanian and Israeli halves of the industrial estate. When Gateway opens in July, however, companies using the Haifa Port will have to travel the 7 kilometers to the Sheikh Hussein Bridge border crossing. To facilitate this land transportation, the Government of Jordan will allow Israeli trucks to come to the Gateway site, if the transport is provided by an Arab Israeli. This will save companies the time and expense of back-to-back transportation arrangements at the Israeli border.

Public Free Zones

Jordan's public free zones also provide land and buildings for rent. Several private free zones have been sanctioned, but are not yet developed. Public free zones open for industrial investment and warehousing are located in Zarqa, Sahab Industrial Estate, Karak Industrial Estate, and Queen 'Alia International Airport. Currently, 350 of 520 hectares in Zarqa Free Zone have been leased to investors. This includes 32 operative factories; the remainder of investors is engaged in trading. This report will analyze the free zones located within JIEC industrial estates as part of the uptake of those industrial estates.

3.3 Provision of Land and Standard Factory Buildings

The provision of fully serviced industrial estates can provide a strong incentive to investors, particularly those from outside a country, who need a quick, reliable way to establish a medium-sized factory. Fully serviced industrial estates often provide cost savings through various incentive schemes, and, in some cases, concessionary land and utility rates.

The Jordanian and Middle East industrial estates examined offer three options for locators to obtain land and buildings—lease, purchase, and lease-to-own, with individual estates offering one or all of the options. In order to compare the lease rates with the sale prices, the net present value (NPV) of the cost of land and buildings was computed for the twelve zones examined.¹ The NPV analysis illustrates the “effective cost” of leasing or buying land after 20 years. In this way, sale and rental rates can be analyzed in a uniform manner.

Table 3.1 on the next page lists the rental and sale prices and computed NPVs for serviced industrial land and standard factory buildings for the three operational JIEC industrial estates and six Middle Eastern free zones and industrial estates.

¹ Net present value (NPV) is the present value of future returns, discounted at an appropriate rate, minus the initial cost of the investment. The appropriate interest rate is the rate on a loan if the money had been borrowed to purchase the land in the zone. Typically, real estate interest rates range from 8 to 12 percent for dollar purchases. For the purpose of this analysis, a discount rate of 8 percent was used. Additionally, the NPV streams take into account the escalation rates for leases as specified by each zone. In order to maintain simplicity, this NPV analysis does not take into account the salvage or residual value of buildings that a lessee may lose at the end of the lease period.

Table 3.1: Rental and Sale Costs for Serviced Land and Standard Factory Buildings

Industrial Estate	Cost of Serviced Land²	Cost of Standard Factory Building²	Lease Period
Al Hassan Industrial Estate, Irbid, Jordan	Rental Price: JD 2.5/m ² /yr Rental NPV³: JD 26.85/m ²	Rental Price: JD 15.4/m ² /yr Rental NPV³: JD 165.38/m ²	Normally 1-year lease. Will provide a 30-year lease upon request.
	Sale Price: JD 29.4/m ² Sale NPV: JD 27.22/m ²	Sale: Not allowed	Not applicable
Karak Industrial Estate, Karak, Jordan	Rental Price: JD 2.5/m ² /yr Rental NPV³: JD 26.85/m ²	Rental Price: JD 15.4/m ² /yr Rental NPV³: JD 165.38/m ²	Normally 1-year lease. Will provide a 30-year lease upon request.
	Sale Price: JD 24.5/m ² Sale NPV: JD 22.69/m ²	Sale Price: JD 70/m ² Sale NPV: JD 64.81/m ²	Not applicable
Aegean Free Zone, Izmir, Turkey	Rental Price: JD 2.57/m ² /yr Rental NPV⁴: JD 26.79/m ²	Rental Price: JD 42/m ² /yr Rental NPV⁴: JD 438/m ²	Minimum 5 years
	Sale: Not allowed	Sale: Not allowed	
Jebel Ali Free Zone, Dubai, UAE	Rental Price: JD 2.86/m ² /yr Rental NPV⁵: JD 30.10/m ²	Rental Price: JD 67/m ² /yr Rental NPV⁵: JD 705.20/m ²	1 year
	Sale: Not allowed	Sale: Not allowed	
Port Said Public Free Zone, Port Said Egypt	Rental Price (Industry): JD 2.49/m ² /yr Rental NPV (Industry)⁶: JD 26.68/m ²	SFBs not offered	No limits on lease period. Long-term leases not available.
	Rental Price (Warehouse)⁶: JD 4.9/m ² /yr Rental NPV (Warehouse)⁶: JD 52.62/m ²		
	Sale: Not allowed		
Jeddah Industrial City, Jeddah, Saudi Arabia	Rental Price: JD 0.014/m ² /yr Rental NPV⁷: JD 0.14/m ²	SFBs not offered	25 years, with option to renew
	Sale: Not allowed		
Gaza Industrial Estate, Gaza, Palestinian Territory	Rental Price: JD 7/m ² /yr Rental NPV⁸: JD 71.9/m ²	Rental Price: JD 17.5/m ² /yr Rental NPV⁸: JD 179.74/m ²	Unknown
	Sale: Not allowed	Sale: Not allowed	
Palestinian Local Industrial Estates (Proposed)	Rental Price: JD 5.25/m ² /yr Rental NPV⁸: JD 53.93/m ²	Rental Price: JD 10.5/m ² /yr Rental NPV⁸: JD 107.85/m ²	Unknown
	Sale: Not allowed	Sale: Not allowed	

² The cost of land and buildings is expressed in two ways. The first lists the actual rental or sale price of land or SFBs, according to the rates supplied by the respective industrial estates. Because some IEs provide for the rental, but not sale, of land and buildings (and vice versa), the costs are also expressed in terms of Net Present Value (NPV) in order to be expressed in common comparative terms. Net Present Value is calculated according to the following formula:

$$NPV = \sum_{t=1}^n \text{rental/sale payments}_t / (1 + \text{rate})^t$$

where the applicable flat interest rate is 8%, and the time period, t, is 20 years.

³ Assumes 5% rent increase every five years, beginning in 2003, based on JIEC's historical pattern of rent escalation.

⁴ Assumes 5% rent increase every five years, beginning in 2006, based on Aegean Free Zone's historical pattern of rent escalation.

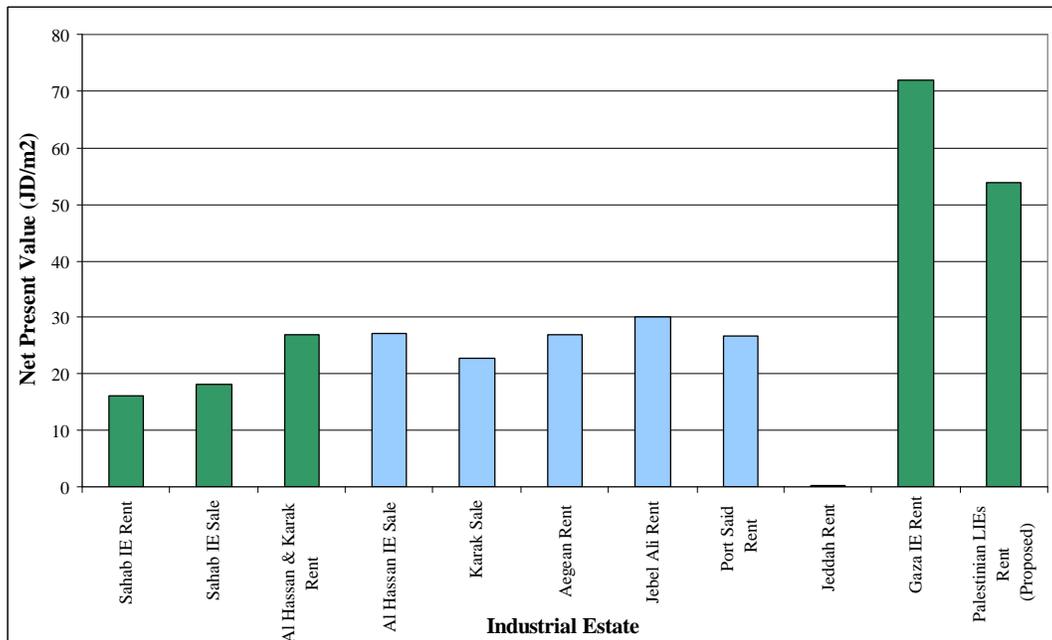
⁵ Assumes 5% rent increase every five years, beginning in 2005. Jebel Ali Free Zone Authority has historically raised rent by 5% each year, but suspended the increase two years ago. They will not raise rent again for several years.

⁶ Assumes 5% rent increase every five years beginning in 2003, based on Port Said's historical pattern of rent escalation, although Port Said has not indicated any plans for such.

⁷ Assumes no rent increase over course of 25-year lease, as per Saudi law.

⁸ Assumes 5% rent increase beginning 2008, although PIEFZA has indicated no plans for such.

Chart 3.2: Net Present Value of Serviced Land for Industry



Serviced Industrial Land—Regional Competitors

The cost of serviced land in JIEC industrial estates is equal to or below the cost in comparable IEs throughout the Middle East region—with the exception of Saudi Arabia’s industrial cities. Chart 3.2 above illustrates the rental and sale net present values (NPVs) for nine industrial estates, including the three operational JIEC sites.

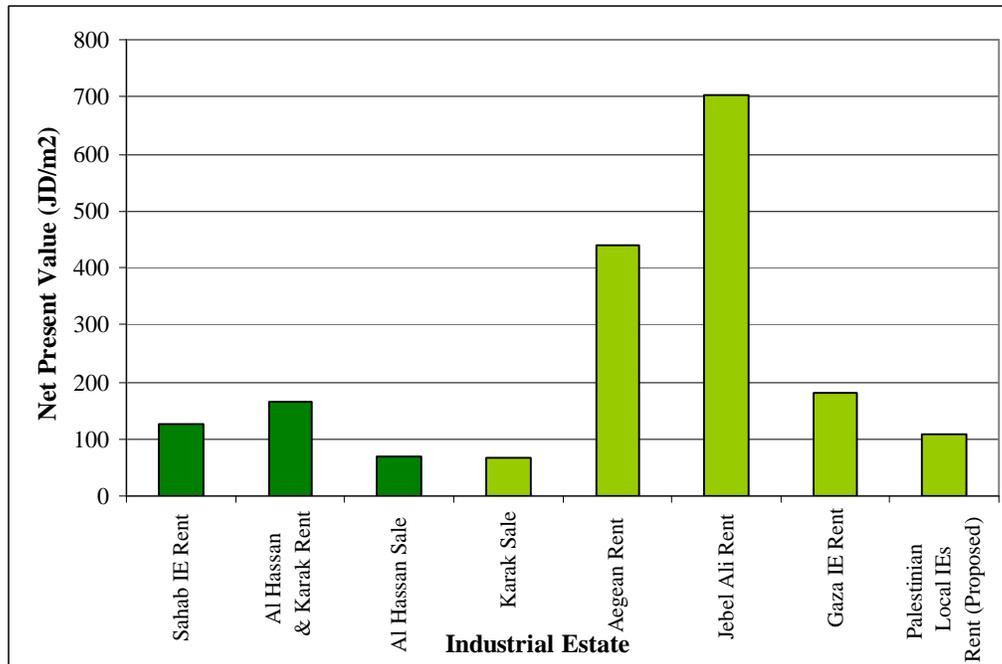
The Gaza Industrial Estate, which rents serviced land for JD 7 per square meter per year is clearly not competitive with the JIEC industrial estates in terms of serviced land costs. The sale of land in Karak, however, is slightly more competitive than renting land in the Aegean, Jebel Ali, or Port Said Free Zones, when compared in terms of net present value.

The Jeddah Industrial City, and Saudi Arabia’s other large industrial cities in Riyadh and Dammam, provides stiff competition to the JIEC in terms of serviced land costs. However, rent prices in Saudi industrial cities are heavily subsidized by the Saudi government, and have created a shortage of serviced industrial space. Currently there are 300 companies on the waiting list for space in the Jeddah Industrial City alone. As a result, the Ministry of Industry and Electricity, which administers the industrial cities, has plans to develop six more industrial cities in the coming years.

While the low cost of serviced land in the Saudi industrial cities should be considered an attractive investment incentive, problems with transparency, bureaucracy, and social customs make the Saudi sites often less desirable to foreign investors. Some investors, for instance, have complained of non-transparent procedures in obtaining serviced land. Others have begun to complain about the decreasing capacity of the state-owned utility service providers to keep up with demand for services in Saudi industrial estates.⁹

⁹ “Saudi Arabia: Administrative Barriers to Investment.” World Bank, February 2002.

Chart 3.3: Net Present Value of Standard Factory Buildings



Standard Factory Buildings—Regional Competitors

Standard factory buildings (SFBs) in JIEC industrial estates are priced far below most competing industrial estates in the Middle East. Chart 3.3 above illustrates the net present values (NPV) of renting and buying land in the regions industrial estates. Port Said Public Free Zone in Egypt and Jeddah Industrial City in Saudi Arabia do not offer SFBs.

Renting or buying an SFB from the JIEC is competitive with Gaza rental rates, but a far greater value than renting SFBs in the Aegean Free Zone in Turkey or the Jebel Ali Free Zone in the UAE. For instance, the NPV of purchasing an SFB in Karak is JD 165 per square meter, while the NPVs for Aegean and Jebel Ali are JD 438 and JD 703 per square meter, respectively. The purchase of SFBs from the JIEC provides an even greater value over the other industrial estates, which only offer options to lease.

Serviced Land for Industry—Jordanian Competitors

Inside Jordan, the JIEC competes with free zones and private industrial estates in selling and leasing serviced land. Investors who seek industrial land or buildings make their decisions about where to locate in one of two manners. One, some companies first decide that Jordan provides a more suitable investment location than other countries. The owners or representatives then search for the best site within the Kingdom for their particular ventures. Two, some companies are lured to Jordan by the promotion campaign of a particular industrial estate. If these firms feel that that industrial estate offers reliable service, the investor might pass up lower factor costs offered by competing locations. Investment promotion, coupled with a trusted reputation for service delivery, is paramount to attracting companies to an industrial estate.

Table 3.4: Rental and Sale Costs for Serviced Land and Standard Factory Buildings in Jordanian Industrial Estates and Free Zones

Industrial Estate	Cost of Serviced Land	Cost of Standard Factory Building	Lease Period
Sahab Industrial Estate, Amman, Jordan	Rental Price: JD 1.5/m ² /yr Rental NPV ¹⁰ : JD 16.11/m ²	Rental Price: JD 11.9/m ² /yr Rental NPV ¹⁰ : JD 127.8/m ²	Normally 1-year lease. Will provide a 30-year lease upon request.
	Sale Price: JD 19.6/m ² /yr Sale NPV: JD 18.15/m ²	Sale: Not allowed	Not applicable
Al Hassan Industrial Estate, Irbid, Jordan	Rental Price: JD 2.5/m ² /yr Rental NPV ¹⁰ : JD 26.85/m ²	Rental Price: JD 15.4/m ² /yr Rental NPV ¹⁰ : JD 165.38/m ²	Normally 1-year lease. Will provide a 30-year lease upon request.
	Sale Price: JD 29.4/m ² Sale NPV: JD 27.22/m ²	Sale: Not allowed	Not applicable
Karak Industrial Estate, Karak, Jordan	Rental Price: JD 2.5/m ² /yr Rental NPV ¹⁰ : JD 26.85/m ²	Rental Price: JD 15.4/m ² /yr Rental NPV ¹⁰ : JD 165.38/m ²	Normally 1-year lease. Will provide a 30-year lease upon request.
	Sale Price: JD 24.5/m ² Sale NPV: JD 22.69/m ²	Sale Price: JD 70/m ² Sale NPV: JD 64.81/m ²	Not applicable
Al Tajamouat Industrial City, Amman, Jordan	Serviced land not offered	Rental Price: JD 23.1 to 38.5/m ² /yr Rental NPV ¹¹ : JD 318.53/m ²	Minimum four years
		Sale Price: JD 154/m ² Sale NPV: JD 142.59/m ²	Not applicable
Al Dulayl Industrial Park, Zarqa, Jordan	Rental: Not allowed	Rental: Not allowed	Not applicable
	Sale Price: JD 31.5/m ² Sale NPV: JD 29.17/m ²	Sale Price: JD 77.1 to 92.4/m ² Sale NPV ¹² : JD 78.75/m ²	
Cyber City Industrial Estate, Irbid, Jordan	Rental Price: JD 2.45/m ² /yr Rental NPV ¹³ : JD 25.09/m ²	Rental Price: JD 25.2/m ² /yr Rental NPV ¹³ : JD 260.62/m ²	Minimum 3 years
	Sale Price: JD 29.4/m ² Sale NPV: JD 27.22/m ²	Sale Price: JD 140/m ² Sale NPV: JD 129.63/m ²	Not applicable
Al Moushata Industrial Estate, ¹⁴ Amman, Jordan	Rental Price: JD 1.875/m ² /yr Rental NPV ¹⁵ : JD 19.39/m ²	Rental Price: JD 22.5/m ² /yr Rental NPV ¹⁵ : JD 232.69/m ²	Minimum 3 years
	Sale Price: JD 22.5/m ² Sale NPV: JD 20.83/m ²	Sale Price: JD 112.5/m ² Sale NPV: JD 104.17/m ²	Not applicable
Gateway Industrial Estate and Free Zone, North Ghor, Irbid, Jordan	Serviced land not offered	Rental Price: JD 42 to 60/m ² /yr Rental NPV ¹⁶ : JD 523.87/m ²	Minimum 5 years
		Sale: Not allowed	
Public Free Zones, Zarqa, Sahab, Karak, and QAIA	Rental Price: JD 1.2-1.5/m ² /yr Rental NPV ¹⁷ : JD 12.21/m ²	Rental Price: JD 15/m ² /yr Rental NPV ¹⁷ : 152.67/m ²	Unknown
	Sale: Not allowed	Sale: Not allowed	

¹⁰ Assumes 5% rent increase every five years, beginning in 2003, based on JIEC's historical pattern of rent escalation.

¹¹ Building rental NPV calculated on the average price (JD 30.8/m²/yr). Assumes a 5% increase in rental, beginning in 2007, although Tajamouat has not definitively indicated such. Assume use of standard operating lease, without option to purchase.

¹² Building sale NPV calculated on the average price (JD 85.05/m²).

¹³ Assumes 5% rent increase every five years, beginning in 2008, although Cyber City has not definitively indicated so.

¹⁴ Al Moushata prices are estimates. Al Moushata is scheduled to open in late 2002, and expects to charge prices 25% lower than competing private industrial estates.

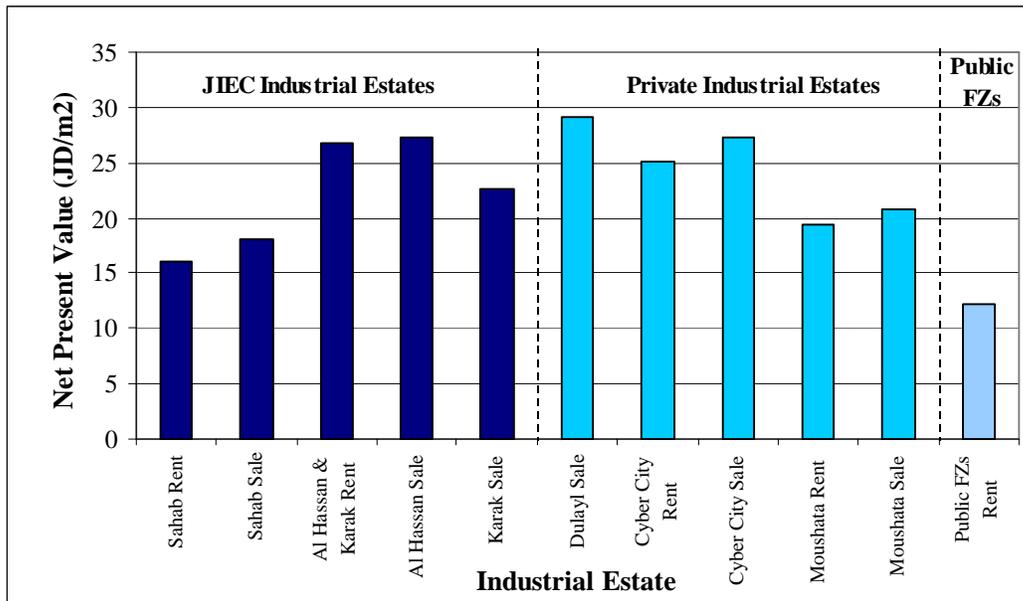
¹⁵ Assumes 5% rent increase every five years beginning in 2008, although Al Moushata has not definitively indicated such. Values assume use of standard operating lease, without option to purchase.

¹⁶ Building rent NPV calculated on the average rental price (JD 51/m²/yr). Assumes 5% rent increase every five years beginning in 2008, although Gateway has not definitively indicated such.

¹⁷ Assumes 2% rent increase every five years beginning in 2003, based on Free Zones Authority's historical pattern of rent escalation.

The cost of serviced land and buildings remains an important component of an investor’s location decision once he or she has determined that Jordan is a profitable place to do business. Table 3.4 on the previous page lists the rental and sale prices, and NPVs for serviced land and standard factory buildings in Jordanian industrial estates.

Chart 3.5: Net Present Value of Serviced Land in Jordanian Industrial



Estates

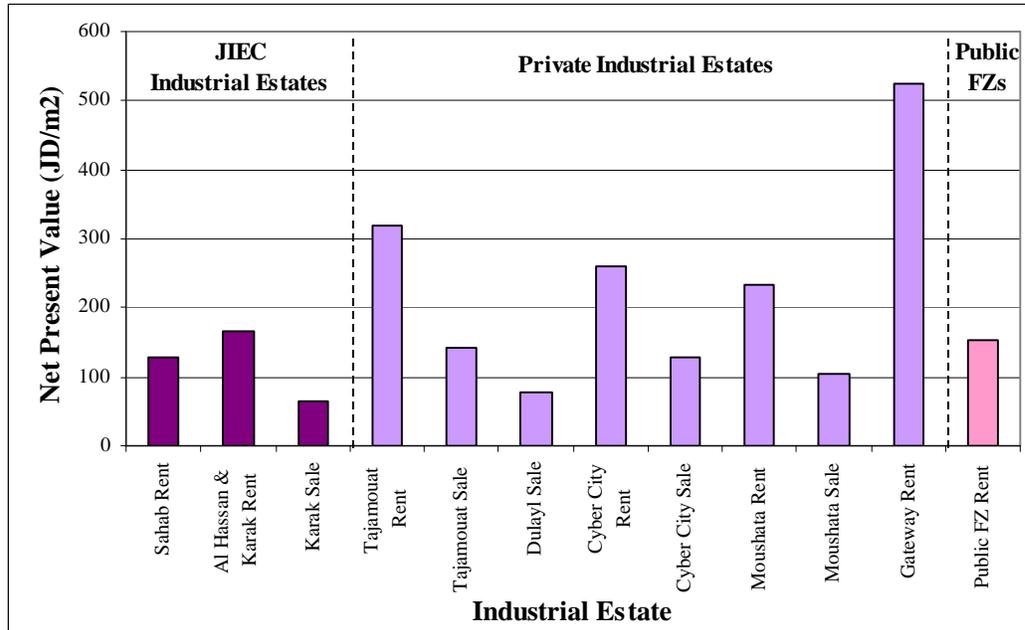
Table 3.5 above illustrates the net present value (NPV) of buying or renting serviced land in Jordanian industrial estates. Serviced land in JIEC sites is competitively priced with private industrial estates, but more expensive than Zarqa Free Zone. Although Al Moushata Industrial Estate has not officially set its prices, it predicts that it will charge approximately 25 percent less than competing private industrial estates for land and SFBs. Al Tajamout and Gateway Industrial Estates do not offer serviced land for rent or sale.

JIEC industrial estates offer some additional cost savings that are not reflected in the above NPVs. Private industrial estates in Jordan must pay a “University Fee,” equal to 0.005 percent of the sale of land or buildings, or yearly fee based on the rental value of such. JIEC tenants, on the other hand, benefit from already having these fees figured in the rental and sale prices in the public industrial estates. Construction licenses are also significantly cheaper within the JIEC industrial estates. Investors in Jordan’s private industrial estates pay JD 10 per square meter for a license, while JIEC tenants are charged only JD 2 per square meter.

Standard Factory Buildings—Jordanian Competitors

All of Jordan’s private industrial estates and Zarqa Free Zone sell or lease standard factory buildings (SFBs). The NPV of SFBs ranges from JD 79 per square meter for purchase in Al Dulayl to JD 524 per square meter for rent in Gateway. These values are illustrated in Chart 3.6 on the next page.

Table 3.6: Net Present Value of Standard Factory Buildings in Jordanian Industrial Estates



Standard factory buildings are competitively priced in JIEC industrial estates. The NPVs for renting SFBs from the JIEC is half as much as some competing private industrial estates.

Unlike JIEC, Al Tajamouat and Al Moushata offer capital leases to investors. This presents investors with an attractive option to purchase land or buildings after a minimum lease period. Investors, for example, may purchase their land or SFB from Al Moushata at 25 percent the normal sale cost after the five-year capital lease period has expired. This is extremely attractive to companies that want the benefits of ownership, but might be hesitant or unable to initially make such a large purchase.

Al Moushata Industrial Estate has also indicated that it will help investors negotiate preferential lending rates through local banks. This is a service that will lower the effective cost of investing at that site.

Implications for Investment

The JIEC has high standards of infrastructure in its industrial estates and consistent application of procedures and service delivery. In terms of land availability and cost, therefore, JIEC will remain competitive.

With the opening of Karak and expansion of Al Hassan Industrial Estates in 2001, there is also now enough space to make the JIEC a continuing competitor with the private industrial estates. Net present values of land and buildings in the JIEC are equivalent to or below those in competing industrial estates, particularly with regard to the rental of standard factory buildings.

3.4 Cost of Utilities

Manufacturing and service-oriented enterprises alike are dependent on the availability of reliable and inexpensive utilities. However, the relative importance of electricity, water, and telecommunications varies depending on the industry. This study references specific industry requirements in its examination of power and water tariffs. Some industrial estates are more competitive for enterprises with high levels of utility usage, while others are more competitive at lower levels of usage.

Table 3.7 below lists the electricity and water charges for the JIEC industrial estates and five competing locations throughout the Middle East. All of the data provided below is specific to the industrial estates studied, as supplied by the respective industrial estate authorities.

Table 3.7: Cost of Utilities in Middle East Industrial Estates

Industrial Estate	Cost of Power	Cost of Water
JIEC Industrial Estates, ¹⁸ Jordan	<u>Large Consumers</u> Capacity: JD 2.4/kVA/month Consumption: (7 am – 11 pm): JD 0.047/kWh/mo (11 pm – 7 am): JD 0.032/kWh/mo	JD 1/m ³ /month
	<u>Medium Industries (Loads > 200 KVA)</u> Capacity: JD 3.05/kVA/mo Consumption: (7 am – 11 pm): JD 0.033/kWh/mo (11 pm – 7 am): JD 0.021/kWh/mo	
	<u>Small Industries (Loads < 200 KVA)</u> Consumption: JD -.036/kWh/month	
Aegean Free Zone, Izmir, Turkey	<u>Firms Leasing Land or Using High Level of Power</u> Capacity: JD 0.0336/kVA/month Consumption: JD 0.0574/kWh/month	0–100 m ³ /mo: JD 1.4/m ³ /mo > 100 m ³ /mo: JD 1.225/m ³ /mo
Jebel Ali Free Zone, Dubai, UAE	Consumption: JD 0.035/kWh/month	JD 1.257/m ³ /month
Port Said Public FZ, Port Said, Egypt	High Potential Consumption (33-66 kVA): JD 0.021/kWh/month	JD 0.168/m ³ /month
	Medium and Low Potential Consumption (1-500 KVA): JD 0.0315/kWh/month (>500 KVA): JD 0.028/kWh/month AND JD 1.26/KVA/month	
Jeddah Industrial City, Jeddah, Saudi Arabia	Consumption: JD 0.0224/kWh/month	1-50 m ³ /mo: JD 0.021/m ³ /mo 51-100m ³ /mo: JD 0.028/m ³ /mo 101-200m ³ /mo: JD 0.371/m ³ /mo 201-300m ³ /mo: JD 0.749/m ³ /mo >301 m ³ /mo: JD 1.12/m ³ /mo
Gaza Industrial Estate, Gaza, Palestinian Territory		

Electricity

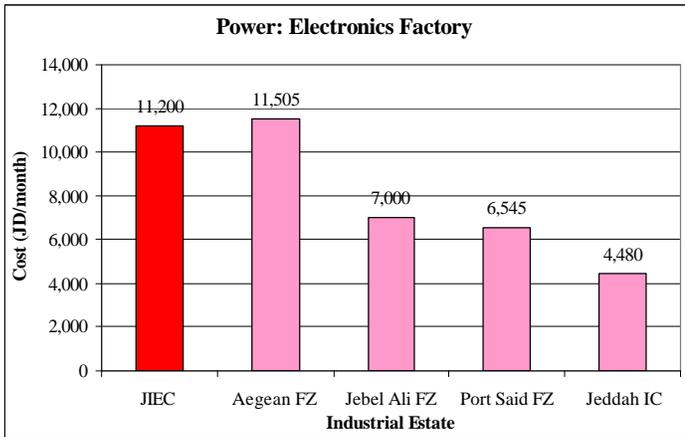
As a developing country, Jordan has an impressive electrification record, with approximately 99 percent of the country electrified to international standards. Additionally, Jordan's

¹⁸ Electricity charges provided by the Jordan Electricity Company, the distributor that supplies power to north and central Jordan. The capacity demand charge is levied on the maximum peak load for the month occurring for a continuous period of at least 30 minutes during a peak period (5:00 pm to 8:00 pm Oct. 1 through March 30; and 7:00 pm to 10:00 pm April 1 through Sep. 30).

electrical grid is now linked to grids in Egypt and the rest of North Africa via a submarine cable across the Gulf of Aqaba. This further ensures and uninterrupted power supply for companies that locate in all of Jordan’s industrial estates.

Electricity is often priced according to both capacity demand—measured in kilovolt amperes (KVA)—and usage—measured in kilowatt/hours (kWh). In the case of Jebel Ali Free Zone and Jeddah Industrial City, however, only a monthly usage charge is levied on industrial customers. The breakdown of these charges is reflected in Table 3.7 on the previous page.

