

IV. PLANNED DEVELOPMENT PROJECTS

4-1 Planned Large-Scale Projects

These projects proposed in the Casablanca and Amman Summits and other large-scale projects have been looked into in view of the relevance to the development of the Southern Districts. Besides these which are to be developed in the Southern Districts, those located outside of the Southern Districts are considered if they are deemed to affect, either favorably or adversely, the development of the Southern Districts.

4-1-1 Transportation Sector

A number of development projects in the transportation sector were proposed at both national and international levels to accelerate regional development in the Middle East and North Africa during the Economic Summits in Casablanca and Amman in 1994 and 1995, respectively.

Among the development projects, multiple development projects are closely related to the transportation sector including road, railway, air and sea transportation. In particular, bridges and access roads improvement along the Jordan Valley will be possibly implemented with the cooperation between Jordan and Israel. In addition, in order to implement the projects, multi-lateral cooperation with neighboring countries such as Iraq, Saudi Arabia, Palestinian National Authority (PNA), Egypt, and Israel is required for the regional development.

(1) Road transportation

The planned projects of international road transportation network are summarized below and detailed plans for road development are described in Table 4-1-1 and illustrated in Figure 4-1-1.

International Road Transport Development Projects

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- Mafrak (Jordan) - Irbid (Jordan) - Haifa (Israel) Network
 - Amman (Jordan) - Ashdod (Israel) - Gaza (PNA) - El Arish (Egypt) Network
 - Karak (Jordan) - Safi (Jordan) - Nitsana (Israel) - Ismailiya (Egypt) - Cairo (Egypt) Network
 - Aqaba (Jordan) - Eilat (Israel) - Suez (Egypt) - Cairo (Egypt) Network
 - Aqaba (Jordan) - Eilat (Israel) - Taba (Egypt) Ring Road
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1) Mafraq-Irbid-Haifa network

Although the road between Irbid and Haifa exists at present, improvement of road section is required to serve as an international road. The Mafraq-Irbid-Haifa road provides direct access to the Haifa Port on the Mediterranean Coast from the Northern Districts of Jordan through the Sheikh Hussein Bridge.

2) Amman-Ashdod-Gaza-El Arish network

This east-west network links Jordan to Egypt via Israel and PNA. The major cities on the connection involve Amman, Ashdod, Gaza and El Arish and its extension can reach Ismailiya in Egypt.

3) Karak-Safi-Nitsana-Ismailiya-Cairo network

The network connects the Southern Districts of Jordan with Egypt through Israel. The linkage penetrates to Karak, Safi, Nitsana, Ismailiya and Cairo.

4) Aqaba-Eilat-Suez-Cairo network

This east-west network in the Southern Districts of Jordan connects the Aqaba City with Cairo, passing by Eilat and Suez City, which is the shortest road link between the Southern Districts of Jordan and Cairo.

5) Aqaba-Eilat-Taba ring road

The purpose of the road project is to provide a road transportation link for Aqaba region in Jordan up to Egypt via Israel. This ring road serves as a bypass road that can facilitate efficient truck transport for distribution by avoiding traffic through the major cities such as Aqaba, Eilat and Taba.

(2) Rail transportation

The major future railway development projects both at international and national levels are listed below and illustrated in Figure 4-1-1 and 4-1-2.

Railway Transportation Improvement Projects

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- Zarqa-Aqaba Railway Link
 - Amman (Jordan) -Mafraq (Jordan) -Irbid (Jordan) -Haifa (Israel) Railway Link
 - Red Sea (Jordan) -Dead Sea Potash Complex (Jordan/Israel)-Beer Sheva (Israel)-Ashdod (Israel) Railway Link
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1) Zarqa-Aqaba link

The purpose of this project is to provide railway transportation service between the Northern/Central Districts and the Aqaba Port for distribution services for export and import. In particular, almost half of the whole section between Al Abiad/ Al Hasa to the Aqaba Port via Batn El Ghul with about 250 km is currently in operation for transportation of phosphate. However, the Amman-Al Abiad section has obsolete narrow gauge and is not in operation at present.

2) Amman (Jordan) -Mafrq (Jordan) -Irbid (Jordan) -Haifa (Israel) link

Currently, the existing railway section of Amman-Mafrq is under limited operation, while the section of Mafrq-Haifa does not exist. The project consists of improvement of the Amman-Mafrq section and construction of the Mafrq-Haifa section with a total length of about 150 km to connect the Northern/Central Districts of Jordan with Israel.

3) Red Sea (Jordan) -Dead Sea Potash Complex (Jordan/Israel)-Beer Sheva (Israel) - Ashdod (Israel) link

At present, the potash product from the Arab Potash Company (APC) in Safi near the Dead Sea is conveyed to the Aqaba Port by only truck transportation. The project consists of construction of a new railway link from Aqaba/Eilat to APC of approximately 170 km long to promote industrial activities through the inland railway network. In addition, the proposed railway network links the Ashdod Port by way of the proposed railway link between the Dead Sea and the Red Sea.

(3) Air transportation

With the trend of air transportation volume increase in Jordan, the improvement of air transport capacity is required. In this regard, several projects are proposed by the Civil Aviation Authority (CAA) to meet the future transportation needs. The future air transportation development plans are summarized below and the upgrading plans of the existing airports are listed in Table 4-1-2.

Air Transportation Improvement Projects

- Improvement and Expansion of Airport Facilities
 - Queen Alia International Airport (QAIA)
 - Amman Civil Airport (ACA)
 - Aqaba International Airport (AIA)
 - Construction of New Airport Facilities
 - Araba International Airport
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1) Queen Alia International Airport (QAIA) development plan

The capacity of QAIA was designed to accommodate 3 million passengers and 40,000 aircrafts per year to perform as a main air gateway to Jordan. Nevertheless, the current trend of increasing air traffic volume for tourism and trade has necessitated upgrading and improving the airport facilities to meet the future demand in the country. In the light of these conditions, the following improvement plans for QAIA have been proposed in the future.

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- Improvement and expansion of passenger & cargo terminals
 - Tunnel construction under taxi way
 - Asphalt concrete overlay for the north runway
 - Maintenance of the pavement to south runway
 - Extension of existing service road
 - Construction of access road to the airport
 - Expansion of fire station buildings
 - Construction of Mosque
 - Construction of taxi station
 - Remodeling of interior facilities
 - Improvement of telecommunication facilities
 - Improvement of electromechanical facilities
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2) Amman Civil Airport (ACA) development plan

Utilizing its locational advantage in Amman, ACA is currently serving as a local and short-distance regional airport. ACA could share the air traffic handling with QAIA for the future demands. The improvement and upgrading plans include:

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- Rehabilitation of airfield pavement
 - Expansion of passenger terminal
 - Improvement and maintenance for service road
 - Expansion of administration building
 - Construction of fire station
 - Improvement of telecommunication facilities
 - Improvement of electromechanical facilities
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3) Aqaba International Airport (AIA) development plan

Aqaba area has a high potentiality for industry and tourism development with easy accessibility to the seaport and airport. Similar to the trend of air traffic increase in QAIA, AIA has an observed steady increase of air traffic volume in recent years. In addition, the peace agreement between Jordan and Israel has encouraged a feasibility study for mutual utilization of AIA and the Eilat Airport as one major regional air traffic hub by making the most of the locational character. For this reason, various alternatives are proposed for the improvement of AIA that includes:

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- Construction of new passenger terminal including relevant facilities with a total area of about 8,000m²
 - Construction of taxi ways and expansion of aprons to accommodate large aircraft such as Boeing 747 aircraft
 - Improvement of asphalt concrete overlay for runway
 - Rehabilitation of service road
 - Construction of warehouse building
 - Construction of sewage treatment plant
 - Construction of housing complex for employees
 - Improvement of telecommunication facilities
 - Improvement of electromechanical facilities
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4) Proposed joint Araba International Airport development plan

In accordance with the discussion between Jordan and Israel in the Casablanca and Amman Summits, the development plan of Jordan and Israel of an airport in Araba for common use as a regional airport was proposed based on the joint aviation agreement. The new Araba Airport is planned to be located near the Jordanian and Israeli border, 12 km north of Eilat. The plan also includes transferring the function of the Eilat Airport to the proposed Araba Airport. The joint regional airport development plan includes:

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- Construction of new runway of Aqaba Airport close to international borderline
 - Construction of common terminal and aprons complex
 - Joint/ coordinated administration, management, air control and maintenance
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(4) Sea transportation

In accordance with the Peace Treaty between Jordan and Israel as well as the possibility of lifting embargo against Iraq in the future, the sea traffic volume of domestic and transit cargoes is presumed to increase. In order to meet the future cargo demand, the expansion of cargo and passenger handling capacity is required as discussed in the Casablanca and Amman Summit.

The future expansion and development plan of the Port of Aqaba that are proposed in the Casablanca and Amman Summit are summarized below.

The Port of Aqaba Improvement Plan

Project	Contents	Construction Cost
(1) New Multi-purpose Jetty	• Construction of a concrete berth with total length 180m with necessary facilities	US \$ 35 million
(2) Container Port	• Construction of two additional berths with 180m each	US \$ 30 million
(3) Passenger Terminal	• Construction of new 100m long berth that can accommodate ferries and ro-ro ships	US \$ 15 million
(4) Port Road Improvement	• Construction of a new 3.5 km long bypass along the backside of the terminal and a new 4.5 km long service road between the main port and the container port	US \$ 10 million
(5) Road Pavement	• Pavement of free zone and transship area, and storage yard with an area of 200,000 m ²	US \$ 3 million
(6) Phosphate Storage House	• Construction of new storage houses for phosphate	US \$ 23 million
(7) Cement Silo	• Construction of new cement silos	US \$ 8 million
(8) Equipment Storage House	• Construction of two new storage houses for spares of heavy equipment of 3,000 m ²	US \$ 1 million

4-1-2 Energy Sector

Various large-scale projects have been proposed for the energy sector at the Economic Summit of Middle East and North Africa in Casablanca and Amman in 1994 and 1995. Brief explanations are given below for those which relate to the Southern Districts.

(1) Oil pipeline

The following two plans for crude oil pipeline are proposed by the Government of Israel as a development option for the Middle East / East Mediterranean Region.

1) Stretching the T.A.P. pipeline to Haifa

The T.A.P line is a 30-inch diameter pipeline that crosses north Saudi Arabia, Jordan, Syria and Golan Heights. This line has a capacity of 25 million tons per annum, but has not been used since 1970.

This plan is to stretch the existing T.A.P. pipeline to Haifa in Israel from Irbid through the Valley of Jezrael, with an extension length of about 100 km. The plan requires a certain investment to increase the pipeline original capacity of 25 million tons.

2) Stretching the Yanbu pipeline to Eilat

The Yanbu pipeline with a capacity of 75 million tons per annum traverses Saudi Arabia and ends at the Red Sea export terminal at Yanbu.

This plan is to stretch the existing Yanbu pipeline to Eilat through Aqaba with an extension length about 950 km. At Eilat, the pipeline will be connected to the existing Eilat-Ashkelon oil pipeline (K.Z.A.A. (EAPL) line). This plan is limited by K.Z.A.A. pipeline's crude oil capacity, which is approximately 45 million tons, and an expansion to 60 million tons might be possible.

(2) Export-oriented refinery

The Ministry of Energy and Mineral Resources is planning to construct a new export-oriented oil refinery at Aqaba with a capacity of 250,000 BPSD (barrels per stream day). It is anticipated that international oil companies implement the project in the form of BOO (Build, Operation and Own) or BOT (Build, Operation and Transfer).

Crude oil may be supplied from Yanbu of Saudi Arabia by sea transport or from Iraq via the newly planned pipeline.

The fixed investment cost is estimated to be approximately US\$ 1.5 billion. Any feasibility study has not been done yet and it would be made by the selected investors after pre-qualification.

(3) LNG receiving terminal

The import of natural gas into Israel was not considered realistic until recent days, due to its political isolation. As a result of the peace process, Egypt and Qatar have expressed initial interest in supplying natural gas to Israel.

Israel has two alternatives in importing natural gas:

- In a gaseous form via pipelines; and
- In a liquefied form (LNG) via special vessels equipped to transport LNG at -160°C

Gas from Egypt is intended for the former alternative, and gas from Qatar is intended for the latter alternative.

The US' Enron Corporation has a plan to build a LNG receiving terminal at Aqaba, Eilat or the Mediterranean coast of Israel to regasify LNG supplied from Qatar and supply gas to Israel.

Jordan has an idea to import 500,000 tons per year of LNG and build a power station using re-gasified gas, if this project is materialized and a re-gasification plant is located in Aqaba.

4-1-3 Water Supply Sector

(1) The Peace Treaty projects

1) General

The Peace Treaty between Jordan and Israel that includes the issue of water, addressed in Article VI, is shown below.

"With the view to achieving a comprehensive and lasting settlement of all the water problems between them:

- (a) The Parties agree mutually to recognize the rightful allocations of both of them in Jordan River and Yarmouk River waters and Araba/Arava groundwater in accordance with the agreed acceptable principals, quantities and quality as set out in Annex II, which shall be fully respected and complied with.

- (b) The Parties, recognizing the necessity to find a practical, just and agreed solution to their water problems and with the view that the subject of water can form the basis for the advancement of cooperation between them, jointly undertake to ensure that the management and development of their water resources do not, in any way, harm the water resources of the other Party.
- (c) The Parties recognize that their water resources are not sufficient to meet their needs. More water should be supplied for their use through various methods, including projects of regional and international cooperation."

The implementation of both Parties' undertaking under this Article is detailed in Annex II which includes seven Articles as follows:

- a) Allocation; (i) Water from the Yarmouk River,
(ii) Water from the Jordan River,
(iii) Additional water,
(iv) Operation and Maintenance
- b) Storage
- c) Water Quality and Protection
- d) Groundwater in Wadi Araba/Emek Ha'arava
- e) Notification and Agreement
- f) Cooperation
- g) Joint Water Committee

2) Jordan's new water rights

- (a) Water from the Yarmouk River

Article I.1.a shows that during summer (May 15 to October 15), Israel is entitled to abstract 12 million m³/year from the Yarmouk downstream of Adassiya and that the remaining flow will be available to Jordan. Article I.1.b implies that during winter, Israel is entitled to abstract 13 million m³/year with the rest being available to Jordan. Article I.1.c describes that in order to minimize the waste of water, Jordan and Israel may use excess flood water downstream of the Adassiya Diversion that is not usable and will evidently go to waste unused.

The flow of the Yarmouk River at Adassiya is estimated at 270 million m³/year. The remainder of the flow is estimated at 245 million m³/year. It is made up of the following:

- 100 million m³/year base flow, currently being used in total, and
- 145 million m³/year flood flow, of which only 20 million m³/year is used due to the lack of storage facilities

Before the Treaty is concluded, Jordan's usage of water from the Yarmouk River was 120 million m³/year on average, of which 100 million m³ was base flow. Accordingly, Jordan can additionally use 125 million m³/year of flood water. This increase is divided as follows:

- 10 million m³/year during summer, from May 15 to October 15, which can be used in total for all purposes (the amount of water that was used by Israel before concluding the Treaty will be recovered),
- 20 million m³/year during summer from the Lake Tiberias, which will be stored in the Lake Tiberias by Israel during winter for Jordan's share in the Yarmouk River (the quantity can be used in total for all purposes), and
- 95 million m³/year of floods to be impounded by storage systems, which can be used only when the required storage systems are built.

(b) Water from the Jordan River

It is estimated that 80 million m³/year can be provided by rehabilitating the flow of the Jordan River. The quantity will be equally shared between Jordan and Israel. However, its usage is most likely limited to the irrigation purpose only after blending with fresh water, due to its high salinity.