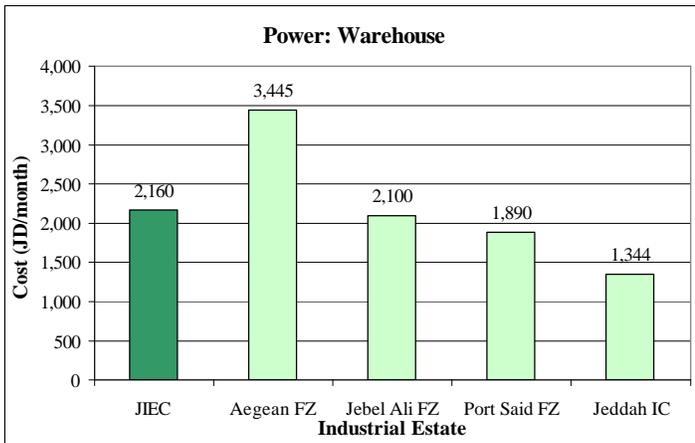
Chart 3.8: Power Charges for Electronics Factory



Charts 3.8 to 3.10 at the left illustrate the calculated power charges for a large electronics factory, warehouse, and garments factory. Each industry requires different electrical capacity and usage, making some industrial estates relatively more competitive for certain industries than others.

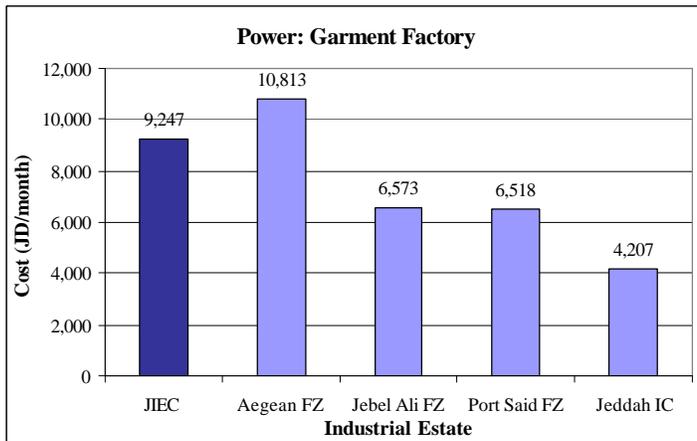
Electricity tariffs for a hypothetical 5,500-square meter electronics factory were calculated, assuming a maximum demand of 750 KVA, and monthly consumption of 200,000 kWh.¹⁹ A typical electronics factory would pay the lowest electricity tariffs in the Jeddah Industrial City, and the highest in the Aegean Free Zone. This analysis assumes the enterprise is purchasing its power directly from the National Electric Power Company (NEPCO) as a “Large Consumer.” The Jordanian industrial estates are not particularly competitive with Jebel Ali, Port Said, or Jeddah in terms of high capacity electrical consumption.

Chart 3.9: Power Charges for Warehouse



When the capacity demand is lower, however, small electricity consumers in Jordanian industrial estates pay tariffs that are much more competitive with industrial estates in the region. Chart 3.9 at the left illustrates the power tariffs for a medium-size warehouse, which demands 80 KVA and consumes 60,000 kWh per month.

Chart 3.10: Power Charges for Garment Factory



The power charges for a typical garment factory, calculated in Chart 3.10 at the left, are based on the peak demand and average monthly consumption of

¹⁹ Based on average values provided by The Competitive Alternatives: A Comparison of Business Costs in North America, Europe, and Japan. KPMG Report.

electricity provided by the Camel Textile International Corporation, located in the Karak Industrial Estate. The factory demands 1000 KVA, and consumes approximately 187,8000 kWh each month. These tariffs were calculated for a medium industry, drawing power from the Jordan Electric Power Company (JEPCO), the distributor that supplies power to JIEC industrial estates in north and central Jordan. Here too, electricity rates in Jordan are less competitive than those in Jebel Ali, Port Said, or Jeddah.

The rise in the number of garment factories in the past four years has placed additional demands on the power infrastructure of JIEC industrial estates. For instance, after 1998, the average electrical load per dunnum at Al Hassan Industrial Estate rose from 25 KVA to 150 KVA. Since then, the 5 megawatt power station built in 1991 to supply Al Hassan has not been sufficient to supply the additional garment factories with enough power. JIEC is now expanding the capacity at Al Hassan to meet this demand.

Water

Water rates are also an important cost factor considered by enterprises when making location decisions. Unlike Jordan, some countries base water tariffs on the volume of usage. This alters the relative competitiveness of industrial estates based on the intensity of water usage of a particular industry. Thus, water charges have been calculated for a hypothetical electronics factory, warehouse, and garment factory.

Chart 3.11 at the right illustrates the competitive position of the JIEC industrial estates for a factory that consumes 880 cubic meters of water each month. At this level of water consumption, Jordanian industrial estates are competitive with most other locations in the region, with the exception of Port Said, which just charges JD 0.075 per cubic meter per month.

When water consumption is low, however, the Jeddah Industrial Estate, which receives concessionary utility rates, levies the lowest tariffs of all the sites studied. The water charges calculated for the warehouse in Chart 3.12 are based on a monthly consumption of just 30 cubic meters per month.

Chart 3.11: Water Charges for Electronics Factory

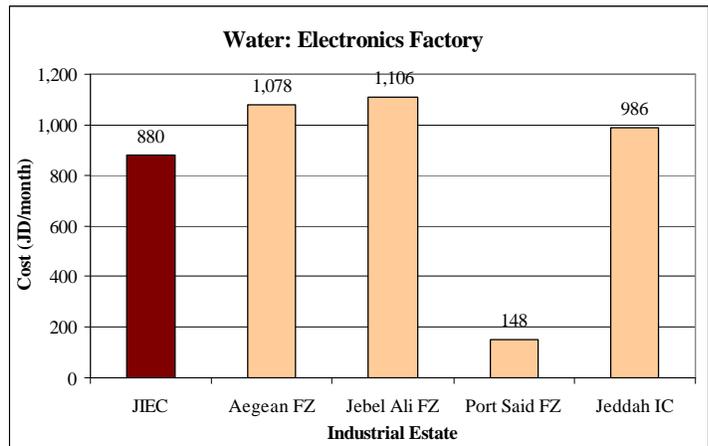
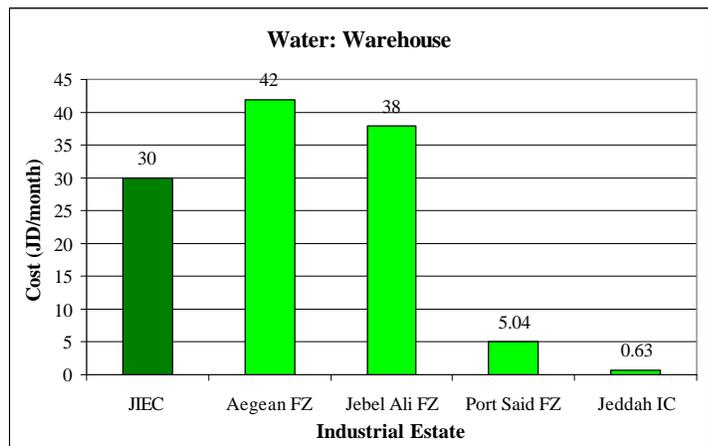


Chart 3.12: Water Charges for Warehouse



Based on Camel Textile’s monthly water consumption of 1,750 cubic meters, the water bill of a typical garment factory was calculated and illustrated in Chart 3.13 at the right. Here again, at

higher levels of water usage, Jordan levies tariffs 10 to 20 percent lower than competing industrial estates, with the exception of Port Said.

Despite the cost competitiveness with some regional competitors, water tariffs in Jordan are relatively high compared to many other regions. Jordan is one of the world’s driest countries, and, like many others in the region, fresh water production capacity and effluent water quality are insufficient to meet the current demand.

Telecommunications

The quality of telecommunication services is an important component of the location decision for companies engaged in information technology, remote office services, just-in-time delivery logistics, or production requiring tight retail delivery schedules. Table 3.14 below shows international direct dialing costs to the U.S. and U.K. from Jordan and competitor countries.

Chart 3.13: Water Charges for Garment Factory

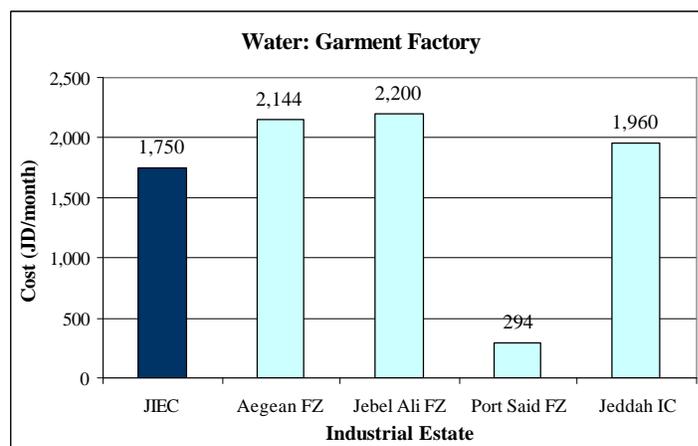


Table 3.14 Cost of International Direct Dialing in the Middle East

		Jordan	Egypt	Saudi Arabia	Turkey	Israel	UAE
International Direct Dialing (JD/minute)	To U.S.	0.525-0.75	1.68	1.20-1.49	0.53	0.13	0.88
	To U.K.	0.525-0.75	1.37	1.65	0.35	0.19	1.03

Jordan’s international direct dialing (IDD) costs are expensive by international standards, but cheaper than Egypt and Saudi Arabia, where the average tariff is greater than JD 1.4 per minute. Turkey and Israel, on the other hand, offered much lower IDD rates to the U.S. and U.K.

Some areas within Jordan might be better suited than others for enterprises requiring high-speed internet access for their operations. Jordan Telecom offers leased lines, and local internet service providers have recently begun to offer high-speed ASDL lines into homes and businesses. Table 3.15 below shows the cost of obtaining a leased line in Jordan’s governorates.

Table 3.15: Cost of Leased Line to Amman from Jordan’s Governorates (JD/month)²⁰

	Within Amman	Irbid	Mafrq	Jerash	Ajloun	Zarqa	Salt	Madaba	Karak	Tafila	Ma’an	Aqaba
256 KB/sec	216	471	471	437	471	318	318	383	737	737	1,215	1,215
512 KB/sec	280	722	722	722	722	485	485	629	1,254	1,254	2,211	2,211
1 MB/sec	408	1,133	1,133	1,133	1,133	771	771	1,059	2,196	2,196	4,109	4,109
2 MB/sec	632	1,604	1,604	1,604	1,604	927	927	1,604	3,597	3,597	7,185	7,185

²⁰ Costs in Table 3.15 do not reflect the one-time initiation fee of JD 700 for obtaining a leased line.

The price of a lease line to Amman varies depending on the speed of the line, and general distance from Amman. Salt, Madaba, and Zarqa governorates, however, have relatively lower rates than other governorates in the North Region—presumably to attract investment to those areas.

Implications for Investment

Electricity tariffs in Jordan are very competitive for low energy-intensive industries, but less so for industries requiring capacity greater than 200 KVA. With the increase in garment manufacturing investments, JIEC has also had to increase capacity at Al Hassan Industrial Estate in order to meet the demand for higher power loads.

Until recently, the national electricity company subsidized the electrical infrastructure in JIEC industrial estates, with the JIEC paying only half the cost of offsite power infrastructure. They passed these costs savings onto JIEC tenants in the form of lower rents. As of March 2002, however, the electricity company had indicated that it would now pass on 100 percent of power infrastructure costs on to the JIEC. This could potentially result in higher rents for future JIEC investors.

JIEC industrial estates are very competitive in terms of water costs with other regional sites studied. Only Port Said offered significantly lower water tariffs for large water-consuming industries. In a region that suffers from a shortage of water, Jordan’s water tariffs are attractive. However, supply of fresh water may not keep up with increasing demand from households and businesses alike. Additionally, the increase in the number of garment manufacturers, and other light to medium industries, underscores the need for expanded wastewater treatment facilities.

The high price of telecommunications and high-speed internet service might act as a disincentive for companies reliant upon large amounts of on-line data transfer. While these high tariff rates will probably not discourage investment by manufacturing industries, they might discourage industries dependent on high-bandwidth communications, such as integrated logistics handling.

3.5 Cost and Availability of Labor

Jordan’s 90 percent-literate population and educated workforce make Jordan’s labor pool very attractive to someone investing in the Middle East. Jordan’s working age population—those between the ages of 15 and 59—forms a large percentage of the population, 56 percent. The national employment rate is almost 14 percent. Sixty percent of the population is currently not economically active, creating an even larger potential pool of labor.

Cost of Labor

The cost of labor in the JIEC industrial estates is quite competitive in relation to Jebel Ali, Jeddah, Aegean, and Gaza Industrial Estates, but less so than in Port Said and Vietnam. Charts 3.16 and 3.17 on the next page show the variation in labor rates between the JIEC industrial estates and competing locations.

Chart 3.16: Monthly Unskilled Wage Rates

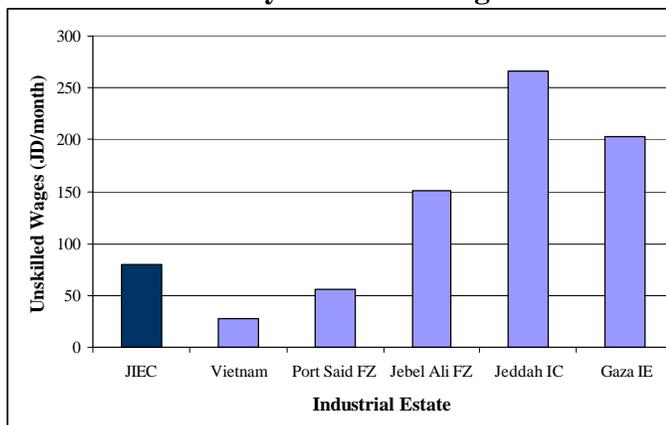
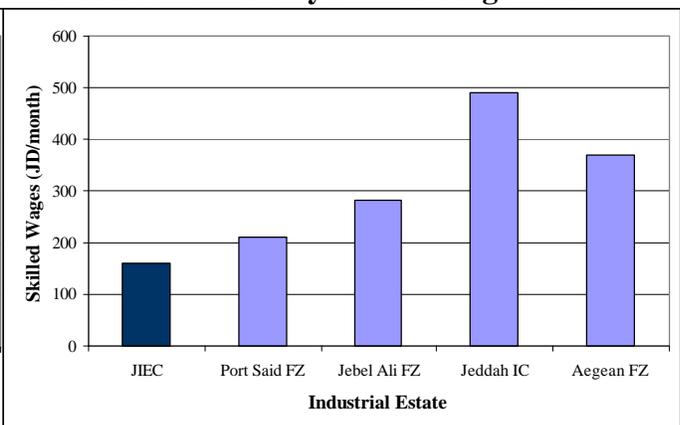


Chart 3.17: Monthly Skilled Wage Rates



Without the QIZ arrangement, Jordan would have a difficult time competing with lower wage countries like Egypt and Vietnam in the textile and apparel sectors. Vietnam was included as a competitor in the labor rate analysis because an increasing number of textile and garment manufacturers are locating there—especially in the wake of the trade agreement signed between Vietnam and the United States. Camel Textile International Corporation, for instance, indicated that it is difficult to compete with the excellent workmanship and efficiency of Vietnamese workers, who are paid just JD 28 per month.

Workers in industrial estates in the Gulf and Palestinian Territories, on the other hand, demand salaries up to several times higher than those paid in Jordan. Unskilled workers in JIEC industrial estates, for instance, earn JD 80 per month. Those in Jebel Ali and Gaza, on the other hand, are paid JD 151 and JD 203, respectively. Higher wages in those countries have forced companies to seek production platforms in lower wage countries.

Skilled wages in Jordan, however, are lower than Middle East competitors. A skilled worker in Jordan makes on average, just JD 160, while in Port Said, the average skilled salary is JD 210. The Aegean Industrial Estate and Jeddah Industrial City pay the highest average salaries—JD 370 and JD 490, respectively.

Availability of Labor in Jordan's Governorates

North and Central regions are more attractive investment locations from the standpoint of labor availability and worker skills. This fact impacts the potential of JIEC's proposed industrial estates to attract investment.

Jordan's population is unevenly distributed throughout the country. Approximately 62 percent of the population lives in the central governorates including and surrounding Amman. Twenty-eight percent live in the North, while just 10 percent live in the southern governorates of Karak, Tafila, Ma'an, and Aqaba. Table 3.18 on the next page shows the distribution and size of Jordan's workforce.

Table 3.18: Distribution of Employment in Jordanian Governorates²¹

Total Population		Labor Force/Economically Active (Percent)			Economically Inactive	Unemployment Rate
Population	Total	Employed	Unemployed			
Total	5,039,000	39.4	34.0	5.4	60.6	13.7
Central Region Governorates						
Amman	38.05 % of Total Population					
Total	1,917,340	40.3	34.9	5.4	59.7	13.4
Male	1,004,090	67.1	59.2	7.9	32.9	11.8
Female	913,250	13.9	11.0	2.9	86.1	20.8
Balqa	6.56 % of Total Population					
Total	330,555	41.6	36.4	5.2	58.4	12.6
Male	173,865	67.3	59.8	7.6	32.7	11.2
Female	156,680	16.0	13.1	2.9	84.0	18.2
Zarqa	15.73 % of Total Population					
Total	792,635	39.4	33.9	5.5	60.6	14.1
Male	413,120	67.8	58.7	9.1	32.2	13.4
Female	379,515	9.0	7.2	1.8	91.0	19.7
Madaba	2.55 % of Total Population					
Total	128,495	39.1	32.7	6.4	60.9	16.5
Male	66,960	64.7	54.5	10.2	35.3	15.7
Female	61,535	13.4	10.7	2.7	86.6	20.2
North Region Governorates						
Irbid	17.84 % of Total Population					
Total	898,955	37.9	33.0	4.9	62.1	13.0
Male	465,470	64.9	57.5	7.4	35.1	11.4
Female	433,485	11.0	8.6	2.4	89.0	21.9
Mafrq	4.61 % of Total Population					
Total	232,300	36.2	30.6	5.6	63.8	15.4
Male	121,680	61.7	52.6	9.0	38.3	14.6
Female	110,620	8.6	6.7	1.8	91.4	21.3
Jerash	2.94 % of Total Population					
Total	148,145	38.0	32.5	5.5	62.0	14.5
Male	77,110	63.9	55.8	8.1	36.1	12.6
Female	71,035	11.1	8.3	2.8	88.9	25.6
Ajloun	2.22 % of Total Population					
Total	111,865	35.7	31.0	4.7	64.3	13.1
Male	57,015	61.6	54.3	7.3	38.4	11.9
Female	54,850	10.2	8.1	2.1	89.9	20.5
South Region Governorates						
Karak	4.02 % of Total Population					
Total	202,570	40.0	33.5	6.6	60.0	16.4
Male	105,900	62.5	53.4	9.1	37.5	14.6
Female	96,670	17.0	13.0	4.0	83.0	23.4
Tafila	1.52 % of Total Population					
Total	76,595	36.5	31.0	5.5	63.5	14.9
Male	39,865	63.8	55.3	8.5	36.2	13.4
Female	36,730	9.9	7.5	2.5	90.1	24.7
Ma'an	1.95 % of Total Population					
Total	98,260	38.9	32.7	6.2	61.1	15.9
Male	53,280	65.2	55.5	9.7	34.8	14.9
Female	44,980	9.8	7.5	2.3	90.2	23.3
Aqaba	2.01 % of Total Population					
Total	101,285	43.6	39.4	4.2	56.4	9.7

²¹ Compiled from Statistical Yearbook (2000) and the Annual Report of Employment and Unemployment Survey (2000), Jordan Department of Statistics

Total Population		Labor Force/Economically Active (Percent)			Economically Inactive	Unemployment Rate
Population		Total	Employed	Unemployed		
Male	57,035	74.1	67.7	6.4	25.9	8.6
Female	44,250	9.9	8.1	1.8	90.1	18.3

The table on the previous page shows the labor force and unemployment distribution throughout Jordan's twelve governorates. Data on the number of economically active and inactive persons in each governorate was collected from 12,000 households (each averaging 5.6 persons) during 2000 for the Annual Report of Employment and Unemployment.

The Jordanian labor force includes all employed and unemployed persons. The unemployed are those persons between the ages of 15 and 65 who are able, available, and searching for work, but have not found employment. The unemployment rate is the percentage of unemployed persons amongst the economically active population—or labor force. Persons who cannot work or are not seeking employment are classified as “Economically Inactive,” and, therefore, not calculated in the unemployment rate. In the Kingdom as a whole, 55.5 percent of the economically inactive are housewives, approximately 31 percent are students, and nearly 3.7 percent are disabled and unable to work.

The unemployment rate ranges from a low of 9.7 percent in Aqaba to a high of 16.5 percent in Madaba. Aqaba was also the governorate with the highest percentage of economically active persons—43.6 percent. Ajloun was the lowest, with only 35.7 percent of the governorates population employed or seeking work.

The absolute amount of available labor in each governorate was obtained by multiplying the labor force and unemployment percentages obtained in the 12,000-household sample by the size of the population in each governorate. This yielded the results shown in Table 3.19 below. From the column titled “Number of Unemployed,” one can gauge the size of the workforce in each governorate that would immediately be available for hire—providing they possess the proper skills. It is also possible that a percentage of workers who are currently “Economically Inactive” could join the labor force and seek employment sometime in the future.

Table 3.19: Calculated Labor Supply and Available Workers by Governorate

Governorate	Total Population	Labor Supply (Employed & Unemployed)	Number of Unemployed	Number of Economically Inactive
Amman	1,917,340	772,688	103,536	1,144,652
Balqa	330,555	137,511	17,189	193,044
Zarqa	792,635	312,298	43,595	480,337
Madaba	128,495	50,242	8,224	78,253
Irbid	898,955	340,704	44,049	558,251
Mafrq	232,300	84,093	13,009	148,207
Jerash	148,145	56,295	8,148	91,850
Ajloun	111,865	39,936	5,258	71,929
Karak	202,570	81,028	13,370	121,542
Tafila	76,595	27,957	4,213	48,638
Ma'an	98,260	38,223	6,092	60,035
Aqaba	101,285	44,160	4,254	57,125
Total	5,039,000	1,985,135	270,937	3,053,534

In terms of absolute amount of available workers, Amman Governorate has the largest number of persons, over 103,000, who are seeking employment. Zarqa and Irbid also have a

large pool of available labor, which enhances the attractiveness of these governorates as investment locations. The Southern governorates of Tafila, Ma'an, and Aqaba, on the other hand each have approximately 6,000 or less persons who are actively seeking employment. Therefore, any large-scale ventures in these governorates would be dependent upon imported labor from North or Central Jordan, or overseas.

Quality of Labor in Jordan's Governorates

The availability of workers does not guarantee that they possess the proper skills required by investing companies. Within Jordan, most of the skilled labor force resides in the North and Central governorates surrounding Amman. Technical labor such as computer programmers, chemists, and engineers are almost exclusively found in the Amman area.

The experience of garment companies in the Karak Industrial Estate underscores the need for intensive worker training and assimilation into factory life and corporate culture, especially in Jordan's rural governorates. Box 3.20 below highlights the experience of two companies in Karak.

Box 3.20: Labor in the Karak Industrial Estate

Karak Industrial Estate: An Exercise in Hiring Unskilled Labor in Rural Jordan



Workers in the Camel Textile Factory, Karak Industrial Estate

Karak has a relatively large pool of unemployed labor. Few, if any, have the necessary skills required for most types of factory work. The two garment factories located in the Karak Industrial Estate, however, had no problem hiring labor from the local Karak population. All, however, had to be specially trained, and slowly assimilated into the culture of an 8-hour assembly line job.

Because most of the workers in Karak came to the factories with no previous employment experience, the companies were able to custom-train them in their specific techniques and corporate culture. Both factories, however, have experienced extremely high labor turnover rates, and have problems retaining the workers they hire.

The general managers of the Camel and Honorway factories in the Karak Industrial Estate felt they could not commence production in the first months without a 100-percent foreign workforce. Although the Chinese and South Asian workers are three to five times as expensive to employ as labor from Karak, they possess the necessary cutting, sewing, and finishing skills lacking in the local labor force. Also typical of QIZ garment factories located in Irbid and Amman, the Camel and Honorway factories now employ a half foreign, half Jordanian workforce.

Factories in Karak advertise employment opportunities by word of mouth, and recruitment usually includes women from the same families or neighborhood. Factory managers also liaise closely with local community leaders. Much of the success in attracting labor to the Karak IE can be attributed to the efforts of its Director, Mr. Awni Yakoub, who has engaged in community outreach to positively expose the local community to the opportunities available in the industrial estate.

Only because the companies in Karak were able and willing to invest in large-scale training were they successful in using the local Jordanian labor. Companies without such training infrastructure would not have found Karak an appealing place to invest, and would have likely located in Amman or Irbid.

In order to enhance opportunities for vocational training and apprenticeship, the government-funded Vocational Training Corporation (VTC) has established three Regional Training Directorates with a network of 38 training centers and institutes throughout the Kingdom. Close relations and linkages are also kept with more than 4,600 enterprises with a view of implementing training and placing graduates accordingly.

The VTC has established a training center at every operative JIEC industrial estate. It also encourages and assists both private and public sector entities in establishing their own training centers. Training programs are designed and annually updated to suit the needs of industries and overall market trends. However, some companies have noted that the VTC centers do not train students in the latest technology used by the factories. On-the-job retraining is required to meet these deficiencies.

Of Jordan’s total labor force of nearly 2 million, 1.2 percent are estimated to have had some form of vocational technical training or apprenticeship through the VTC. Currently, the total number of registered students at VTC’s 38 centers is 14,000, with females representing approximately 15 percent. From the establishment of the first center in 1976, VTC has graduated over 175,000 trainees. The largest numbers of graduates have studied in the fields of electricity, vehicle and equipment maintenance, mold manufacturing, and air conditioning and sanitary works.

Table 3.21: North Region Vocational Training Graduates (2000)²²

Vocational Training Courses in North Region	No. of Graduates
Vehicle and Equipment Maintenance	614
Electricians	412
Other (Sales & Marketing, Clerks, Hair Dressers)	280
Molding and General Mechanics	250
Air Conditioning and Sanitary Works	201
Carpentry and Artwork	163
Hotels, Restaurants, and Bakeries	107
Clothes and Apparel	102
Electronics	54
Construction	28
Printing	0
North Region Total	2,211

The largest numbers of graduates in the North Region are found in vehicle and equipment maintenance and electrical installation and repair. There is growing interest and demand for training in apparel manufacturing. However, garment companies in the North cannot rely on the numbers of VTC graduates, and actually do prefer to train their own workforces. Table 3.21 at the left shows the breakdown of graduates in the year 2000 in each discipline offered by VTC centers in the North.

Table 3.22: Central Region Vocational Training Graduates (2000)

²² Source: Compiled from the Vocational Training Corporation Annual Report, 2000.

Vocational Training Courses in Central Region	No. of Graduates
Electricians	2,224
Hotels, Restaurants, and Bakeries	2,048
Vehicle and Equipment Maintenance	1,972
Molding and General Mechanics	1,403
Air Conditioning and Sanitary Works	1,180
Carpentry and Artwork	664
Other (Sales & Marketing, Clerks, Hair Dressers)	379
Electronics	342
Printing	311
Clothes and Apparel	119
Construction	26
Central Region Total	10,764

The central region produces the largest numbers of technical vocational school graduates, as shown in Table 3.22 at the left. Programs in electricity and hospitality-related services graduated the most number of students in 2000. A specialized printing training center is also located in this region to serve the printing and publishing industry in the Amman area. The absence of high-tech programming, CNC, auto-CAD, and other such programs exposes lack of expertise required to attract advanced industries to Jordan.

In the South Region, about 25 percent of the graduates are concentrated in electricity and engineering support vocations. The distribution of VTC graduates is depicted on the next page in Table 3.23. Unlike the North and Central regions, however, very few graduates

Table 3.23: South Region Vocational Training Graduates (2000)

Vocational Training Courses in South Region	No. of Graduates
Vehicle Equipment and Maintenance	536
Electricians	504
Molding and General Mechanics	434
Air Conditioning and Sanitary Works	151
Carpentry and Artwork	110
Hotels, Restaurants, and Bakeries	104
Clothes and Apparel	47
Other (Sales & Marketing, Clerks, Hair Dressers)	29
Electronics	5
Construction	0
Printing	0
South Region Total	1,942

emerge from electronics programs. This might serve as a disincentive for factories requiring that type of labor, but not able or willing to conduct their own intensive training programs. Hospitality-related services are also becoming more attractive areas of specialization in the South, particularly with the Jordan's main tourist attractions—Petra, Karak, Wadi Rum, and Aqaba—located in the South region.

Implications for Investment

Jordan's wage rates—for all skill levels—provide it with a cost advantage over regional competitors in the Gulf, Palestinian Territories, and Turkey. Jordan is at a labor cost disadvantage with Egypt and Vietnam—with which it competes for garment manufacturers. When properly trained, Jordanian workers are efficient by regional standards.

The concentration of labor force and skilled graduates is in the area surrounding Amman, Irbid, and Zarqa. Companies wanting to establish small to medium ventures, but without the resources to train large numbers of workers, have found North and Central Jordan more attractive than the South. Workers in the South can be well-trained, but investors must be willing to bring in large numbers of trainers, and heavily invest in workforce assimilation and training.

The numbers of available workers in Aqaba, Ma'an, and Tafila are too small to fully support the labor needs of proposed JIEC industrial estates in those governorates. Additionally, skills and literacy rate tend to be lower than Jordan as a whole, making it more difficult to recruit

the required skilled and technical workers to support certain types of industry. Labor would need to migrate from more populated areas and overseas to supply the workforce needs of any industrial estates in these southern governorates.

3.6 Transportation

Industries in Jordan are reliant upon the import of capital equipment and raw materials. An increasing number of companies are also exporting their goods to overseas markets. Therefore, access to inexpensive and reliable transportation services is an important factor in the location decision.

Availability and Cost of Sea Freight

Jebel Ali, Jeddah, and Aegean Free Zone have comparatively better sea freight options than those available to investors in Jordan. The Jeddah Islamic Port is one of the largest ports in the Middle East, with modern high-tech facilities. Jeddah handles approximately 37 million metric tons of cargo each year—more than three times the current throughput in Aqaba.

Jebel Ali is considered the premier port in the Middle East, and among the finest in the world. It handles almost two million TEUs per year. Efficiency, little bureaucratic interference, and modern infrastructure make Jebel Ali an extremely business-friendly port, which has weighed heavily on investors' decisions to locate in the Jebel Ali Free Zone.

Companies in Jordan export their goods through either Aqaba Port on the Red Sea or Haifa Port on the Mediterranean Sea. Both ports have advantages and disadvantages for investors. Aqaba Port has no direct lines serving the United States. When the typical QIZ garment manufacturer exports through Aqaba, the goods must be transshipped through Italy or Spain—taking about two weeks longer than using Haifa Port. Additionally, some have complained that consignments often take five days to clear in the Port of Aqaba. Transit time is very important to industries. Cutting weeks, or even days off total transportation time, can result in significant cost savings for a company.

Haifa Port is closer to manufacturers located in the north of Jordan, but offers its own disadvantages. Several companies have complained of Haifa's high cost, low availability of containers, and decreasing quality of service. Recent political events have resulted in intensive security checks, delays at the Sheikh Hussein Bridge, and suspension of licenses of Jordanian trucks to drive within Israel. Israeli shippers, who used to exact an 8-percent premium on rush consignments, are now demanding such for all orders. Because of these border delays and growing non-transparency, Aqaba is the more predictable port from which to transport.

While port handling charges are fairly competitive, sea freight rates from Aqaba are not very cost-competitive vis-à-vis most of the other ports under evaluation. Table 3.24 below lists shipping and handling charges from Aqaba, Haifa, and ports used by competing industrial estates. Box handling charges range from JD 59 to JD 67 per TEU in Aqaba, compared to a low of JD 56 in Jeddah and an average of JD 77 in Jebel Ali.

Table 3.24: Sea Freight and Port Handling Charges (JD per 20-foot container)²⁵

	Aqaba Port	Port Said	Jeddah Islamic Port	Haifa Port	Aegean Port of Izmir	Jebel Ali Port
Average Port Handling Charges	59-67	46	56-72 ²³	21	53	77
Average Sea Freight Rates to:						
New York	1330-2030 ²⁴	420-630	700-945	980-1050	1260	840-1610
Rotterdam	385-420	280-420	315-420	280	525	490-630
Japan	455	840-998	315-420	665	N/A	315-630

Sea freight rates from Aqaba, particularly to the United States and Europe, are somewhat higher than from most of the competing ports because of Aqaba’s location away from the main trade routes and the relatively small vessels serving the port.

The quoted tariff to transport a 20-foot container to New York averages JD 1,400 from Aqaba and JD 1,015 from Haifa. The cheapest quoted freight rate to New York for the trading range is from Port Said, where a 20-foot container averaged JD 525. Both Port Said and Haifa are located on the other side of the Suez Canal, in the more competitive trading range of the Mediterranean, and attract larger vessels.

The quoted rate to Rotterdam for a loaded 20-foot container from Aqaba averaged JD 403, compared to JD 350 from Port Said and JD 280 from Haifa. Sea freight rates to Japan from Aqaba are slightly more competitive, averaging JD 455, well within the range of Jeddah and Jebel Ali.

Air Transportation

Queen ’Alia International Airport (QAIA) in Amman is the sole international cargo airport in Jordan. Due to a current lack of demand, there are no airfreight services from Aqaba. Airfreight is channeled instead through Queen Alia. Airfreight rates from QAIA are very competitive with the competitor countries, with shipments to New York and Amsterdam having the cheapest rates. Table 3.24 below lists the airfreight rates for consignments shipped from JIEC and competing industrial estates in the region.

Table 3.25: Airfreight Rates (JD per kilogram)²⁶

	QAIA	Port Said	Jeddah	Haifa	Aegean	Jebel Ali
New York	1.00-1.10	2.10	1.40	1.96	1.37	1.05-1.26
Amsterd am	0.50-0.60	0.98	0.91	1.05	0.60	0.67-0.81
Japan	2.15	3.50	1.65-1.86	N/A	N/A	1.47-1.82

From QAIA, freight rates average between JD 1 and JD 1.10 per kilogram to New York, about half the cost of freight from Port Said. Similarly, to Amsterdam, rates from QAIA

²³ Handling charges levied on imports only

²⁴ Includes Suez Canal fee plus handling in US

²⁵ Source: Collected from a survey of 20 freight forwarders operating in the Middle East

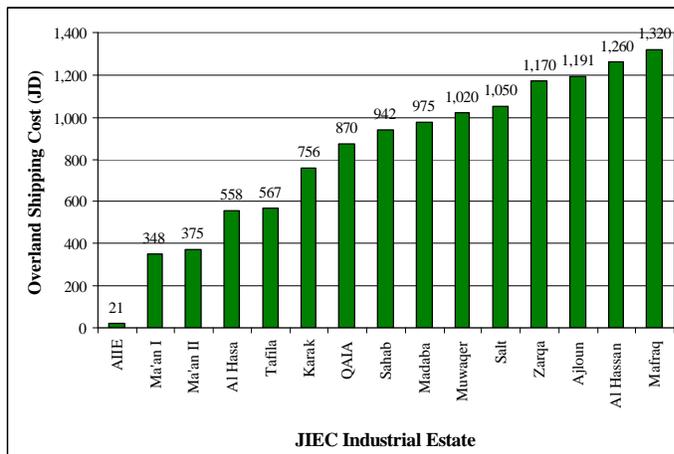
²⁶ Source: Data collected from survey of 20 freight forwarders operating in the region.

range from JD 0.5 to JD 0.6 per kilogram, compared to just JD 0.6 from the Aegean Free Zone. Shipments from QAIA to Tokyo average JD 2.15, somewhat higher than Jebel Ali and Jeddah, but significantly lower than Port Said.

Land Transportation: Comparison of Internal Costs for Proposed JIEC Sites

Land transportation within Jordan costs JD 3 per kilometer. Distance from a seaport or airport adds to the cost of doing business in an industrial estate. Chart 3.26 below lists the overland transportation costs from each industrial estate to Aqaba Seaport. It should be noted that some QIZ manufacturers, especially in the North, ship through Haifa Port, not Aqaba.

Chart 3.26: Overland Shipping to Aqaba

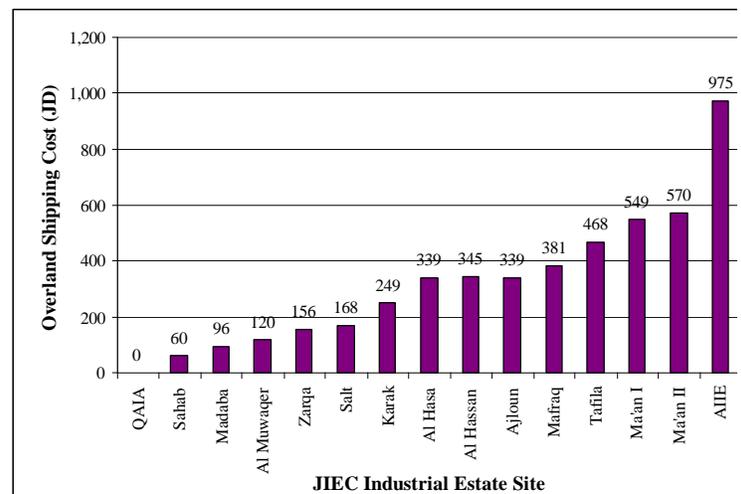


Obviously, locating directly in the Aqaba Special Economic Zone is advantageous not only in terms of shipping costs from the AIIE to the port, but also because of the ability to import goods through the port without tariff. Free Zones throughout Jordan also offer this incentive, but none are so conveniently located to a seaport. Those sites located in northern Jordan would be at the greatest cost disadvantage in terms of importing inputs and exporting manufactured products.

International Airport will become an option for enterprises located in the South.

Electronics, perishable food products, lightweight components, and rush order of small to medium-sized items are typically shipped via air freight. As Jordan increasingly excels in electronics assembly for export, it will be increasingly advantageous to locate at or near an international airport. Thus, the proposed JIEC site directly on the airport premises is the most competitive in this respect. However, it would have to compete for investment with Al Moushata Private Industrial Estate (QIZ) located just adjacent to QAIA. The proposed Madaba and Salt sites are also relatively more competitive than others in their proximity to the airport. Tafila, Ma'an, and Aqaba are the most disadvantaged, with overland transportation to QAIA costing between JD 468 and JD 975.

Chart 3.27 at the right illustrates the **Chart 3.27**



Implications for Investment

Investors in JIEC and other Jordanian industrial estates are constrained by relatively high port costs, delays, and infrequent shipping schedules in both Aqaba and Haifa ports. This could

act as a disincentive for companies requiring fast transit times for the import and export of raw materials and finished products.

The Aqaba International Industrial Estate (AIIE) will benefit from close proximity to the container port, expanded airport cargo facilities, and road transportation network. Warehousing, packaging and distribution, and logistics handling will all take route at the AIIE. However the scope of activities will likely be limited by several factors. Aqaba's distance from major shipping lines will limit the overall growth in container traffic required to become a true regional logistics hub. Second, the cost differential between eastbound and westbound sea freight favors activities trading goods with Asia, while discouraging activities that trade goods from the West—for which the Mediterranean ports of Izmir, Haifa, and Port Said can provide a strong cost advantage.

Within Jordan, the Aqaba International Industrial Estate offers the cheapest venue in terms of overland access to Jordan's Port. The proposed QAIA, Madaba, and Al Muwaqer sites are the most attractive locations in accessing air freight options from Queen 'Alia International Airport in Amman.

3.7 Risk Profile

Political and economic stability often play an important role in a company's decision to locate in a country. Investors must be reasonably assured that future governments will not reverse the commercial and investment policies that attracted them in the first place. They must also be assured that their investments will be physically safe from political or civil unrest. This is particularly important for those industries requiring substantial capital investments.

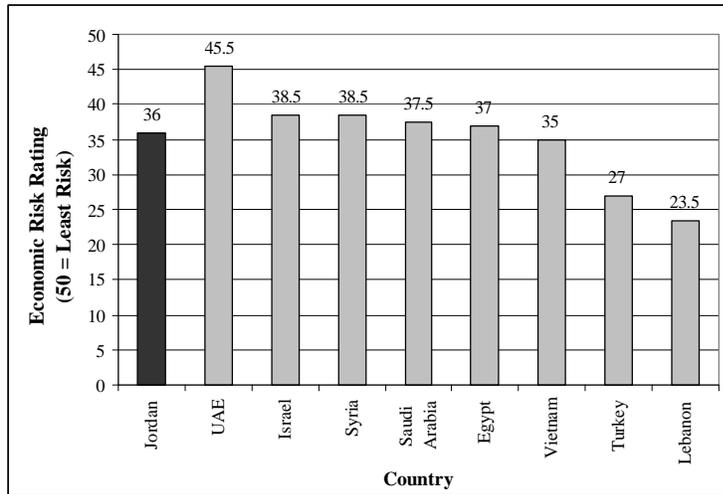
Economic Risk

Healthy economies make attractive investment locations. A growing internal market allows for local sourcing of product inputs and an expanding consumer base for manufactured goods. An expanding economy also provides an incentive for local capital to remain in a country. Thus, countries with less economic risk usually have greater economic growth and attract more domestic and foreign investment than high-risk countries.

Table 3.28 below shows the economic risk ratings for Jordan and seven Middle East and one Asian country. The risk index is based on a combination of per capita GDP, real annual GDP growth, annual inflation rate, budget balance as a percentage of GDP, and current account balance as a percentage of GDP. Risk ratings range from a high of 50 (least risk) to a low of 0 (highest risk).

Chart 3.28: Economic Risk Rating (Jan. 2002)²⁷

²⁷ Source: Political Risk Service (PRS)



The UAE has the least economic risk of all competitor countries, while Turkey and Lebanon have significantly greater risk. Jordan and the remaining countries have a medium risk for factors influencing growth, such as inflation and trade balance.

Political Risk

Jordan has exerted great effort to maintain internal political stability as well as actively improve

political and economic relations in the Middle East. Perception of political risk, however, is just as important as the actual risk of political upheaval. Even the most politically stable country cannot sell itself to investors if a negative perception exists in corporate minds.

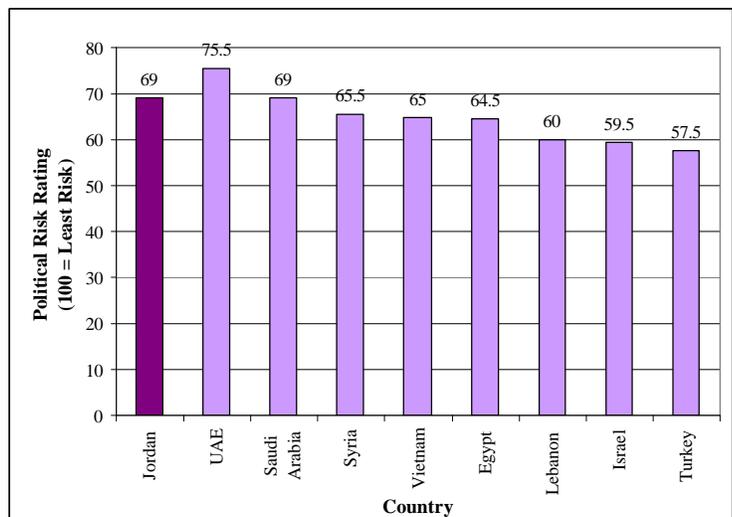
Businesspersons totally unfamiliar with Jordan figure the Kingdom in with their perceptions of the entire Middle East region. The recent military conflicts in Afghanistan and Palestinian Territories, have, for example, made some South Asian and East Asian companies reluctant to consider Jordan as an investment location, according to the Jordan Investment Board. On the other hand, businesspersons familiar with Jordan’s relatively calm political landscape have been drawn to the Kingdom. The Gateway Industrial Estate, for example, has many Israeli investors wanting to invest in Jordan in order to escape the political tensions in their own country and surrounding Palestinian Territories.

Chart 3.29 below shows the political risk rating, as calculated with the following component factors: government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religion in politics, law and order, ethnic tensions, democratic accountability, and quality of bureaucracy. The risk ratings range from a high of 100 (least risk) to a low of 0 (highest risk).

Jordan fares relatively well on the Political risk index. Of the countries compared, only the UAE scored politically less risky than Jordan. Israel, Turkey, and Lebanon scored about 10 to 15 points lower, based on the high level of internal conflict and/or large military presence in government in those countries.

Implications for Investment

Chart 3.29: Political Risk Rating²⁸



²⁸ Source: Political Risk Service (PRS)

Many of Jordan's economic reforms to date have reduced government interference in the affairs of private enterprise, increasing business efficiency through market-driven solutions. Jordan's continuing reforms and consolidated positive investment promotion efforts will further improve the regulatory environment and encourage investment in JIEC industrial estates.

Prevailing Middle East politics have been detrimental to all comparator industrial estates in this study. Jordan's political risk rating is near the lowest of the countries in the region. However, until political tensions ease in the region, Jordan can expect to suffer the broad perception that, as part of the Middle East, it is a politically unstable location. However, in the short term, investors familiar with the Middle East region, particularly those with established interests here, are unlikely to be deterred by regional politics from establishing or expanding business ventures in Jordan.

4. Industrial Estate Investment Trends and Growth Projections

4.1: Overview

Jordan's industrial estates are generally competitive with competing regional IEs in terms of the quality and cost of labor, cost and availability of serviced industrial land, market access opportunities. The JIEC, private industrial estate developers, and other agencies must aggressively promote Jordan's competitive position in order to achieve sustained growth and demand for the country's industrial estates and free zones.

This chapter provides an overview of the historical growth patterns of Jordan's JIEC and private industrial estates and public free zones. Demand for industrial estates grew rapidly in the early 1990s with an increase in investment from Jordanian citizens repatriated from Gulf countries. Forty-four new tenants invested an average of 26.9 hectares in industrial estates each year during that period.

New investment was also robust during the late 1990s, especially by international investors attracted to Jordan by the market opportunities associated with the QIZ scheme. The past four years, however, have been particularly difficult for some local Jordanian investors, whose businesses have suffered from an economic downturn and restrictive lending practices by Jordanian banks.

Five-year growth projections based on 'Worst,' 'Base,' and 'Best' case scenarios are presented at the end of the chapter. Under the 'Best Case' scenario—achievable with relative regional stability and targeted marketing—Jordan's industrial estates could attract over 70 enterprises each year. This amounts to a demand of 200 hectares of land and buildings in Jordan's industrial estates over the next five years.

Jordan's industrial estates have a large enough supply of serviced industrial land to meet the 'Best Case' demand over the next five years. JIEC and private industrial estates, and Zarqa Free Zone, currently have over 500 hectares of land available for sale or lease. An additional 840 hectares of land is available for expansion of these operational IEs if demand justifies such.

This chapter differentiates between the "net" number of tenants demand for land, and the "new", or *gross* numbers of tenants or land. The "net" number of tenants, for instance, is the sum of newly investing enterprises *minus* the number of tenants who have canceled contracts and vacated an industrial estate.

4.2: Availability of Serviced Land in Jordanian Industrial Estates

The Jordan Industrial Estates Corporation began offering serviced industrial land and standard factory buildings to investors in the early 1980s with the opening of Jordan's first industrial estate in Sahab. Since that time, the JIEC has developed and operated industrial estates in Irbid in 1991 and Karak in 2000. Private industrial estates began leasing and selling land and buildings to investors in the mid-1990s when Al Tajamouat opened in Amman. This section examines the historical growth data collected for this study, which calculates the current and availability of serviced land in Jordan's public and private industrial estates.

Data and Definitions

Growth trends presented in this section are based on data provided, and confirmed, by the Jordan Industrial Estates Corporation, and reflect investment in JIEC industrial estates through February 2002.²⁹ The growth data obtained from the JIEC is summarized in Tables 4.1 to 4.3 on the following two pages. The following definitions are useful for understanding the compiled data and analysis presented in this chapter.

- **Gross Area:** Total area of land in an industrial estate, including that used for roads, utilities, administration buildings, etc.
- **Net Investment Area (NIA):** Area of land in an industrial estate offered for sale or lease to investors. NIA is usually 75 percent of the gross area in JIEC industrial estates, and does not include areas used for roads, green space, administration facilities, and the like.
- **Land Area Uptake:** Area of land, with or without buildings, leased or sold by an industrial estate. “New Land Area Uptake” refers to land sold or leased to new tenants. “Net Land Area Uptake” is the sum of new land area sold minus land vacated by tenants.
- **Used Land:** Land was considered “used,” and no longer available for sale or lease, upon signature of a contract for serviced land or buildings. A tenant need not have constructed anything on the land for it to be deemed “used.”
- **Vacated Land:** Land is classified as “vacated” upon the termination, and non-renewal, of land or building contracts. In some cases, a tenant may have “vacated” the land before having occupied it. For the purposes of this study, “Vacated” land is deemed available for rental or sale immediately upon termination of the previous tenant’s contract.
- **Tenant:** A holder of one or more land or building contracts in an industrial estate, and assigned a unique user identification number by the JIEC or private industrial estate.
- **New Tenant:** A tenant is considered a “New Tenant” on the date that it signed its first land or building contract with the JIEC or private industrial estate.
- **Vacated Tenant:** A “Vacated Tenant” is one that has terminated all land or building contracts, and, presumably, no longer in operation in an industrial estate. In some cases a tenant may have terminated its contract without having occupied the land. For the purposes of this study, these tenants are still classified as “Vacated Tenants.”
- **QIZ:** A company, or tenant, that participates in the Qualifying Industrial Zones scheme. Some QIZ companies were existing tenants in JIEC industrial estates when the QIZ program was inaugurated in 1998, and have since been certified to participate in the QIZ scheme. For the purposes of this study, they appear as “QIZ” tenants on the date they signed their first land or building contract.
- **Non-QIZ:** A company, or tenant, that does not participate in the Qualifying Industrial Zones scheme. Includes kiosks, banks, training centers, and the like.

²⁹ All figures pertaining to growth in JIEC industrial estates were calculated using JIEC’s own data. In some cases, values presented in this study differ slightly from values published by the JIEC. However, these differences did not affect the analysis or recommendations in any significant way.

Table 4.1: Sahab Industrial Estate: Land Area Uptake and Tenant Occupancy

Year	New Land Area Uptake (m2)			Land Area Vacated (m2)			New Tenants			Tenants Vacated		
	Non-QIZ	QIZ	Total	Non-QIZ	QIZ	Total	Non-QIZ	QIZ	Total	Non-QIZ	QIZ	Total
1981	2,882	0	2,882	0	0	0	1	0	1	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	33,395	0	33,395	0	0	0	7	0	7	0	0	0
1984	56,898	0	56,898	0	0	0	10	0	10	0	0	0
1985	18,886	0	18,886	0	0	0	7	0	7	0	0	0
1986	61,276	0	61,276	0	0	0	10	0	10	0	0	0
1987	17,470	0	17,470	0	0	0	7	0	7	0	0	0
1988	46,581	0	46,581	0	0	0	22	0	22	0	0	0
1989	124,461	0	124,461	0	0	0	28	0	28	0	0	0
1990	56,355	0	56,355	0	0	0	22	0	22	0	0	0
1991	235,252	0	235,252	0	0	0	40	0	40	0	0	0
1992	181,690	0	181,690	0	0	0	36	0	36	0	0	0
1993	434,869	0	434,869	0	0	0	56	0	56	0	0	0
1994	199,423	0	199,423	0	0	0	29	0	29	0	0	0
1995	36,979	0	36,979	0	0	0	16	0	16	0	0	0
1996	86,666	0	86,666	3,001	0	3,001	19	0	19	0	0	0
1997	54,794	0	54,794	0	0	0	16	0	16	0	0	0
1998	22,342	0	22,342	1,849	0	1,849	15	0	15	1	0	1
1999	55,139	0	55,139	9,368	0	9,368	27	0	27	4	0	4
2000	52,202	0	52,202	72,112	0	72,112	36	0	36	19	0	19
2001	77,918	0	77,918	58,106	0	58,106	26	0	26	18	0	18
2002 (March)	7,125	0	7,125	0	0	0	1	0	1	0	0	0
Total	1,862,603	0	1,862,603	144,436	0	144,436	431	0	431	42	0	42

Net Land Area Uptake=Total New Area Uptake – Total Land Vacated: Non-QIZ: 1,718,167 m2
 QIZ: 0 m2 Total: 1,718,167 m2
 Net No. Tenants=Total New Tenants – Vacated Tenants: Non-QIZ: 389 QIZ: 0
 Total: 389

Table 4.2: Al Hassan Industrial Estate: Land Area Uptake and Tenant Occupancy

Year	New Land Area Uptake (m2)			Land Area Vacated (m2)			New Tenants			Tenants Vacated		
	Non-QIZ	QIZ	Total	Non-QIZ	QIZ	Total	Non-QIZ	QIZ	Total	Non-QIZ	QIZ	Total
1985	41,420	0	41,420	0	0	0	1	0	1	0	0	0
1991	1,584	0	1,584	0	0	0	4	0	4	0	0	0
1992	5,349	654	6,003	0	0	0	4	1	5	0	0	0
1993	1,728	0	1,729	0	0	0	3	0	3	0	0	0
1994	14,587	0	14,587	0	0	0	4	0	4	0	0	0
1995	5,668	2,278	7,946	0	0	0	7	0	7	0	0	0
1996	9,168	10,291	19,459	100	0	100	7	2	9	1	0	1
1997	18,499	6,681	25,180	0	0	0	10	1	11	0	0	0

1998	7,816	53,070	60,886	0	0	0	6	6	12	0	0	0
1999	71,991	37,870	109,861	5,880	0	5,880	11	4	15	1	0	1
2000	17,314	136,005	153,319	73,697	39,844	113,541	20	10	30	13	1	14
2001	15,296	43,599	58,895	13,883	45,026	58,909	13	3	16	7	0	7
Total	210,430	290,448	500,869	93,560	84,870	178,430	90	27	117	22	1	23

Net Land Area Uptake=Total New Area Uptake – Total Land Vacated:

Non-QIZ: 116,870 m2 QIZ: 205,578 m2 Total: 322,439 m2

Net No. Tenants=Total New Tenants – Vacated Tenants: Non-QIZ: 68 QIZ: 26 Total: 94

Table 4.3: Karak Industrial Estate: Land Area Uptake and Tenant Occupancy

Year	New Land Area Uptake (m2)			Land Area Vacated (m2)			New Tenants			Tenants Vacated		
	Non-QIZ	QIZ	Total	Non-QIZ	QIZ	Total	Non-QIZ	QIZ	Total	Non-QIZ	QIZ	Total
1999	111	0	111	0	0	0	1	0	1	0	0	0
2000	93	22,871	22,964	0	0	0	1	2	3	0	0	0
2001	431	33,428	33,859	0	0	0	5	1	6	0	0	0
Total	635	56,299	56,934	0	0	0	7	3	10	0	0	0

Net Land Area Uptake=Total New Area Uptake – Total Land Vacated:

Non-QIZ: 635 m2 QIZ: 56,299 m2 Total: 56,934 m2

Net No. Tenants=Total New Tenants – Vacated Tenants: Non-QIZ: 7 QIZ: 3 Total: 10

Summary of Serviced Industrial Land Available in Jordan

Tables 4.1 to 4.3 on the previous two pages list the number of tenants that have bought, leased, or vacated land or buildings in JIEC industrial estates since 1981, and the amount of land area used or vacated. These data were collected and calculated from JIEC's database, with the assistance and support of the JIEC staff. They were used to analyze JIEC's historical growth rates, and suggest future growth trends. The remainder of this chapter will examine the supply and demand of serviced industrial land in Jordan, and plot predictions for the future demand for industrial estate space, given the current and potential supply over the next five years.

Table 4.4 below summarizes the amount of serviced industrial land available in each of the JIEC and private industrial estates and public free zones in Jordan. These are the same industrial estates that are competitively benchmarked in Chapter 3 of this report. The study did not include individual satellite QIZ companies such as United Textile Group in the Al Qostal industrial area or Al Zey because they do not offer serviced industrial land for sale or lease. Zarqa Free Zone was included because it does offer industrial land for manufacturing

	Industrial Estate	Net Investment Area (ha) ³⁰	Used Land (ha)	Land Available for Sale/Lease (ha)	Expandable NIA (ha)
JIEC ³¹	Abdullah (Sahab) IE	187.4	171.8	15.6	0
	Al Hassan IE (QIZ)	77.6	32.2	45.4	13.1
	Hussein (Karak) IE (QIZ)	54.4	5.7	48.7	81.3
	Aqaba Int'l IE (QIZ)	43	0	43	163.7
	JIEC Total	362.4	209.7	152.7	258.1
Private	Al Tajamouat Industrial City ³² (QIZ)	14.5	8.2	6.3	8.8
	Cyber City (QIZ)	75	2.3	72.7	225
	Al Dulayl Industrial Park (QIZ)	29.3	17.1	12.2	18.8
	Al Moushata IE (QIZ)	45	0	45	255
	Gateway IE (QIZ)	45	0	45	75
	Private Total	208.8	27.6	181.2	582.6
F	Zarqa Free Zone	520	350	170	0
	Total	1,091.2	587.3	503.9	840.7

³⁰ The Net Investment Area for private industrial estates (except Al Tajamouat, where actual values were known) was estimated as 75 percent of the gross area of the respective industrial estates. Actual values, however, may differ depending on the individual industrial estate.

³¹ Figures pertaining to land availability in JIEC industrial estates were calculated using data from JIEC's database. In some cases, values presented in this study differ slightly from values published by the JIEC. However, these differences did not affect the analysis or recommendations in any significant way.

and other activities, although it only has 32 operative factories.

Table 4.4: Summary of Serviced Land Availability in Jordanian Industrial Estates

The total net investment area of serviced industrial land in Jordan is 1,091 hectares, of which almost 504 hectares remain available for sale or lease by the JIEC, private industrial estates, or Zarqa Free Zone. These data include the Aqaba International, Al Moushata, and Gateway Industrial Estates—all scheduled to open by late 2002. In the JIEC industrial estates alone, close to 153 hectares of land remain available for rent or sale—with or without construction of standard factory buildings. The ten industrial estates listed in Table 4.4 can be expanded to yield a total additional net investment area of 841 hectares, if demand for space at those sites warrants such.

What follows, is an analysis of the historical demand for serviced industrial land in Jordan, and an examination of the historical and current supply of land in JIEC and private industrial estates.

4.3: Historical Demand and Supply of Serviced Industrial Land in Jordan

The JIEC opened Jordan's first industrial estate in the Sahab area of Amman in the early 1980s. Since then, five more industrial estates have opened for investment—two under the ownership and management of JIEC, and three under private operators. Three additional IEs are currently under development, and will begin operations by the end of 2002. This section examines the historical pattern of development in Jordan's industrial estates.

Potential Demand

While offering valuable infrastructure, services, and investment security, Jordan's industrial estates have not attracted the entirety of enterprises that could *potentially* locate in a serviced industrial estate. Enterprises that typically are attracted to serviced industrial estates include the following:

- Large and medium-size industrial factories
- Warehouses and logistics companies
- Product wholesalers, packagers, and distributors
- Traders
- Offshore branch offices of companies
- Remote back office processing firms

³² Much of the industrial space leased or sold by Tajamouat is in multi-story buildings. Therefore, the total built floor space is 28.6 hectares, of which 11.8 hectares have been leased or sold.

Jordan's public and private industrial estates have historically attracted medium-size industrial factories, and some warehouses and trading operations. Most industrial enterprises in Jordan, however, are not located in industrial estates. This study did not survey companies locating in Jordan outside the IEs. However, the following estimation provides some insight to the number of enterprises that meet the profile of an industrial estate investor, but chose not to locate in a JIEC or private IE.

Factories constitute the majority of industrial estate tenants in Jordan. This study accessed Ministry of Industry and Trade (MIT) data on the number of companies registered as factories to assess the percentage that were actually located in industrial estates.

Between January 1997 and April 2002, MIT registered 3,770 "factories" in Amman, Zarqa, Irbid, and Karak. All of Jordan's operational industrial estates during that time period were located in those governorates. The AMIR Investment Realization Rate study suggests that between 50 to 75 percent of company projects in Jordan are actually realized within two years of registration.³³ Therefore, one can assume that 1,885 to 2,828 of the factory projects actually were initiated. Half or more of these would not likely fit the profile of an industrial estate investor due to the small scale of operations, retail trade associated with operations which restricted access to an industrial estate would not allow, or operations that caused environmental impacts beyond those allowed in an industrial estate. That leaves a pool of about 750 to 1,130 factories in those governorates that could have potentially considered investment in an industrial estate.

The actual number of new JIEC and private industrial estate tenants during the period 1997 to 2002 was 339. This is just 30 to 45 percent of the potential investors estimated above. When each governorate was considered separately, industrial estates in Amman (Sahab and Tajamouat) attracted between 20 and 35 percent of estimated potential investors; Al Hassan and Cyber City attracted from 75 to 100 percent of estimated potential investors in Irbid.

Uncaptured demand in of 750 to 1,130 factories in Amman, Irbid, Zarqa, and Karak could have potentially resulted in 174 to 336 hectares of land area over the five years between 1997 and 2001, or an average of 53 to 67 hectares of demanded industrial space per year.