(c) Desalinated water

Article I.2.d describes that Israel will provide 10 million m³/year of water from the proposed 20 million m³/year desalination plant which will use brackish water springs diverted to the Jordan River. The Water Authority of Jordan (WAJ) says the desalinated water will be supplied during the winter period only. This is equivalent to an average daily flow of 47,000 m³.

According to Article I.2.d, Israel will provide 10 million m³ during the winter period through the Deganya Conveyor until the desalination plant is developed.

(d) Groundwater in Wadi Araba

Article IV shows that Israel will be allowed to abstract 10 million m³/year of groundwater that is above the current use, about 5 million m³/year, abstracted by Israeli farms. It is, however, allowed only when such abstraction is permissible

under the hydrogeological conditions and the increase in Israeli abstraction will not adversely affect Jordanian uses. The Joint Water Committee is still discussing this matter.

(2) The Disi-Amman water supply project

The Disi-Amman water supply project has been conceived by WAJ. The main objective of the scheme is to supply additional urban water to the Greater Amman Area from the Disi Aquifer in the Southern Districts, located approximately 325 km from Amman. WAJ has divided the Disi-Amman water supply project into four stages as follows:

- First stage: study and preliminary design;
- Second stage: detailed design based on the technical recommendations of the first stage;
- Third stage: implementation that includes fund raising based on the financial recommendations of the first stage, and an award of contracts; and
- Fourth stage: construction and commissioning of the project.

The first stage has been divided further into two phases, i.e. the phase of conceptual study, and the phase of a feasibility study and preliminary design of system components.

In January 1996, the final report on the conceptual study was presented. According to this report, the project will provide 100 million m³/year of drinking water for the first stage by the year 2000, and 150 million m³/year for the second stage by the year 2020. Also, it is recommended that the route along the Desert Highway be selected as the preferred pipeline route. The estimated capital costs are JD 362 million.

4-1-4 Electricity and Telecommunication Sectors

(1) Electricity

NEPCO gives an annual updated electricity demand forecast for the next 20 years in order to grasp the increased demand for electricity in all economic sectors in consideration of population increase, and economical and social developments. Based on the demand forecasts, NEPCO prepares the expansion plan of the systems to meet the demand in the most economic and reliable way.

At present NEPCO has an expansion project for the Aqaba Thermal Power Station and an upgrading project for the 400 kV transmission line between the Amman South

Substation and the Aqaba Thermal Power Station, to increase electricity supply capacity to the Amman area to cover future demand.

Jordan, Egypt, Syria, Iraq and Turkey have concluded general electricity trading agreements to install electrical networks among these five countries in June 1993. A 400 kV interconnection project between Jordan and Egypt is scheduled to be completed in 1997. Also a 400 kV interconnection project between Jordan and Syria, for which financing has already been arranged, will be completed in 1997.

Besides the above NEPCO's projects, a 400 kV power transmission line project, which connects the load centers of Jordan, Egypt, Israel and Palestinian National Authority (PNA), was proposed at the Middle East and North Africa Economic Summit in 1995.

Planned projects for electrical power system development in Jordan are summarized as follows:

- 1) Upgrading of the 400 kV transmission line between the Amman South Substation and the Aqaba Thermal Power Station

The 400 kV transmission line between the Amman South Substation and the Aqaba Thermal Station is planned to be upgraded. This project includes the construction of a 400 / 132 kV substation in the Amman South Substation, consisting of six complete bays of 400 kV switchgear, two complete bays of 132 kV switchgear and two 400 MVA, 400 / 132 / 33 kV auto - transformers.

- 2) Jordan - Egypt link project

The project is to establish interconnection between Jordanian and Egyptian electricity systems by construction the following:

- a 400 kV transmission line of 10 km long between the Aqaba Thermal Power Station and the Aqaba coast;
- a 400 kV submarine cable laid in the Gulf of Aqaba, between the Aqaba coast and Naqab in Egypt;
- a 500 / 400 / 220 kV substation in Naqab in Egypt; and
- a 400 / 132 kV substation in the Aqaba Thermal Power Station which consists of seven complete bays of 400 kV switchgear, two complete bays of 132 kV switchgear and two 240 MVA, 400 / 132 / 33 kV auto - transformers and 100 MVar 400 kV reactor.

3) Jordan - Syrian link project

The project involves the interconnection with the Syrian electricity system. It includes a 400 kV double circuit transmission line of 40 km long from the Amman South Substation to the Amman North Substation (a new substation), and a 400 kV single circuit transmission line of 60 km long from the Amman North Substation to the Syrian border to interconnect with the Syrian 400 kV network.

The above Amman North Substation is planned to be constructed as a 400 / 132 kV substation which consists of five complete bays of 400 kV switchgear in the first stage.

4) Expansion project of the Aqaba Thermal Power Station

The Aqaba thermal power station is planned to be expanded by adding three thermal (heavy fuel oil burning) power generating units with a capacity of 130 MW each. By the completion of the project in 1998, the installed capacity of the power station will reach 650 MW in total.

5) 400 kV transmission line project among Jordan, Egypt, Israel and PNA

The project's facilities, which will be built in two major phases, are scheduled for completion by the end of 1999. Phase I is to connect Jordan with PNA and Israel, and Phase II is to connect Israel with PNA and Egypt. Phase I and II will include the following works:

Phase I: Jordan - The West Bank - Israel

- Amman North-Jerusalem East: 65 km of 400 kV double circuit;
- Jerusalem East-Zafit: 35 km of 400 kV double circuit;
- Hebron-Jerusalem East-Nablus: 100 km of 132 kV double circuit;
- Amman North and Zafit substation extensions: 400 kV;
- Jerusalem East substation: 400/132 kV;
- Hebron, Nablus and Jerusalem East substations: 132/33 kV; and
- International reinforcement in Jordan by constructing the Amman North- Aqaba transmission line.

Phase II : Egypt - The West Bank and Gaza - Israel

- Ayoun Mousa-Qantara East: 100 km of 220 kV double circuit;
- El Arish-Gaza-Zafit: 100 km of 400 kV double circuit;
- Ayoun Mousa substation: 220/400 kV;
- Gaza substation: 400/132 kV; and

- Zafit substation: 400 kV.

(2) Telecommunications

To meet the surging demand for telephones with qualitative improvement of the telecommunication service, TCC has formulated a 15-year plan for the network development.

The first stage of this plan has already started under the name of National Telecommunication Program (NTP) with targets to double the network capacity up to around 600,000 lines for the period from 1994 to 1998. At the second stage that is scheduled for the period from 1998 to 2008, the telecommunication services will be developed and expanded continuously. The second stage is composed of the following major projects:

- 1) Replacement of existing analogue exchanges with digital exchanges,
- 2) Replacement of existing digital exchanges with new ones at the end of their economic life,
- 3) Expansion of the basic telecommunication network with a capacity of more than 1,270,000 lines through provision of new network exchanges, and
- 4) Installation of a regional optical fiber transmission link from Amman to Tel Aviv.

Penetration rate in 1995 is 7.5 per 100 inhabitants and the expected rate after the end of the on-going projects of the expected projects will be 20 per 100 inhabitants; 20 telephone lines per 100 inhabitants.

Table 4-1-3 shows the outline of projects included in the 15-year plan of the telecommunication network development in Jordan. Among those projects, the following projects are particularly relevant the Southern Districts:

1) Rural Telecommunication & Dead Sea Project

New digital exchange: Madaba South (increased capacity: 221 lines)
 Aqaba / Wadi Araba (increased capacity: 304 lines)
 East coast - Dead Sea (increased capacity: 1,000 lines)
 Ma'an Rural Area (increased capacity: 918 lines)

2) Karak Telecommunication Project

2 New digital exchanges and 23 new Remote Line Units (RLUs) with Total capacity of 19,747 lines to serve 122 cities, villages and localities.

3) Tafila Telecommunication Project

1 New digital exchange and 8 new RLUs with total capacity of 10,312 lines to serve 42 cities, villages and localities.

4) Ma'an Telecommunication Project

New digital exchange: Ma'an (increased capacity: 5,000 lines)
Wadi Musa (increased capacity: 1,200 lines)
Shawbak (increased capacity: 840 lines)

5) Aqaba Telecommunication Project

New digital exchange (increased capacity: 5,000 lines)
Expansion of primary exchange (increased capacity: 6,000 lines)
Expansion of 1 new RLU (increased capacity: 100 lines)

6) Radio Rural Communication System: Automatic telephone services for remotely scattered areas in three governorates, Madaba, Ma'an and Aqaba

4-1-5 Industrial Sector

Brief explanations are given below for various large-scale projects for the industrial sector which have been proposed at the Economic Summit of Middle East and North Africa in 1995.

(1) Potassium sulfate / di-calcium phosphate project

The Arab Potash Company (APC) is planning to construct a plant for the manufacture of potassium sulphate (SOP) and di-calcium phosphate (DCP) with a capacity of 75,000 tons per year of SOP and 40,800 tons per year of DCP. SOP will be used as a fertilizer while DCP as an animal feed supplement. Local resources of potassium chloride and phosphate rock will be used as the main raw materials.

The SOP/DCP complex will be constructed in Aqaba near the fertilizer plant of Nippon Jordan Fertilizer Company (NJFC) that is under construction. This location is good for both raw material supply and product export. A French company (SOFRECO) conducted a feasibility study and estimated the project cost at US\$ 85 million.

In order to proceed with projects utilizing the Dead Sea mineral resources, the Jordan Dead Sea Industries Company (JODICO) was established with the following shareholders; APC (51%), Social Security Corporation (18%), Jordan Investment

Corporation (10%), Jordan Phosphates Mines Company (6%), and banks and others (15%). The company has a capital of JD 60 million and will set up subsidiary companies to produce other products derived from the Dead Sea brine.

The May 3, 1996 issue of MEED reported that JODICO would invite technical and financial tenders for a turnkey project for the construction of a grassroots SOP/DCP complex in Aqaba, in early May 1996.

(2) Magnesium oxide project

It is planned to produce magnesium oxide (MgO) from limestone and magnesium chloride (MgCl₂) contained in the Dead Sea brine. A pilot plant test has been carried out by APC and RCE (an Austrian engineering company) at the Safi plant site to test the raw material available in Jordan. The test results are so far good. Magnesium Oxide (MgO) is mainly used for producing fire bricks.

Based on a feasibility study that has been completed in August 1994, Arab and European markets will be the targets for magnesium oxide, a commercial plant being constructed at Safi with a capacity of 60,000 tons per year. Total investment cost for the plant construction was estimated to be US\$ 85 to 90 million by the study.

This project will be proceeded by JODICO as well as the SOP/DCP Project. According to the April 19, 1996 issue of MEED, pre-qualification tenders were invited for execution of detailed engineering and procurement of a plant to produce 50,000 tons a year of magnesium oxide and 10,000 tons a year of magnesium oxide special products.

(3) Bromine and derivative project

APC plans to build a complex to extract bromine from the effluent brine of the potash plant operation and to manufacture its derivatives.

Bromine derivatives are used as intermediates in the manufacture of many products including agrochemical, pharmaceuticals and fire retardants. Tetrabromobisphenol-A is the largest volume bromine derivative and is used as a fire retardant for epoxy resins in the circuit board industry.

World bromine production is 400,000 to 450,000 tons per year. The merchant bromine market size, which is the volume equal to production minus captive use, ranges from 70,000 to 80,000 tons per year. The largest producing country of merchant bromine is the United States, the second one is Israel. These two countries account for

85% of the world production. The remaining 15% is produced in Japan and Europe, which are expected to desist as production costs escalate.

APC concluded a Minutes of understanding for this project, with the Dead Sea Bromine of Israel. Production capacity of bromine will vary between 25,000 and 50,000 tons per year, depending on derivatives. Bromine derivatives may include Tetrabromobisphenol-A (TBBPA), calcium bromide and sodium bromide, but this has not yet been finalized. The Dead Sea Bromine Company will provide technology for bromine production and will have responsibility for marketing, since they have already established the market mainly in Europe. The company will also supply chlorine to APC by using tank trucks. Bromine will be exported by means of special containers.

(4) Phosphoric acid project

Phosphoric acid is the main intermediate product for producing phosphatic fertilizers from phosphate rock. JPMC is planning to build a new phosphoric acid plant in Eshidiya, close to the JPMC phosphate mine. The project involves the construction of two phosphoric acid plants with a total production capacity of 500,000 tons per year. Of this volume, 225,000 tons per year will be supplied to a fertilizer complex at Port Qasim, Pakistan which will be built by a joint venture between Fauji Fertilizer Co. and JPMC; about 100,000 tons per year to a NPK plant being constructed by NJFC; and the balance will be exported.

4-2 Preliminary Assessment of the Necessity of Projects and Expected Role of the Development

Numerous projects were proposed at MENA Summits held in Casablanca and Amman in 1994 and 1995, respectively. Some of them have direct relevance to the economic and industrial development in the Southern Districts while some would indirectly affect their development. Together with large-scale domestic projects in Jordan, these bi and multi-lateral project are assessed mainly from the viewpoint of their necessities and significance of effects.

It should be noted that the assessment is made in order to clarify the major preconditions for the industrial development in the Southern Districts based on the readily available reports/information without conducting any studies to assess their feasibilities. The assessment made and presented herein is, therefore, of preliminary nature and solely for the purpose of the Study.

4-2-1 Transportation Sector

Multiple transportation development projects have been proposed for the transportation sector. These projects together with other large-scale projects are preliminarily assessed from the viewpoint of the economic development of the country as well as the Southern Districts, considering their necessities and effects as follows.

- Provision of national and international transportation networks to promote industrial linkage, trade distribution services, and tourism activities;
- Strengthening linkages among urban areas/functions ; and
- Enforcement of accessibility to international trading seaports and airports

(1) Land transportation

1) Roads

Two important road projects were proposed in the Amman Summit:

- Mafrq (Jordan) - Irbid (Jordan) - Haifa (Israel) network
- Amman (Jordan) - Ashdod (Israel) - Gaza (PNA) - El Arish (Egypt) network

These two roads running east-west would provide Jordan, whose sea gateway have long been limited to the one along the Red Sea, with direct and easy access to the Mediterranean Sea and the Mediterranean countries if the agreement should be reached between Jordan and Israel. The two major sea ports of Israel, the capacity of each of which is comparable to that of Aqaba, could be availed for Jordan for trading with the

Mediterranean countries. The economic and industrial cooperation among the countries, in particular Jordan, Israel and the West Bank and Gaza could be reinforced. The King Hussein Bridge and the Sheikh Hussein Bridge, for which basic designs have already been completed with technical assistance extended by the Japanese Government, will be constructed across the Jordan River forming parts of the two roads. In August 1996, the Japanese Government made an agreement to offer grant aid for the reconstruction of the Sheikh Hussein Bridge.

In addition, two other bridges, the Prince Mohammed Bridge and the King Abdullah Bridge, are considered to be improved under the German Government financial aid.

When completed, the impacts of these road networks would be quite substantial. Before implementation, however, detailed studies should be conducted paying due attention to the following aspects.

- Priority

Whether both should be implemented or one should suffice at least within the time frame up to the year 2010 should be studied. Priority between the two should also be studied considering the development strategies for the Central and Northern Districts as well as Jordan as a whole.

- Utilization of the Israeli ports

Study should be made on the customs clearance and handling of Jordanian cargoes to be loaded/unloaded at the Israeli Ports of Haifa and Ashdod. The adverse impacts of possible reduction of cargoes handled at the Aqaba Port should also be carefully studied and in particular its impact on employment in the trucking industry in the southern region.

A new outer ring road connecting the four cities of Aqaba in Jordan, Eilat in Israel, and Taba and Nuweiba in Egypt around the Aqaba Gulf has been proposed. This road would establish transport link around the Aqaba Gulf and might play certain role in increasing the tourists for this area. From the viewpoint of the industrial development in the Southern Districts, the impacts of this project should be studied. Another proposal at the Amman Summit is to extend the above-mentioned road up to Cairo via Suez City across the Sinai Peninsula. However, this project does not seem to be urgent in consideration of the long distance as well as the low intensity of land use along the proposed route. Providing direct access for

the Karak Governorate to Israel, the proposed Karak - Safi - Nitsana (Israel) - Ismailiya (Egypt) - Cairo (Egypt) would be of significance for the development of the Southern Districts, though its justification depends on the Government's policy.

2) Railway

Along the route of Amman - Mafraq - Irbid - Haifa, construction of a railway link was proposed together with the road project at the Amman Summit by reviving and rehabilitating the railway between Amman and Mafraq which shows quite inactive operation at present, as well as constructing a new section from Mafraq through Haifa via Irbid. It seems advisable, however, that road link be firstly established and traffic demand be carefully observed before decision is made on the railway.

Construction of a new rail way connecting the Dead Sea, Red Sea and Ashdod in Israel, has been proposed in the Amman Summit, aiming at transporting increased volume of potash and other minerals produced in the Dead Sea. As the future increase of potash and other mineral products is estimated to be almost double by 2005, the Dead Sea - Red Sea railway link should be considered as an alternative road transport mode based on the future demand. With regard to the Red Sea - Dead Sea - Ashdod section, the possibility of common use between Jordan and Israel seems to be high.

At present, Aqaba is connected with Amman by rail besides the Desert Highway. Of this railway, the Aqaba - Al Hasa section is active transporting phosphate rock from the mine to the port. The Amman - Al Hasa section, however, is not in operation at present. A project has been proposed to revive the Al Hasa - Amman section and establish another north-south trunk line for the country. This project would, if implemented, play certain role in reinforcing the transport capacity of the country. The Desert Highway seemingly having room for accommodating additional traffic, however, it may be advisable that study be conducted on the additional capacity of the highway as well as cost comparison between the expansion of the highway and rehabilitation of the railway.

By the year 1998, the phosphate production at the Eshidiya mine is planned to be doubled. Currently, the railway exists only between Batn El Ghul and the Aqaba Port. For this reason, the majority of phosphate has been transported by truck mode to the Aqaba Port. This road mode, however, seems to be inefficient because the road route is a detour to Aqaba via Ma'an. The other transport mode is the mixed truck and railway mode. Phosphate is carried from Eshidiya to Batn El Ghul by truck and is

transferred from the truck to the train bound for Aqaba, which is inefficient transport mode. To perform efficient transport of phosphate rock from the Eshidiya mine to the Aqaba Port, construction of a new railway section between the Eshidiya mine to Batn El Ghul is required. If this section is completed, phosphate products from the Eshidiya mine can be transported to the Aqaba Port solely by railway mode on the shortest route.

The majority of phosphate at the Eshidiya mine is transported to the Aqaba Port and some amount of phosphate rock is sent to the A-1 Industrial Zone (A-1 IZ) near Saudi Arabia for processing. If the Aqaba-A-1 IZ section is completed, a direct railway network is established from the Eshidiya mine to the A-1 IZ along with the implementation of Eshidiya-Batn El Ghul rail section. This new railway section would play a significant role by reducing phosphate truck traffic near the Aqaba area.

(2) Port

The Japan International Cooperation Agency (JICA) extended technical cooperation to Jordan to conduct the "Study on the Improvement Plan of the Port of Aqaba in the Hashemite Kingdom of Jordan (Port of Aqaba Study)" for evaluating the feasibility of the expansion of the Aqaba Port. In the final report completed in March 1996, various scenarios have been presented with regard to the external conditions including the Middle-East peace progress and sanctions against Iraq. Among the nine scenarios presented, Case 1 (most optimistic), Case 5 (medium), and Case 9 (most conservative) are specifically explained. If compared with the scenarios assumed in the Study on Industrial Development in the Southern Districts, Case 1 roughly corresponds to Ideal Scenario of the Study while Case 5 to Optimistic Scenario. According to the Port of Aqaba Study, eighteen berths should be constructed by the year 2010 to cope with increasing demand for handling even under the most conservative scenario.

The Aqaba Port should be expanded in line with the recommendation made in the Port of Aqaba Study, paying due attention to the following aspects.

- Progress of the recovery of cargo handling volume,
- Possible shifting of cargo handling to the Mediterranean Ports of Haifa and Ashdod in case the two road connections in the north should be realized, and
- Shifting cargoes handled currently at the Eilat Port in Israel to the Aqaba Port.

(3) Airport

At the Amman Summit, the following two alternative development plans were presented.

- Expansion of the existing Aqaba International Airport (AIA) with an extended runway which can accommodate jumbo class aircraft, and
- Construction of a first-grade international airport with two runways and terminals for joint development and management by Jordan and Israel possibly utilizing the existing facilities of the AIA.

The development of a full-scale international airport, first alternative, together with the multiple lines connected with various cities in the world would give significant impacts on the attraction of foreign investors to Aqaba and other Southern Districts as well as foreign tourists. The second alternative would fully depend on the agreement between the two countries. If implemented, the impacts might be bigger. The estimated costs for the improvement of QAIA, AIA and ACA are approximately JD 15.5 million, JD 24.0 million and JD 6.1 million, respectively.

After the Amman Summit, a feasibility study on the improvement plan of AIA was completed by CAA in July 1996. As a result of the feasibility study, two options were proposed for the expansion of AIA. The first option (called C option) is to construct a common terminal building with access from both Israel and Jordan sides. The total cost is estimated at approximately US\$ 284,343,000 for phases I and II. The second option (called D-1 option) is to provide a terminal building on Jordan side only. The total cost is approximately US\$ 149,931,000 for phases I and II. Currently, it is said that D-1 option is considered preferable to C option in economical and technical terms.

4-2-2 Energy Sector

(1) Export-oriented refinery

Although feasibility of the export-oriented refinery project cannot be judged without a feasibility study, it could be said, as a general rule, that it would be very difficult to establish a grass roots refinery for export purpose in a non-oil-producing country like Jordan. Such refinery could not have sufficient advantage in term of economics over those in oil-producing countries where crude oil is available at low cost. It is essential that Jordan look for partners who have experience of BOO or BOT scheme and can provide crude oil at low cost, in order to realize this project by BOO or BOT scheme.

(2) Oil pipeline

This project was proposed by Israel at the Middle-East and North Africa Economic Summit in 1995. Jordan is the country where crude pipelines pass through and may have branches to the own refinery. At present, the Jordan Petroleum Refinery Co. Ltd. (JPRC)

is importing crude oil from Iraq by tank trucks to treat at the Zarqa refinery, that is the only Jordanian refinery. If a crude oil pipeline is built and operated to transport crude oil to the Zarqa refinery, it can reduce the transportation cost. However, realization of this project highly depends on the political issue and it is not easy to evaluate it.

(3) LNG receiving terminal

This project is one of the options for natural gas supply to Israel that was proposed by Israel at the Middle East and North Africa Economic Summit in 1995. This project will create opportunities for the industrial development by utilizing cold energy of the LNG in the fields of air separation, cold storage for goods, manufacturing of liquid dioxide and dry ice, manufacturing of frozen foods, etc., in the Aqaba area. The project will generate both direct and indirect job opportunities for Jordanian work force and will increase foreign exchange earnings as well.

4-2-3 Water Supply Sector

(1) The Peace Treaty projects

1) Summary of Jordan's new water rights

The table below summarizes Jordan's new water rights according to the Peace Treaty. 105 million m³/year of water is expected to be newly availed for municipal and industrial uses. Of which, however, 50 million m³/year is still indefinite.

Source	Unit: million m ³ /year			
	For Municipal & Industrial Uses	For Agricultural Use	Spillage	Total Uses
Yarmouk River	45	70	10	125
Desalinated Water	10	-	-	10
Jordan River	-	40	-	40
Indefinite	50	-	-	50
Total	105	110	10	225

2) Water from the Yarmouk River

The current water conveyance capacity from the Yarmouk River to Amman is 45 million m³/year. Of which, an amount of 30 million m³/year is currently being used. The water conveyance capacity from the Yarmouk River will be increased to 90 million m³/year by 2000, 45 million m³/year of municipal water being additionally supplied to Amman for domestic and industrial purposes. This project is divided into the following four works.

(a) Construction of the new Adassiya-Deir Alla water conveyance pipeline

The work is to construct water collection facilities in the Yarmouk River, Mukheiba wells and the Lake Tiberias along with a water conveyance pipeline having a capacity of 90 million m³/year and a length of 60 km. The feasibility study was finished. This work is scheduled to be executed by EU.

(b) Extension of the existing Deir Alla-Zai water conveyance facilities

The work is to increase the water conveyance capacity from 45 million m³/year to 90 million m³/year by reinforcement of the pumping stations. This work is scheduled to be executed under Japan's Grant Aid Program. JICA is carrying out the basic design study.

(c) Extension of the Zai water purification plant

This work is scheduled to be executed together with the extension of the Deir Alla-Zai water conveyance facilities under Japan's Grant Aid Program. JICA is carrying out the basic design study.

(d) Extension of the Zai-Amman water conveyance facilities

The work is for reinforcement of 16 km water conveyance facilities from the Zai water purification plant to the Dabuk Reservoir in Amman City. This work will be carried out using Jordan's own budget.

3) Unity dam

Construction of the Unity Dam in the Yarmouk River will be needed to meet the Amman's demand after 2005. The dam may provide 50 million m³/year of water. The Water agreement between Jordan and Syria, however, is a key factor for its realization because the upper catchment of the Yarmouk River lies within the territory of Syria. Regarding the water from the Yarmouk River, the abstraction increase in Syria should be considered. However, an agreement on the Yarmouk River water right has not been concluded yet between Jordan and Syria. The Unity Dam project rests on a shaky ground now.

4) Desalinated water

10 million m³/year of desalinated water may be provided from Israel utilizing its brackish water. Such amount of desalinated water has a small effect to supplement the

shortage of water in the Greater Amman Area. However, it has a sufficient effect on relieving water shortage in Irbid Governorate where required water import is next to Amman in the northern governorates.

At present, it is not clear when this water may become available, or how or to where it will be supplied. WAJ indicated that the desalinated water might be supplied through Israel's potable water system. If desalinated water should be made available to Amman, an option of transferring some or all of the desalinated water to Irbid while supplying more of the Yarmouk River water to Amman should be studied.

5) Preliminary assessment of the Peace Treaty Projects

All the above-mentioned Peace Treaty water projects are of vital importance for securing additional water to the Amman and Irbid regions. Every effort should be made to bring these into reality. Incremental supply to Jordan from the Yarmouk River, however, is contemplated on the assumption that the water abstraction by Syria where the upper catchment of the river lies, should remain at the current level. Talks among the concerned countries, therefore, may be necessitated.

(2) The Disi-Amman water supply project

1) Outline of the project

Municipal water demand for the northern eight governorates, Amman, Madaba, Zarqa, Balqa, Irbid, Jarash, Ajlun and Mafraq was 246 million m³/year in 1994 and is expected to increase to 304 million m³/year in 2000 and 426 million m³/year in 2010. If the current supply capacity of 191 million m³/year is not augmented, shortage of the water supply will be 114 million m³/year in 2000 and 235 million m³/year in 2010 as shown below.

Projected Municipal Water Demand and Water Balance for Northern Governorates

Year	Municipal Water Demand	Water Supply	Unit: million m ³ /year
			Balance
1994	246.190	190.712	-55.478
2000	304.335	190.712	-113.623
2005	356.662	190.712	-165.950
2010	425.650	190.712	-234.938

A feasibility study is being conducted on the conveyance of Disi groundwater to Amman which is scheduled to be completed in mid-1996. According to the interim

result of the study, 100 million m³ of Disi water should be transported to Amman by 2000 and 150 million m³ by 2020 at a unit cost of conveyance of JD 0.5 per m³ which is much higher than the WAJ's overall average of JD 0.326 per m³, due to the long distance and difference of altitudes between the source and the demand center.

2) Preliminary assessment

Currently, 75 million m³/year of Disi groundwater is abstracted to supply water for Aqaba City (12 million m³) and the Mudawara agricultural area (63 million m³). As rapid development is expected in the Southern Districts, water demand will sharply increase. Disi groundwater should meet the demand increase at least in Aqaba and Ma'an.

It may be advisable that water demand of the Southern Districts be estimated based on its expected rapid development in line with the Government policy of giving high priority to this region. In particular, water demand which is expected to be met by the Disi groundwater should be calculated. Subsequently, water demand/supply balance should be estimated for the Southern Districts as well as the capital region.

Based on the results of the balance study, water supply projects should be worked out. In accordance with the Government policy of avoiding over-concentration in Amman and giving priority to the southern region development, the followings should be considered:

- Suppressing the sharp increase of water demand to be generated in Amman,
- Desalination of the brackish groundwater in the Northern and Central Districts,
- Desalination of sea water in the Gulf of Aqaba, and
- Conversion of water use to higher value-added production.

In this context, allocation and use of the Disi groundwater should be optimized considering the relative costs of the water to be supplied under various cases.

4-2-4 Electricity and Telecommunication Sectors

(1) Electricity

1) Upgrading of the 400 kV transmission line between the Amman South Substation - Aqaba Thermal Power Station

This project is being implemented by JEA for the purpose of supplying electricity from the Aqaba Thermal Power Station to the Northern / Central Districts to satisfy

their future demand for electricity. In these areas, the demand is currently satisfied, but it is growing rapidly.

Contractors for this project have already been fixed and some construction work has already been commenced. The completion of the project is scheduled for 1999, and will contribute toward providing electricity for the high demand area.

2) Jordan - Egypt link project

This project is being materialized as a part of an electrical network project among five countries, Jordan, Egypt, Syria, Iraq and Turkey, under the general electricity trading agreements concluded in 1993 among the five countries.

Most of the tenders have already been invited for the project, in particular the fabrication work for a submarine cable in the Gulf of Aqaba has already commenced. The project is scheduled to be completed in 1997.

The completion of the project will contribute to the electricity trading among the five countries as well as Jordan and Egypt. In particular, excess electricity in the off-peak period can be utilized effectively after the completion of the entire project, since each country has a different peak period.

3) Jordan - Syrian link project

This project has been planned as a part of an electrical network project among Jordan, Egypt, Syria, Iraq, and Turkey based on the general electricity trading agreements concluded by the five countries in 1993.

Practical steps were undertaken to implement this bilateral interconnection project. Finance is fully secured from Arab Fund for Economic and Social Development, for implementation of this project. The project is scheduled to be completed before the end of 1997, and will contribute to the electricity trading between Jordan and Syria.

The completion of the project for an entire electrical network among the five countries will contribute to mutual electricity supply when necessary and effective utilization of excess electricity in the off-peak period.

4) Expansion project for the Aqaba Thermal Power Station

Expansion of the Aqaba Thermal Power Station has been planned for the purpose of increasing its capacity to provide electricity for the Northern/Central Districts to

satisfy their future demand, and to provide electricity for an electrical network among the five countries.

This project is now in progress and scheduled to be completed between 1997 and 1998.

5) 400 kV transmission line project among Jordan, Egypt, Israel, and PNA

The object of this project is to connect load centers of Jordan, Egypt, Israel and the West Bank and Gaza via 400 kV transmission lines. The main load and generation centers for the electrical grids of these areas are located within an area of less than 300 km radius around a center point on the Sinai Peninsula. As a result of the Middle-East peace process, this project was proposed at the Middle-East and North Africa Economic Summit in 1995.

Although the other four projects mentioned above have already been included in the JEA's project list up to 1999, this project has not been included yet on the list.

Materialization of this project would be subject to further progress of the peace process.