Distribution of Actual Demand

The "actual demand" for industrial estate space in Jordan is represented by the net amount of land area rented or sold in JIEC and private industrial estates. Since the opening of the first industrial estate in the early 1980s, there has always been an adequate supply of serviced land in either a JIEC or private industrial estate to meet the needed demand for factory, warehouse, or other light industrial use space.

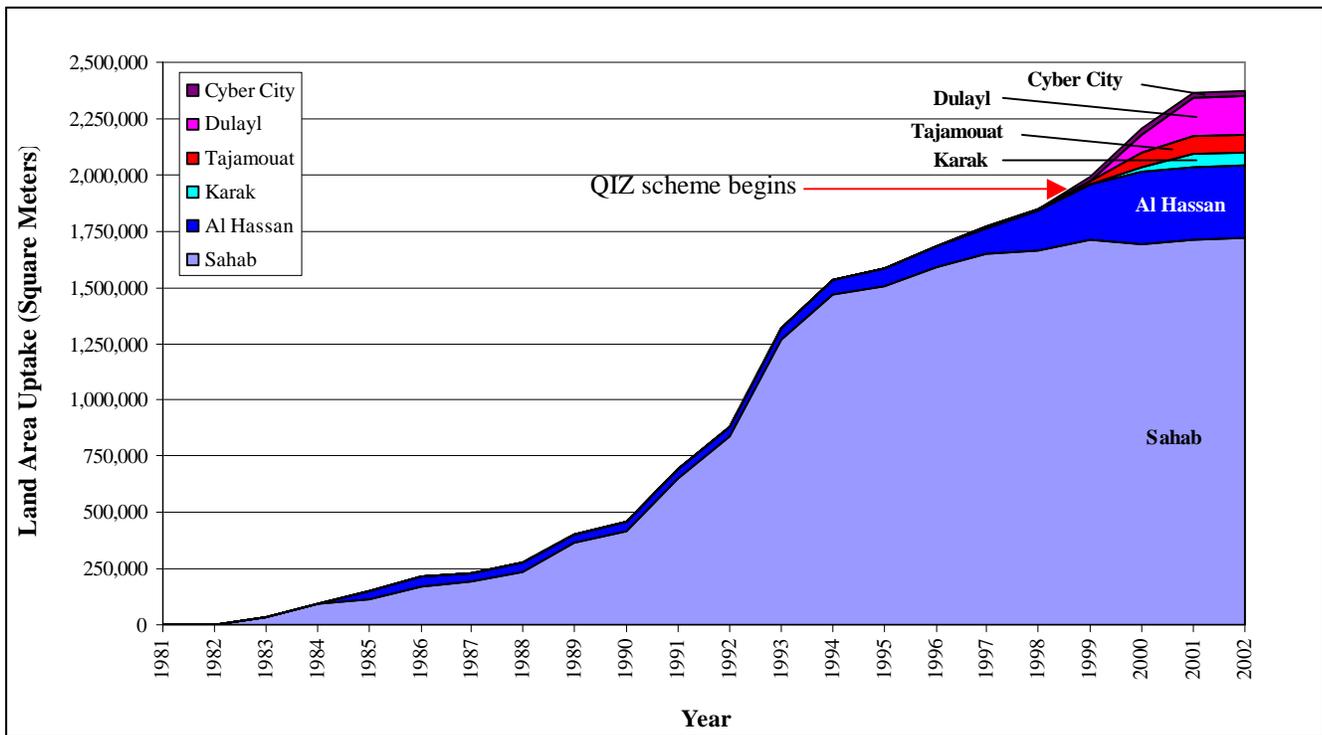
Until the opening of private IEs beginning in 1995, the JIEC was the primary developer of industrial estates in Jordan. Sahab and Al Hassan Industrial Estates absorbed the entirety of actual demand for industrial land in Jordan between 1981 and 1997. The QIZ scheme, which was inaugurated in 1998, created additional demand for serviced industrial land and

³³ "Investment Realization Analysis for the Jordan Investment Board," Deliverable for Policy Component Contract No. 278-C-00-98-0029-00. Access to Microfinance and Improved Implementation of Policy Reform (AMIR) Program, United States Agency for International Development (USAID), Jordan. April 2000.

buildings. The JIEC responded by expanding Al Hassan IE and building an additional industrial estate in Karak. During these construction operations, many QIZ companies invested in private IEs, which were able to meet the early demand for QIZ land and factory buildings 1999 and 2000.

Chart 4.4 on the next page illustrates *each* industrial estate’s *cumulative* contribution to the net land area uptake in JIEC and private industrial estates between 1981 and February 2002. “Net land area uptake” refers to the difference between newly rented or sold land or buildings, and the amount of land or buildings vacated—calculated from new and terminated contracts. The chart does not include net land area in the Zarqa Free Zone utilized for industrial factory use because data on the size of land leased to tenants on a yearly basis was not available. Nonetheless, Zarqa Free Zone should be considered a potential area for promoting industrial development.

Chart 4.4: Cumulative Net Land Area Uptake in JIEC and Private Industrial Estates



JIEC’s share of the net land area rented or sold is represented above in shades of blue; private industrial estates are exhibited in shades of red. The graph is a cumulative representation, which displays each industrial estate’s share of net land area sold or rented to investors between 1981 and March 2002. In March, there were 586 tenants occupying 237.3 hectares of land in private and JIEC industrial estates.

Four distinct growth trends can be observed in Chart 4.4. From 1981 to 1990, an annual average of 4.6 hectares of IE land or buildings were rented or sold to companies in Jordan—primarily in Sahab Industrial Estate. This amounted to about 12 new tenants per year during that time period. In contrast, the early 1990s saw an increase of capital inflow to the Kingdom, particularly from Jordanian citizens repatriated from Gulf countries. The period

from 1991 to 1994, therefore, saw a rapid inflow of capital to Sahab Industrial Estate, and total area rented or sold in IEs averaged 26.9 hectares per year. The two operational industrial estates together annually averaged about 44 new tenants during that period of rapid investment.

Overall demand for industrial estate land slowed in the mid-1990s, but growth in the Al Hassan Industrial Estate in Irbid began to increase. In the period from 1995 to 1997, an average of 26 new tenants invested annually in Sahab and Al Hassan Industrial Estates. The average annual demand for IE land and buildings during that time was 7.7 hectares.

Growth of Jordan's private industrial estate occurred primarily in response to interest in the incentives created by the Qualifying Industrial Zone (QIZ) scheme, begun in 1998. The four years between 1998 and 2002 also saw the largest net growth in Al Hassan Industrial Estate, also designated as a QIZ. During that time period, the average land area demanded by new QIZ and non-QIZ tenants in JIEC and private industrial estates was 23.1 hectares per year. However, the period was also marked by failing local companies, some of which cancelled contracts, and vacated land or buildings. Therefore, in actuality, the average *net* land area demanded by tenants in Jordanian IEs was closer to 16.5 hectares per year during the past four years. It is this growth rate that is reflected in the graph on the previous page. A more detailed breakdown of the size of land area used and vacated can be found in Tables 4.1 to 4.3 earlier in this chapter.

Investment by companies taking advantage of QIZ incentives created new demands on the quantity and quality of serviced industrial land in Jordan. For instance, QIZ tenants demand, on average, about 10,300 square meters of land area. Non-QIZ tenants, on the other hand, require an average of just 4,300 square meters.³⁴

Approximately 60 QIZ tenants are now about equally split between JIEC and private industrial estates. QIZ firms are primarily garment manufacturers, many of which seek a "plug and go" opportunity, allowing rapid start-up of operations. Industrial estates that have maintained a ready supply of standard factory buildings, such as Al Tajamouat in Amman, have benefited from investments by these "turn key" QIZ operations.

QIZ tenants have demanded higher capacity electricity supplies, and have put greater stress on an IE's wastewater treatment facility than non-QIZ tenants traditionally have. After the arrival of garment factories in Al Hassan Industrial estate, for instance, the power load per dunnum rose from 25 to 150 KVA. As a result, the 5-megawatt power station built in 1991 is now being expanded.³⁵

Supply of Industrial Estate Land

This section describes the amount of land available for rent or sale in Jordan's private and JIEC industrial estates, and documents the history of land area uptake. Charts 4.5 and 4.6 on the next page graphically represent the data presented in Tables 4.1 to 4.2 presented earlier in this chapter.

³⁴ Based on the land area, including buildings, leased or sold to tenants located in JIEC's three operational industrial estates.

³⁵ According to interview with Eng. Ishaq Al-Hijazeen, Manager of Al-Hassan Industrial Estate. February 5, 2002.

The first graph on the next page illustrates the growth in total net investment area in Jordan’s private industrial estate QIZs. The light gray area depicts the amount of land area available for rent or sale in all private IEs, and labels the points in time at which new private IEs opened. By the end of 2002—when Al Moushata and Gateway will open—there will be a total of 181.2 hectares of land available for rent or lease in Jordan’s private IEs.

The dark gray area indicates the amount of land that has actually been leased or sold in *all* private industrial estates. As of December 2001, only 27.6 hectares had been bought or rented by investors. The graph does not depict the amount of potentially expandable land area in private IEs, which totals about 583 hectares of saleable or leasable land.

Chart 4.5 on the next page depicts the supply and demand of serviced land in *all* JIEC-owned and operated industrial estates. Each successive expansion or new IE development is labeled on the graph. The amount of expandable net investment area in the existing JIEC IEs—258 hectares—is not depicted in the chart.

Chart 4.5: Supply and Demand for Serviced Land in Private Industrial Estates

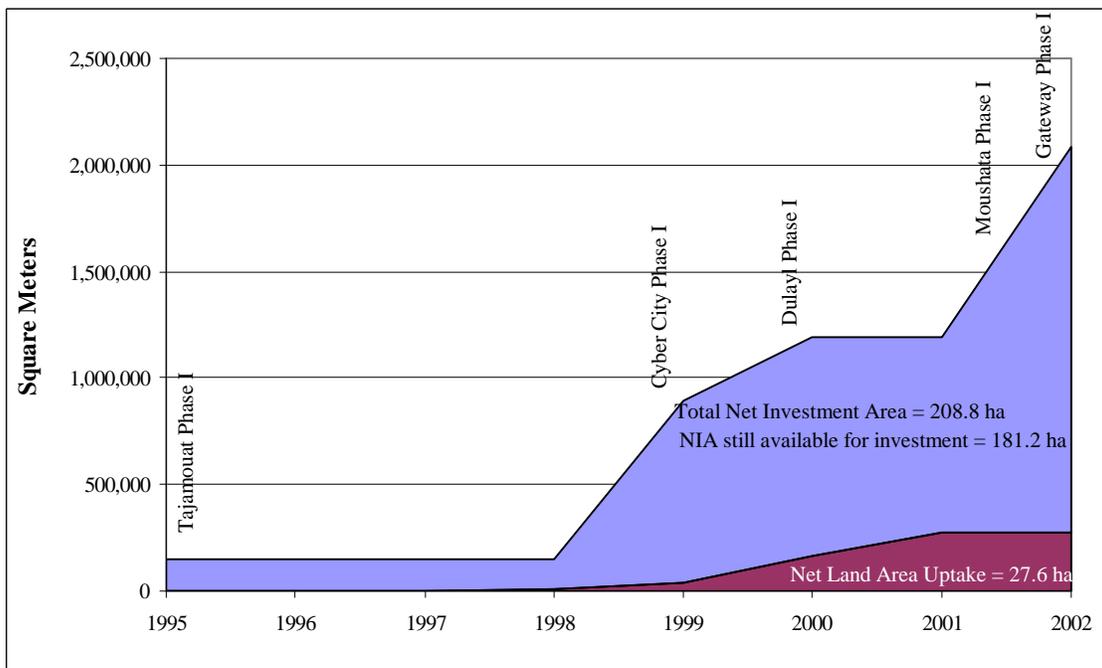
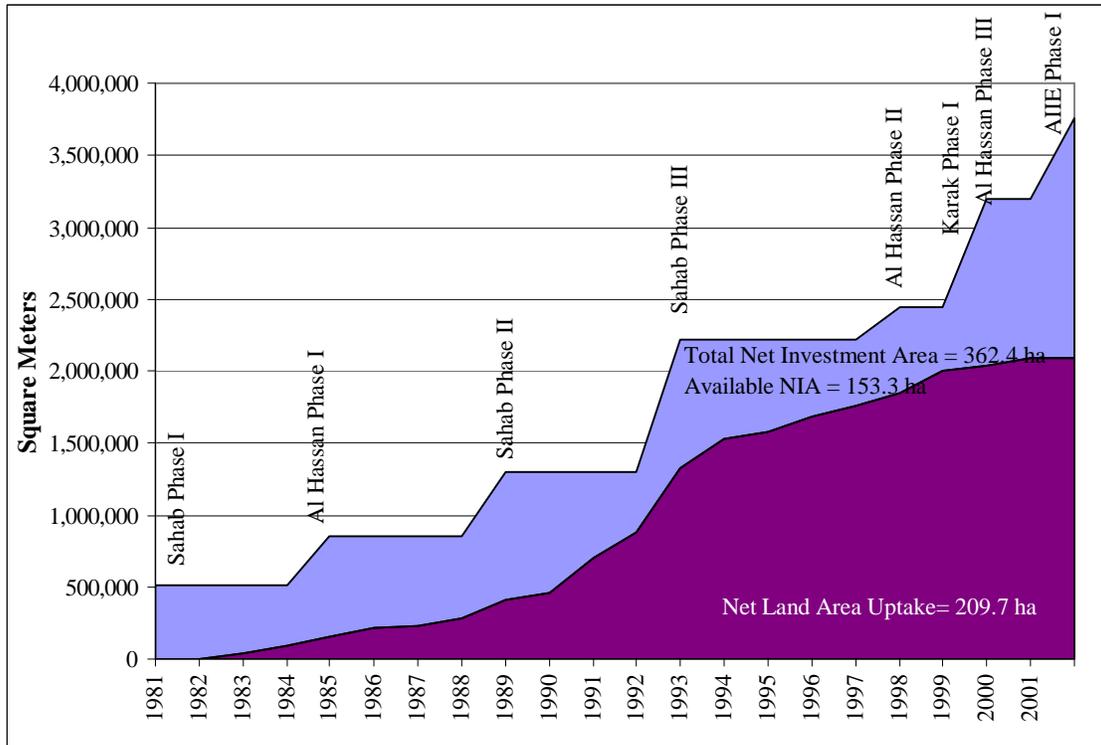


Chart 4.6: Supply and Demand for Serviced Land in JIEC Industrial Estates



The dark gray area in the Chart 4.6 above illustrates the 209.7 hectares of net land area rented or sold to investors in *all* JIEC industrial estates from 1981 to March 2002. In general, JIEC’s development and expansion have kept good pace with the demand for serviced land. Some of the expected demand for QIZ space in Al Hassan and Karak have, however, been lost to Jordan’s private QIZ industrial estates.

4.4: Growth Trends in JIEC Industrial Estates

This section examines the growth trends in each of JIEC’s three operational industrial estates, including factors that shaped growth and expansion.

Abdullah II Ibn Al Hussein (Sahab) Industrial Estate

The Abdullah II (Sahab) Industrial Estate located in Amman officially opened for investment in 1983. Most of the 187 hectare-net investment area has been sold or leased to investors, and Sahab is now effectively filled to capacity.

Chart 4.7: Sahab Industrial Estate Land Area Uptake Trend

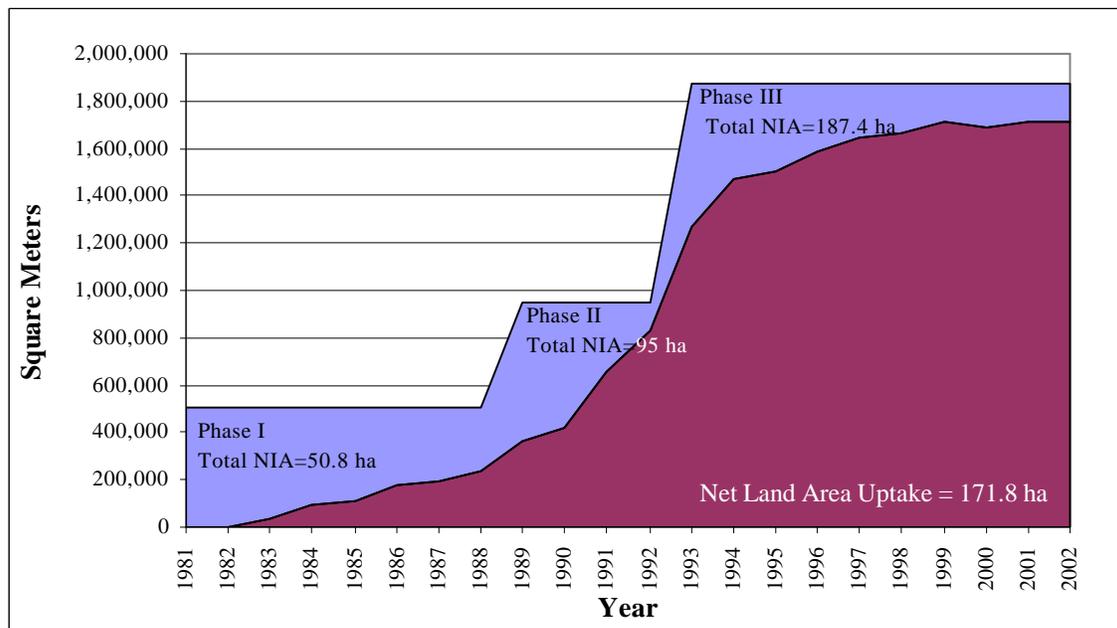


Chart 4.7 above shows the growth pattern of Sahab Industrial Estate throughout its three phases of development. Sahab’s highest growth period occurred between 1989 and 1994, with an average land area uptake of 20.5 hectares per year. An average of thirty-five tenants invested in Sahab each year during this six-year period, with many of the projects financed by capital from Jordanian citizens repatriated from Gulf countries.

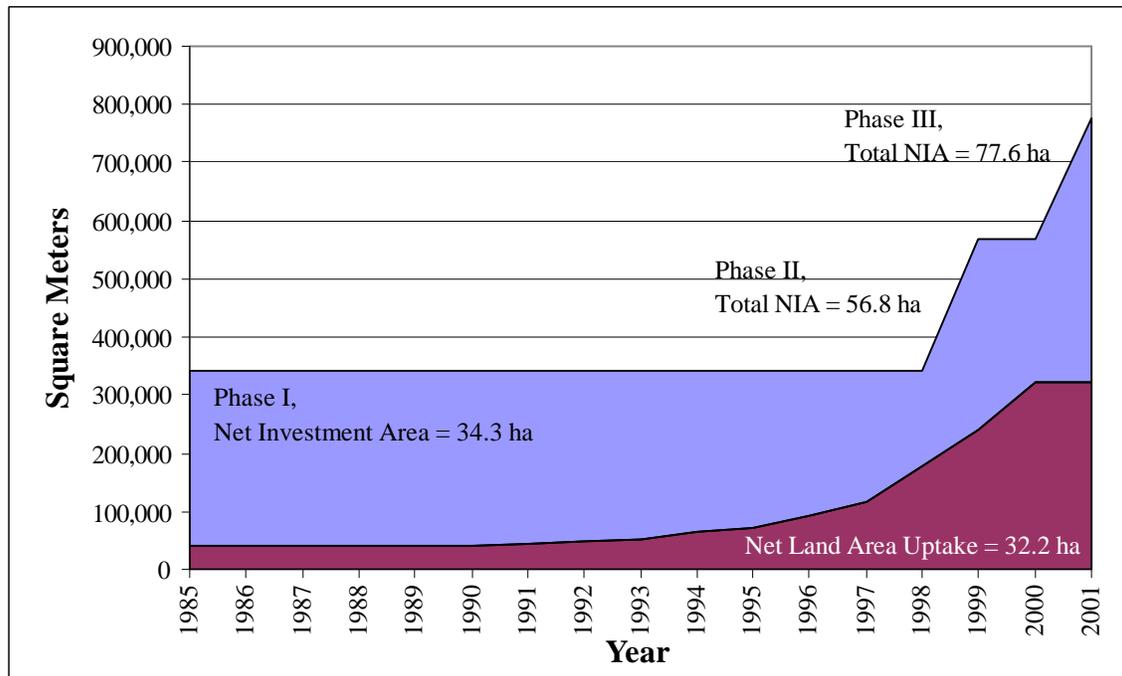
In the most recent period, net growth slowed due to vacancies created by tenants that did not renew their lease contracts. So, while an average of 24 new tenants signed contracts for land or buildings in the five years between 1997 and 2001, the average net increase in tenants was just 16 per year. Thus, new tenants demanded an additional 5.2 hectares of land per year, but vacancies in the past five years have resulted in an average net land area uptake of just 2.4 hectares per year.

Sahab IE is now essentially filled to capacity, and its demand for land and buildings—around 5.2 hectares per year—must now be channeled to other industrial estates. The privately operated Al Tajamouat and Al Moushata are the main competitors for companies that wish to site their operations in Amman.

Al Hassan Industrial Estate

The JIEC began construction on the Al Hassan Industrial Estate in Irbid during the late 1980s. At that time, the site designated for the industrial estate was already occupied by an industrial tenant. Al Hassan offered its first land and buildings to new investors in 1991. Chart 4.8 below illustrates the subsequent growth and development of Al Hassan.

Chart 4.8: Al Hassan Industrial Estate Land Area Uptake Trend



The dark gray area in the chart above illustrates the size of land and buildings that have been occupied by tenants since 1985. The light gray region depicts the total Net Investment Area (NIA) during each phase of Al Hassan’s development. ‘Net Investment Area’ refers to the land area that the industrial estate can lease or sell to investors. Al Hassan’s current NIA is 77.6 hectares, which can be expanded by about 13 additional hectares of NIA if demand would warrant such.

Al Hassan has witnessed its most rapid growth in the four years since 1998, when the industrial estate was certified as a QIZ. Since that time, QIZ companies have constituted about 43 percent of net tenants in Al Hassan. From 1998 to December 2001, new tenants have demanded an average of 9.5 hectares of land and buildings each year.

This period of growth has also been marked by economic hardships for some Al Hassan tenants, resulting in cancelled contracts for land or buildings. Thus, the average *net* land area uptake during the past four years has been 5.1 hectares per year. Forecasted demand for land and buildings in Al Hassan has not been achieved over the past two years. This is primarily due to the development of private IEs since 1998, and the addition of the JIEC’s Al Hussein Industrial Estate in Karak.

The increase in the number of large garment factories locating in Al Hassan during the past four years has put stress on Al Hassan’s wastewater treatment facilities and electrical capacity. The average electrical load per dunnun rose from 25 KVA to 150 KVA. JIEC is currently expanding Al Hassan’s 5-megawatt electrical station, built in 1991, to meet the power requirements of its new tenants, and expansion of wastewater treatment facilities is also underway.

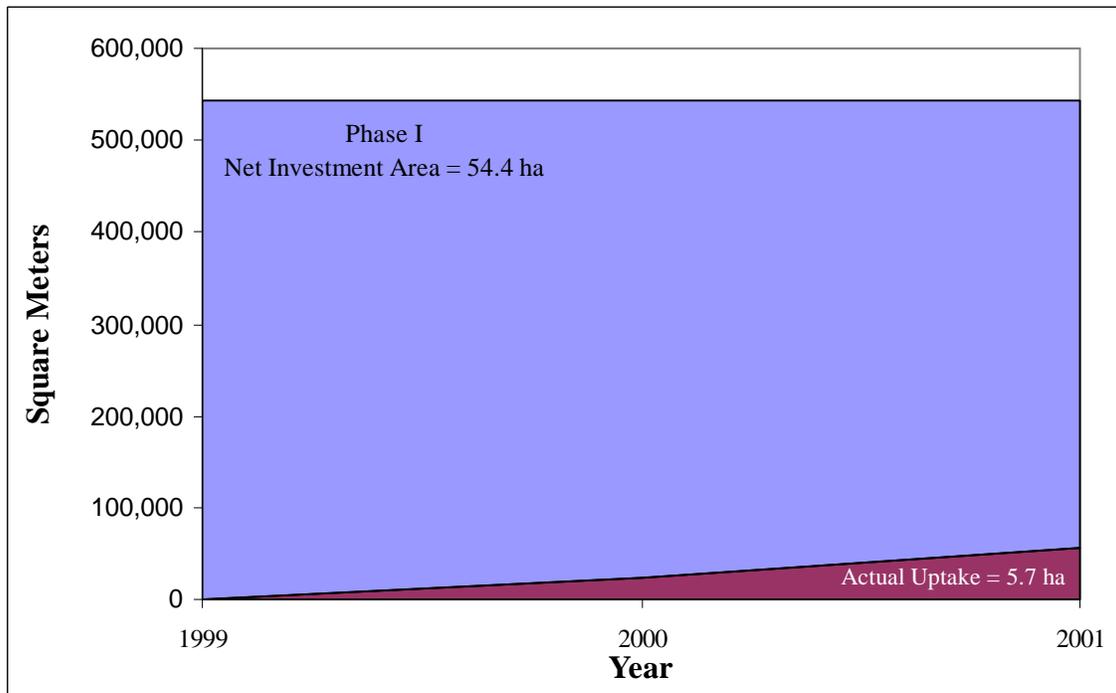
Before 1998, most of Al Hassan’s tenants were local or Arab investors. Since 1998, the IE has received more foreign companies, including those from Taiwan, China, Pakistan, the United States, Israel, and the United Kingdom. Foreign investors have found Al Hassan

attractive because of the low wages and skilled workers available in Irbid, Jordan’s secure and central location in the Middle East, QIZ scheme, flexible option to buy or lease land and buildings from the JIEC, and lower licensing costs associated with locating in a JIEC industrial estate. Local and Arab investors, on the other hand, have preferred JIEC’s Sahab and Al Hassan Industrial Estates because of because JIEC’s transparent prices and benefits are known throughout the Kingdom and region.

Al Hussein Ibn Abdullah Al Thani (Karak) Industrial Estate

Al Hussein (Karak) Industrial Estate’s 79-hectare Phase I opened as a QIZ in 2000. Currently, three garment factories have located in the IE, and have rented or bought 5.7 hectares of land and buildings. Chart 4.9 below illustrates this land area uptake with the size of Karak’s Net Investment Area (light gray region).

Chart 4.9: Karak Industrial Estate Land Area Uptake Trend



Additional new tenants in the Karak IE will include a bank, cafeteria, vocational training center, and 14.3-hectare free zone. Karak has also received numerous inquiries from garment companies in Pakistan and other Asian countries—all interested in the QIZ scheme.³⁶ Companies currently located in the industrial estate were attracted to the Karak IE for various reasons. They were drawn to the JIEC, in general, because of the flexibility to own or rent land or buildings on a fully serviced site, JIEC’s competitive prices, and customer assistance provided to them during the companies’ initial site selection process. The companies had initially inquired about space in the Al Hassan Industrial Estate. However, in 1999 and 2000,

³⁶ According to interview with Mr. Awni Yokoub, Manager, Karak Industrial Estate. February 6, 2002.

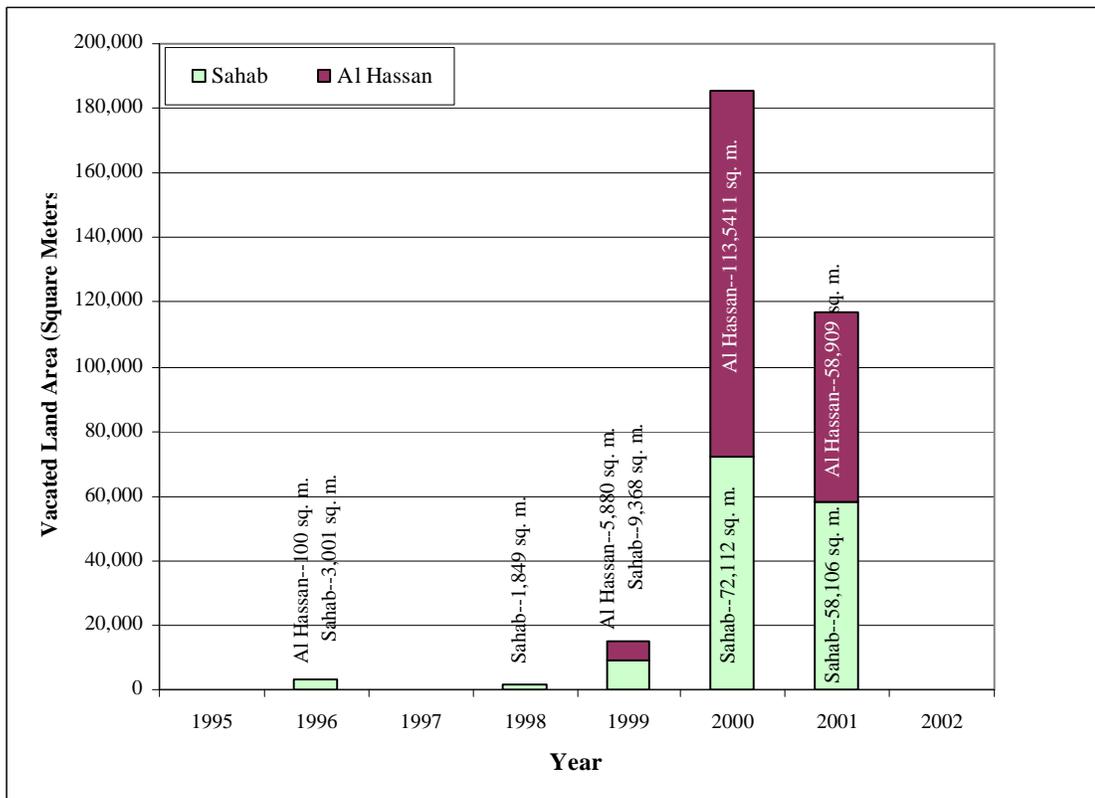
Al Hassan had little space available for large QIZ operations. Thus, the companies located in the Karak IE, and report an overall satisfaction with that choice.³⁷

4.5: Slowdown in Local Demand for Serviced Industrial Estates

This section examines a trend of disinvestment in JIEC industrial estates, especially by local Jordanian companies. The slowdown in demand for industrial estate land and buildings is accompanied by a tightening of the capital available to local industrial firms.

Disinvestment in JIEC Industrial Estates

Chart 4.10: Vacated Land in JIEC Industrial Estates



JIEC industrial estates have experienced a trend of disinvestment over the past three years. For the purposes of this study, “disinvestment” was measured as a nonrenewed contract for land or buildings, based on canceled contract data supplied by the JIEC. When a tenant did not renew its contract with the JIEC, it was considered to have “vacated” the land or buildings. A company was considered a “vacated tenant” if it canceled all of its contracts with the JIEC.