(2) Telecommunications

The link between economic prosperity and telecommunication services has been clearly established in developing economies. The peace process and a thriving service industry contribute to strong and growing demand for better and more varied telecommunication services. However, the existing infrastructure does not meet the current demand nor supply advanced features.

TCC has prepared a long-range (15-year) plan to address these problems and meet the growing telecommunication needs of Jordan. The concept of this plan is first to solve the problem of deficits in telecommunication capacity in the Northern/Central Districts and secondly to provide high grade telecommunication services by optical fiber transmission. The Jordanian Government has approved the first phase of this plan - The National Telecommunications Investment Program for 1994 to 1998.

The first stage of this plan is being implemented, however, its progress is being delayed due to the financial problem. The second stage of this plan would not be materialized without a strong financial support by foreign countries.

4-2-5 Industrial Sector

(1) Potassium sulfate / di-calcium phosphate project

This project belongs to the Dead Sea mineral resource-based chemical industry that the Study Team selected as one of the core fields.

This project is assessed as a project with high potentiality and practicability based on the following points:

- This project will contribute to raising value-added by converting potassium chloride to potassium sulfate that has higher price in the world market.
- This project will use potassium chloride and phosphate rock both available in Jordan, being suitable in terms of effective utilization of local resources.
- The presence of fund in APC will enable this project to be implemented.
- The new organization JODICO has already been established to implement this project.

(2) Magnesium oxide project

This projects also belongs to the Dead Sea mineral resource-based chemical industry, and assessed as a project with high potentiality and practicability based on the following points:

- This project will use magnesium chloride that is involved in the Dead Sea water but not used so far, being suitable in Jordan in terms of effect utilization of local resources.
- The presence of fund in APC will enable this project to be implemented.
- JODICO has been established to promote this project.

(3) Bromine and derivative project

This project can be assessed as having high potentiality and practicability based on the following points:

- Bromine is one of the elements involved in the Dead Sea water but not yet utilized, being suitable in terms of effective utilization of local mineral resources.

- JODICO has been established to promote this project.
- The on-going peace process has made it possible for JODICO to proceed with this project jointly with an Israeli enterprise.
- The presence of fund in APC will enable this project to be implemented.

(4) Phosphoric acid project

- This project is similar project to the on-going phosphoric acid complex project implemented by JPMC and an Indian enterprise. Accumulated know-how of the on-going project could be used for this project.
- This project will make exportable products, phosphoric acid, which enable Jordan to earn more foreign currency compared with exports as phosphate rock.
- The presence of fund in JPMC would enable this project to be implemented.

This project is assessed as highly practicable for the above reasons.

Table 4-1-1 International Development Projects for Road Network

Project	Objectives	Contents	Cost
(1) Mafraq (J) - Irbid (J) - Haifa (I)	• to provide international road network that connects the Northern Districts of Jordan and Haifa Seaport in Israel to promote trading/distribution activities.	- Existing road is 2-lane section with poor pavement. Upgrading or improvement of the road are required in the section including Sheikh Hussein Bridge rehabilitation.	US\$ 300 million
(2) Amman (J) - Ashdod (I) - Gaza (PNA) - El Arish (E)	• to offer international road network from the Northern Districts of Jordan to Egypt by way of Ashdod Port in Israel & PNA to promote trading/distribution activities.	- Existing road section has poor pavement. Upgrading/ improvement and new construction of roads are required in the section including King Hussein Bridge rehabilitation.	
(3) Karak (J) - Safi (J) - Nitsana (I) - (Ismailiya (E) - Cairo (E))	• to provide international road network from the Southern Districts in Jordan to Israel to promote trading/distribution activities. The extension road section links to Cairo in Egypt.	- Existing road is 2-lane section with poor pavement. Upgrading/ Improvement of roads are required in the section. New construction is required in the section of Safi-Israeli road.	US\$ 500 million
(4) Aqaba (J) - Eilat (I) - Suez (E) - Cairo (E)	• to offer international road network from Aqaba to Egypt by way of Eilat in Israel to promote trading/distribution activities.	- Existing road is 2-lane section with poor pavement. Upgrading/Improvement and new construction of roads are required in the section.	
(5) Aqaba (J) - Eilat (I) - Taba (E) Ring Road	• to provide international road network between Jordan and Egypt via Israel. This ring road plan aims to promote international distribution service of Aqaba Port by avoiding through truck traffic inside Aqaba, Eilat and Taba Cities.	- The existing road has steep grade problem and, geometric & hydrological deficiency. The improvement of grade, geometric & hydrological problem is required.	US\$ 50 ~ 100 million

Source: Development Options for Cooperation, Middle East/ East Mediterranean Region, 1996, Israel
 N.B.: J: Jordan, I: Israel, E: Egypt, PNA: Palestinian National Authority

Table 4-1-2 Future Improvement Plan for the Existing Airports

Airport	Queen Alia International Airport (QAIA)	Aqaba International Airport (AIA)	Amman Civil Airport (ACA)
	Improvement Projects	Improvement Projects	Improvement Projects
	Estimated Cost (Thousand JD)	Estimated Cost (Thousand JD)	Estimated Cost (Thousand JD)
	Implementation Period	Implementation Period	Implementation Period
Construction Projects	1. Improvement of Terminal Building	1. Construction of New Terminal Building	1. Expansion of Passenger Terminal Building
	2. Tunnel Construction under Taxi way	2. Construction of Taxi way & Apron Expansion	2. Rehabilitation of Airfield Pavement
	3. Asphalt Overlay for Two Runways	3. Asphalt Overlay for A Runway	3. Improvement of Airport Service Road
	4. Improvement of Airport Service Road	4. Improvement of Service Road & Entrance	4. Construction of New Fire Station Building
	5. Airport Buildings Facilities and others	5. Airport Buildings, Facilities and others	5. Expansion of Administrative Building
	- Fire station	- Warehouse Building	
	- Warehouse office	- Employees Housing	
	- Mosque, etc.	- Sewage Treatment	
Communication Projects	3,550	10,460	1,000
Electromechanical Projects	4,570	1,000	950
Total	15,540	23,960	6,100

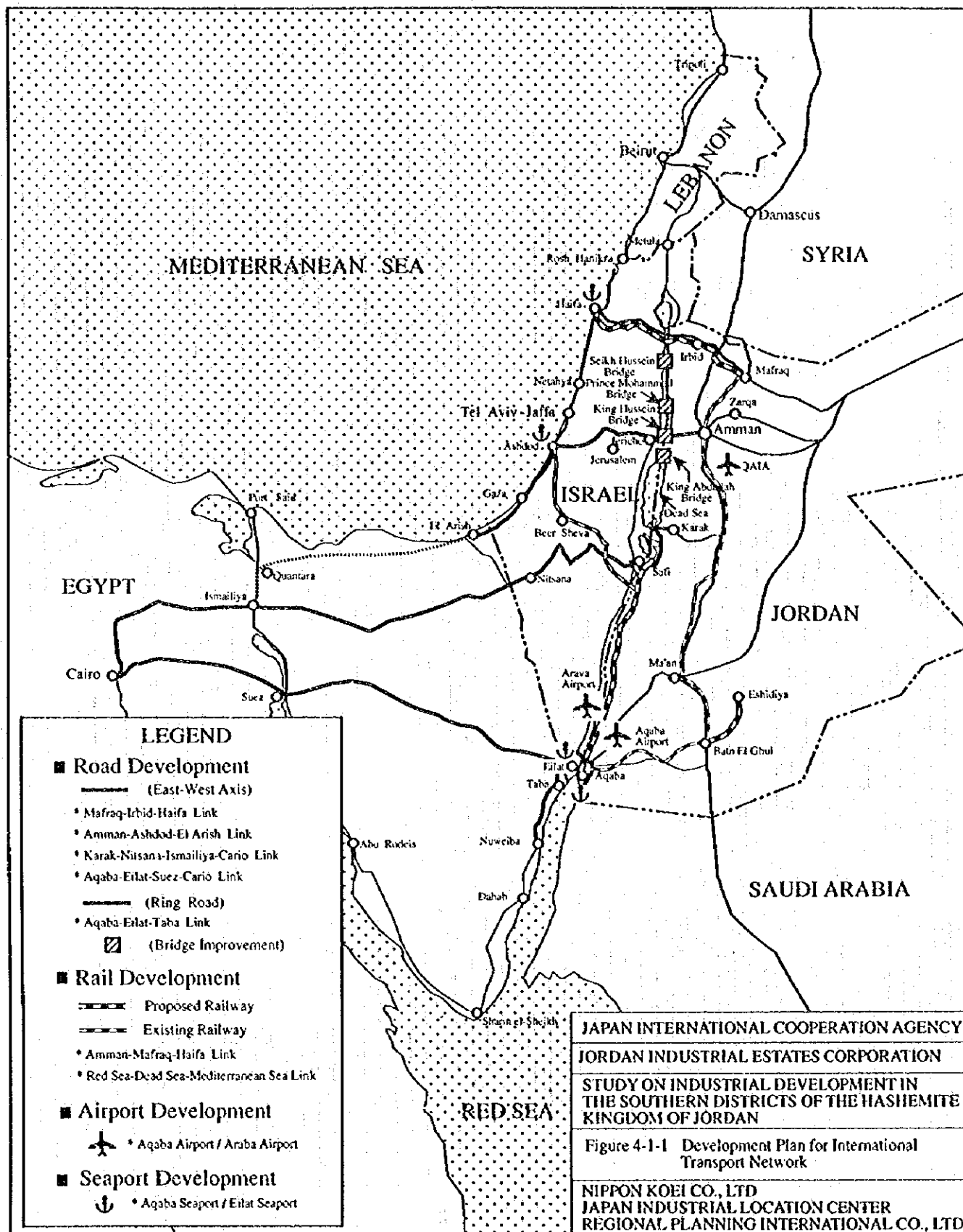
Source : Civil Aviation Authority (CAA).

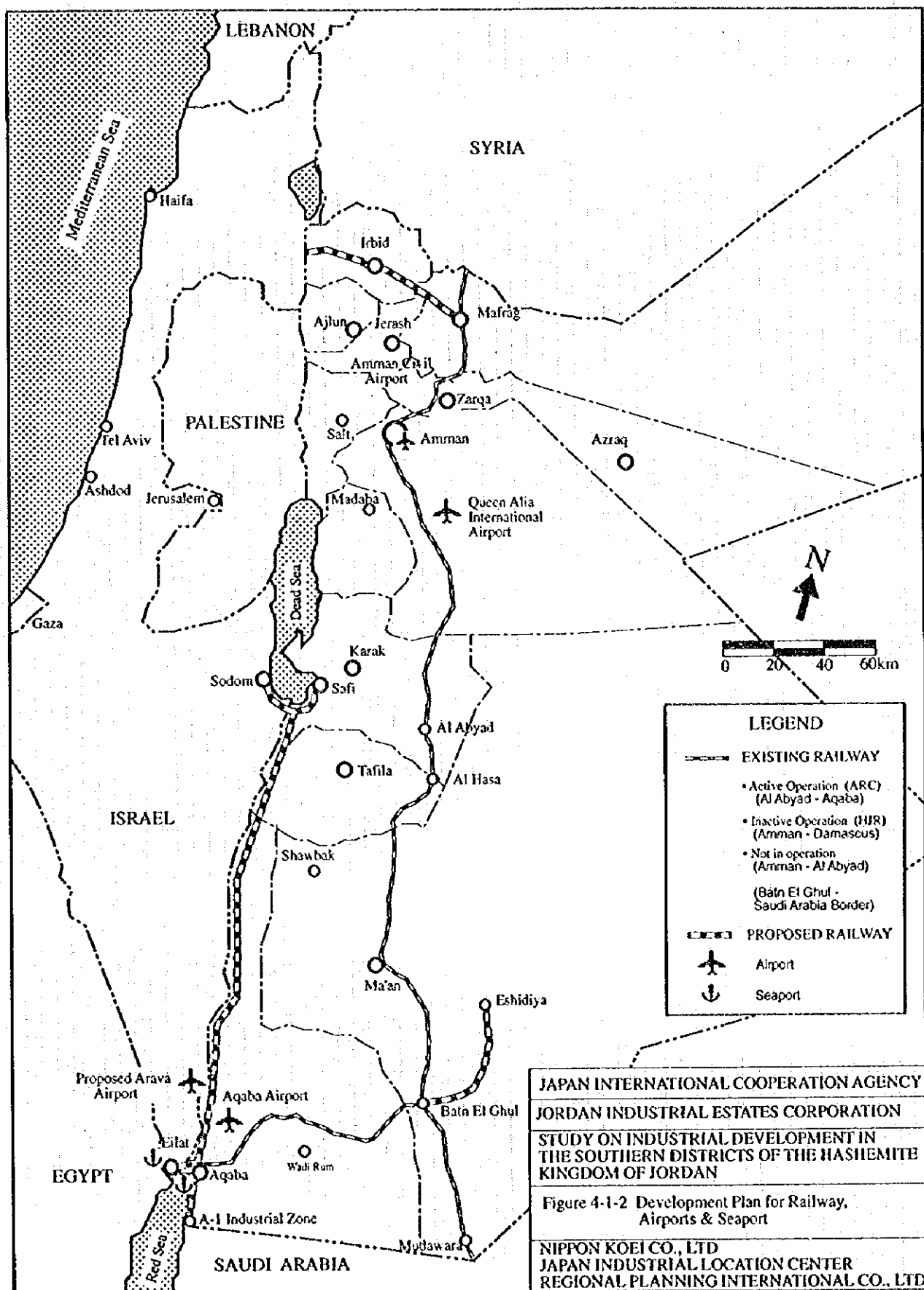
N.B : This cost for implementation is estimated during the Amman Summit

Table 4-1-3 Outline of Telecommunication Projects

Project Outline	Increased Capacity (lines)			New Exch.	New RLU's	Sites Served
	ESS	RLUs	Total			
Greater Amman Area Projects (11 projects)	144,000	1,312	145,312	10	2	47
-10 New digital (ESS) exchange						
-1 New RLU						
-Expansion of RLU						
Zerqa Shamali Project	17,600	5,904	23,504	1	7	28
-10 New digital (ESS) exchange						
-1 New RLU						
-Expansion of RLU						
Rusaifa Projects	17,968		17,968	1		1
-1 New digital (ESS) exchange						
Awajan Project	7,040		7,040	1		1
-1 New digital (ESS) exchange						
Mshairfeh Project	6,512		6,512	1		2
-1 New digital (ESS) exchange						
Zawahreh Project	4,000		4,000	1		1
-1 New digital (ESS) exchange						
Salt Communication project	3,568	8,320	11,888	1	9	87
-9 New digital (ESS) exchange						
-Expansion of Salt exchange						
Madaba Communication Project	3,552	8,960	12,512	1	11	100
-Expansion of Madaba exchange						
-Expansion of RLUs with additional capacity						
Irbid Shamali Project	12,656	12,032	24,688	1	16	55
-New digital (ESS) exchange						
-16 new RLUs controlled by Irbid Shamali exchange						
Dari Abi Sa'id and Northern Agwar Project	2,112	10,416	12,528	1	11	62
-New digital (ESS) exchange						
-11 new RLUs controlled by Irbid Shamali exchange						
Aldoon Project	5,008	12,400	17,408	1	11	31
-New digital (ESS) exchange						
-11 new RLUs controlled by Irbid Aldoom exchange						
Ajlou Project	2,512	5,616	8,128	1	6	41
-New digital (ESS) exchange						
-6 new RLUs controlled by Ajloun exchange						
Jarash Project	2,640	4,048	6,688	1	8	61
-New digital (ESS) exchange						
-8 new RLUs controlled by Jarash exchange						
Rural Telecommunications & Dead Sea Project	2,443	-	2,443	-	-	-
-New digital (ESS) exchange						
Ma'an Telecommunications Project	7,040	-	7,040	-	-	-
-New digital (ESS) exchange						
Replacement of Abadali Exchange and Expansion of Wadi El-seeir Exchange						
-Replacement primary exchanges	(60,000)	-	(60,000)			
-Expansion of Wadi El-Seer primary exchange	5,000	-	5,000	-	-	-
Aqaba Telecommunication Project	11,000	100	11,100	-	-	-
-New digital (ESS) exchange						
-Expansion of primary exchange						
-Expansion of 1 new RLU						
Regional Projects						
Submarine cables	-Submarine cable terminated at Aqaba and linked to the submarine cable at Red Sea to Secure international communications					
Jordan-Saudi Arabia Connection	-Optical fiber cable link to establish a regional transmission network					
Jordan-Egypt Connection	-Optical fiber cable link to establish a regional transmission network					
Jordan-Lebanon Connection	-Optical fiber cable link to establish a regional transmission network					
Jordan-West Bank Connection	-Optical fiber cable link to establish a regional transmission network					
Amman-Tel Aviv Connection	-Optical fiber cable link to establish a regional transmission network					

(Source: TCC)







V. ANALYSES OF INVESTMENT DEMAND SURVEY RESULTS

5-1 Investment Demand of Jordanian Enterprises

5-1-1 First Interview Survey on Investment Demand in Jordan

(1) Selection of samples

A first interview survey was conducted on the existing enterprises in Jordan to know their intention on investment in the planned industrial estates as well as the requirements for their investment decision making. The interview survey was sublet by the Study Team to a local consultant selected among three Jordanian consultants, from both technical and financial aspects.

A total of 674 Jordanian enterprises listed by the local consultant on the basis of "Industrial Census 1994"^{/1} were requested to fill in the questionnaire form. The first interview survey covered all of about 160 existing manufacturing enterprises with more than 5 employees in the Southern Districts (Karak, Tafila, Ma'an and Aqaba). These objective enterprises included not only small and medium scale enterprises but also three large scale enterprises (Nippon Jordan Fertilizer Company Ltd., Jordan Cement Factories Co., Ltd. and Arab Potash Company). Unfortunately, these large enterprises refused to answer. The remaining about 514 (76%) enterprises were selected from those with not less than 5 employees by the random sampling method on the basis of the existing share of industrial categories, in other parts of Jordan including Amman and Irbid.

The major items of the questionnaire are:

1) Investment demand

- (a) Interest in locating factories within the planned industrial estates,
- (b) Preference among the candidate sites,
- (c) Number of workers to be employed,
- (d) Expected investment amount,
- (e) Kinds of products to be produced,
- (f) Expected markets,
- (g) Demand for joint ventures with foreign partners,
- (h) Requirements for factory lot area, water, electricity, etc.

^{/1} "Industrial Census 1994" has not been officially published during the second study period in Jordan. The Study Team obtained preliminary information on the list of enterprises in Arabic from the Department of Statistics.

2) Present situation of industrial production

- (a) Types of manufactured products,
- (b) Demand for products,
- (c) Quality and quantity of products,
- (d) Production technology,
- (e) Marketing, etc.

(2) Number of respondents and interested enterprises

Out of 674 enterprises, 500 enterprises, i.e. 74%, replied the questionnaire. Of these the 500 respondents, 114 enterprises showed an interest in the proposed industrial estates, with 74 showing very positive interests and 40 showing positive interests, as shown below.

No. of Samples	No. of Respondents	Response Rate (%)	Interest in the Proposed IE			
			Very Positive/ ¹	Positive/ ²	Total	No
674	500	(74.0)	74	40	114	386

¹ Enterprises with very positive interests are defined as those answered "Yes" to the question on interest in investment in the proposed industrial estates.

² Enterprises with positive interests are defined as those answered "Possibly" to the question on interest in investment in the proposed industrial estates.

(3) Analysis of the first interview survey results

1) Enterprises interested in investment in the proposed industrial estates

Table 5-1-1 shows the enterprises interested in investment in the proposed industrial estates by International Standard Industrial Classification (ISIC). Among the industrial categories, fabricated metal was dominant, followed by glass and non-metal mineral, food manufacturing, wearing apparel, and wood and cork furniture.

2) Preferred governorates for candidate industrial sites

Table 5-1-2 shows the number of enterprises which preferred each governorate for candidate industrial sites. The first interview survey revealed that Aqaba Governorate was the most preferred, followed by Karak Governorate.

The following reasons were cited for their location preference:

- (a) Availability of cheap and abundant labor force
- (b) Relatively good accessibility to the Aqaba Port
- (c) Adequate infrastructure including electricity and water supply
- (d) Availability of local resources

(e) Being close to the Queen Alia Airport

The largest number of very interested enterprises were located in Aqaba, followed by those in Karak, Amman, Irbid and Tafila as shown in Table 5-1-3.

The industrial categories of the enterprises with very positive interests in each preferred candidate site were as follows (refer to Table 5-1-4):

- (a) Karak Sites --- Fabricated metal, food, chemical, etc.
- (b) Tafila Sites --- Glass and non-metal mineral, machinery, etc.
- (c) Ma'an Sites --- Mining, wood and furniture, glass and non-metal mineral, etc.
- (d) Aqaba Sites --- Fabricated metal, food, wearing apparel, glass and non-metal mineral, machinery, etc.

The present location of interested enterprises in each preferred candidate site was distributed as follows (refer to Table 5-1-5):

- (a) Karak Sites --- 73 % of enterprises which preferred Karak sites were local enterprises currently located in Karak.
- (b) Tafila Sites --- All enterprises which preferred Tafila sites were local enterprises currently located in Tafila.
- (c) Ma'an Sites --- 88 % of enterprises which preferred Ma'an sites were supposed to relocate from other Governorates except Ma'an.
- (d) Aqaba Sites --- 64 % of enterprises which preferred Aqaba sites were local enterprises currently located in Aqaba. The remaining 36 % were supposed to relocate from other Governorates except Aqaba.

3) Expected activities in the proposed industrial estates

About 67 % of the enterprises with very positive or positive interests indicated they will locate factories in the proposed industrial estates within one or two years. In general, the enterprises with very positive interests showed the intention to invest earlier than those with positive interests.

Less than half, about 46 %, of interested enterprises said they will export their products to foreign countries (refer to Table 5-1-6). Those enterprises belonged to such industrial categories as wearing apparel, chemical, plastic products, glass and non-metal mineral, and electrical machinery. In terms of target countries for export,

neighboring Arab countries were dominant, followed by other Middle East countries.

82 % of the interested enterprises replied they will use trucks, and 17 % will use ships in combination with trucks or railways for transporting their products. Only 7 % of them showed interests in using air transport.

As to the investment amount, 45 % of the interested enterprises mentioned a range from JD 0.1 to 0.9 million, and the remainder less than JD 0.1 million. Consequently, the investment amounts expectable from Jordanian enterprises would not be so large.

About 60 % of the interested enterprises showed interests in forming joint ventures with foreign investors.

In terms of land lease systems, long term land lease was most preferred, followed by annual factory lease, and annual land lease. 65 % of the enterprises which preferred long term land lease, expected a land rent of less than JD 10 /m²/year.

4) Requirements for the proposed industrial estates

About 39 % of the interested enterprises required less than 0.2 ha for the factory lot area and about 25 % of them required 0.2 to 0.4 ha.

With regard to water supply, about 65 % of the interested enterprises required less than 100 m³/day. None interested enterprise required more than 1,000 m³/day.

Concerning electricity requirement, about 44 % of the interested enterprises required 100 - 999 kWh/month.

About 51 % of the interested enterprises replied that 5 to 25 employees would work in the factory to be located in the proposed industrial estates.

The major incentives desired by the interested enterprises are summarized below:

- (a) Profit tax exemption/reduction
- (b) Easy access to loans
- (c) Export and import duties exemption / reduction
- (d) Turn over tax exemption / reduction, etc.

The results of the first investment demand interview survey showed that, 114 enterprises - 74 with very positive interests and 40 with positive interests - were interested in expansion and relocation of existing factories to the proposed industrial

estates. However, the scale of investment would not be so large judging from the envisaged investment amounts, required factory lot area, expected number of employees and required utilities including water and electricity.

5-1-2 Confirmation Interview Survey on Investment Demand in Jordan

(1) Targets for confirmation interview survey

The local consultant conducted a confirmation interview survey of the 74 Jordanian enterprises which expressed keen interests in locating their factories in the proposed industrial estates in order to reconfirm the degree of interest as well as the preferred candidate sites for investment. The Study Team visited some of these enterprises together with the local consultants members.

The following items were asked in the confirmation interview survey.

- (a) Degree of interest in investing in the proposed industrial estates
- (b) Preferred candidate sites for investment
- (c) Reasons for preference of the candidate sites
- (d) Factors which influence preferred candidate sites
- (e) Interest in future cooperation with foreign investors
- (f) Supposed export share
- (g) Supposed export countries

(2) Analysis of confirmation interview survey results

1) Investment demand of Jordanian enterprises

The investment demand for the proposed industrial estates is summarized below. Table 5-1-7 shows the candidate sites preferred by enterprises with very positive interests classified by International Standard Industrial Classification (ISIC). Out of 74 such enterprises, 57 enterprises strongly wished to invest in the candidate sites for the proposed industrial estates. These 57 enterprises were defined as "prospective enterprises".

Degree of Interest	Definition	No. of Enterprises
Prospective enterprises	-Likely to invest	57
Others	-Interested with less than 50 % probability	8
	-Interested in investment inside Amman or in its environs	2
	-Interested in investment in areas close to the current location	5
	-Not available due to closing of enterprises	2
Total		74

The major results of the reconfirmation interview are summarized below for the "prospective enterprises":

(a) Preferred candidate sites

The table below shows the number of "prospective enterprises" that preferred each candidate site and the major reasons for preference.

Sites	No. of Enterprises	Major Reasons for Preference
K-1	1	Being close to their current location
K-2	9	Being close to a city, a town and their current location; and suitable for expansion
K-3	3	Being suitable for expansion and close to the center of the Southern Districts
T-1	4	Being close to the center of the Governorate and a city
T-2	0	—
M-1	0	—
M-2	5	Good access to the Gulf countries, and being close to the center of the Southern Districts and a city
A-1	3	Being suitable for export to Saudi Arabia and close to the port
A-2	26	Being close to a city, a town, a port and the international airport, etc.
A-3	6	Being suitable for export and industry

The candidate sites include K-1, K-2, K-3, T-1, T-2, M-1, M-2, A-1, A-2 and A-3 which are defined in Chapter 7 of this report.

(b) A possibility of relocation from the Central / Northern regions

The relationship between the candidate sites preferred by enterprises with very positive interests and their existing location is shown in Table 5-1-8. From a

viewpoint of possibility of relocation, the candidate sites can be divided into two groups as follows:

- Candidate sites which have a possibility of relocation only from the local Governorate that includes the sites: K-1 and T-1 sites
- Candidate sites which have a possibility of relocation from the Central / Northern regions: K-2, K-3, M-2, A-1, A-2 and A-3 sites

2) Analysis of the confirmation interview survey results

The other results of confirmation interview survey are summarized below.

(a) Management initiatives

The "Prospective enterprises" replied that their management should take initiatives in the following fields:

- Product planning
- Marketing planning

(b) Interest in cooperation with foreign partners

57 % of the "prospective enterprises" replied that they wished to cooperate with foreign partners.

(c) Kinds of future cooperation

The "Prospective enterprises" replied that they wished to do the following cooperation with foreign partners in the future:

- Joint venture --- 42 % of "prospective enterprises"
- Technical cooperation --- 8 % of "prospective enterprises"
- Entrusted production --- 4 % of "prospective enterprises"
- Under license and others --- 3 % of "prospective enterprises"

(d) Desired incentives

The following incentives were desired by many Jordanian enterprises with very positive interests.

- Tax exemption / reduction
- Soft loans, etc.

(c) Expected export share

12 % of the "prospective enterprises" said they expected more than 60 % of export share.

(f) Expected target countries for export

The "Prospective enterprises" indicated the following expected target countries for export:

- Saudi Arabia --- 47 % of "prospective enterprises"
- Arab Gulf countries --- 22 % of "prospective enterprises"
- Israel --- 9 % of "prospective enterprises"
- Egypt --- 5 % of "prospective enterprises"
- Palestine --- 5 % of "prospective enterprises"
- Europe --- 4 % of "prospective enterprises"

(g) Most important transportation facilities influential on investment

The "Prospective enterprises" listed the following as the most important transportation facilities which influence investment:

- Desert Highway --- 77 % of "prospective enterprises"
- Aqaba International Airport --- 43 % of "prospective enterprises"
- Queen Alia International Airport --- 31 % of "prospective enterprises"
- Aqaba Port --- 27 % of "prospective enterprises"

(h) Most important utilities influential on investment

The following utilities were considered most important by the "prospective enterprises" among influential factors on investment:

- Availability of electricity --- 91 % of "prospective enterprises"
- Cheap & adequate labor force --- 84 % of "prospective enterprises"
- Availability of water --- 76 % of "prospective enterprises"

(i) Most important local markets

The following local markets were considered to be most important by the "prospective enterprises":

- Aqaba City --- 68 % of "prospective enterprises"

- Amman --- 66 % of "prospective enterprises"
- Aqaba Governorate --- 65 % of "prospective enterprises"

(j) Most important export markets

The "Prospective enterprises" replied that the most important export markets are the following:

- Saudi Arabia --- 50 % of "prospective enterprises"
- Arab Gulf countries --- 34 % of "prospective enterprises"
- Israel --- 26 % of "prospective enterprises"
- Iraq --- 24 % of "prospective enterprises"

5-2 Investment Demand of Enterprises in Eight Foreign Countries

5-2-1 Selection of Samples

Eight foreign countries were selected for the final investment demand survey. Out of these countries, Israel and Japan were selected by the instructions of JICA Headquarters. The other countries, which were supposed to have a high possibility of investment in Jordan, were selected in consideration of the following issues and the judgment on investment potentiality by the Study Team.

- (a) Strong economic (export and import) connections with Jordan
- (b) Nationality of enterprises which are located in the Amman Industrial Estate
- (c) Connections by direct flights with Amman in Jordan

A mail questionnaire survey was carried out during a period from the end of January to the middle of March 1996. This survey was aimed at assessing the investment demand of foreign investors in the eight countries for the proposed industrial estates in the Southern Districts as well as their requirements. The survey was sublet to a Japanese consultant. This consultant and its branch offices conducted the mail questionnaire survey in Japan and in the other seven countries. More than 500 enterprises in each country, i.e. about 4,300 enterprises in total, were selected from the following inventories :

- | | | |
|---|-----|--------------|
| • Dun & Brad Street Directory | --- | Israel |
| • The Green Business Guide | --- | Egypt |
| • Top 1,000 Saudi Companies | --- | Saudi Arabia |
| • Hoppenstedt | --- | Germany |
| • Directory of Top 3,000 Korean Company | --- | South Korea |
| • List of Japanese Firms with Direct Investment Experiences Overseas, Toyo Keizai | | |
| • Potential Investors from Japan | --- | Japan |
| • Manufactures and Products Directory | --- | Singapore |
| • Dun & Brad Street Directory | --- | U.S.A. |

These inventories cover mainly large and medium scale enterprises under each criteria. For instance, "Hoppenstedt" of Germany covers medium scale enterprises with more than DM 2 million in annual sale amount and more than 20 employees, and large scale enterprises with more than DM 20 million in annual sale amount and more than 150 employees.

The following items were asked in the mail questionnaire.

- (a) Interest in investment to Jordan
- (b) Interest in locating factories within the proposed industrial estates in the Southern Districts
- (c) Objective of investment
- (d) Required area of factory lots
- (e) Expected number of workers
- (f) Kinds of products to be produced
- (g) Expected export ratio
- (h) Required capacities of utilities(water, electricity)
- (i) Desirable land rent, etc.