³⁷ Based on interviews with Mr. Paul Chang, General Manager, Camel Textile International Corporation; Mr. Bassam Mahadin, Human Resources Assistant Manager, Camel Textile International Corporation; and Mr. Pubudu E. Caldera, General Manager, Honorway Apparels Jordan Ltd. February 6, 2002.

Data pertaining to the size of land area vacated each year in JIEC industrial estates is provided in Tables 4.1 to 4.3 of this chapter. Chart 4.10 on the previous page graphically summarizes this disinvestment since 1995. The dark-shaded portion of the bars illustrates the amount of land area that has been vacated in Al Hassan Industrial Estate; the light gray-shaded portions are vacancies created in Sahab IE.

Local Jordanian companies struggling with financial difficulty created the majority of vacancies in Sahab and Al Hassan IEs in 2000 and 2001. Several local and Arab companies also expanded or moved operations to Egypt or other Middle Eastern countries. This study found no evidence that vacating tenants moved operations to Jordan's private industrial estates.

The disinvestment by existing tenants in Sahab and Al Hassan has slowed the net demand for serviced industrial land in JIEC industrial estates. In 2000 and 2001 combined, the net demand for land and buildings in Sahab and Al Hassan was approximately zero and 4 hectares, respectively. This comes despite the fact that companies signed new contracts for 13 hectares of land or buildings in Sahab, and 21.2 hectares in Al Hassan during those two years. Clearly, the economic downturn faced by local firms is hurting JIEC growth.

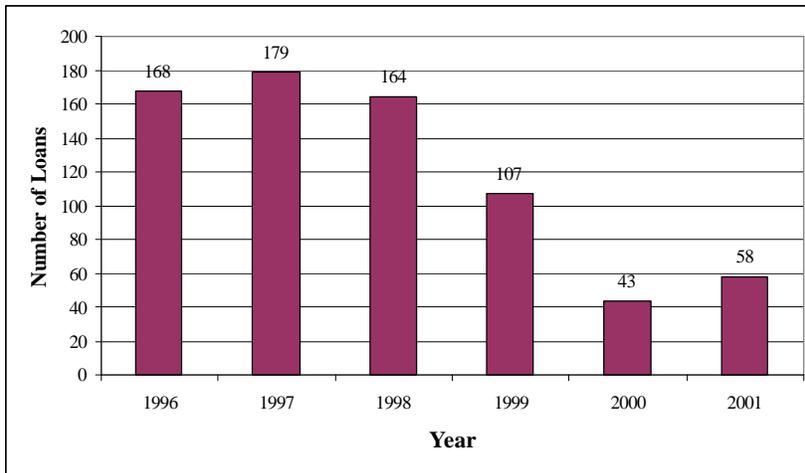
Loan Performance: Poor Economic Health of Jordanian Companies

Jordan has a decreasing amount of capital available to investors. Jordanian banks extend credit to predominately Jordanian nationals, whose ventures are impacted by the tightening of loan policies. This is impacting the ability of Jordanian entrepreneurs to invest, and has subsequently had a negative impact on the amount of land and buildings they demand in Jordan's industrial estates. This section examines loan disbursement in Jordan as evidence of the state of investment activity in the Kingdom.

Access to credit allows an investor to implement his or her venture. When access to credit is restrictive, a businessperson will either choose not to implement the project, or take the project to an alternative location where loan requirements are less restrictive. The latter option might not be viable for a local entrepreneur who seeks to sell solely to the local market. However, investors with an eye to the Middle East or international markets might be dissuaded from investing in a location with tight lending policies.

Generally all banks have reported modest economic performance and low demand for credit during the second half of the 1990s. Loan policies and control procedures of banks have all contributed to recent low lending activity. Jordanian banks presently do not offer prime lending rates in support of priority industries or geographical areas. The volume of non-performing loans has also risen over the last several years.

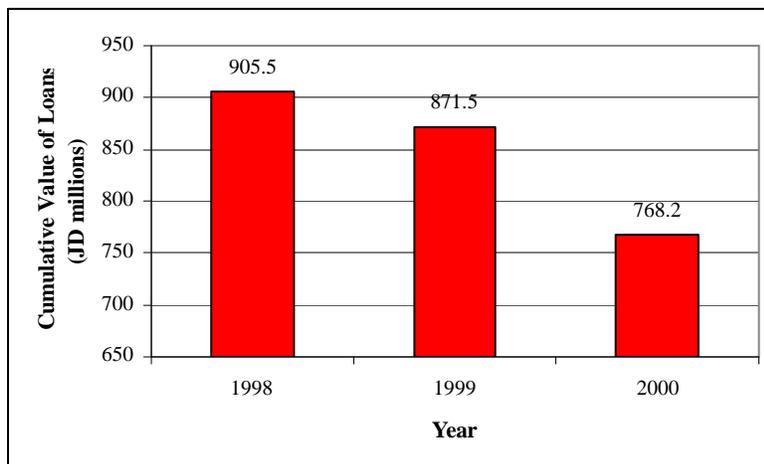
Chart 4.11: Industrial Development Bank Loan Approvals³⁸



The Industrial Development Bank (IDB) is a specialized bank extending credit, in particular, to the industrial and tourism sectors. As Chart 4.11 at the left illustrates, the number of loans the bank has approved has fallen by 65 percent over the last six years. In 1996, the IDB granted 168 loan approvals. In 2000, it granted only 43 loans. The fall in loan approvals

beginning in 1999 also corresponds with the disinvestments in JIEC industrial estates over the same period. (See Chart 4.10). A similar trend has occurred in Jordan’s commercial banks.

Chart 4.12: Commercial and Investment Bank Loans to Industry³⁹



The number of commercial bank loans to industry has also fallen in recent years. Chart 4.12 at the left shows the aggregated total value of loans disbursed by four Jordanian commercial and investment banks between 1998 and 2000. A JD 103.3 million drop in the value of credit occurred between 1999 and 2000 as all banks

began restricting credit and adopting no-risk lending policies.

Local Jordanian firms constitute the majority of tenants in Jordan’s industrial estates, and Jordanian industrialists form a large potential customer base for the JIEC. (Foreign QIZ companies would not be as likely to seek credit from a Jordanian bank.) Most bankers and investors interviewed for this study blamed the economic downturn, in part, on the September 11 attacks in the United States and recent political situation in the Palestinian Territories and Israel. However, local entrepreneurs are the least likely investors to be deterred by political instability in the region, and without proper access to credit, industrial estates’ most important customer base is weakened.

³⁸ Source: Industrial Development Bank Annual Report, 2000.

³⁹ Reflects aggregate loan disbursements in each year from the Export Finance Bank, Arab Jordan Investment Bank, Housing Bank for Trade and Finance, and Jordan Islamic Bank. Compiled from Annual Reports.

4.5: Profile of Investors in Jordan

Companies and individuals that open ventures in Jordan are not of one mold. Each differs in the markets it serves, the factors considered important for business, and sensitivity to location of the enterprise. This section discusses the profiles of five main types of investors found in Jordan.

Projections of future demand in Jordan's industrial estates will utilize these categories of investors. Table 4.13 on the next page provides a matrix summary of investor characteristics discussed in this section.

Small Local Investors

Small local investors comprise the majority of enterprises in Jordan. These locally owned businesses primarily serve the surrounding city, town, or village area. Small enterprises usually interact directly with the customers they serve, rather than operating through wholesalers or agents. Production and retail are often conducted at the same location. As such, they are extremely sensitive to the locations from which they conduct their business—preferring storefront locations in central business districts or workshops on heavily trafficked industrial roads.

Handicrafts, low-volume production, and local services typify the pursuits of small businesses in Jordan. Their activities include small craft workshops, repair services, custom tailoring, and small-scale food manufacturing. Large industrial estates usually do not attract this type of small local investors. Small local industrial estates (LIEs) have been developed in some countries to meet the needs of workshops and small-scale production. However, the presence of such sites usually does not increase investment or employment by small local investors.⁴⁰

Medium-Size Jordanian Investors

The majority of tenants in Jordanian industrial estates are medium-sized Jordanian enterprises that serve markets inside Jordan and, occasionally, surrounding countries. Because goods and services are primarily consumed domestically, little product differentiation exists between goods produced in Jordan and other Middle Eastern countries. Thus, one typically finds Syrian, Lebanese, or Saudi medium-size enterprises manufacturing the same kinds of products for their home markets. These include snack foods, plastic products, detergents, hygienic paper, and molded metal products.

Medium-size Jordanian investors generally do not consider locating outside Jordan due to the domestic focus of their operations and business contacts established within the Kingdom. Therefore, investors of this sort usually prefer locations close to business associates, and within commuting distance from their homes. The companies they establish are small to medium-size, and do not have a large in-house training capacity. They must rely on access to skilled or trained labor, typically found in Amman and Jordan's small cities.

⁴⁰ Chapter 6 of this report provides further discussion of small local industrial estates (LIEs) as an option for Jordan.

Table 4.13: Profile of Investor Types

Investor Type	Description	Example of Activities	Priority Needs	Industrial Estate Preference
Small Local Investor	Small locally owned businesses that primarily serve the surrounding town or village market area.	Small workshops Repair services Tailors Small-scale food manufacturing	Extremely location-sensitive. Must be accessible to those that purchase the goods or services. Production and retail often conducted at same location.	Do not require services of large industrial estate. Some small investors found in “local industrial units.” Presence of industrial estate does not increase investment among this group.
Medium-Size Jordanian Investor	Jordanian-owned companies that serve markets inside Jordan and surrounding countries. Generally do not consider locating outside Jordan. Majority of companies in Jordan IEs belong to this group.	Metal molding Snack foods Plastic products Paints Furniture Detergents	Prefer locations within commuting distance from home, with access to trained labor force.	Will locate in an industrial estate if it is a good value and in preferred location.
Regional Investor from Middle East	Middle East investors looking for access to the Jordanian and regional markets. Choose Jordan because of access to regional markets, quality of workforce, connections with Jordanian partners, and/or investment incentives.	Medical products Clothing Food and juices Warehousing Metal products Machinery Detergents	Prefer locations with easy access to markets companies intend to serve. Prefer location with trained labor force. Incentives important especially if locations other than Jordan were considered.	Presence, location, and quality of industrial estate could make Jordan more attractive than other locations.
Regional Investor from Outside Middle East	Large foreign companies looking for access to Middle East market. May have minimal connections in the region.	Electronics manufacturing Automotive assembly	Factor costs, labor supply, transportation, and incentives are priorities.	Attracted to industrial estates if proper infrastructure is supplied. Less sensitive about industrial estate location within Jordan as long as priority needs are met.
International Investor	Foreign companies primarily selling to markets outside Jordan or the Middle East. Have minimal connections in the region. Market access, access to raw materials, or lower operating costs than home country are primary reasons for locating in Jordan. QIZ companies belong to this group.	Fertilizer Mixing Garments Electronics Luggage Jewelry	Market access and raw materials are priorities. Factor costs, labor supply, and transportation options determine location within Jordan.	If a QIZ company, location in a QIZ industrial estate is usually mandatory. Less sensitive about industrial estate location within a country as long as priority needs are met.

Medium-size Jordanian investors will locate in an industrial estate when they feel it is a good value and in a preferred location. As stated in Section 4.3, however, it is estimated that only 35 to 40 percent of Jordanian enterprises that potentially could locate in an industrial estate actually do so.

Regional Investors from the Middle East

A “regional investor” is defined as an individual or company whose aim is to access the *regional* market. Regional investors from surrounding Middle Eastern and Gulf countries choose to locate in Jordan because of raw materials, access to desired markets, quality of the workforce, connections with Jordanian partners, and/or incentives offered for investment. Regional investors of this type account for 10 to 20 percent of investors in JIEC industrial estates.⁴¹

Products produced by Middle Eastern regional investors do not significantly differ from those manufactured by medium-size Jordanian firms. Examples of activities include manufacturing of medical products, clothing, food and juices, metal products, machinery, and detergents, and warehousing. The small size of the Jordanian market is rarely an incentive to locate in the Kingdom.

Investment incentives might attract these investors to Jordan in cases where other countries are also under consideration for the site location. Often, however, good business contacts, transparency in investment procedures, trained workforce, or access to raw materials provides the incentive for a Middle Eastern investor to locate in the Kingdom. Once within Jordan, however, an incentives package offered by a particular industrial estate or municipality might sway the investor in favor of that location—provided that the industrial estate is within easy access to markets the company intends to serve.

Regional Investors from Outside the Middle East

Several investors from outside the Middle East, Gulf, and North Africa have located in Jordan in order to serve markets in Jordan and surrounding countries. Usually they are large multinational companies, which are establishing a manufacturing, distribution, or service presence in the Middle East. Sometimes the firms form joint venture partnerships with Jordanian industrialists. Examples of their activities include automobile assembly, electronics assembly, brand name food manufacturing, and customer support and repair services for internationally branded products. These are the most difficult investors to attract to Jordan.

Factor costs, quality and quantity of labor supply, transportation options, ease of doing business, and investment incentives are all priorities for multinational companies investing in the Middle East. Jordan will typically be one of several countries visited in order to make a site location decision. Other regional competitors might include Saudi Arabia, United Arab Emirates, Egypt, and Lebanon.

⁴¹ Calculated from data supplied by the JIEC.

Jordan offers only small domestic market, so it must rely on enticements such as its central location, educated workforce, transparent policies, tax incentives, and availability of serviced industrial land as incentives to attract foreign firms. Such companies might have minimal business relationships in the Middle East. Therefore, their information and perceptions about Jordan—and other countries—will come from the news media, joint venture partners, investment promotion agencies, and free zone or industrial estate corporations.

A large company establishing operations in the Middle East would be less sensitive about an industrial estate location within Jordan, as long as overall factor costs are low, and labor, transportation, and other priority needs are met. The challenge of an industrial estate is to first sell ‘Jordan’ as a site location, with a thorough knowledge of the activity the company wishes to undertake. Investors will equate ‘Jordan’ with whatever was presented to them during the course of their own research or visit to the Kingdom.

International Investors

An ‘international investor’ is usually a company that primarily serves markets outside Jordan or the Middle East. These firms are attracted to Jordan because of its stock of particular raw materials or the access it affords to overseas markets. QIZ companies belong to this group, as do some fertilizer mixing factories. Currently, international investors of this sort constitute 10 percent of industrial estate tenants in Jordan. The proportion of international investors is increasing. They constituted about 30 percent of net tenants between 1998 and 2001.

Factor costs, labor supply, and transportation options often determine the specific location *within* Jordan where an international investor establishes its operations. Location within a QIZ industrial estate is mandatory for all investors wishing to avail of the United States market access incentives. However, QIZ companies are less sensitive about the specific location of an industrial estate as long as priority needs are met. Incentives given over and above those offered under the normal QIZ scheme might make a particular QIZ industrial estate more attractive than others. The Aqaba International Industrial Estate, which will offer all the benefits of the Aqaba Special Economic Zone, is a case in point.

4.6: Character of Investment in JIEC Industrial Estates

An examination of the character of investment in Jordan’s industrial estates is helpful in understanding the priority needs of the various groups of tenants, and predicting future demand for land or buildings by those groups. The types of investors profiled in Section 4.5 are distributed throughout Jordan’s JIEC and private industrial estates in the following proportions.

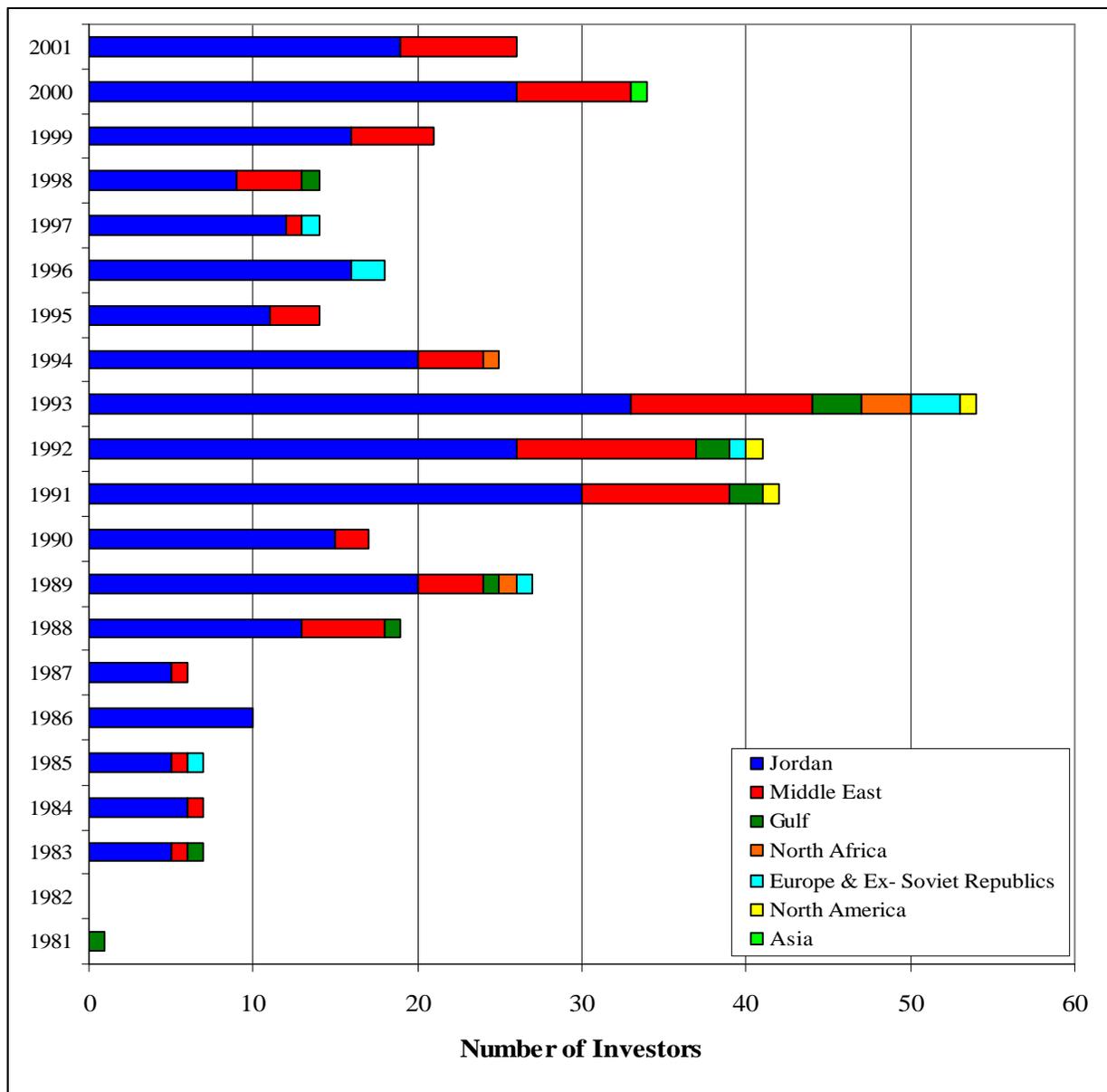
- Small local investors—0 to 2 percent
- Medium-size Jordanian investors—65 to 80 percent
- Regional investors from the Middle East, Gulf, and North Africa—10 to 20 percent
- Regional investors from outside the Middle East, Gulf, and North Africa—0 to 3 percent
- International investors—10 percent

This section examines the types of investors that have established themselves each year in JIEC’s industrial estates. The nationality and industrial or service activity of investors were documented using data supplied by the JIEC. Nationality of Investors

The study utilized JIEC’s database on the nationality of investors in its industrial estates. An ‘investor’ was defined as an individual who contributed to the registered capital of the project at the time of signing a contract for land or buildings with the JIEC. It was possible for a project to have more than one investor.

Chart 4.14 below displays the nationality of investors in Sahab since it opened in the early 1980s. The majority of investors in Sahab Industrial Estate have been Jordanian companies selling to local and/or regional markets. Investors from the Middle East⁴², shown below in red, have accounted for about 20 percent of total investors in. In the early-1990s, there was

Chart 4.14: Nationality of New Investors in Sahab Industrial Estate



an increase in investment from throughout the Middle East, particularly Iraq and the Palestinian Territories. The number of Iraqi investors in Sahab also climbed in the late 1990s with the slight opening of Iraq to trade in humanitarian goods.

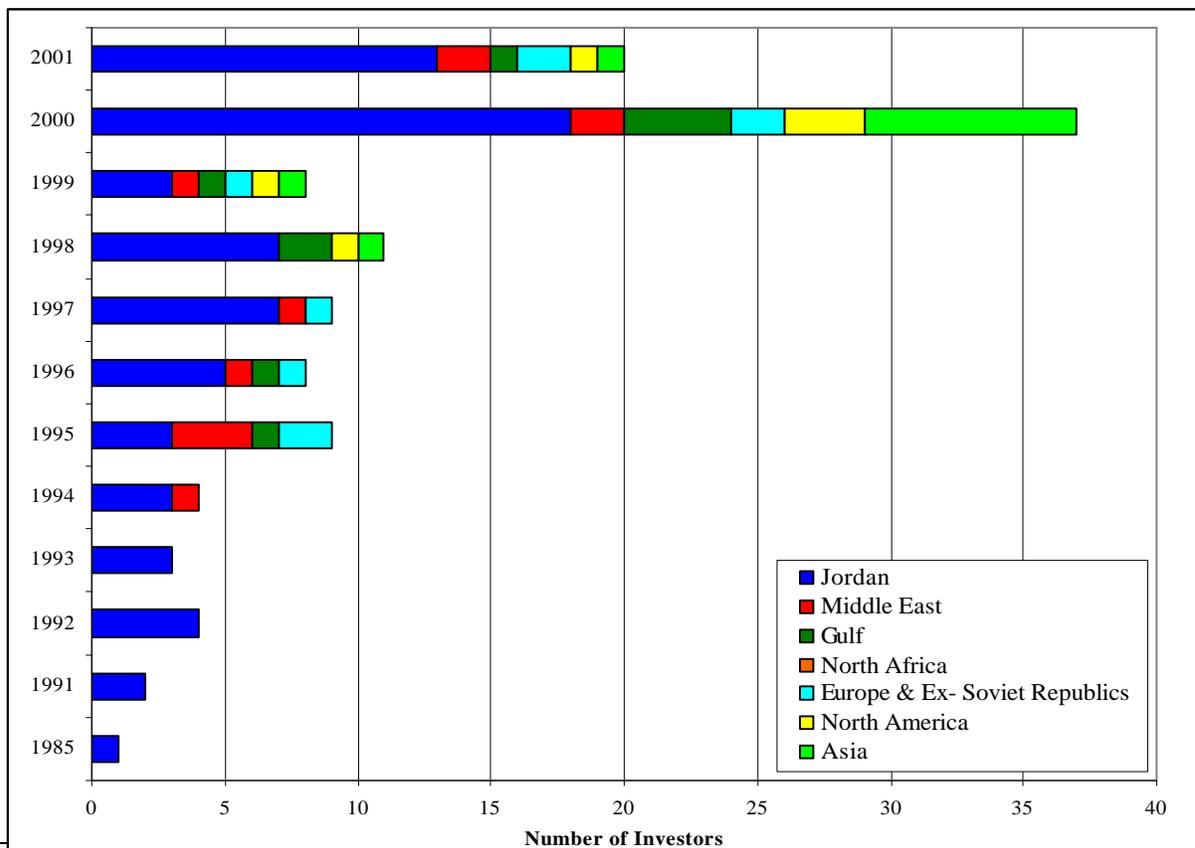
In general, the investor profile of the Sahab IE can be summarized as follows:

- Small local investors—0 to 1 percent
- Medium-size Jordanian investors—75 to 80 percent
- Regional investors from Middle East, Gulf, and North Africa—20 percent
- Regional investors from outside Middle East, Gulf, and North Africa—3 percent
- International investors—0 to 1 percent

On the other hand, the profile of Al Hassan investors reflects more investment from outside Jordan and the Middle East. Chart 4.15 below illustrates the nationalities that have invested since 1985.

- Small local investors—0 percent
- Medium-size Jordanian investors—50 percent
- Regional investors from Middle East, Gulf, and North Africa—11 percent
- Regional investors from outside Middle East, Gulf, and North Africa—5 percent
- International investors—34 percent

Chart 4.15: Nationality of New Investors in Al Hassan Industrial Estate



⁴² In Charts 4.14 and 4.15, “Middle East” refers to the following countries: Turkey, Lebanon, Syria, Israel, Palestinian Territories, Iraq, and Iran.

number of new tenants investing in a particular sector each year can yield important clues about future direction of investment—and demand for serviced industrial land.

Sahab Industrial Estate has a broad mix of tenants, about 70 percent of which are Jordanian companies producing products or services for the domestic market. This is reflected in the types of activities found in the industrial estate. Chart 4.16 on the previous page illustrates the sectors in which new Sahab tenants have started operations each year. The chart does not reflect tenants that have vacated operations over the past several years.

Throughout its history, Sahab has attracted an unspecialized mix of companies producing chemicals, garments, footwear, food, beverages, plastics, and furniture. The spike in “Services” (shown in light blue) in 2000 was due to the establishment of additional kiosks throughout the industrial estate.

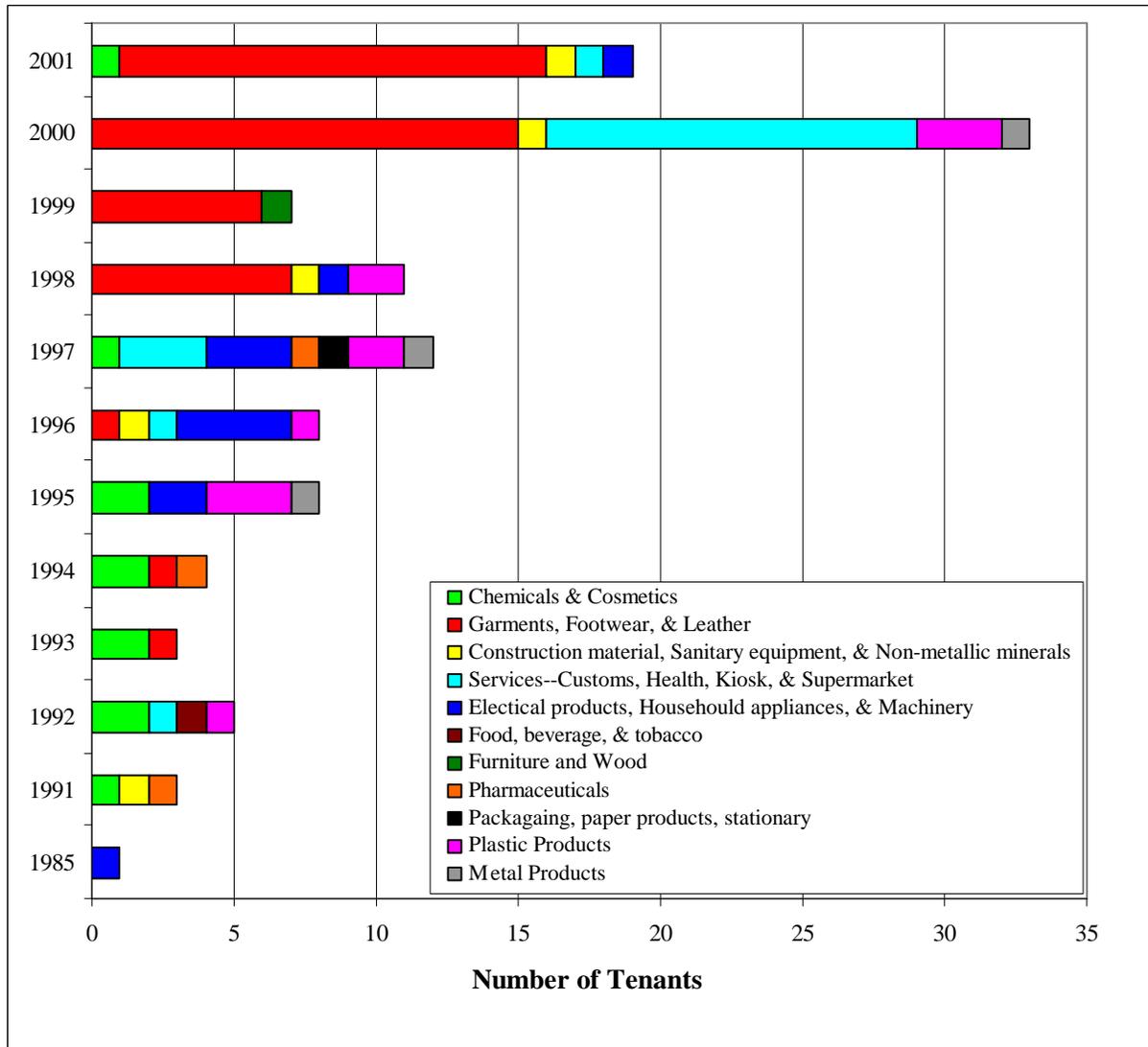
Few tenants in Sahab manufacture products that have a specialized advantage over other producers in the region. As Jordan lowers its regional and international barriers to trade, increasing competition will weaken some Sahab companies. Similarly, a drop in demand for Jordanian-made products could dissuade some Jordanians from starting new ventures, or could potentially force investors into more competitive sectors. Currently, however, no sector-based incentives or special lines of credit are made available to Jordanian entrepreneurs by the government or banks. Though few in number, those tenants that produce pharmaceuticals, medical supplies, and certain food and chemical products are involved in expanding sectors in which Jordan does have a comparative advantage over competitors in neighboring countries.

Fully occupied industrial estates such as Sahab generally do not reflect new investment trends. An examination of the tenants in Al Hassan Industrial Estate, however, reveals a trend toward international interest in Jordan’s garment sector. Chart 4.17 on the next page illustrates the sectors in which new tenants invested each year between 1985 and 2001. The chart does not reflect tenants who have vacated their operations during the past few years.

During the first five years of operation, investment in Al Hassan followed much the same pattern as in Sahab IE. Jordanian entrepreneurs started ventures in chemicals, food products, garments, plastics, and pharmaceuticals. In the mid-1990s, several European investors established operations in Al Hassan in order to sell into the Jordanian, Syrian, and Israeli markets. These firms manufactured plastics, garments, and metal products. Investment in electronics also increased during the mid-1990s, predominately by Jordanian investors for sale to the domestic and Middle Eastern markets.

The last four years were marked by increased investment from North America and Asia, almost exclusively in the garment sector (shown below in red.) Investment in this sector peaked in 2000, and is expected to plateau in the near term. Note that the large increase in the number of ‘Services’ tenants in 2000 reflects the establishment of additional kiosks throughout the industrial estate, and not actual investment by companies in the services sector.