5-2-2 Number of Respondents

The results of the investment demand surveys in eight foreign countries are shown below. Out of 4,282 enterprises in total, 386 firms replied, i.e. at a response rate of 9%.

Number of Respondents to Investment Demand Survey in Eight Countries

	No. of Samples	No. of Respondents	(%)
I. Middle East			
1. Israel	540	64	(11.9)
2. Saudi Arabia	500	27	(5.4)
3. Egypt	500	25	(5.0)
II. Europe			
4. Germany	532	64	(12.0)
III. ASIA			
5. South Korea	610	59	(9.7)
6. Singapore	500	30	(6.0)
7. Japan	600	92	(15.3)
VI. North America			
8. U.S.A.	500	25	(5.0)
Total	4,282	386	(9.0)

5-2-3 Analysis of the Questionnaire Survey Results on Investment Demand in Eight Foreign Countries

(I) Foreign enterprises interested in investment in the proposed industrial estates

The table below shows the results of the questionnaire survey on investment demand in the eight foreign countries. Out of the 386 enterprises that replied, 29 enterprises (called "interested enterprises") showed interests in the proposed industrial estates in the

Southern Districts of Jordan. Out of 29 enterprises, eight enterprises marked "Likely to invest" and the other 21 enterprises marked "Possible to invest". The interested foreign enterprises are shown by industrial category in Table 5-2-1 to Table 5-2-8 for each country.

Results of Investment Demand Survey in Eight Foreign Countries

	No. of Resp.	No. of Interested Ent.		
		Likely	Possibly	Total
I. Middle East				
1. Israel	64	6	13	19
2. Saudi Arabia	27	0	2	2
3. Egypt	25	1	0	1
II. Europe				
4. Germany	64	0	3	3
III. ASIA				
5. South Korea	59	0	2	2
6. Singapore	30	0	0	0
7. Japan	92	0	0	0
VI. North America				
8. U.S.A.	25	1	1	2
Total	386	8	21	29

(2) Governorates preferred by foreign enterprises for candidate industrial sites

Table 5-2-9 shows the Governorates preferred by 29 interested enterprises for candidate industrial sites. More than half of these 29 enterprises had not fixed the site yet. Among the preferred Governorates, the highest degree of interest was given to Aqaba Governorate, followed by Karak and Ma'an Governorates.

Of the 29 interested enterprises, two Israeli enterprises (wearing apparel, chemicals / other chemicals) preferred Karak Governorate, one Israeli enterprise (transport equipment) preferred Ma'an Governorate. Two Israeli enterprises (chemicals / other chemicals, transport equipment), one Saudi Arabian enterprise (glass and glass products), one Egyptian enterprise (plastic products), one South Korean enterprise (wearing apparel) and one U.S. enterprise (machinery) expressed an interest in investment in Aqaba Governorate as shown below.

Governorates Preferred by Foreign Enterprises for Candidate Industrial Sites

Interested Enterprises	Preferred Governorates	Industrial Categories
1. Israel		
ENT.(IS)-1	Karak	Wearing apparel
ENT.(IS)-2	Karak	Chemicals / other chemicals
ENT.(IS)-3	Ma'an	Transport equipment
ENT.(IS)-4	Aqaba	Chemicals / other chemicals
ENT.(IS)-5	Aqaba	Transport equipment
13 Enterprises	Not fixed at present	-
1 Enterprise	No answer	Professional equipment
2. Saudi Arabia		
ENT.(SA)-1	Aqaba	Glass & glass products
1 Enterprise	Not fixed at present	Food manufacturing
3. Egypt		
ENT.(EG)-1	Aqaba	Plastic products
4. Germany		
3 Enterprises	No answer	-
5. South Korea		
ENT.(SK)-1	Aqaba	Wearing apparel
1 Enterprise	Not fixed at present	Chemicals / other chemicals
6. U.S.A.		
ENT.(US)-1	Aqaba	Machinery
1 Enterprise	Not fixed at present	Leather products

(3) Expected activities of foreign enterprises in the proposed industrial estates

In reply to the question on objectives of investment, about 39 % of the interested enterprises showed their ideas to create a base of production for export to other countries and 35 % aimed at Jordan or Middle East markets.

About 70 % the interested enterprises wanted to form joint ventures with Jordanian partners. About 21 % wanted to establish factories only by their own capital.

As shown in Table 5-2-10, 83 % of interested enterprises had an idea to export their products to foreign countries. For instance, 16 of the 19 interested Israeli firms said they would export more than 50 % of their produce.

For transporting products, 82 % of the interested enterprises answered they will use trucks, and 17 % with use ships in combination with trucks or railways. Only 7 % of them showed interests in using air transport.

In terms of land lease systems, long term land lease was most preferred, followed by annual factory lease, and annual land lease. 65 % of the enterprises that preferred long term land lease expected a land rent of less than JD 10 m²/year.

(4) Requirements for the proposed industrial estates by foreign enterprises

About 24 % of the interested enterprises required 0.5 to 1.0 ha for the factory lot area and about 21 % of them required 1.0 to 2.0 ha.

About water requirement, about 70 % of the interested enterprises gave "no answer" and about 28 % required more than 5,000 m³/day.

Electricity requirements of the interested firms varied considerably from 500 -1,000 kW to more than 10,000 kW.

About 38 % of the interested enterprises expected to hire 100 -500 employees for the factory to be located in the proposed industrial estates and 24 % expected to hire 10 - 50 employees.

According to the results of the questionnaire survey on investment demand of foreign enterprises, eight enterprises showed very positive interests and 21 enterprises showed positive interests in investment in the industrial estates proposed in the Southern Districts of Jordan. Compared with the investment demand of Jordanian enterprises, the scale of foreign investment seemed to be larger judging from the required factory lot area, expected number of employees and required utilities including water and electricity.

5-3 Overall Investment Demand for the Promising General Industrial Estate Sites / Export Processing Zones

5-3-1 Overall Investment Demand of Jordanian Enterprises

Based on the results of the confirmation interview survey, 74 Jordanian enterprises with very positive interests were narrowed down to 57 prospective enterprises which have a high possibility of investment in the promising general industrial estate (GIE) sites / export processing zones (EPZ) in the Southern Districts of Jordan.

The first interview survey was conducted on all the existing enterprises with more than 5 employees, in the Southern Districts. As for the survey covering the enterprises in other parts of Jordan, the random sampling method was adopted. As such, there is a possibility that some other enterprises had also investment demand but were not selected by the random sampling methods.

The overall investment demand of the Jordanian enterprises can be estimated by applying an expansion coefficient equivalent to the reciprocal of the sampling ratio in each category of industry. The expansion coefficient by industrial category and the expansion coefficient by prospective enterprise are shown in Table 5-3-1 and Table 5-3-2, respectively.

On the basis of the expansion coefficient, the overall investment demand of the Jordanian enterprises in each promising GIE/EPZ was estimated by industrial category as shown in Table 5-3-3 and summarized below.

K-1	---	1 enterprise
K-2	---	19 enterprises
K-3	---	4 enterprises
T-1	---	4 enterprises
T-2	---	0 enterprise
M-1	---	0 enterprise
M-2	---	31 enterprises
A-1	---	11 enterprises
A-2	---	52 enterprises
A-3	---	23 enterprises
Total	---	145 enterprises

As shown in the table, the total number of highly prospective Jordanian enterprises was projected at 145. The overall investment demand of the Jordanian enterprises for

the A-2 site (52 enterprises) is dominant, followed by that for the M-2 site (31 enterprises), the A-3 site (23 enterprises), and the K-2 site (19 enterprises).

5-3-2 Overall Investment Demand of Foreign Enterprises in the Eight Countries

The prospective enterprises which replied "Likely to invest" or "Possible to invest" to questionnaire survey on investment demand conducted in the eight countries were screened to determine those with a high possibility of investment in the promising GIE/EPZ by the following criteria:

- Degree of interest: The possibility of investment in the promising GIE/EPZ should be more than 50 % based on the confirmation interview survey conducted after the questionnaire survey.
- Preference for the Southern Districts: Enterprises that prefer to invest in the Southern Districts than in other parts of Jordan.

The 14 enterprises that satisfied the above two criteria simultaneously were selected as those with a high possibility of investment in the promising GIE/EPZ, as shown below:

Number of Foreign Enterprises with a High Possibility of Investment in the Promising GIE/EPZ

	No. of Interested Enterprises in Questionnaire Survey	No. of Enterprises with High Possibility of Investment
I. Middle East		
1. Israel	19	9
2. Saudi Arabia	2	2
3. Egypt	1	1
II. Europe		
4. Germany	3	0
III. Asia		
5. South Korea	2	1
6. Singapore	0	0
7. Japan	0	0
IV. North America		
8. U.S.A.	2	1
Total	29	14

Table 5-3-4 and Table 5-3-5 show the expansion coefficients applied to each industrial category and foreign prospective enterprise, respectively.

On the basis of the expansion coefficients, the overall investment demand of foreign enterprises in the eight countries was estimated as shown in Table 5-3-6. The estimated total number of highly prospective foreign enterprises is 83 firms as summarized below.

Governorate of the Promising GIE / EPZ	GIE	EPZ	Total
Karak	9	0	9
Tafila	0	0	0
Ma'an	5	0	5
Aqaba	10	46	56
Not fixed	13	0	13
Total	37	46	83

5-3-3 Overall Investment Demand for the Promising General Industrial Estate Sites / Export Processing Zones

The overall investment demand has finally been estimated at 228 enterprises in total, 145 Jordanian and 83 foreign enterprises, as shown below.

Overall Investment Demand in the Promising GIE/EPZ

Overall Investment Demand	
I. Middle East	
1. Jordan	145
2. Israel	41
3. Saudi Arabia	2
4. Egypt	4
II. Europe	
5. Germany	0
III. Asia	
6. South Korea	1
7. Singapore	0
8. Japan	0
IV. U.S.A.	
9. U.S.A.	35
Total	228

The investment demand survey, however, was not conducted in other foreign countries than the eight countries mentioned previously. Investments from Iraq, Italy,

U.K., France, Netherlands, and so on, which are major trading partners of Jordan, can be expected besides the investment demand of the selected 8 foreign countries. Therefore, the overall investment demand estimated by the Study Team might be rather conservative.

The estimated demand as well as the potential demand for investment is judged to be sufficient to justify the development of the promising GIE/EPZ in the Southern Districts of Jordan.

Table 5-1-1 Interested Jordanian Enterprises by Industrial Category

ISIC	Industrial Category	Population	Visited	Replied	Response Rate	Interest in the Proposed Industrial Estates				
						Very Positive	Positive	Total	No	No Answer
290	Mining	32	32	30	93.8%	3	3	6	24	0
311	Food manufacturing	546	82	82	100.0%	11	9	20	58	4
313	Beverage	17	8	8	100.0%	0	0	0	8	0
314	Tobacco	6	3	0	0.0%	0	0	0	0	0
321	Textile	109	32	15	46.9%	0	1	1	14	0
322	Wearing Apparel	312	33	33	100.0%	5	6	11	21	1
323	Leather Products	18	5	5	100.0%	1	1	2	3	0
324	Footwear	95	2	2	100.0%	0	1	1	1	0
331	Wood & Cork Furniture	257	40	27	67.5%	5	3	8	18	1
341	Paper	39	15	14	93.3%	1	2	3	10	1
342	Printing	126	13	13	100.0%	2	0	2	11	0
351	Chemical	116	72	25	34.7%	1	1	2	20	3
353	Petroleum Refineries	1	0	0	-	0	0	0	0	0
355	Rubber	13	7	7	100.0%	0	1	1	4	2
356	Plastic Products	115	50	29	58.0%	1	3	4	24	1
362	Glass & Non-Metal Mineral	496	108	108	100.0%	14	2	16	89	3
381	Fabricated Metal	310	85	79	92.9%	26	5	31	44	4
382	Machinery	23	7	7	100.0%	0	1	1	6	0
383	Electrical Machinery	71	26	11	42.3%	3	0	3	8	0
384	Transport Equipment	12	6	0	0.0%	0	0	0	0	0
385	Professional Equipment	14	3	2	66.7%	0	0	0	2	0
390	Other Manufacturing	43	6	1	16.7%	0	0	0	1	0
410	Others	33	33	0	0.0%	0	0	0	0	0
951	Industrial Services	334	6	2	33.3%	1	1	2	0	0
Total		3138	674	500	74.2%	74	40	114	366	20

// Source : Industrial Census 1994 conducted by Statistical Department of Jordan

Table 5-1-2 Preferred Governorates for Investment by Jordanian Enterprises

Preferred Governorates	Very Positive Enterprises		Positive Enterprises		Total	
	No.	(%)	No.	(%)	No.	(%)
Karak	22	29.7%	14	35.0%	36	31.6%
Tafila	5	6.8%	3	7.5%	8	7.0%
Ma'an	8	10.8%	4	10.0%	12	10.5%
Aqaba	39	52.7%	18	45.0%	57	50.0%
No Answer		0.0%	1	2.5%	1	0.9%
Total	74	100.0%	40	100.0%	114	100.0%

Table 5-1-3 Existing Location of Very Positive Jordanian Enterprises by Industrial Category

ISIC	Amman		Balqa		Irbid		Jarash		Karak		Tafta		Ma'an		Aqaba		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
290 Mining	1	10.0%	0	0.0%	1	12.5%	0	0.0%	1	5.9%	0	0.0%	0	0.0%	2	7.4%	5	6.8%
311 Food manufacturing	0	0.0%	0	0.0%	1	12.5%	1	50.0%	1	5.9%	0	0.0%	0	0.0%	4	14.8%	7	9.5%
322 Wearing apparel	0	0.0%	0	0.0%	1	12.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	11.1%	4	5.4%
331&332 Wood & cork/Furniture	1	10.0%	0	0.0%	0	0.0%	0	0.0%	1	5.9%	0	0.0%	1	100.0%	2	7.4%	5	6.8%
341 Paper	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	5.9%	0	0.0%	0	0.0%	1	3.7%	2	2.7%
351 Chemicals	0	0.0%	1	33.3%	1	12.5%	0	0.0%	1	5.9%	0	0.0%	0	0.0%	1	3.7%	4	5.4%
356 Plastic products	2	20.0%	0	0.0%	0	0.0%	0	0.0%	1	5.9%	0	0.0%	0	0.0%	0	0.0%	3	4.1%
362&369 Glass & Non-metal mineral	1	10.0%	0	0.0%	1	12.5%	0	0.0%	1	5.9%	1	16.7%	0	0.0%	3	11.1%	7	9.5%
381 Fabricated metal	2	20.0%	0	0.0%	3	37.5%	1	50.0%	9	52.9%	0	0.0%	0	0.0%	8	29.6%	23	31.1%
382 Machinery	1	10.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	16.7%	0	0.0%	2	7.4%	4	5.4%
383 Electrical machinery	2	20.0%	1	33.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	4.1%
385 Professional equipment	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	5.9%	0	0.0%	0	0.0%	1	3.7%	2	2.7%
999 Others	0	0.0%	1	33.3%	0	0.0%	0	0.0%	0	0.0%	4	66.7%	0	0.0%	0	0.0%	5	6.8%
Total	10	100.0%	3	100.0%	8	100.0%	2	100.0%	17	100.0%	6	100.0%	1	100.0%	27	100.0%	74	100.0%