Chart 4.17: Activities of New Tenants in Al Hassan Industrial Estate



Section 4.7: Middle East Investment Trends

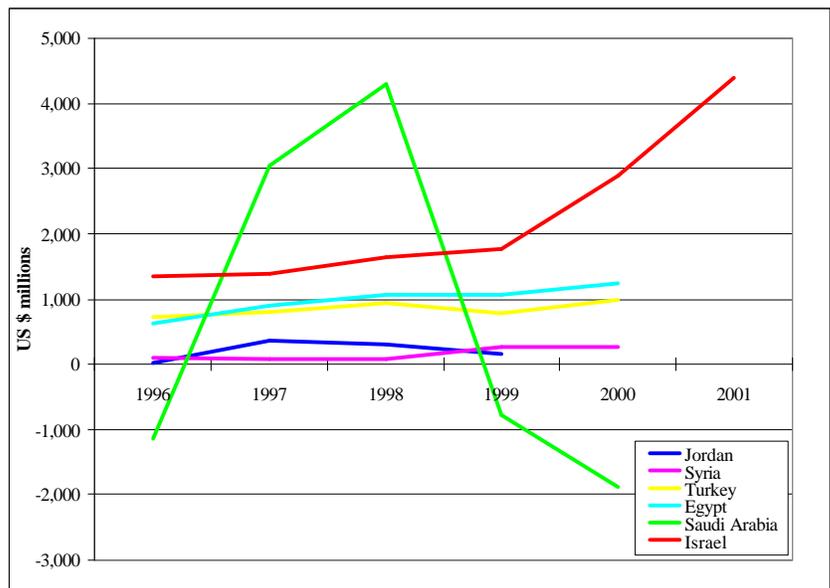
Demand for serviced industrial estates in Jordan is affected by regional investment trends. Examination of foreign direct investment flows and the demand for land and buildings in other regional industrial estates suggests that foreign investment in the Middle East has been generally stagnant over the last few years. Egypt, Turkey, and the United Arab Emirates have emerged as the primary manufacturing platforms to serve the regional economy, with Jordan receiving only a minute share of this type of investment. Should such trends continue, Jordan will not see a substantial increase in industrial estate demand from non-Jordanian investors over the next five years.

Foreign Direct Investment Flows to the Middle East

Foreign direct investment (FDI) to Jordan is very small, even in comparison to other Middle East countries. This is reflected in the fact that local investors generate most of the demand for land and buildings in Jordanian industrial estates. The International Monetary Fund normally defines FDI as an investment of 10 percent or more in a company by a foreign person or enterprise. It does not include small portfolio investments of less than 10 percent. Chart 4.18 below graphs net FDI flows in all sectors to six Middle East countries between 1996 and 2001.

Foreign direct investment rose slightly in all countries except Jordan and Saudi Arabia from 1996 to 1999. FDI flows to Saudi Arabia (shown in green) are subject to pro-cyclical investment reactions to oil prices. Net FDI flows to the Saudi manufacturing sector, however, have generally remained flat. Annual net investment flows to Jordan (shown in dark blue) in all sectors fell from about US\$ 361 million in 1997 to US\$ 158 million in 1999. Direct investment flows to Israel (shown in red) more than doubled between 1999 and 2001.

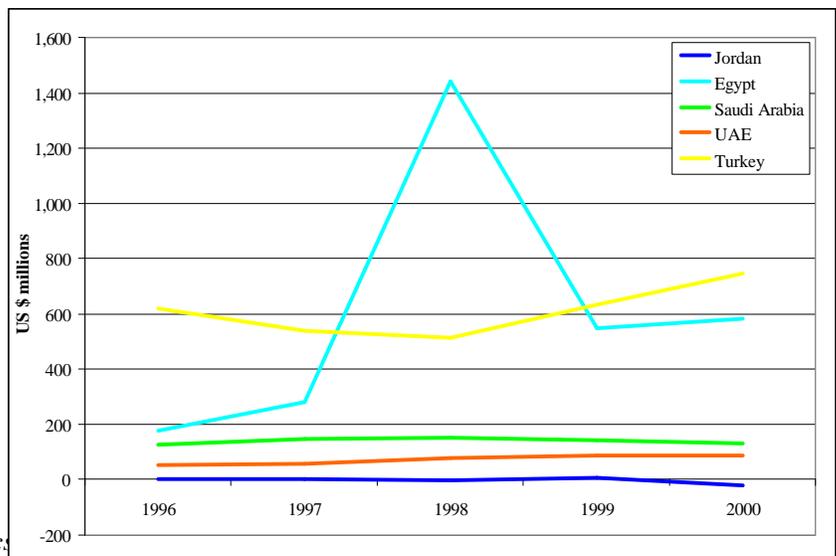
Chart 4.18: Net FDI Inflows to Middle East Countries⁴³



American investment in Israel’s electronics sector accounts for approximately two-thirds of total net FDI to the country in all years examined above.

Overall FDI flows are useful for gauging the overall health and attractiveness of the region’s economies. Demand for space in industrial estates, however, might be more accurately reflected in FDI in the region’s manufacturing sector. Chart 4.19 at the right presents the net flows of U.S. direct investment in the manufacturing sectors of Jordan and its Middle East competitors. Such sector-specific data was not available for

Chart 4.19: Net Flows of U.S. Direct Investment to Middle East, Manufacturing Sector⁴⁴



⁴³ Source: *International Financial Statistics*.

⁴⁴ Source: Bureau of Economic Analysis, U.S. Department of Commerce, April 2002.

manufacturing FDI flows from European or Gulf countries.

Jordan (shown in dark blue) has a negligible share of direct U.S. manufacturing investment, and the Kingdom even experienced US\$ 20 million net dis-investment in 2000. Similarly, Syria and Lebanon (not shown) also received little or no U.S. manufacturing FDI during the late 1990s.

Data on manufacturing investment suggest that American firms are using Turkey and Egypt as their primary manufacturing platforms to serve Middle East markets. This, of course, is spurred by the fact that both countries have considerably sized domestic markets themselves. Net flows of American investment to Turkey and Egypt (shown in yellow and light blue in Chart 4.19) increased overall between 1996 and 2000.

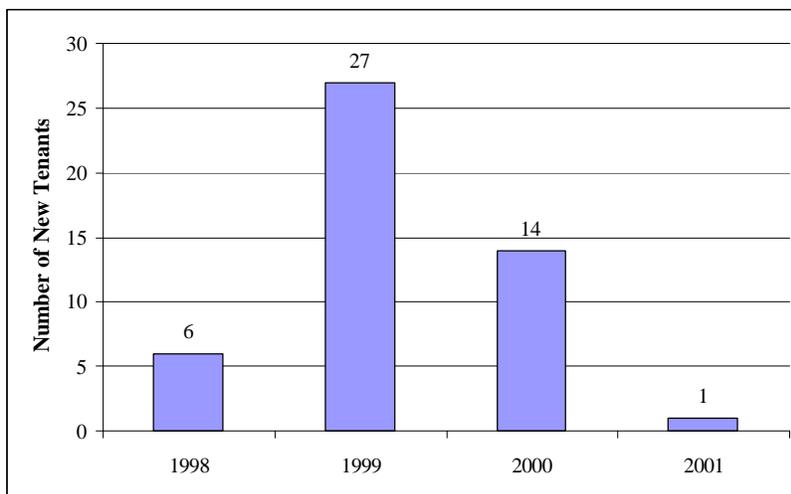
Annual manufacturing investment flows to oil-rich Gulf countries remained consistently low during the late 1990s. In 2000, Saudi Arabia (shown in green) received net flows of US\$ 132 million, while American nationals invested about US \$ 90 million in manufacturing operations in the UAE (shown in orange).

Investment in Middle East Industrial Estates

The quantity and character of investment in Middle East industrial estates can yield clues about regional trends, which could have an impact on demand in Jordan over the next five years. Growth patterns in three of the industrial estates compared in Chapter 3 are described below.

Investment in all Jordanian industrial estates netted an average of 50 new tenants per year between 1998 and 2001. About 30 percent of tenants were international investors taking advantage of quota and duty-free exports to the United States through the QIZ scheme. The majority of new tenants were Jordanian investors serving domestic and regional markets. Facing economic difficulties, domestic investors had the greatest incidence of disinvestments in JIEC industrial estates. Sections 4.3 and 4.4 of this chapter highlight these trends in detail.

Chart 4.20: Gaza Industrial Estate New Tenants, 1998-2001⁴⁵ Anecdotal evidence from manufacturers and Jordanian officials alike suggests that the recent political situation in the region will have a moderately negative impact on investment in Jordan’s industrial estates.



One garment manufacturer, for example, scaled back to half its capacity when orders were cancelled after the September 11th attacks in the United States. Further political tensions could also hurt regional markets, upon which

⁴⁵ Source: Palestinian Industrial Estates and Free Zone Authority

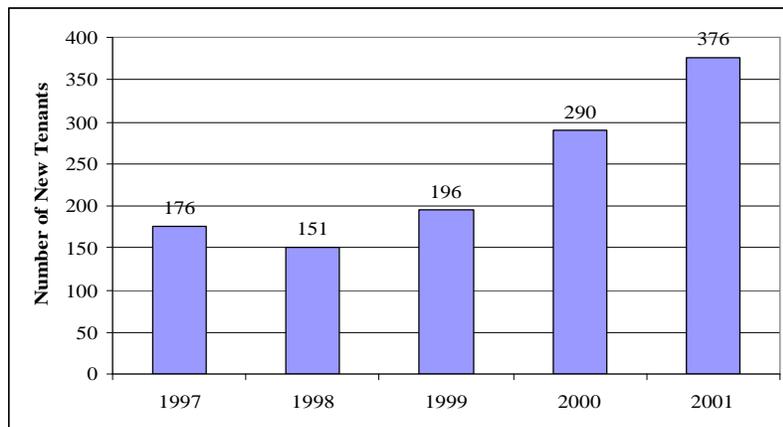
domestic producers depend.

A recent decrease in the numbers of new tenants in the Gaza Industrial Estate (GIE) highlights the effect that the recent political situation has had on investment in the Palestinian Territories. As Chart 4.20 illustrates on the previous page, only one new tenant invested in the GIE last year—down from a high of 27 new tenants in 1999.

Gaza represents an extreme case, not likely replicated in Jordan’s industrial estates. The effects of the neighboring political unrest on Jordan will be twofold. Firstly, regional perceptions shape investors’ site selection decisions. Though Jordan remains free from civil and international unrest, current regional politics will deter some non-Middle Eastern investors from considering investment in the Middle East at this time. Investment of this type currently accounts for no more than 13 percent of investors in Jordan’s industrial estates.

Secondly, however, Jordan’s reputation as a stable country in the region will attract the investment of some who want to remain in the Middle East, or who have decided that viable business opportunities exist for their sector in the region. This includes some Israeli businesspersons, who, because of political instability in their own country, see Jordan as a low-cost and relatively stable investment environment. Of the 11 investors who have already signed contracts for the Gateway Industrial Park, seven are Israeli ventures that will produce garments, medical equipment, and jewelry.⁴⁶ The Aqaba International Industrial Estate also has the potential to create the same type of cross-border synergies.

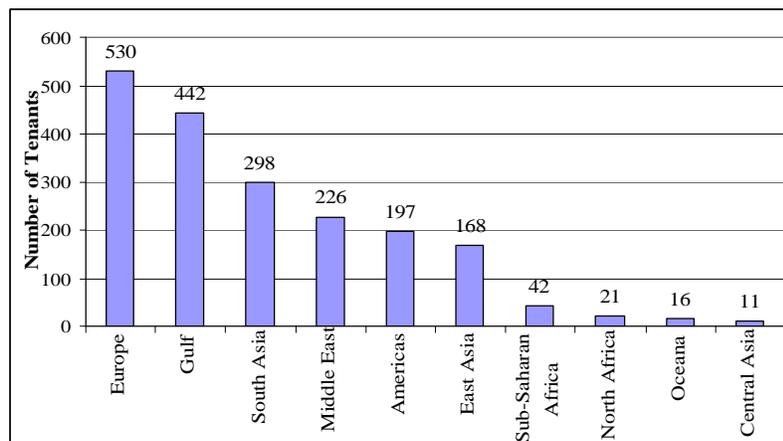
Chart 4.21: Jebel Ali Free Zone New Tenants, 1997-2001⁴⁷



The growth patterns in other regional industrial estates, however, do not reflect the same dire situation seen in the Gaza Industrial Estate. Turkey’s Aegean Free Zone, which draws predominately Turkish investment, has attracted about 23 new tenants each year since 1999.

Jebel Ali Free Zone in Dubai, attracts an increasing number of new tenants each year. Chart 4.21 displays the number of new companies each year since 1997. Eighty percent conduct trading activities, and 16 percent operate industrial enterprises. The trend reflects the expanding interest that investors have in serving the broad Middle East market.

Chart 4.22: Jebel Ali Free Zone Tenants, February 2002⁴⁸

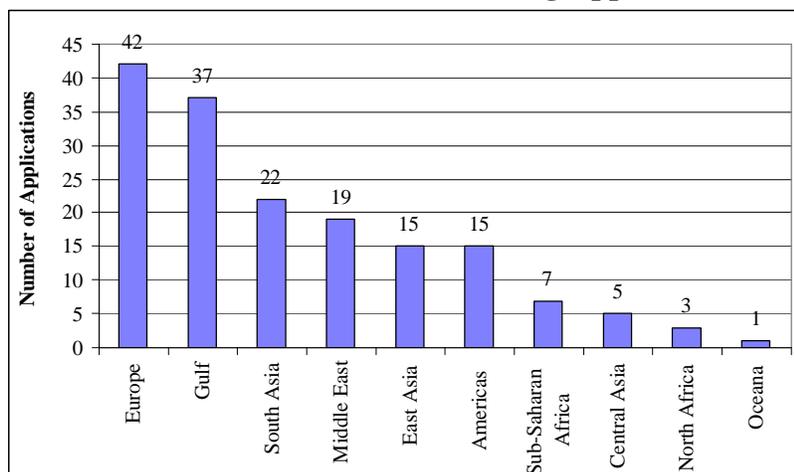


Source: Jebel Ali Free Zone Directory

Company for Multi-Projects, March

(Only about 10 percent of companies in Jebel Ali cater to the local market in the UAE.) Jebel Ali is an attractive location for non-Arab investment, particularly from Europe and South Asia. Chart 4.22 at the left shows the number of companies from each region currently located in the Jebel Ali Free Zone.

Chart 4.23: Jebel Ali Free Zone Pending Applications, February 2002⁴⁹



Interest from foreign investors remains strong, despite the heightened political uncertainty in the region. The number of new applications for space in the free zone, as of February 2002, is displayed in the chart at the left. As with current tenants, 80 percent of the Jebel Ali's new applicants are interested in utilizing the zone for ventures in the trading sector. Jebel Ali is well suited for traders

because of its world-class port facilities, stable political environment, and transparent investment atmosphere. The steady interest in the zone, however, is met with higher operating costs than Jordan (See Chapter 3). Jebel Ali Free Zone continues to grow despite higher costs primarily because of the quality of life it offers to investors. Industrial estates in Jordan, particularly the AIIE, could be poised to capture some investment from Jebel Ali with a targeted promotion campaign highlighting Jordan's lower costs and quality living standards.

There exists a potential opportunity to attract some of the continued interest in Middle East trading activities to Aqaba. The likelihood of this would arise if Aqaba provided reduced transport costs over Jebel Ali for a particular trader. Possibilities also exist for current Jebel Ali companies to expand their traditional trading operations to include value-added product assembly. Lower labor, land, and building costs in Jordan's industrial estates could attract this type of investment.

4.8: Effects of Trade Liberalization on Industrial Investment in Jordan

Jordan has undertaken trade liberalization commitments that will potentially impact demand for investment in the Kingdom. This section examines these agreements and how they might affect business decisions to locate in Jordan's industrial estates.

Jordan's trade commitments include signed agreements with three regions—Greater Arab Free Trade Area, European Union, and European Free Trade Association countries—and bilateral free trade agreements with several Arab countries and the United States. Table 4.24 on the next page summarizes these agreements, and their trade liberalization schedules.

⁴⁹ Source: Jebel Ali Free Zone Authority

Table 4.24: Jordan's Trade Liberalization Commitments

Agreement	Countries	Date Effective	Liberalization Schedule	Size of 2000 Trade (JD)
European Free Trade Association (EFTA) Agreement	Iceland Liechtenstein Norway Switzerland	January 1, 2002	Progressive liberalization in most sectors over 12 years. (2014) All industrial products originating in Jordan benefit from free trade beginning January 1, 2002. "Jordanian" origin can be conferred on content from Egypt, Palestinian Territories, and Israel	Imports Approx. 44,000,000 Exports Approx. 753,000
Jordan-Europe Association Agreement	European Union	May 1, 2002	Progressive liberalization over 12 years. (2014) All industrial products originating in Jordan benefitted from free trade beginning May 1, 2002.	Imports 1,027,196,098 Exports 59,528,860
Greater Arab Free Trade Area (AFTA) Agreement	Syria, Lebanon, Iraq United Arab Emirates Bahrain, Oman, Sudan Qatar, Saudi Arabia, Kuwait, Morocco Tunisia, Egypt, Libya	2007 (Negotiations under-way to expedite full implementation of free trade by 2005.)	Agreement does not allow free trade in goods with certificates of origin from "free zones."	Imports 763,032,512 Exports 458,118,972
Jordan-US Free Trade Agreement (FTA) Agreement	United States	January 1, 2001	Progressive liberalization over 10 years. (January 1, 2011) Free Trade by January 1, 2003 Machinery and parts Pharmaceuticals Appliances rs Refrigerators/freeze Furniture Soaps garments Non-woven polish Shoe/furniture Pumps Fertilizers Aluminum/lead waste Metal wire Medical instruments Orthopedic appliances Free Trade by January 1, 2005 Blankets and sacks Synthetic yarn Bath tubs and sinks Jewelry Aluminum products Vehicle parts Hand tools Kitchenware Paints TV receivers Optical fibers Desks and cabinets <u>Free Trade by January 1, 2007</u> Suits and overcoats Juices Glazed ceramics Natural fiber yarn Animal feed	Imports 321,982,016 Exports 47, 270,398

Effects of Liberalized Trade with Europe

Industrial products from Jordan may now be imported to European Union and European Free Trade Association countries without tariff. The volume of such exports amounted to JD 60.3 million in 2000.⁵⁰ Jordanian enterprises that sell significant volumes to Europe will feel the immediate effects of liberalization, if their firms benefit from increased sales to European countries. Over the next ten years, however, Jordanian companies that produce goods that compete with European imports might lose market share as tariffs on European products become progressively liberalized.

Over the next two or three years, Gulf companies that want to enter or expand the European market might find it profitable to use Jordan as a production platform. This would require a concerted effort, however, to educate the Gulf business community on the specific benefits to their enterprises of the trade agreements with Europe.

It is possible, but unlikely, that European companies would expand or move operations to Jordan for the sole purpose of exporting goods back to Europe. Locating in low-cost East European countries might be more attractive than Jordan because of faster goods shipment, cheaper transportation options, and common language and business practices. As East European countries graduate to greater value-added production, however, there might be opportunities for Jordan to attract some of the simpler assembly operations over the next two to five years. This will only occur with proper identification and targeted promotion to the firms that could benefit.

Effects of Liberalized Trade with Arab Countries

Trade between all members of the Greater Arab Free Trade Area (AFTA) will be liberalized in 2007. Currently, there is very little intra-industry trade among countries of the region. With little specialization, companies in each country produce a mix of plastics, food products, detergents, metal products, and furniture to satisfy local domestic demand. Free trade will increase the competition between similar products from other Arab countries. In the medium term, some Jordanian companies will benefit due to efficient production and superior products. The business of others, however, might suffer if buyer preferences switch to imported Arab products.

Under the agreement foreign companies could freely serve the regional market from any one of the AFTA member countries. Jordan's industrial estates could attract investment of this sort if the costs of production—including transportation, fiscal incentives, and labor—were lower than in competing countries. As discussed in Chapter 3, Jordanian labor is less costly than labor in most regional competitor countries, except Egypt. The cost of serviced industrial land and buildings are also competitive with regional countries. Saudi Arabia is the exception. However, average port charges from Aqaba are generally higher than Jebel Ali, Jeddah, or Port Said.

AFTA does not allow free trade in goods with a certificate of origin from a "free zone." This could limit the Arab export potential of products produced in Jordan's free zones or the Aqaba Special Economic Zone (ASEZ) including the Aqaba International Industrial Estate.

⁵⁰ Calculated from Jordan Department of Statistics, Yearly External Trade Flows

To circumvent this problem, Jebel Ali Free Zone issues its manufacturers and traders certificates of origin from Dubai. These are honored discriminately at the Saudi border, with tariffs levied on some shipments, but not others. It remains too early to assess whether products produced in the ASEZ would be treated in a similar manner. ASEZA is currently considering a duty-addback mechanism as part of its certificate of origin so that goods produced in the zone may be exported to AFTA countries.

Effects of Liberalized Trade with the United States

Trade with the United States—both imports and exports—will be liberalized over a period of ten years. The liberalization schedule of major categories of products is listed in Table 4.24 on the previous page. Many of these products already enjoy duty-free access to the U.S. market through the QIZ scheme.

Unlike the QIZ scheme, the free trade agreement will not require specific content requirements from Israel. This is good news for companies that have found such requirements expensive, burdensome, or otherwise overly restrictive to their entrepreneurial options. Though investment in garment manufacturing has plateaued, the free trade agreement might spawn increased interest in that and other sectors—particularly after the liberalization of various classes of products in 2003 and 2005.

The Jordan-U.S. Free Trade Agreement will not restrict the location of manufacturers to QIZ-designated industrial estates. This will free companies to locate anywhere within the Kingdom. While good for overall investment in Jordan, it could hurt some Jordanian industrial estates that were established for the sole purpose of attracting QIZ tenants. A concerted effort must be made by the JIEC to ensure that manufacturing enterprises are attracted to its industrial estates.

High transportation costs would likely dissuade American companies from relocating in Jordan for the sole purpose of serving the U.S. market. However, a possibility exists for Jordan to attract domestic and Middle East investors, which would locate in Jordan to take advantage of its free trade with the United States. The largest demand for industrial estate land or buildings from this group would occur from late-2003 to 2006, as the largest segments of products become duty-free.

Taking Advantage of “Missed Opportunities”

Labor in Jordan remains competitively priced compared with wage rates in Israel, Saudi Arabia, and the United Arab Emirates. (Section 3.5 of Chapter 3 discusses this competitiveness in detail.) Companies throughout the world often seek to expand operations or move to countries that offer lower wages, particularly if productivity and worker education is high.

Jordan is once such country that has the potential to attract corporate relocation in certain sectors. It would be useful, therefore, for the JIEC to *predict* the sectors that have potential to expand or relocate to industrial estates in Jordan. An examination of trade flows provides some very useful clues about which industries to target.

Israel, Saudi Arabia, and the UAE all export products to the North America⁵¹ and Western Europe.⁵² This study examined the exports of these in ‘dynamic’ sectors—those commodities in which North America and Western Europe are demanding an increasingly greater number of imports. In some ‘dynamic’ sectors, exports to North America or Western Europe fell between 1994 and 1998, even though demand for the products continued to increase. These are called “Missed Opportunities.”

The reason for the decline in exports of ‘dynamic’ products partially lies in the rising cost of producing those commodities in Israel, Saudi Arabia, or the United Arab Emirates. Manufacturers are either disinvesting in those unprofitable sectors, or specializing in higher value-added products in which the country maintains a competitive advantage. Therein lies an opportunity for Jordan—utilizing its *free trade* opportunities with the United States and Europe—to capture receding investment in certain sectors of neighboring countries.

Table 4.25 on the next page displays calculations derived from trade data between 1994 and 1998.⁵³ Column 3 shows the commodities in which Israel, Saudi Arabia, and the UAE experienced a decreasing share of the North American or Western European market in that specific ‘dynamic’ product.⁵⁴ Columns 4, 5, and 6 show the size and variation of the countries’ market share in those products. The last column suggests which “Missed Opportunities” Jordan is best suited to attract based on its current capacity and trade liberalization commitments over the next one to three years. In the three to seven-year medium term, Jordan could attract additional sectors from neighboring countries if it enhances its capacity in certain areas. These sectors are also noted in the last column of Table 4.25.

Many of the sectors seem obvious candidates for investment in Jordan—garments, knitted fabrics, spices, and the like. However, the above trade flow analysis points to *specific* products and countries where Jordanian industrial estates can promote their low costs and market access opportunities. Further research could yield the specific companies in Israel, Saudi Arabia, and UAE that are ripe for expansion or relocation. It is precisely *this* type of targeted identification and promotion that the JIEC and other industrial estate developers and managers must conduct in order to *create* new opportunities from Jordan’s free trade agreements.

⁵¹ ‘North America’ includes Canada and the United States.

⁵² ‘Western Europe’ includes Austria, Denmark, France, Greece, Ireland, Netherlands, Portugal, Sweden, United Kingdom, Belgium/Luxembourg, Finland, Germany, Iceland, Italy, Norway, Spain, and Switzerland.

⁵³ Calculations made from the CAN2000 Database and Software for Competitiveness Analysis of Nations, Economic Commission for Latin America and the Caribbean (ECLAC), World Bank. Database provides trade flows only through 1998.

⁵⁴ A ‘dynamic product’ is a product for which a country is increasingly demanding a greater quantity of imports.

Chart 4.25: “Missed Opportunities”: Declines in Market Share of Israel, Saudi Arabia, and UAE on the North American and Western European Markets

M. k€	Export Country	Commodities	Market Share			Best Prospects for Jordan to Capture Demand
			1994	1998	Variation	
North America	Israel	Nitrogen function compounds	2.11	1.71	-19.35	Sectors of Existing Capacity Underwear Made-up textile articles Knitted or crocheted garments Knitted or crocheted fabrics
		Underwear	1.64	1.59	-3.22	
		Aircraft and associated equipment	1.95	1.50	-23.26	
		Made-up textile articles (ie. curtains)	1.51	1.41	-6.97	
		Knitted or crocheted garments	1.72	1.17	-31.85	
		Knitted or crocheted fabrics	1.36	1.11	-18.05	
		Crude vegetable materials	1.21	1.09	-10.51	
	Saudi Arabia	Special transactions and commodities	0.23	0.20	-11.40	Sector where Capacity Enhancement Needed Aircraft equipment
		NEC Textile yarn	0.20	0.03	-72.30	
	UAE	Knitted or crocheted underwear Knitted or crocheted garments Perfumes and cosmetics Lead Made-up textile articles (ie. curtains)	0.33	0.24	-25.62	Sectors of Existing Capacity Knitted or crocheted underwear Knitted or crocheted garments Made-up textile articles Cosmetics
			0.29	0.22	-24.94	
			0.21	0.16	-22.85	
0.58			0.10	-83.39		
0.29			0.10	-66.96		
Western Europe	Israel	Printing and bookbinding machinery	1.67	1.10	-34.34	Sectors of Existing Capacity Knitted or crocheted underwear Knitted or crocheted fabrics Knitted or crocheted garments Heating and cooling equipment
		Knitted or crocheted underwear	1.06	0.87	-18.02	
		Heating and cooling equipment	0.76	0.67	-12.18	
		Knitted or crocheted fabrics	0.68	0.22	-60.23	
		Knitted or crocheted garments	0.58	0.23	-60.23	
	Saudi Arabia	Natural gas	1.32	0.95	-27.61	None
		Precious metal ore	1.86	0.70	-62.51	
		Electric power machinery	0.54	0.32	-40.44	
	UAE	Knitted or crocheted underwear Sliver, platinum, and other platinum metals Measuring and controlling instruments Spices	1.10	0.73	-33.14	Sectors of Existing Capacity Knitted or crocheted underwear Spices
			0.68	0.36	-47.00	
			0.22	0.21	-4.81	
			0.26	0.12	-53.79	
	Sector where Capacity Enhancement Needed Measuring and controlling instruments					

4.9: Projections of Demand for Land in Jordanian Industrial Estates

The preceding sections of this chapter described the growth patterns of Jordan’s industrial estates, and highlighted some of the important factors that contribute to that growth. This section will present projections for the future demand for land and buildings in Jordan’s JIEC and private industrial estates. Chart 4.26 below illustrates the three demand projections that this section discusses.

Chart 4.26: Projections of Demand for Land in Jordanian Industrial Estates

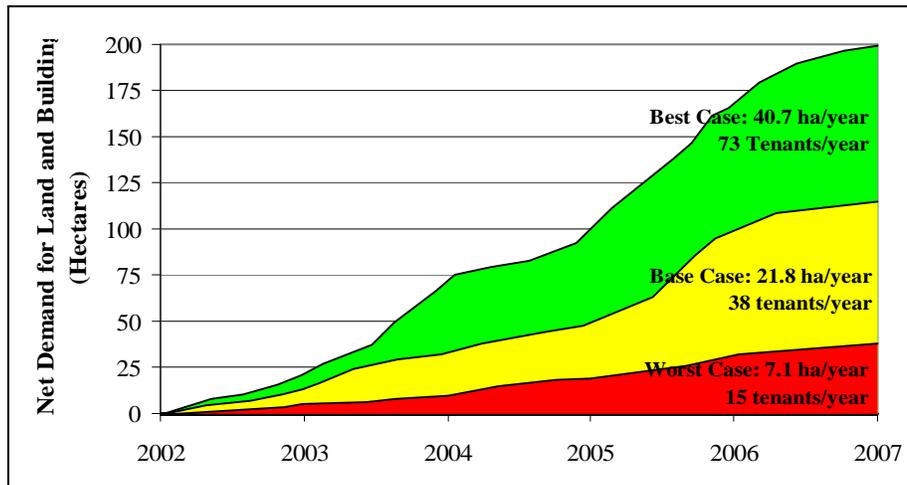


Table 4.27 on the next page summarizes three scenarios for future demand for serviced land and buildings in Jordan’s JIEC and private industrial estates over the next five years. The size of land area demanded each year was calculated based on the likely profile of investors under each scenario. JIEC data was used to calculate the average size of land and buildings demanded by each type of investor, as follows:

- Medium-size Jordanian investor: 4,000 square meters
- Middle East regional investor: 4,200 square meters
- Non-Middle East regional investor: 4,500 square meters
- International investor: 10,300 square meters

The total land area demanded by each scenario over the next five years is 35 hectares (Worst Case), 110 hectares (Base Case), and 205 hectares (Best Case). As summarized in Table 4.4, Jordan’s industrial estates currently have over 500 hectares of land or buildings available for sale or lease—enough to absorb the demand under any of the three scenarios described below.

Base Case Scenario

The most likely scenario assumes that Jordan will remain a stable and relatively lower-risk location to invest in the Middle East. Sanctions against Iraq will continue to limit the ability of Jordanian companies to fully serve that sizable market. Continued, but waning, political tensions in Israel and the Palestinian Territories will slightly weaken the regional economy, and cause hesitation among investors to consider locating in the Middle East. Access to credit from Jordanian banks will continue to pose problems for domestic entrepreneurs, resulting in fewer local ventures.

Table 4.27: Scenarios for Industrial Estate Demand from 2002 to 2007

Scenario	Net Increase in Tenants per Year	Net Land Area Demanded per Year (ha)	Profile of Investors Under Scenario	Likely Scenario Conditions
Worst Case	14	7	Medium-Size Jordanian (80%): 10 net tenants Mid-East Regional (15%): 3 net tenants Non-Mid-East Regional (0%): 0 net tenants International (5%): 1 net tenant	<ul style="list-style-type: none"> Regional war, such as a military invasion of Iraq Domestic and regional recession resulting in disinvestments and IE vacancies If Jordan itself remains stable, it will continue to attract some investment from the Middle East. Companies from outside Middle East will hesitate to invest in region.
Base Case	40	22	Medium-Size Jordanian (43%): 17 net tenants Mid-East Regional (27%): 11 net tenants Non-Mid-East Regional (10%): 4 net tenant International (20%): 8 new tenants	<ul style="list-style-type: none"> Some regional political tensions Some failing Jordanian factories Moderate interest in QIZ scheme Little targeted promotion to take advantage of opportunities posed by free trade agreements Stagnant foreign investment in Middle East.
Best Case	73	41	Medium-Size Jordanian (47%): 35 net tenants Mid-East Regional (21%): 15 net tenants Non-Mid-East Regional (11%): 8 net tenants International (21%): 15 net tenants	<ul style="list-style-type: none"> Regional stability Targeted promotion to 'International' investors Greater number of companies creating regional presence in Jordan Arab and non-Arab investors expanding or relocate to Jordan to take advantage of European and U.S. market access opportunities. Increased health of Jordanian companies More companies locating <i>inside</i> Jordanian industrial estates.

Interest in the QIZ scheme will continue in the 'Base Case', but not at the same pace it grew between 1999 and 2001. (See Box 4.28 on the next page.) In the first four years of the QIZ scheme, moderate marketing efforts were all that was required to attract investors. This 'Base Case' assumes that the JIEC, JIB, and ASEZA will continue their moderate promotion of Jordan's industrial estate opportunities domestically and abroad. However, this scenario assumes that their marketing efforts will not aggressively target the types of companies that could best benefit from Jordan's market access agreements with the Europe, U.S. and Gulf countries.

In the 'Base Case', an average net increase of 40 tenants will demand 22 hectares of land or buildings each year in Jordanian industrial estates. This Base Case scenario takes into consideration the current rate at which failing factories are vacating Jordan's industrial

estates. It also assumes that some Jordanian companies will lose market share to Arab competitors when tariffs are lifted between countries in 2005 or 2007.

Worst Case Scenario

Military incursions into Iraq or a spillover of the Israel-Palestinian conflict into Jordan would yield a 'Worst Case' scenario for industrial estate growth. The political uncertainty would dissuade both international and regional investors from considering new projects in the Middle East. However, if Jordan remains politically stable throughout a regional conflict, it could continue to attract small amounts of investment from neighboring countries.

It is likely that regional aggression would cause some companies to pull their investments out of Jordan. In the Worst Case scenario, Jordan's industrial estates would likely attract a net of just 14 tenants each year. This translates to a demand of just 7 hectares per year, split between JIEC and private industrial estates.

Box 4.28: QIZ Investment Plateau

QIZ Investment Plateau: Changes in the International Garment Industry

The QIZ scheme attracted about 60 new tenants to Jordan's industrial estates between 1998 and 2001. Companies attracted to Jordan because of QIZ opportunities have constituted the vast majority of 'International' investors in Jordan's industrial estates. Interest in the QIZ scheme, however, has plateaued over the past eighteen months.

Some of the waning interest in QIZs can be attributed to recent political instability in the region. On the other hand, the international garment industry, which constitutes the bulk of Jordan's 'International' investors, is undergoing changes that affect its own location and investment decisions.

First, the Multi-Fibre Agreement (MFA), which assigns quotas to countries' garment exports, will expire in 2005. Unrestricted by quotas, many garment manufacturers will be free to move close to the retail markets to which they sell. Thus, companies will more likely take advantage of investment opportunities in Caribbean and Central American countries in order to access the U.S. market. Some speculate, however, that another trade-restrictive agreement will replace the MFA in the future.

Second, there has become vertical integration throughout the garment industry. Large clothing retailers, such as Wal-Mart in the U.S., are increasingly owning their supply chains or not allowing subcontracting by their selected manufacturers. This is closing many of the smaller garment operations and curtailing new start-up ventures. Thus, while Jordan will continue to receive a piece of the garment industry, the universe of manufacturers is growing smaller.

estate. This includes larger corporations, which currently do not locate in Jordan's IEs.

Access to credit has recently made it difficult for companies to start new ventures or survive the recent economic downturn. Al Moushata Industrial Estate will assist investors locating in

Best Case Scenario

The 'Best Case' scenario projects an average net increase of 73 industrial estate tenants each year over the next five years. These investors will demand, on average, 41 additional hectares in Jordan's JIEC and private industrial estates. Regional stability alone, however, will not ensure that Jordan's industrial estates achieve this 'Best Case' demand projection.

Greater numbers of Jordanian entrepreneurs must locate or maintain operations in Jordan's industrial estates. Regional stability would surely boost local industries by lending strength to the national and regional economies. However, the JIEC and private industrial estate operators must ensure that greater numbers, and types, of enterprises choose to locate within a serviced industrial

its IE in obtaining flexible financing arrangements through relationships Al Moushata has with local lending institutions. Lowering the minimum capital requirement for investing in an IE is another way to attract and maintain the medium-size Jordanian investors that constitute the bulk of tenants in JIEC industrial estates.

The 'Best Case' scenario envisions a greater number of companies creating a regional presence in Jordan, as well as Arab and non-Arab investors expanding or relocating to Jordan to take advantage of European and U.S. market access opportunities. This will only be possible if the JIEC, ASEZA, JIB, and other promoters specifically target the types of investors that can best benefit from Jordan's free trade commitments with Europe, the United States, and Gulf countries.

Although investment in the QIZ scheme has plateaued (See Box 4.28 on the previous page), the potential opportunities for 'International' investors has grown with the signing of recent agreements. Jordan's industrial estates will see very little of this potential, however, unless they undertake a very selective targeting process. Section 4.8 of this chapter described one such manner in which industries in neighboring countries could be selected to take advantage of Jordan's market access opportunities.

4.10: Growth Projections for JIEC Industrial Estates

Five-year Projections for Jordan's overall industrial estate demand were presented in the previous section. The demand for land and buildings will be split between JIEC and Jordan's private industrial estates. JIEC's ability to capture a share of that investment will depend on the cost of renting or buying JIEC land or buildings, the quality of customer service, and availability of land and building in locations demanded by various types of investors. This section describes the growth potential in Al Hassan, Karak, and Aqaba International Industrial Estates.

Al Hassan Industrial Estate

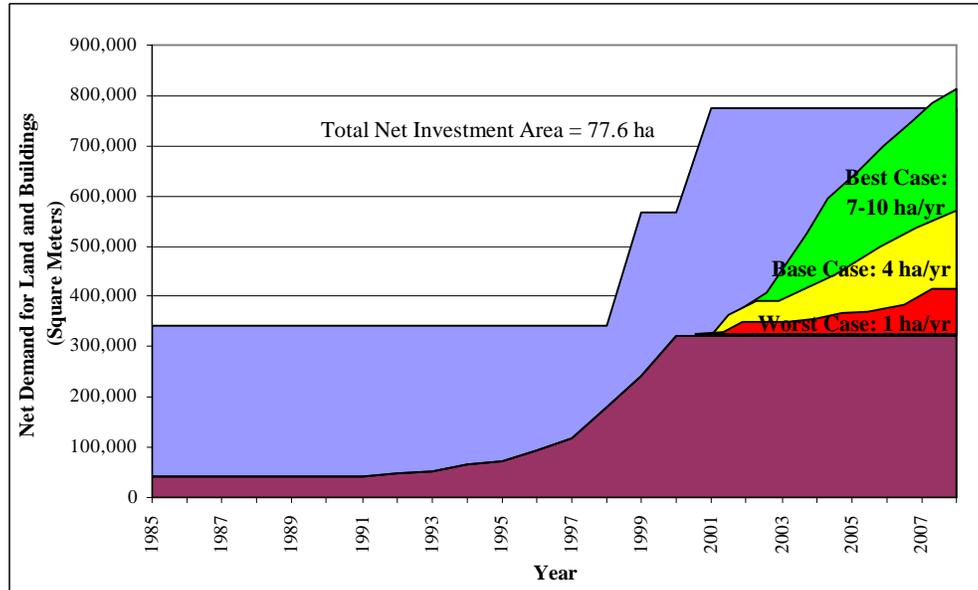
Demand for land and buildings in the Al Hassan Industrial Estate experienced an average net increase of 5.1 hectares each year between 1998 and 2001. Forecasted demand for land and buildings in Al Hassan has not been achieved over the past two years. This is primarily due to the development of private industrial estates, which have also obtained QIZ classification. Gateway, Al Moushata, Al Tajamouat, and Al Dulayl Industrial Parks will continue to compete with Al Hassan, especially for 'International' investors. Al Hassan's three potential future growth scenarios, illustrated in Chart 4.29, assumes the effects of this increased competition. Unlike Al Dulayl and Gateway IEs, however, Al Hassan's location near Jordan's urban and industrial centers, Al Hassan is attractive to both domestic and foreign investors.

Base Case Scenario

Al Hassan would experience an average net demand of 4 hectares each year under the 'Base Case' scenario. There are actually two conditions under which this scenario would occur. First, if Jordan's overall industrial estate demand remains moderate, Al Hassan could achieve its 'Base Case' growth if no additional industrial estates are constructed that would dilute

demand for land and buildings in Al Hassan. If more industrial estates are constructed, however, Al Hassan might only achieve its ‘Base Case’ growth with a large increase in Jordan’s overall industrial estate demand. This would occur with greater targeted promotion, and lowering the amount of capital required to invest in JIEC industrial estates.

4.29: Growth Projections for Al Hassan Industrial Estate



Worst Case Scenario

Al Hassan’s ‘Worst Case’ scenario would reflect a severe downturn in the overall demand for serviced industrial land in Jordan. This is likely in the event of a regional military confrontation, such as an invasion of Iraq. Under this scenario, investors would demand only one hectare of land each year. This amounts to just one ‘International’ investor, or 2 to 4 ‘Medium-size Jordanian’ investors each year.

Best Case

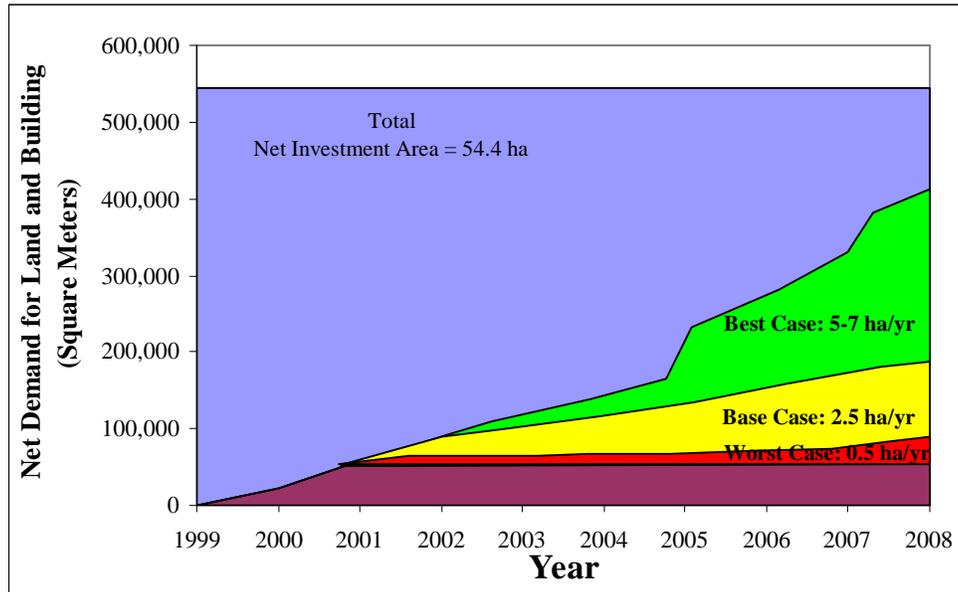
Abdullah (Sahab) Industrial Estate in Amman is currently filled to capacity. Over the past five years, new Sahab tenants have demanded an average of 5.2 hectares of land each year. The JIEC no longer offers land or buildings in Amman, and now faces the challenge to channel that demand to its other industrial estates. Al Hassan’s ‘Best Case’ scenario, therefore, reflects JIEC’s success in attracting a portion of the investors who normally would have preferred locating in Amman. This scenario cannot be achieved, however, if the JIEC constructs an additional industrial estate in the Amman vicinity—Salt, Madaba, Al Muwaqer, or Queen ’Alia International Airport.

In the ‘Best Case,’ Al Hassan will be filled to capacity by 2007. Therefore, the JIEC should study plans for expansion of Al Hassan beginning in 2005. Depending on the strength of demand at that time, it might also be appropriate to consider an additional industrial estate in Al Muwaqer (current JIEC location) or Salt (preferably new location).

Al Hussein (Karak) Industrial Estate

Since opening in 2000, Al Hussein (Karak) Industrial Estate has attracted three companies, which occupy about 5.5 hectares of land and buildings. ‘International’ QIZ investors have been attracted to Karak, despite its rural location. It will experience a harder time, however, attracting ‘Middle East Regional’ and ‘Medium-Size Jordanian’ investors, who prefer locating nearer to urban industrial centers with larger populations of trained labor.

Chart 4.30: Growth Projections for Al Hussein (Karak) Industrial Estate



Base Case

Karak’s ‘Base Case’ reflects an occupancy rate of about just two additional ‘International’ companies each year over the next five years. This primarily reflects competition from the Aqaba International Industrial Estate (AIIE), which will open in late 2002. The AIIE, also a QIZ, offers a better location for companies in terms of transportation options and investment incentives, which lower a company’s overall costs of production. The ‘Base Case’ is likely under current political and economic conditions.

Worst Case

Disinvestment by current Karak tenants would occur under a ‘Worst Case’ scenario. This is reflected in the average net demand increase of just 0.5 hectare per year. Tenants would vacate the industrial estate in the event of a regional conflict that drove up transportation costs or caused unreliable delays in securing the necessary imported inputs.

Karak’s remote location has not attracted any ‘Middle East Regional’ or ‘Jordanian’ investors thus far. The construction of any new industrial estate in Jordan’s southern region—Tafila, Al Hasa, Ma’an—would further limit any potential Karak had of luring local investment. Construction of additional IEs in the South, however, would not likely impact Karak’s potential QIZ tenants, since the U.S. government has indicated that it will not likely certify additional QIZs in Jordan in the near future.⁵⁵

⁵⁵ Interview, Mr. Ian Campbell, U.S. Embassy, Jordan. March 2002.

Best Case

Karak's 'Best Case' scenario would only occur with an overall increase in 'International' and 'Non-Middle East Regional' investment in Jordan. Those two types of investors are less sensitive about the particular location of an industrial estate than investors serving the local market. 'International' investors would include garment companies taking advantage of the QIZ scheme, or Arab and Asian companies looking for an inexpensive production platform to access European markets. 'Non-Middle East Regional' investors are those who would take advantage of stability and growth in the Middle East, and establish or expand their regional presence. Several local companies could follow on the heels of this foreign investment to supply these foreign companies in the Karak IE.

Aqaba International Industrial Estate

The Aqaba International Industrial Estate (AIIE) is currently under construction, and is expected to open in October 2002. The AIIE will most likely receive a higher proportion of Jordan's overall industrial demand than any other single industrial estate in Jordan. That is because the duty-free incentive regime offered by Aqaba Special Economic Zone (ASEZ) has stimulated its own demand. Many of the investors who have expressed interest in the AIIE, or ASEZ in general, were attracted to Jordan *because of* ASEZ's unique duty-free and low corporate tax incentives. Thus, an investment in the AIIE is not necessarily an investment lost to other industrial estates in Jordan.

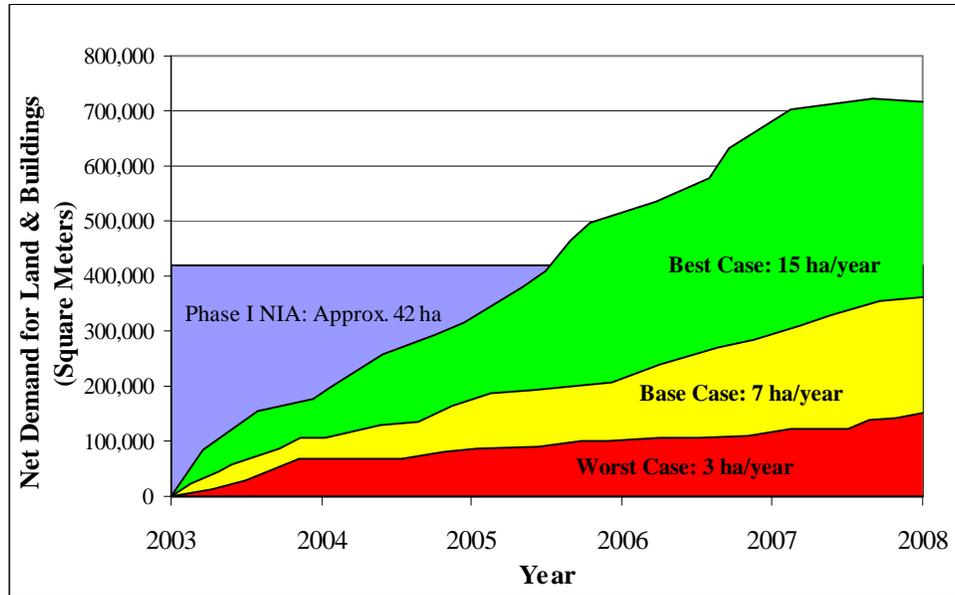
Base Case

There currently exists considerable demand for land in the ASEZ. While some of the demand has been speculative, other investors are awaiting decisions on land applications. It is very likely that the AIIE will become a fast-track solution for some serious industrial enterprises to find the land, buildings, and services that their ventures require. ASEZA has also received credible leads in the manufacturing sector—including garments, electronics, chemicals, and medical equipment. This pent-up demand for serviced industrial space could yield 10 to 15 tenants in the AIIE's first year of operation. The 'Base Case' assumes that demand after 2003 would not be as large, and over five years would average approximately 7 hectares per year. This is in line with previous demand assessments made for the AIIE.

Worst Case Scenario

In its first year of operation, the AIIE will experience a similar demand as described above in the 'Base Case' scenario. However, interest by foreign investors will sharply decline in the event of a regional military conflict. Thus, despite moderate to large investment in its first year, growth in the AIIE will remain stagnant in subsequent years under the 'Worst Case' scenario.

Chart 4.31: Growth Projections for Aqaba International Industrial Estate



Best Case Scenario

AIIE’s ‘Best Case’ scenario assumes that the JIEC establishes no new industrial estates in the South—Al Hasa, Tafila, and Ma’an. Additional IEs in those locations could not compete with the Aqaba’s location and incentives. Any investment in those IEs would likely be at a loss to the AIIE and Karak IE.

Under the ‘Best Case’ scenario, ASEZA and JIEC promote the AIIE as an access hub to the Gulf, European, and U.S. markets. The AIIE also becomes a manufacturing platform for some regional trading companies that wish to expand into assembly operations. The cost of land and buildings and the services inside the AIIE must be of better value than in the ASEZ in general in order to achieve the projected 15-hectare annual growth envisioned in the ‘Best Case’ scenario. If ASEZA’s own land is sold at a significantly cheaper rate, then the AIIE will lose important warehousing, distribution, and light factory investments to other areas within the ASEZ.

In the ‘Best Case Scenario,’ the JIEC should assess the need to expand the AIIE beyond its initial 42-hectare net investment area in 2004 or 2005.

4.11: Conclusions

Jordan’s JIEC and private industrial estates and the Zarqa Free Zone currently have enough developed land to meet the ‘Best Case’ overall growth scenario over the next five years. Demand projections in the Best Case do not justify development of industrial estates at this time. Section 4.2 highlighted the fact that there exists over 500 hectares of land available for sale or lease in the Kingdom’s free zones and industrial estates. These operational IEs can be expanded an *additional* 840 hectares if demand warrants.

Some industrial estates will experience more demand than others. Under the ‘Best Case’ scenario, it is possible that Al Hassan and Aqaba International Industrial Estates could fill to

capacity. It is recommended in 2004 that the JIEC conduct an assessment of the two-year space uptake Al Hassan and AIIE to assess the needs for expanding those sites. Phase I of Karak Industrial Estate, on the other hand, is not expected to fill to capacity over the next five years—even under its Best Case scenario.

Aggressive marketing is paramount to achieving the ‘Best Case’ growth scenarios for all industrial estates. The moderate promotion activities of the JIB, JIEC, private developers, ASEZA, and other agencies have been successful in attracting increased foreign investment to Jordan. Between 1998 and 2001, about 30 percent of net tenants in Jordan’s IEs were international investors, most attracted to Jordan by the market access offered by the QIZ scheme.

International investor interest in Jordan can be sustained with aggressive marketing specifically targeted to the types of investors that could best benefit from the market access opportunities available in Jordan. A targeted marketing campaign could determine whether JIEC industrial estates achieve their ‘Base Case’ growth of 67.5 hectares or ‘Best Case’ growth of 160 hectares over the next five years. Organizations such as the JIEC should focus their resources on promoting the excellent industrial estates that they currently have. That is the only way to ensure future demand for expansion or development of additional IEs.

5. Evaluation of JIEC Industrial Estate Sites

The Jordan Industrial Estates Corporation has purchased or reserved land at eleven sites throughout Jordan in anticipation of developing additional industrial estates. This study suggests that current demand for serviced industrial land and buildings in Jordan does not warrant construction of additional industrial estates at this time. Should future demand increase, this chapter provides a general technical evaluation of JIEC’s proposed industrial estate sites for future development consideration.

Most of the data used for the site evaluation was provided by the JIEC. The Jordan Electricity Company and Jordan Water Authority also provided some information about the offsite infrastructure available to each site. During the course of research for this study, 15 JIEC sites were visited under the guidance and cooperation of JIEC staff. They include:

- 3 operational industrial estates (Sahab, Al Hassan, and Karak)
- 1 industrial estate under construction (Aqaba International Industrial Estate)
- 11 proposed industrial estate sites (Mafrag, Ajloun, Salt, Al Muwaqer, Queen ‘Alia Airport, Madaba, Al Hasa, Tafileh, Ma’an I, and Ma’an II)

The “proposed” sites visited were those for which the JIEC has already purchased or reserved land. The scope of this study did not include identification of additional or alternative sites throughout Jordan’s governorates. Annex B of this report provides detailed information and photographs of each of the operational and proposed JIEC sites.

5.1: Guidelines for Evaluating Proposed JIEC Sites

Overview

An industrial estate represents the vision that one enterprise, the developer, holds as a means of satisfying the needs of a multitude of other enterprises – the industrial estate tenants or individual enterprises. From a business perspective, the principle behind developing industrial estates is one of economy of scale in the provision of services, and economy of scale in regulation, planning, control, and environmental protection.

This study considered two types of factors in evaluating JIEC’s proposed industrial estate locations. First, ‘external criteria’ relate to the wider geographical location of the site, and the infrastructure, labor, and supporting industries in that area. Second, ‘internal criteria’ refer to the on-site characteristics of each proposed location. These criteria are similar to those that an individual investor might use when selecting a site for his or her enterprise.

External Criteria

The external criteria identified for evaluation of the proposed JIEC sites are:

- Labor availability and skills

- Availability of infrastructure
- Accessibility
- Synergy with local industry
- Competition from nearby industrial estates

The external criteria are considered individually below. In some cases, there is an unavoidable linkage between criteria. For example, labor availability and skills might be highest where there is the greatest synergy with local industry.

Labor Availability and Skills

Industrial estates require a large pool of labor from which enterprises can hire local managers, engineers, administrative staff, and skilled or semi-skilled assembly line workers. Where qualified labor does not exist, a company must recruit workers from other governorates or overseas, which is quite costly for the enterprise. Thus, the availability of a mixed skill workforce is an important external criterion by which to evaluate a proposed location.

Availability of Infrastructure

This criterion examines the major infrastructure needs of an industrial estate—water, wastewater treatment, electricity, and telecommunications. This study evaluated the site infrastructure based on preliminary findings from the JIEC, Jordan Telecom, National Electric Power Company, and the Water Authority without any detailed feasibility studies, which would normally be required before development of any site.

Accessibility

Gaining access to the site is an important factor that can cut transportation costs for industrial estate tenants, and decrease the extra costs that might be required to upgrade road networks near the site. “Accessibility” examines the quality of road network near the site, access to international airport and seaport, and access to neighboring country markets via land transportation across borders. Sites located near a seaport or airport scored higher than those located further from international transportation access points. Sites located along narrow rural or steep roads were also rated lower than sites located along major highways.

Synergy with Local Industry

The “synergy” criterion has two aspects. First, investors often look for local suppliers for their factor inputs. To cut shipment and inventory costs, they often prefer to locate near complementary industries. Second, where there are large numbers of industries of a given type—pharmaceuticals, assembly line production, etc.—“labor synergy” is created, and a pool of workers skilled in production emerges.

Competition from Nearby Industrial Estates

Regardless of private or JIEC ownership, industrial estates compete with one another for investment and labor. When demand for industrial space is low or moderate, additional industrial estates will dilute investment demand for the others. Additionally, rural industrial estates, which often absorb excess demand from urban centers, severely weaken one

Sites that the JIEC has already purchased scored higher in this criterion than ones which have not been purchased.

Environmental Impacts

Only with a detailed environmental impact assessment can this criterion be effectively evaluated. However, a low score was given to sites in which development would clearly damage the surrounding ecosystem, such as the elimination of a forested tract of land. This factor is not only important for environmental preservation, but is also tenet of Jordan’s international agreements, including the Jordan-U.S. Free Trade Agreement.

Estimated Cost to Develop Site

The scope of this study did not include estimating the development cost of each site. This would require a detailed feasibility study for each site. The ‘cost’ criterion utilizes JIEC’s own estimates. The offsite infrastructure costs, however, do not reflect a recent decision by the electrical companies to stop subsidizing JIEC’s electrical infrastructure costs. According to the decision, the JIEC must now pay 100 percent of the costs associated with bringing power to its sites.

5.2: Methodology for Ranking Sites

The goal in ranking the sites is to find out the most suitable locations for development. Therefore, the ranking will be done both from the point of a developer, both in terms of his or her cost in developing the site—impacted by ‘internal criteria’, and revenues generated from attracting tenants—impacted by the attractiveness of ‘external criteria’ to individual investors. Therefore, internal and external criteria are assumed to carry equal value, and are accordingly assigned 50 points each.

Within the two criteria groups, each factor is assigned a different weight based on its effect on the decision of a developer or investor. The proportion of the assigned weight to the total 100 points yields a weighted multiplier for each factor, used in calculating the final score for each site. The assigned weights and weighted multipliers for each criterion are presented in Table 5.1 below.

Table 5.1: Ranking of External and Internal Criteria for Evaluating Sites

EXTERNAL CRITERIA	Assigned Weights	Weighted Multipliers
Labor Availability and Skills	12 points	0.12
Infrastructure Availability	9 points	0.09
Site Accessibility	9 points	0.09
Synergy with Local Industry	5 points	0.05
Competition from Nearby Sites	15 points	0.15
<i>SUBTOTAL</i>	<i>50 points</i>	
INTERNAL CRITERIA	Assigned Weights	Weighted Multipliers
Suitability of Terrain	15 points	0.15
Site Area and Potential for Expansion	7 points	0.07
Land Ownership and Availability	8 points	0.08
Environmental Impacts	10 points	0.10
Estimated Cost to Develop Site	10 points	0.10
<i>SUBTOTAL</i>	<i>50 points</i>	
TOTAL	100 points	

The proposed JIEC sites are ranked according to the evaluation criteria presented in the left column of the table above. Each site is assigned a score from 1 to 5 (with the highest possible grade for a site being 5) for each criterion. Then the assigned score for each criterion is multiplied with the weighted multiplier to yield a weighted score. Finally, all weighted scores are added up to determine the final score for each site. See an illustrative example in Box 5.2 below.

Box 5.2: Calculation of the Weighted Site Score

Calculating the Weighted Score of a Proposed JIEC Industrial Estate Site

Suppose “Site A” has attained the scores for each criterion as listed in Column B. To calculate the final score for “Site A”, the weighted multiplier for each criterion (Column A) is multiplied by the assigned score (Column B). This results in the weighted scores listed in Column C. Those are then added up to result in Subtotal values for both Internal and External Criteria. Adding the subtotals produces the final score for “Site A”.

	Column A	Column B	Column C = (Column A) x (Column B)
External Criteria	Weighted Multiplier	Score	Weighted Scores
Labor	0.12	3	0.15
Infrastructure	0.09	5	0.40
Accessibility	0.09	4	0.36
Synergy with Local Industry	0.05	5	0.45
Competition from Other IEs	0.15	5	0.25
<i>SUBTOTAL</i>			<i>2.12</i>
Internal Criteria	Weighted Multiplier	Score	Weighted Scores
Terrain	0.15	4	0.48
Site Area	0.07	5	0.35
Land Ownership	0.08	5	0.60
Environmental Impacts	0.10	4	0.28
Estimated Cost to Develop	0.10	5	0.60
<i>SUBTOTAL</i>			<i>2.31</i>
TOTAL			4.43

5.3: Review Matrix

The matrices on the next five pages present external and internal criteria scores for each proposed JIEC industrial estate, and detail the factors that influenced the scores.