**Table 5-1-4 Preferred Governorates by Jordanian Enterprises with Very Positive Interests
by Industrial Category**

District of Candidate Sites ISIC	Karak		Tafila		Ma'an		Aqaba		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
290 Mining	1	4.5%	0	0.0%	2	25.0%	2	5.1%	5	6.8%
311 Food manufacturing	3	13.6%	0	0.0%	0	0.0%	4	10.3%	7	9.5%
322 Wearing apparel	1	4.5%	0	0.0%	0	0.0%	3	7.7%	4	5.4%
331&332 Wood & cork/Furniture	1	4.5%	0	0.0%	2	25.0%	2	5.1%	5	6.8%
341 Paper	1	4.5%	0	0.0%	0	0.0%	1	2.6%	2	2.7%
351 Chemical	3	13.6%	0	0.0%	0	0.0%	1	2.6%	4	5.4%
356 Plastic products	1	4.5%	0	0.0%	0	0.0%	2	5.1%	3	4.1%
362&369 Glass & Non-metal mineral	1	4.5%	1	20.0%	2	25.0%	3	7.7%	7	9.5%
381 Fabricated metal	9	40.9%	0	0.0%	1	12.5%	13	33.3%	23	31.1%
382 Machinery	0	0.0%	1	20.0%	0	0.0%	3	7.7%	4	5.4%
383 Electrical machinery	0	0.0%	0	0.0%	1	12.5%	2	5.1%	3	4.1%
385 Professional equipment	1	4.5%	0	0.0%	0	0.0%	1	2.6%	2	2.7%
999 Others	0	0.0%	3	60.0%	0	0.0%	2	5.1%	5	6.8%
Total	22	100.0%	5	100.0%	8	100.0%	39	100.0%	74	100.0%

**Table 5-1-5 Preferred Governorates by Jordanian Enterprises with Very Positive Interests
by Existing Location**

District of Candidate Sites	Karak		Tafila		Ma'an		Aqaba		Total	
Existing Location	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Amman	0	0.0%	0	0.0%	2	25.0%	8	20.5%	10	13.5%
Balqa	1	4.5%	0	0.0%	1	12.5%	1	2.6%	3	4.1%
Irbid	3	13.6%	0	0.0%	3	37.5%	2	5.1%	8	10.8%
Jerash	1	4.5%	0	0.0%	0	0.0%	1	2.6%	2	2.7%
Karak	16	72.7%	0	0.0%	0	0.0%	1	2.6%	17	23.0%
Tafila	0	0.0%	5	100.0%	0	0.0%	1	2.6%	6	8.1%
Ma'an	0	0.0%	0	0.0%	1	12.5%	0	0.0%	1	1.4%
Aqaba	1	4.5%	0	0.0%	1	12.5%	25	64.1%	27	36.5%
Total	22	100.0%	5	100.0%	8	100.0%	39	100.0%	74	100.0%

Table 5-1-6 Willingness to Export by Interested Jordanian Enterprises

Willing to Export	Enterprises with Very Positive Interests		Enterprises with Positive Interests		Total	
	No.	(%)	No.	(%)	No.	(%)
Yes	31	41.9%	21	52.5%	52	45.6%
No	41	55.4%	15	37.5%	56	49.1%
No Answer	2	2.7%	4	10.0%	6	5.3%
Total	74	100.0%	40	100.0%	114	100.0%

Table 5-1-7 Candidate Sites Preferred by Jordanian Enterprises with Very Positive Interests by Industrial Category
(by Confirmation Interview Survey)

(Of Commutation and the Commuted Salary)																																			
Preferred Candidate Sites		K-1		K-2		K-3		T-1		T-2		M-1		M-2		Δ-1		Δ-2		Δ-3		Sub-Total		Not So Interest		Not Interest		No Answer		Not Answerable		Sub-Total		Total	
		No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
290 Mining																																			
311 Food manufacturing																																			
322 Wearing apparel																																			
323 Leather Products																																			
331&332 Wood/Furniture																																			
341 Paper																																			
351 Chemicals																																			
356 Plastic products																																			
362&369 Glass & Non-metal																																			
381 Fabricated metal																																			
383 Electrical machinery																																			
991 Industrial Services																																			
No Answer																																			
Total		1	100.0%	9	100.0%	3	100.0%	4	100.0%	0	0	0	5	100.0%	3	60.0%	26	100.0%	6	100.0%	57	100.0%	8	100.0%	2	25.0%	2	100.0%	5	100.0%	17	100.0%	74	100.0%	

/1 Not So interest : 9 enterprises showed an interest in investment in candidate sites with a probability of less than 50 %.

/2 Not Interest : 2 enterprises were interested in investment in and around Amman.

/3 No Answer : 2 enterprises were interested in investment in close to existing location.

/4 N.A.: 5 enterprises did not operate during this season.

Table 5-1-8 Relationship between Preferred Candidate Sites and Existing Location of Jordanian Enterprises with Very Positive Interests
(by Confirmation Interview Survey)

BY COMMUNITARIAN INTERVIEW SURVEY																																				
Preferred Candidate Sites Existing Location	K.1		K.2		K.3		T.1		T.2		M.1		M.2		Δ.1		Δ.2		Δ.3		Sub.Total		Not So Interest		Not Interest		No Answer		Not Available		Sub-Total		Total			
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)		
Irbid			1	33.3%									3	60.0%	1	33.3%			1	16.7%	6	10.5%	2	25.0%							2	11.8%	8	10.8%		
Jerash					1	11.1%															1	1.8%							1	20.0%	2	11.8%	3	4.1%		
Amman					1	11.1%							1	20.0%			5	19.2%	1	16.7%	8	14.0%			1	50.0%					1	20.0%	1	5.9%	9	12.2%
Balqa																				1	16.7%	1	1.8%	1	12.5%					1	20.0%	2	11.8%	3	4.1%	
Karak	1	100.0%	7	77.8%	2	66.7%															10	17.5%	4	50.0%			1	50.0%	2	40.0%	7	41.2%	17	23.0%		
Tafila																					4	7.0%			1	50.0%	1	50.0%			2	11.8%	6	8.1%		
Mafan													1	20.0%							1	1.8%											1	1.4%		
Aqaba																	2	66.7%	21	80.8%	3	50.0%	26	45.6%	1	12.5%					1	5.9%	27	36.5%		
No Answer																																				
Total	1	100.0%	9	100.0%	3	100.0%	4	100.0%	0	0.0%	0	0.0%	5	100.0%	3	100.0%	26	100.0%	6	100.0%	57	100.0%	8	100.0%	2	100.0%	2	100.0%	5	100.0%	17	100.0%	74	100.0%		

/1 Not So interest: 8 enterprises showed an interest in investment in candidate sites with a probability of less than 50%.

/2 Not Interest: 2 enterprises were interested in investment in and around Amman.

/3 No Answer: 2 enterprises were interested in investment in close to existing location.

/4 N/A: 5 enterprises did not operate during this season.

Table 5-2-1 Interested Enterprises from Israel in Investment in the Proposed Industrial Estates

Classification	No. of Samples		No. of Replies		No. of Effective Replies				Wish to Invest				Interest for New I.E.				Wish to Investigate		Population in Dun & Bradstreet Directory
	No.	A	No.	A	B	Replies		A	B	No.	A	C	No.	A	C	No.	A	C	
						No.	A												
311 Food manufacturing	75	14	2	3	3	2	3	3	0	0	0	0	0	0	0	0	0	397	
313 Beverage industries	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	
314 Tobacco	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
321 Textile	40	7	1	2	3	1	2	3	0	0	0	0	0	0	0	0	0	212	
322 Wearing apparel	50	9	13	20	26	13	20	26	3	50	23	3	23	23	23	23	23	201	
323 Leather products	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	
324 Footwear	15	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	
331,332 Wood & cork / Furniture	25	5	1	2	4	1	2	4	0	0	0	0	0	0	0	0	0	173	
341 Paper	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	124	
342 Printing	20	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	279	
351,352 Chemicals/Other chemicals	60	11	15	23	25	15	23	25	1	17	7	4	31	27	27	27	27	313	
353 Petroleum refineries	5	1	2	3	40	2	3	40	0	0	0	0	0	0	0	0	0	19	
355 Rubber products	5	1	2	3	40	2	3	40	0	0	0	0	0	0	0	0	0	52	
356 Plastic products not elsewhere classified	15	3	1	2	7	1	2	7	0	0	0	0	0	0	0	0	0	354	
362,369 Glass & glass products	75	14	1	2	1	1	2	1	0	0	0	0	0	0	0	0	0	370	
Other non-metal mineral																			
371,372 Iron & steel	5	1	1	2	20	1	2	20	0	0	0	0	0	0	0	0	0	303	
Non-ferrous metal																			
381 Fabricated metal	50	9	2	3	4	2	3	4	0	0	0	0	0	0	0	0	0	359	
382 Machinery	25	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	170	
383 Electrical machinery	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	514	
384 Transport equipment	30	6	12	19	40	12	19	40	2	33	17	3	23	25	25	25	25	141	
385 Professional equipment	15	3	11	17	73	11	17	73	0	0	0	3	23	27	27	27	27	483	
390 Other manufacturing	9	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	773	
Total	540	100	64	100	12	64	100	12	6	100	9	13	100	20	20	20	20	5,341	

* Directory: Dun & Bradstreet Israel

A : % against Total

B : % for Nos. of Samples

C : % for Nos. of Valid Collection

(Unit: %)

Table S-2-2 Interested Enterprises from Saudi Arabia in Investment in the Proposed Industrial Estates

(Unit: %)

Classification	No. of Samples		No. of Replies			No. of Effective Replies			Interest for New I.E.			Wish to Investigate			Population in Saudi Industrial Directory
	No.	A	No.	A	B	No.	A	B	No.	A	C	No.	A	C	
311 Food manufacturing	75	15	12	44	16	12	44	16	0	0	0	1	50	8	76
313 Beverage industries	15	3	1	4	7	1	4	7	0	0	0	0	0	0	15
314 Tobacco	3	1	0	0	0	0	0	0	0	0	0	0	0	0	3
321 Textile	23	5	1	4	4	1	4	4	0	0	0	0	0	0	23
322 Wearing apparel	32	6	1	4	3	1	4	3	0	0	0	0	0	0	32
323 Leather products	5	1	1	4	20	1	4	20	0	0	0	0	0	0	9
324 Footwear	7	1	0	0	0	0	0	0	0	0	0	0	0	0	7
331,332 Wood & cork / Furniture	45	9	0	0	0	0	0	0	0	0	0	0	0	0	45
341 Paper	5	1	1	4	20	1	4	20	0	0	0	0	0	0	8
342 Printing	20	4	2	7	10	2	7	10	0	0	0	0	0	0	23
351,352 Chemicals/Other chemicals	90	18	0	0	0	0	0	0	0	0	0	0	0	0	96
353 Petroleum refineries	4	1	0	0	0	0	0	0	0	0	0	0	0	0	4
355 Rubber products	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
356 Plastic products not elsewhere classified	15	3	1	4	7	1	4	7	0	0	0	0	0	0	23
362,369 Glass & glass products	19	4	2	7	11	2	7	11	0	0	0	1	50	50	19
Other non-metal mineral															
371,372 Iron & steel	5	1	1	4	20	1	4	20	0	0	0	0	0	0	11
Non-ferrous metal															
381 Fabricated metal	28	6	2	7	7	2	7	7	0	0	0	0	0	0	28
382 Machinery	25	5	0	0	0	0	0	0	0	0	0	0	0	0	26
383 Electrical machinery	35	7	1	4	3	1	4	3	0	0	0	0	0	0	48
384 Transport equipment	32	6	0	0	0	0	0	0	0	0	0	0	0	0	32
385 Professional equipment	5	1	0	0	0	0	0	0	0	0	0	0	0	0	12
390 Other manufacturing	11	2	1	4	9	1	4	9	0	0	0	0	0	0	11
Total	500	100	27	100	5	27	100	5	0	0	0	2	100	7	552

* Directory: Saudi Industrial Directory

A : % against Total

B : % for Nos. of Samples

C : % for Nos. of Valid Collection

(Unit: %)

Table 5-2-3 Interested Enterprises from Egypt in Investment in the Proposed Industrial Estates

Classification	No. of Samples		No. of Replies		No. of Effective Replies		Wish to Invest		Interest for New I.E.		Wish to Investigate		Population in Green Business Guide
	No.	A	No.	A	No.	B	No.	A	No.	A	No.	C	
311 Food manufacturing	75	15	3	12	4	3	12	4	0	0	0	0	124
313 Beverage industries	5	1	0	0	0	0	0	0	0	0	0	0	11
314 Tobacco	3	1	1	4	33	1	4	33	0	0	0	0	3
321 Textile	40	8	0	0	0	0	0	0	0	0	0	0	74
322 Wearing apparel	40	8	0	0	0	0	0	0	0	0	0	0	124
323 Leather products	5	1	0	0	0	0	0	0	0	0	0	0	25
324 Footwear	15	3	0	0	0	0	0	0	0	0	0	0	69
331,332 Wood & cork / Furniture	25	5	1	4	4	1	4	4	0	0	0	0	139
341 Paper	5	1	0	0	0	0	0	0	0	0	0	0	23
342 Printing	20	4	1	4	5	1	4	5	0	0	0	0	43
351,352 Chemicals/Other chemicals	50	10	2	8	4	2	8	4	0	0	0	0	96
353 Petroleum refineries	5	1	0	0	0	0	0	0	0	0	0	0	69
355 Rubber products	2	0	1	4	50	1	4	50	0	0	0	0	2
356 Plastic products not elsewhere classified	15	3	1	4	7	1	4	7	1	100	0	0	58
362,369 Glass & glass products	75	15	12	48	16	12	48	16	0	0	0	0	75
Other non-metal mineral													
371,372 Iron & steel	5	1	1	4	20	1	4	20	0	0	0	0	17
Non-ferrous metal													
381 Fabricated metal	49	10	0	0	0	0	0	0	0	0	0	0	49
382 Machinery	25	5	0	0	0	0	0	0	0	0	0	0	71
383 Electrical machinery	5	1	0	0	0	0	0	0	0	0	0	0	88
384 Transport equipment	20	4	0	0	0	0	0	0	0	0	0	0	90
385 Professional equipment	5	1	0	0	0	0	0	0	0	0	0	0	16
390 Other manufacturing	11	2	2	8	18	2	8	18	0	0	0	0	87
Total	500	100	25	100	5	25	100	5	1	100	4	0	1,353

* Directory: Green Business Guide

A : % against Total

B : % for Nos. of Samples

C : % for Nos. of Valid Collection

(Unit: %)

Table 5-2-4 Interested Enterprises from Germany in Investment in the Proposed Industrial Estates

Classification	No. of Samples		No. of Replies				No. of Effective Replies				Interest for New I.E.				Population in Hoppenstedt
	No.	A	Replies		Replies		Wish to Invest		Wish to Investigate		No.	A	C		
			No.	A	No.	A	No.	A	No.	A					
311 Food manufacturing	92	17	21	33	23	21	33	23	0	0	1	33	5	1,756	
313 Beverage industries	5	1	1	2	20	1	2	20	0	0	0	0	0	1,421	
314 Tobacco	5	1	0	0	0	0	0	0	0	0	0	0	0	32	
321 Textile	40	8	4	6	10	4	6	10	0	0	0	0	0	1,073	
322 Wearing apparel	40	8	3	5	8	3	5	8	0	0	0	0	0	1,032	
323 Leather products	5	1	0	0	0	0	0	0	0	0	0	0	0	225	
324 Footwear	15	3	1	2	7	1	2	7	0	0	0	0	0	136	
331,332 Wood & cork / Furniture	25	5	0	0	0	0	0	0	0	0	0	0	0	1,954	
341 Paper	5	1	0	0	0	0	0	0	0	0	0	0	0	702	
342 Printing	20	4	2	3	10	2	3	10	0	0	0	0	0	1,933	
351,352 Chemicals/Other chemicals	50	9	3	5	6	3	5	6	0	0	0	0	0	1,853	
353 Petroleum refineries	5	1	1	2	20	1	2	20	0	0	0	0	0	96	
355 Rubber products	5	1	0	0	0	0	0	0	0	0	0	0	0	322	
356 Plastic products not elsewhere classified	15	3	1	2	7	1	2	7	0	0	0	0	0	1,718	
362,369 Glass & glass products	75	14	3	5	4	3	5	4	0	0	0	0	0	1,549	
Other non-metal mineral															
371,372 Iron & steel	5	1	0	0	0	0	0	0	0	0	0	0	0	2,068	
Non-ferrous metal															
381 Fabricated metal	50	9	2	3	4	2	3	4	0	0	0	0	0	1,203	
382 Machinery	39	7	19	30	49	19	30	49	0	0	2	67	11	5,910	
383 Electrical machinery	6	1	2	3	33	2	3	33	0	0	0	0	0	3,267	
384 Transport equipment	20	4	0	0	0	0	0	0	0	0	0	0	0	831	
385 Professional equipment	5	1	1	2	20	1	2	20	0	0	0	0	0	1,164	
390 Other manufacturing	5	1	0	0	0	0	0	0	0	0	0	0	0	2,666	
Total	532	100	64	100	12	64	100	12	0	0	3	100	5	32,911	