Table 5.3: Evaluation Matrix—External Criteria

	Site	Labor	Infrastructure	Accessibility	Synergy with Local Industry	Competition from Other IEs
Al Hassan Expansion	Details	103,500 seeking work in Greater Amman; medium to high local skill base	Al Hassan power and wastewater treatment currently being expanded to meet increasing needs.	Located on 4-lane road with excellent access	Second largest industrial city in Jordan. Garments, food and beverage, fabricated metal, and furniture industries predominate.	Cyber City QIZ in same general location.
	Score	5	4	5	5	3
Karak Expansion	Details	13,400 seeking work in Karak; low skill base	Infrastructure already on site. If expansion occurs, new assessment of capacity required.	Road in front of site being upgraded. Short distance to Desert Hwy.	Little concentrated industry. Fabricated metal and non-metallic mineral products are largest industries.	No other industrial estate in vicinity. Development of other rural IEs will impact demand for a Karak expansion.
	Score	2	5	4	2	3
Mafraq	Details	13,000 seeking work; medium skill base	Estimated 29 – 108 MVA required Phase I. Nearest power is 2 X 40 MVA sub-station near site. Water from onsite well, though no study done.	Good quality main highway next to site. Moderate distance to airport. Long distance to seaport.	Scattered industries throughout northeast section of governorate. Non-metallic mineral products predominate. Some food, beverage, and furniture manufacturing.	Cyber City and Al Hassan IE in same general region. Development would moderately impact demand in other rural IEs.
	Score	3	4	4	3	3
Zarqa	Details	44,600 seeking work; medium skill base	Estimated 32 – 120 MVA required Phase I. Expansion of Abdali sub-station required. Water from onsite well or water main, though no study done.	Main road is good quality Zarqa-Azraq Hwy. No access road to site. Short road needed. Moderate distance to airport. Long distance to seaport.	Jordan’s third largest concentration of industry. Fabricated metal, garments, and food and beverage predominate. Considerable trading sector in Zarqa Free Zone.	Zarqa Free Zone, Dulayl IE, and proposed private free zone in vicinity.
	Score	4	2	4	4	1
Ajloun	Details	5,300 seeking work; medium skill base	Estimated 8 – 29 MVA required. Nearest power is 2 X 40 MVA sub-station in Ishtafina, not far from site. No water study done.	Main road narrow rural highway. New approach road needed. Moderate distance to airport and Haifa seaport. Long distance to Aqaba.	Small number of industries. One third engaged in food and beverage. Some metal, mineral, and furniture production.	Gateway, Cyber City, and Al Hassan IEs in same general region. Development would moderately impact demand in other rural IEs.
	Score	2	3	1	3	2

	Site	Labor	Infrastructure	Accessibility	Synergy with Local Industry	Competition from Other IEs
Salt	Details	17,200 seeking work; medium skill base	Estimated 11 – 41 MVA required. 3 X 63 MVA sub-station in Subaihi would need expansion to feed site. No study to determine capacity of nearby water main to supply site.	Main road narrow rural highway. New approach road needed. Moderate distance to airport and Haifa seaport. Long distance to Aqaba.	Pharmaceutical and cosmetic industries present. Food, garment, and wood manufacturing industries serve domestic market.	No other IEs in immediate vicinity. Development would moderately impact demand in other rural IEs.
	Score	3	2	1	3	3
Muwaqer	Details	103,500 seeking work in Greater Amman; medium local skill base	Estimated 32 – 120 MVA required Phase I. 2 X 60 MVA Sahab sub-station. Well water on site.	Located on good quality 4-lane highway. Easy access to airport. Long distance to seaport.	Near main industrial center of Amman. All types of manufacturing.	Near Tajamouat and proposed Muwaqer Private Free Zone.
	Score	4	5	5	5	4
QAIA	Details	103,500 seeking work in Greater Amman; high local skill base	Estimated 10 – 38 MVA required. Nearest power is 2 X 80 MVA QAIA sub-station. Water from onsite well.	Located near Desert Hwy. Modifications to access required. Next to airport; long; moderate distance to Haifa; long distance to Aqaba seaport.	Near main industrial center of Amman. All types of manufacturing.	Al Moushata in nearly same location.
	Score	5	4	4	5	2
Madaba	Details	8,200 seeking work; medium skill base	Estimated 20 – 76 MVA required. Nearest power is 2 X 80 MVA QAIA sub-station. Study required. Nearest water main in Madaba.	Main road is 2-land Kings Highway. Approach road narrow 2-lane village road, which cuts through site. Close to airport; long distance to seaport.	Industries serve local or Jordanian markets, particularly food, beverage, metal, and woodworking industries.	Al Moushata nearby at QAIA. Development would severely impact demand on other rural IEs.
	Score	2	2	2	3	1
Al Hasa	Details	13,400 seeking work in Karak; low skill base	Estimated 32 – 129 MVA required Phase I. Nearest power is 2 X 25 MVA Al Hasa sub-station; readjustment of capacity needed. No water study conducted.	Located just off Desert Hwy. Moderate distance to airport and seaport.	Phosphate mining drives industry near the Al Hasa site.	Karak IE in same general area. Development would severely impact demand on other rural IEs.
	Score	2	3	4	1	1

	Site	Labor	Infrastructure	Accessibility	Synergy with Local Industry	Competition from Other IEs
Tafila	Details	4,200 seeking work in Tafila; low skill base	Estimated 16 – 60 MVA required Phase I. Nearest power is 1 X 16 MVA Rashadiya sub-station. Large water main near site.	Main road is 2-lane tarmac between Tafila and Desert Hwy. Access road improvements needed. Moderate distance to airport and seaports.	Agriculture predominates. Some fabricated metal production.	Karak IE in same general area. Development would severely impact demand on other rural IEs.
	Score	1	2	2	1	1
Ma'an I	Details	6,092 seeking work in Ma'an; low skill base	Estimated 17 – 64 MVA required Phase I. Ma'an sub-station constructed. Power now diverted for use by Ma'an University. Well water on site.	Well-located near Desert Hwy, and at junction of roads to Saudi Arabia and Azraq. Moderate distance to airport and seaport.	Small industrial base. Foreign investment in paper products and vehicle assembly.	Aqaba Intl' IE 100 km away. Development would severely impact demand on other rural IEs.
	Score	1	3	4	2	2
Ma'an II	Details	6,092 seeking work in Ma'an; low skill base	17 Estimated 17 – 64 MVA required Phase I. Ma'an sub-station constructed. Power now diverted for use by Ma'an University. Could share infrastructure with Land Rover.	Well located near Desert Hwy. Improvements to access road required. Moderate distance to airport and seaport.	Small industrial base. Foreign investment in paper products and vehicle assembly.	Aqaba Intl' IE 100 km away. Development would severely impact demand on other rural IEs.
	Score	1	3	3	2	2

Table 5.4: Evaluation Matrix—Internal Criteria

	Site	Terrain	Site Area	Land Ownership	Environmental Impacts	Estimated Cost
Al Hassan Expansion	Details	Terrain slightly sloping. Very suitable for expansion.	17.5 hectares available for additional expansion.	Land owned and developed by JIEC.	Minimal damage to environment.	Not determined.
	Score	5	3	5	4	3
Karak Expansion	Details	Terrain slightly sloping. Sandy soil requires retaining wall	109.8 hectares available for expansion.	Land owned and developed by JIEC.	Minimal damage to environment.	JD 138,000/hectare ⁵⁶
	Score	4	5	5	4	3
Mafraq	Details	Terrain very suitable. No slope. Wind and dust a problem.	Gross Area All Phases: 222.5 ha Phase I Gross Area: 71.8 ha	Owned by JIEC.	Desert land. Minimal damage to environment.	Phase I Onsite: JD 5,982,900 Offsite: JD 1,500,000 JD 104,219/hectare
	Score	4	5	4	4	4
Zarqa	Details	Hill on site. Majority of site is flat. Wind and dust a problem.	Gross Area: 250 ha Phase I Gross Area: 80.0 ha	Military land reserved for JIEC. Not yet purchased.	Desert land. Minimal damage to environment.	Not yet determined
	Score	4	5	1	4	3
Ajloun	Details	Unsuitable terrain; >20% gradient; rocky soil.	Gross Area: 19.1 ha	Not yet purchased.	Site is forested; owned by Ministry of Agriculture.	Not yet determined
	Score	1	1	1	1	2
Salt	Details	Unsuitable terrain; 15% gradient; located in valley.	Gross Area: 27.2 ha	Owned by JIEC.	Site sits on agricultural land.	Onsite: JD 4,300,000 Offsite: JD 1,500,000 JD 213,235/hectare
	Score	1	2	4	3	2
Muwaqer	Details	Terrain very suitable. No slope.	Gross Area All Phases: 250 ha Phase I Gross Area: 80.0 ha	Will soon be owned by JIEC.	Desert land. Minimal damage to environment.	Not yet determined
	Score	5	5	4	4	3
QAIA	Details	Terrain very suitable. No slope.	Gross Area: 25 ha; expansion area adjacent to site.	Leased from Civil Aviation Authority.	Desert land. Minimal damage to environment.	Onsite: JD 2,000,000 Offsite: JD 1,500,000 JD 140,000/hectare
	Score	5	3	3	4	3

⁵⁶ Based on Karak Phase I development costs.

Madaba	Details	Unsuitable terrain; 15% gradient; trisected by 2 wadis.	Gross Area: 50.4 ha	Not yet purchased.	Site is forested; owned by Ministry of Agriculture.	Onsite: JD 4,000,000 Offsite: JD 1,000,000 JD 99,206/hectare
	Score	1	2	1	1	4
Al Hasa	Details	2% grade. Experiences periodic winter flooding.	Gross Area All Phases: 406.4 ha Phase I Gross Area: 80.0 ha	Owned by JIEC.	Desert land. Minimal damage to environment.	Not yet determined
	Score	3	5	5	4	3
Tafila	Details	4 % grade. Power lines bisect site.	Gross Area All Phases: 100 ha Phase I Gross Area: 40.0 ha	Owned by JIEC.	Desert land. Minimal damage to environment.	Phase I Onsite: JD 4,500,000 Offsite: JD 1,500,000 JD 150,000/hectare
	Score	3	5	4	4	3
Ma'an I	Details	Suitable terrain; flat site.	Gross Area All Phases: 260 ha Phase I Gross Area: 42.7 ha	Owned by JIEC.	Desert land. Minimal damage to environment.	Phase I Onsite: JD 4,150,000 Offsite: JD 1,700,000 JD 137,002/hectare
	Score	5	5	4	4	3
Ma'an II	Details	Small hill on edge of site. Rest slightly sloping.	Gross Area All Phases: 80 ha Phase I Gross Area: 40.0 ha	Not yet purchased.	Desert land. Minimal damage to environment. Near historical site.	Phase I Onsite: JD 4,000,000 Offsite: JD 1,000,000 JD 125,000/hectare
	Score	4	5	1	3	3

5.4: Ranking Results

This section presents the results of ranking based on the methodology described in Section 5.2. **It is very important to note that the following evaluation does not represent a demonstrated demand for the development of any of the sites.** Neither is it an exhaustive technical evaluation of the sites. The findings presented herein are subject to change, pending more detailed examination or complete feasibility study on the sites. This exercise, however, is useful for pinpointing which sites might be priority candidates for additional in-depth analysis.

Based on the findings outlined and the scoring presented in Tables 5.3 and 5.4 on the previous pages, the results of site ranking are as follows.

Table 5.5: Technical Ranking of Proposed JIEC Industrial Estate Sites

<i>Sites</i>	<i>Weighted Averages</i>		<i>Total Score</i>
	<i>External Criteria</i>	<i>Internal Criteria</i>	
Al Muwaqer	2.23	2.12	4.35
Al Hassan Expansion	2.11	2.06	4.17
Queen 'Alia Int'l Airport	1.87	1.90	3.77
Mafraq	1.68	2.07	3.75
Karak Expansion	1.60	2.05	3.65
Ma'an I	1.15	2.12	3.27
Zarqa	1.37	1.73	3.10
Al Hasa	1.07	1.90	2.97
Ma'an II	1.06	1.63	2.69
Tafila	0.68	1.82	2.50
Salt	1.23	1.11	2.34
Madaba	0.90	0.87	1.77
Ajloun	1.05	0.60	1.65

5.5: Summary Discussion of Sites

This section briefly discusses each of the sites visited, which could be developed or expanded when there is sufficient demand to do so. The profiles below describe factors that might limit or enhance their potential development. They include an assessment of the shortages in offsite infrastructure needs that would require upgrading if JIEC were to develop the sites. “Annex B: Industrial Estate Sites”, at the end of this report, provides an enhanced overview of each of the sites, including photographs, blueprints, plot plans, and maps of the 15 sites.

Al Muwaqer Site—Total Score 4.35

JIEC has suggested the Al Muwaqer site as the expansion for Sahab Industrial Estate in Amman. The location along the four-lane Amman-Azraq Highway offers excellent land transportation to and from the 250-hectare site. Drainage tiles and cisterns sit at the edge of the site along the highway to collect run-off water from the slightly sloping site.

Infrastructure Needs: The JIEC has indicated that onsite wells could supply the water needs of an industrial estate, though no comprehensive study has been conducted. Power could most likely be brought to the site from the sub-station at the Sahab Industrial Estate, which

only uses a fraction of its capacity. NEPCO, indicated however, that a comprehensive electrical demand study would first be required of the site.

Al Hassan Industrial Estate Expansion—Total Score 4.17

Al Hassan's three phases of development have yielded 77.6 hectares of area available for sale or lease—46 hectares of which remain available to investors. Al Hassan is certified as a QIZ, and began expanding its net area for sale/lease in 1998. However, forecasted demand has not been achieved over the past two years. This is due to development of private industrial estates since 1998, and the addition of Karak Industrial Estate. Al Hassan is upgrading its power supply and wastewater treatment facilities to meet the growing needs of factories, especially those in the garment sector. There are 17.5 hectares available for expansion at Al Hassan.

Queen 'Alia International Airport Site—Total Score 3.77

JIEC has leased this 25-hectare site from the Civil Aviation Authority for JD 25,000 per year for the past two years. The Authority's master plan for its property just south of Queen 'Alia Airport includes an industrial estate, free zone, agricultural area, duty-free shopping, polo club, and golf course. The Civil Aviation Authority is hoping that a JIEC industrial estate would lure high-tech investments to the site. A plot plan and tender documents have been prepared for the site. However, if the QAIA site were tendered to a private developer and operator, the current year-to-year lease arrangement with the Civil Aviation Authority does not offer the long-term guarantee and stability sought by profit-seeking management companies. A JIEC industrial estate at the airport would severely compete for investment with the private Al Moushata Industrial Estate, whose 60-hectare Phase I will open in late 2002 just adjacent to the airport.

Infrastructure Needs: The site is well located next to the airport, but access currently requires exchanging photo IDs for a security badge at a checkpoint next to the airport. This design, and the approach roads, would need to be reconfigured to allow for increased vehicular and personnel access to the site. A study needs to be undertaken to determine whether the airport's electrical capacity is sufficient to meet the needs of an industrial estate. It is also unknown whether the airport's water well and waste treatment facility would need upgrading.

Mafraq Site—Total Score 3.75

The proposed Mafraq Industrial estate is located 10 kilometers southeast of Mafraq City. The site has good road access along the Baghdad-Haifa Highway. The site is flat, and suitable for industrial land, but large amounts of dust remain a problem at the site. The JIEC has developed a plot plan for the site in anticipation of tendering development of the 71.8-hectare Phase I.

Industry in Mafraq consists of small-scale enterprises including food and dairy, iron processing, detergents, and automotive spare parts. The dimensional stone industry receives ample investment. These operations, however, are more cost-effective if performed near the mining site.

Infrastructure Needs: Offsite infrastructure requirements include a relocated approach road, constructed on level terrain. There is sufficient power near the site, but a study is needed to examine the availability of water on the site.

Al Hussein Ibn Abdullah Al Thani (Karak) Industrial Estate Expansion—Total Score 3.65

The Karak Industrial Estate opened in 2000, and currently has three tenants—all garment companies. The net investment area⁵⁷ in Phase I is 54.4 hectares. Of this, just 5.7 hectares have currently been sold or leased to tenants. Karak has a moderately sized unemployed workforce, but most are unskilled. The industrial estate can expand by another 109.8 hectares, but it is doubtful if demand in the near future would warrant such.

Ma'an I Site—Total Score—3.27

The JIEC has announced that it intends to develop the Ma'an I site with a JD 3.4 million Chinese soft loan. The site is well located, outside Ma'an town at the junction of main highways to Saudi Arabia and Iraq, and just 12 kilometers from the Desert Highway. The Land Rover Factory in Ma'an will create the primary demand for investment at the site. (See "Box 5.6: Land Rover Comes to Ma'an") Automotive components, packaging materials, and warehousing will comprise the main tenants. However, the Land Rover plant will assemble completely knocked down (CKD) kits, and source little from the local market—at least initially. If foreign automotive suppliers do locate in Jordan to serve Land Rover, they might find Aqaba a more attractive location as a duty-free platform from which to ship their components to other markets outside Jordan.

The pool of local labor is small in comparison to other governorates, and only a small fraction is industrially skilled. Aqaba also has a small labor force, and previous feasibility studies for the AIIE have suggested that Aqaba could draw upon some labor migration from Ma'an and other southern governorates. It is highly likely that both the AIIE, and Ma'an site—if developed, will require use of non-Jordanian labor.

The gross area of the Ma'an I site is 260 hectares, and the JIEC has prepared a plot plan and tender documents for the 42.7-hectare Phase I development. The net area for sale or lease in Phase I will be 30.7 hectares.

Infrastructure Needs: If the site is developed, the local power supply must be upgraded to meet the needs of modern factories. The electrical company had previously upgraded capacity at the nearest power sub-station in anticipation of an industrial estate in Ma'an. However, that power has since been diverted for other uses. The JIEC must also conduct a feasibility study for the intended water needs of the site.

⁵⁷ Net investment area is the area available for sale or lease. It does not include roads, green spaces, utilities, administration, or other common shared spaces.

Box 5.6: Land Rover Comes to Ma'an



Illustration of Land Rover factory, dormitories, and recreation facilities. Land Rover facility under construction, February 2002. Image courtesy of Al Shaheen Investments.

Several kilometers outside Ma'an Town, construction is underway of a Land Rover assembly plant. The 70-hectare site includes a 20-hectare assembly plant and worker's village, including residential and recreational facilities. The site is slated for completion by September or October 2002. Production is expected to commence by January 2003.

The factory is a venture of Al Shaheen Investments to supply the Jordanian Military's demand for four-wheel drive vehicles. Ma'an was chosen as the because of the availability of land, location near major highways, and economic impact in attracting additional industry to the Ma'an area. During the first two years of operation, Land Rover expects a production volume of 2,500 vehicles per year—although the factory will have an annual capacity of 10,000 vehicles. Initially, the Jordanian Military will be factory's sole customer. Eventually, however, Land Rover hopes to expand and produce vehicles for the local and Middle East consumer markets.

Operations will employ 300 to 400 workers, who will be supervised by about 7 management staff from Land Rover U.K. Al Shaheen Investments expects that the majority of labor will be sourced from the local Ma'an and Aqaba areas, and will require just a 5 to 10 percent foreign workforce—primarily from Egypt. The venture will also fund a technical college, which will train students in manufacturing processes and provide accreditation to 25 to 30 people per year.

Land Rover Ma'an will initially assemble completely knocked-down (CKD) kits imported from the U.K. Al Shaheen Investments feels there is a high potential for eventually sourcing some components from the local market, especially upholstery, fan belts, rubber products, packaging materials, and some electrical parts. Companies from Italy, Turkey, and East Asia have also approached Al Shaheen about supplying the factory with components.

Zarqa Site—Total Score 3.10

Two hundred fifty hectares of military land, 30 kilometers southeast of Zarqa City, have been reserved by the government for construction of a JIEC industrial estate. The terrain is slightly sloping, and receives significant amounts of wind and dust. If developed, the Zarqa site would compete with the nearby Zarqa Free Zone, Al Dulayl Industrial Estate, and proposed International Investment Company Free Zone for investment and access to skilled labor. Al Dulayl and Zarqa Free Zone, alone, have a combined 215 hectares available for investment. Any demand for serviced industrial estate space in the Zarqa area can easily be absorbed at those two locations.

could generate enough demand to acquire QIZ certification—especially with the opening of the Aqaba International Industrial Estate (QIZ) in late 2002.

Infrastructure Needs: The Rashadiya sub-station closest to the site currently would not provide the power capacity needed by an industrial estate. Enhancements to the sub-station, or a new sub-station, would be required to power the industrial estate. There exists a large water main near the site, but current Water Authority plans do not include extending the water main for industrial estate use.

Salt Site—Total Score 2.34

The proposed site in Salt sits on 27.2 hectares of agricultural land, which the JIEC purchased from the private sector. JIEC has prepared a plot plan and tender documents for the site in anticipation of tendering its development. The JIEC estimates that the cost to develop the hilly site would be over JD 213,000 per hectare—more costly than other potential sites.

Infrastructure Needs: The Salt site is situated on hilly land, and would require extensive offsite infrastructure, including a newly constructed access road, onsite terracing, and expansion of the Subaihi electrical substation.⁵⁹ A water main runs just 1 kilometer from the site, but neither JIEC nor the Water Authority has studied the feasibility of tapping into this main. The site is accessed by winding narrow rural highways, which are not well suited for heavy industrial transportation.

Madaba Site—Total Score 1.77

Fifty hectares of land—mostly owned by the Ministry of Agriculture—have been reserved for development of a JIEC industrial estate. The site is forested, hilly, and trisected by two privately owned valleys (*wadis*). It is not well suited for industrial use; complete terracing of the site would be required for development. There are several unsanctioned occupants residing on the site, including two houses, a dairy farm, and aerial factory. Development of the site would have to accommodate or evict these occupants.

Madaba does have a sufficient quantity of labor to fill low to semi-skilled industrial estate jobs. The site is also sufficiently close to Amman to attract higher skilled and management positions. Nonetheless, it must compete with nearby Al Moushata Industrial Estate (QIZ) for overseas investment, and the Al Qostal industrial area for local industry.⁶⁰ It is also unlikely that Madaba would be certified as a QIZ based on the environmental impact of its development, and already saturated supply of QIZ locations.⁶¹

Infrastructure Needs: The nearest electrical sub-station is located at Queen 'Alia International Airport, but no study has been conducted to ascertain whether the airport could supply the power requirements of an industrial estate in Madaba. The nearest water main is

⁵⁹ Based on suggestions from an interview with the National Electric Power Company (NEPCO). If the Salt site were developed, NEPCO would require an electrical feasibility study to determine the exact power needs of the site.

⁶⁰ See the map of the Madaba/Amman area in “Annex B: Industrial Estate Sites” at the end of this report.

⁶¹ The U.S. Embassy in Amman is reluctant to sanction additional QIZ locations, feeling the current amount of QIZ space is more than sufficient to meet demand.

approximately 13 kilometers south in the town of Madaba, and the Water Authority has indicated no current plans to extend water to the Madaba site.

Ajloun Site—Total Score 1.65

The Ajloun site sits on 19.1 hectares of Ministry of Agriculture land. Most of the land is steeply graded and covered by oak forest, and not suitable for industrial development. The surrounding road network consists of narrow two-lane highways that wind through rural Ajloun. Additionally, the site would compete for investment with Al Hassan, Cyber City, and Gateway Industrial Estates, all within 65 kilometers, in Irbid.

Infrastructure Needs: Access to the site is by a single-lane gravel road with 20 percent gradient, and a new road is required to handle industrial traffic to and from the site. There might be sufficient power available from the Ishtafina sub-station, though no study has been done to extend power to the site. JIEC has estimated that 5 cubic meters of water per hour would be required for the Ajloun site. According to the Water Authority, sufficient water exists to meet those needs.

5.6: Summary and Conclusions

The analysis presented in Chapter 4 concluded that **demand for serviced industrial land and buildings over the next five years does not warrant the development of additional industrial estates at this time.** JIEC and private IEs and the Zarqa Free Zone currently have over 500 hectares of land available for sale or lease. There are an additional 840 hectares of industrial land available just by expanding currently operational industrial estates. However, aggressive marketing efforts by the JIEC and other developers and promotion agencies will significantly increase the demand for industrial estate land and buildings in Jordan.

This chapter suggests that—*when* there is sufficient demand—an expansion of Al Hassan or development of Al Muwaqer would be the best options from a site-specific technical point of view. That conclusion is based on the specific sites, which JIEC has identified or purchased. The Queen 'Alia Airport site also received a high ranking, but would directly compete with the private Al Moushata Industrial estate, also located adjacent to the airport.

The sites that ranked lowest—Salt, Madaba, and Ajloun—all required extensive leveling of land to make them suitable for industrial tenants. These sites are also not located along major roadways, and development of these would require major upgrades to the surrounding road networks.

This study did not look at alternative locations in each governorate. Salt, for example, has a large educated workforce, and is close enough to the industrial centers of the North to be attractive to Jordanian and Middle East investors. The Salt site, however, ranked very low because the location is hilly, expensive to develop, and would require extensive offsite infrastructure development. *If*, in the future, there is sufficient demand to warrant the construction of an additional industrial estate in the North, the JIEC might want to consider an alternate location within Salt.

much through a brochure or internet site. An industrial estate's marketing personnel must be thoroughly trained in the activities and trends and of a variety of industries. Only then can a promotion officer engage a potential investor in an informed and meaningful discussion about how the industrial estate offers the buildings, services, backward linkages, and market access required by a particular industry. An understanding of industry trends will also help an industrial estate better plan for future infrastructure suitable to specific types of investors.

Identify Opportunities Based on Trade and Investment Trends

It is useful for marketing staff to *predict* the sectors that have the greatest potential to expand or relocate to the industrial estate. An examination of regional and worldwide trade and investment flows can provide valuable clues about which industries to target. Thorough knowledge of Jordan's market access agreements is also necessary to plan a marketing strategy aimed at specific industries and countries. A promotion officer who cannot engage a potential investor in the specifics of Jordan's market access opportunities might miss a potential sale.

6.2: Recommendations for Capturing a Greater Share of Established Investment

Chapter 4 suggested that Jordan's industrial estates are only capturing 30 to 45 percent of potential investors in governorates in which an industrial estate is located. This is potential business lost by JIEC and private industrial estates. Capturing the investment of these foregone tenants would not boost Jordan's overall investment, but it would make good business sense for an industrial estate owner or manager. This section recommends ways in which the JIEC could capture a greater share of investment that does not locate in industrial estates.

Assess the Reasons Enterprises Do Not Locate in Industrial Estates

An assessment of the reasons why Jordan's industrial estates do not capture a larger portion of existing industrial operations was outside the scope of this study. Nonetheless, it would be a useful exercise for understanding the needs of large firms that typically do not locate in industrial estates, and small to medium-size factories that find purchase their own land.

Cater to the Space Requirements of Each Type of Investor

An industrial estate operating company must specialize in catering to the needs of one or more types of investors. Each has different preferences for industrial estate size, services, and location. The following types of investors were identified in Chapter 4:

- Small local—Small workshops that serve the immediate town or village area (Extremely location-sensitive)
- Medium-Size Jordanian—Domestic investors producing products for the Jordanian or neighboring country markets (Prefer Jordan's urban industrial areas)

- Middle East Regional—Middle East investors locating in Jordan in order to access the markets of the entire region (Prefer Jordan’s urban industrial areas or locations with good transportation)
- Non-Middle East Regional—Foreign company locating in Jordan to serve the Middle East market (Less sensitive to location within Jordan. Prefer locations with good transportation)
- International—Investor locating in Jordan to serve markets outside the Middle East (Less sensitive to location within Jordan)

Currently, JIEC and private industrial estates in Jordan have enough land available for all types of investors except “Small Local” enterprises. With Sahab Industrial Estate filled to capacity, the JIEC is no longer able to serve Medium-Size Jordanian companies whose location preference might be Amman. Medium-Size Jordanian investors would likely locate outside of an industrial estate before they would consider moving to a remote location like Tafila, Karak, or Al Hasa. If locating in Amman is a definite requirement, then these enterprises will locate in Al Tajamouat, Al Moushata, or completely outside any industrial estate. It is unlikely, however, that this type of investment will be lost to another country.

International and Regional Investors from outside the Middle East are less sensitive about location decisions within Jordan, and will locate in Gateway, Al Dulayl, and Karak Industrial Estates in greater numbers than Jordanian investors. There currently exists sufficient industrial space suitable for international and foreign regional investors. It is therefore, not justifiable at this time to develop additional remote locations such as Al Hasa, Tafila, or Mafraq.

Study the Possibility of Establishing Small Local Industrial Estates

Small local investors do not require the services of a large industrial estate. They typically locate in storefront locations along moderately traveled industrial streets in Jordan’s small cities and towns. Production and retail are often conducted at the same outlet, so it must be accessible to those that purchase the goods or services.

Small local industrial estates (LIEs) are sometimes established to cater to the needs of small local investors. LIEs rarely create additional demand, investment, or employment but can be useful in serving the following sources of potential demand for industrial property:

- Expansion of existing Jordanian small businesses whose activities are constrained by the lack of suitable and affordable industrial property
- Voluntary relocation of existing small industrial businesses whose current facilities are not suitable for their business activities
- Relocation of small industrial enterprises whose activities are in conflict with local zoning ordinances

LIEs provide the greatest benefits in terms of urban planning and environmental management. They provide a better-organized alternative to the unchecked sprawl of small industrial workshops outside small cities and towns. LIEs also offer small businesses the proper infrastructure they require.

The Palestinian Industrial Estate and Free Zones Authority (PIEFZA) plans to establish LIEs outside three cities in the West Bank and Gaza Strip. Each LIE will consist of several “blocks” of industrial units. Each block will contain 14 units measuring 125 square meters each. This will provide sufficient space for small workshops, repair services, custom tailoring shops, or small-scale food manufacturing. 150 to 400 industrial establishments will occupy an individual LIE. Unlike a traditional industrial estate, however, the LIEs will not be bordered by security fences or other obstacles that could impede the necessary flow of retail and wholesale traffic.

Local industrial estates generate their own unique management challenges. First, the facilities have a large number of small-scale tenants. This results in more contracts and transactions with tenants who are less sophisticated than the medium or large-size companies that locate in large industrial estates. Small tenants are also more likely to require more maintenance services, and their environmental activities are often difficult to monitor.

Second, small local enterprises are extremely location-sensitive, and have stringent requirements about how far from customers and suppliers they can locate. Many “wholesale” transactions at this scale closely resemble retail operations, and small tenants generally generate a lot of traffic throughout the LIE facility area. Attempts to relocate small industrial enterprises away from heavily trafficked industrial districts can have disastrous impacts on their businesses.

Despite the challenges that LIEs pose, their establishment might warrant additional consideration and investigation. Any study aimed at developing LIEs in Jordan should first assess the following:

- Characteristics of existing and desired facilities
- Proximity of businesses to clients and suppliers
- Current capacity utilization of small industrial enterprises in Jordan
- Satisfaction of small local investors with current services and facilities
- Current rental rates and willingness to pay for serviced LIEs
- Infrastructure needs of local industrial establishments

If such a study yields a desire by small local investors for better access to serviced facilities—and a willingness to pay for them—then it might be a good business venture to develop and manage several LIEs throughout Jordan. However, the LIEs will not likely create additional investment or employment opportunities.