* Directory: Hoppenstedt

A : % against Total

B : % for Nos. of Samples

C : % for Nos. of Valid Collection
(Unit: %)

Table 5-2-5 Interested Enterprises from South Korea in Investment in the Proposed Industrial Estates

Classification	No. of Samples	No. of Replies			No. of Effective Replies			Interest for New I.E.			Population in Top 3000 Korean Companies		
		No. of Replies			No. of Effective Replies			Interest for New I.E.			Population in Top 3000 Korean Companies		
		A	No.	B	A	No.	B	A	No.	C	A	No.	C
311 Food manufacturing	75	12	3	5	4	3	5	0	0	0	0	0	0
313 Beverage industries	14	2	1	2	7	1	2	7	0	0	0	0	0
314 Tobacco	0	0	0	0	0	0	0	0	0	0	0	0	0
321 Textile	49	8	5	8	10	5	8	10	0	0	0	0	0
322 Wearing apparel	51	8	12	20	24	12	20	24	0	0	1	50	8
323 Leather products	11	2	0	0	0	0	0	0	0	0	0	0	0
324 Footwear	15	2	0	0	0	0	0	0	0	0	0	0	0
331.332 Wood & cork / Furniture	28	5	2	3	7	2	3	7	0	0	0	0	0
341 Paper	14	2	0	0	0	0	0	0	0	0	0	0	0
342 Printing	28	5	1	2	4	1	2	4	0	0	0	0	0
351.352 Chemicals/Other chemicals	84	14	21	36	25	21	36	25	0	0	1	50	5
353 Petroleum refineries	8	1	3	5	38	3	5	38	0	0	0	0	0
355 Rubber products	9	1	0	0	0	0	0	0	0	0	0	0	0
356 Plastic products not elsewhere classified	17	3	0	0	0	0	0	0	0	0	0	0	0
362.369 Glass & glass products	78	13	5	8	6	5	8	6	0	0	0	0	0
Other non-metal mineral													
371.372 Iron & steel	6	1	1	2	17	1	2	17	0	0	0	0	0
Non-ferrous metal													
381 Fabricated metal	50	8	1	2	2	1	2	2	0	0	0	0	0
382 Machinery	27	4	0	0	0	0	0	0	0	0	0	0	0
383 Electrical machinery	5	1	1	2	20	1	2	20	0	0	0	0	0
384 Transport equipment	20	3	2	3	10	2	3	10	0	0	0	0	0
385 Professional equipment	7	1	0	0	0	0	0	0	0	0	0	0	0
390 Other manufacturing	14	2	1	2	7	1	2	7	0	0	0	0	0
Total	610	100	59	100	10	59	100	10	0	0	2	100	3

* Directory: Top 3000 Korean Companies

A : % against Total

B : % for Nos. of Samples

C : % for Nos. of Valid Collection

(Unit: %)

Table S-2-6 Interested Enterprises from Singapore in Investment in the Proposed Industrial Estates

Classification	No. of Samples		No. of Replies		No. of Effective Replies		Wish to Invest		Interest for New I.E.		Wish to Investigate		Population in Manufacturers and Products Directory	
	No.	A	No.	A	No.	B	No.	A	No.	A	No.	A	No.	C
311 Food manufacturing	78	16	5	17	6	5	17	6	0	0	0	0	0	78
313 Beverage industries	5	1	0	0	0	0	0	0	0	0	0	0	0	5
314 Tobacco	2	0	0	0	0	0	0	0	0	0	0	0	0	2
321 Textile	14	3	2	7	14	2	7	14	0	0	0	0	0	14
322 Wearing apparel	27	5	1	3	4	1	3	4	0	0	0	0	0	27
323 Leather products	5	1	1	3	20	1	3	20	0	0	0	0	0	5
324 Footwear	15	3	1	3	7	1	3	7	0	0	0	0	0	15
331,332 Wood & cork / Furniture	29	6	0	0	0	0	0	0	0	0	0	0	0	29
341 Paper	5	1	0	0	0	0	0	0	0	0	0	0	0	5
342 Printing	17	3	0	0	0	0	0	0	0	0	0	0	0	17
351,352 Chemicals/Other chemicals	54	11	1	3	2	1	3	2	0	0	0	0	0	54
353 Petroleum refineries	4	1	1	3	25	1	3	25	0	0	0	0	0	4
355 Rubber products	5	1	0	0	0	0	0	0	0	0	0	0	0	5
356 Plastic products not elsewhere classified	19	4	1	3	5	1	3	5	0	0	0	0	0	19
362,369 Glass & glass products	79	16	7	23	9	7	23	9	0	0	0	0	0	79
Other non-metal mineral														
371,372 Iron & steel	9	2	1	3	11	1	3	11	0	0	0	0	0	9
Non-ferrous metal														
381 Fabricated metal	50	10	4	13	8	4	13	8	0	0	0	0	0	50
382 Machinery	30	6	2	7	7	2	7	7	0	0	0	0	0	30
383 Electrical machinery	12	2	1	3	8	1	3	8	0	0	0	0	0	12
384 Transport equipment	20	4	1	3	5	1	3	5	0	0	0	0	0	20
385 Professional equipment	5	1	0	0	0	0	0	0	0	0	0	0	0	5
390 Other manufacturing	16	3	1	3	6	1	3	6	0	0	0	0	0	16
Total	500	100	30	100	6	30	100	6	0	0	0	0	0	500

* Directory: Manufacturers and Products Directory

A : % against Total

B : % for Nos. of Samples

C : % for Nos. of Valid Collection

(Unit: %)

Table 5-2-7 Interested Enterprises from Japan in Investment in the Proposed Industrial Estates

Classification	No. of Samples	No. of Replies			No. of Effective Replies			Interest for New I.E.			Wish to Invest			Wish to Investigate			Population in Toyo Keizai Industrial Data
		A	No.	B	A	No.	B	A	No.	C	A	No.	B	A	No.	C	
311 Food manufacturing	100	17	13	14	13	13	14	13	0	0	0	0	0	0	0	0	133
313 Beverage industries	7	1	1	1	14	1	1	14	0	0	0	0	0	0	0	0	17
314 Tobacco	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
321 Textile	53	9	6	7	11	6	7	11	0	0	0	0	0	0	0	0	57
322 Wearing apparel	53	9	3	5	6	3	3	6	0	0	0	0	0	0	0	0	133
323 Leather products	5	1	1	1	20	1	1	20	0	0	0	0	0	0	0	0	5
324 Footwear	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
331,332 Wood & cork / Furniture	28	5	6	7	21	6	7	21	0	0	0	0	0	0	0	0	28
341 Paper	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31
342 Printing	24	4	6	7	25	6	7	25	0	0	0	0	0	0	0	0	24
351,352 Chemicals/Other chemicals	66	11	10	11	15	10	11	15	0	0	0	0	0	0	0	0	273
353 Petroleum refineries	7	1	2	2	29	2	2	29	0	0	0	0	0	0	0	0	19
355 Rubber products	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38
356 Plastic products not elsewhere classified	19	3	3	3	16	3	3	16	0	0	0	0	0	0	0	0	62
362,369 Glass & glass products	68	11	12	13	18	12	13	18	0	0	0	0	0	0	0	0	68
Other non-metal mineral																	
371,372 Iron & steel	7	1	1	1	14	1	1	14	0	0	0	0	0	0	0	0	125
Non-ferrous metal																	
381 Fabricated metal	66	11	8	9	12	8	9	12	0	0	0	0	0	0	0	0	159
382 Machinery	33	6	9	10	27	9	10	27	0	0	0	0	0	0	0	0	313
383 Electrical machinery	7	1	2	2	29	2	2	29	0	0	0	0	0	0	0	0	411
384 Transport equipment	27	5	4	4	15	4	4	15	0	0	0	0	0	0	0	0	185
385 Professional equipment	7	1	2	2	29	2	2	29	0	0	0	0	0	0	0	0	97
390 Other manufacturing	7	1	3	3	43	3	3	43	0	0	0	0	0	0	0	0	163
Total	600	100	92	100	15	92	100	15	0	0	0	0	0	0	0	0	2,343

* Directory: Toyo Keizai Japanese Companies Investment Directory

A : % against Total

B : % for Nos. of Samples

C : % for Nos. of Valid Collection

(Unit: %)

Table 5-2-8 Interested Enterprises from the U.S.A in Investment in the Proposed Industrial Estates

Classification	No. of Samples		No. of Replies			No. of Effective Replies			Interest for New I.E.			Population in Dun & Bradstreet Directory	
	No.	A	Replies		B	Wish to Invest		C	Wish to Investigate		C		
			No.	A		No.	A		No.	A			No.
311 Food manufacturing	75	15	3	12	4	3	12	4	0	0	0	0	559
313 Beverage industries	5	1	0	0	0	0	0	0	0	0	0	0	122
314 Tobacco	5	1	0	0	0	0	0	0	0	0	0	0	21
321 Textile	40	8	1	4	3	1	4	3	0	0	0	0	192
322 Wearing apparel	40	8	0	0	0	0	0	0	0	0	0	0	186
323 Leather products	5	1	0	0	0	1	4	20	0	0	1	100	22
324 Footwear	15	3	1	4	7	0	0	0	0	0	0	0	34
331.332 Wood & cork / Furniture	25	5	2	8	8	2	8	8	0	0	0	0	330
341 Paper	5	1	1	4	20	1	4	20	0	0	0	0	254
342 Printing	20	4	0	0	0	0	0	0	0	0	0	0	371
351.352 Chemicals/Other chemicals	50	10	3	12	6	3	12	6	0	0	0	0	625
353 Petroleum refineries	5	1	0	0	0	0	0	0	0	0	0	0	164
355 Rubber products	5	1	0	0	0	0	0	0	0	0	0	0	139
356 Plastic products not elsewhere classified	15	3	0	0	0	0	0	0	0	0	0	0	325
362.369 Glass & glass products	75	15	2	8	3	2	8	3	0	0	0	0	207
Other non-metal minerals													
371.372 Iron & steel	5	1	0	0	0	0	0	0	0	0	0	0	426
Non-ferrous metal													
381 Fabricated metal	50	10	4	16	8	4	16	8	0	0	0	0	572
382 Machinery	25	5	4	16	16	4	16	16	1	100	25	0	887
383 Electrical machinery	5	1	4	16	80	4	16	80	0	0	0	0	719
384 Transport equipment	20	4	0	0	0	0	0	0	0	0	0	0	443
385 Professional equipment	5	1	0	0	0	0	0	0	0	0	0	0	477
Other manufacturing	5	1	0	0	0	0	0	0	0	0	0	0	195
Total	500	100	25	100	5	25	100	5	1	100	4	1	7,270

* Directory: Dun & Bradstreet U.S.A.

A : % against Total

B : % for Nos. of Samples

C : % for Nos. of Valid Collection

(Unit: %)

Table 5-2-9 Preference of Industrial Sites for Investment

(): %

	Israel	Saudi Arabia	Egypt	Germany	South Korea	Singapore	Japan	U.S.A.	Total
•Karak	2 (10.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (6.9)
•Tafila	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
•Ma'an	1 (5.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (3.4)
•Aqaba	2 (10.5)	1 (50.0)	1 (100.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	1 (0.0)	6 (20.7)
•Not fixed at present	13 (68.4)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	1 (0.0)	16 (55.2)
•No answer	1 (5.3)	0 (0.0)	0 (0.0)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (13.8)
Total	19 (100)	2 (100)	1 (100)	3 (100)	2 (100)	0 (0.0)	0 (0.0)	2 (0.0)	29 (100)

Table 5-2-10 Expected Shares of Exports in Production

Expected Shares of Exports									(): %
	Israel	Saudi Arabia	Egypt	Germany	South Korea	Singapore	Japan	U.S.A	Total
100%	3 (15.8)	0 (0.0)	0 (0.0)	1 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.0)	5 (17.2)
90~99%	3 (15.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (10.3)
80~89%	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.0)	2 (6.9)
70~79%	3 (15.8)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (13.8)
60~69%	3 (15.8)	2 (100.0)	0 (0.0)	1 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (20.7)
50~59%	4 (21.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (13.8)
less than 50%	2 (10.5)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (10.3)
No answer	1 (5.3)	0 (0.0)	0 (0.0)	1 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (6.9)
Total	19 (100)	2 (100)	1 (100)	3 (100)	2 (100)	0 (0.0)	0 (0.0)	2 (0.0)	29 (100)

Table S-3-1 Expansion Coefficient by Industrial Category for Estimate of Overall Investment Demand of Jordanian Enterprises

ISIC	Industrial Category	Population		Number of Samples		Sampling Ratio		Expansion Coefficient	
		Northern Districts	Southern Districts	Total	Northern Districts	Southern Districts	Total	Northern Districts	Southern Districts
290	Mining	14	18	32	14	18	32	1.00	1.00
311	Food manufacturing	515	31	546	51	31	82	0.10	1.00
313	Beverage	17	0	17	8	0	8	0.47	-
314	Tobacco	6	0	6	3	0	3	0.50	-
321	Textile	106	3	109	29	3	32	0.27	1.00
322	Wearing Apparel	304	8	312	25	8	33	0.08	1.00
323	Leather Products	18	0	18	5	0	5	0.28	-
324	Footwear	95	0	95	2	0	2	0.02	-
331	Wood & Cork Furniture	244	13	257	27	13	40	0.11	1.00
341	Paper	38	1	39	14	1	15	0.37	1.00
342	Printing	123	3	126	10	3	13	0.08	1.00
351	Chemicals	115	1	116	71	1	72	0.62	1.00
353	Petroleum Refineries	1	0	1	0	0	0	0.00	-
355	Rubber	13	0	13	7	0	7	0.54	-
356	Plastic Products	115	0	115	50	0	50	0.43	-
362	Glass & Non-Metal Mineral	457	39	496	69	39	108	0.15	1.00
381	Fabricated Metal	278	32	310	53	32	85	0.19	1.00
382	Machinery	23	0	23	7	0	7	0.30	-
383	Electrical Machinery	70	1	71	25	1	26	0.36	1.00
384	Transport Equipment	12	0	12	6	0	6	0.50	-
385	Professional Equipment	14	0	14	3	0	3	0.21	-
390	Other Manufacturing	43	0	43	6	0	6	0.14	-
410	Others	33	0	33	33	0	33	1.00	-
951	Industrial Services	332	2	334	4	2	6	0.01	1.00
	Total	2986	152	3138	522	152	674	0.17	1.00

1/ Source : Industrial Census 1993 conducted by Statistical Department of Jordan

N.B. Northern Districts : Irbid, Ajlun, Jerash, Ma'raq, Zarqa, Amman, Balqa, Madaba

Southern Districts : Karak, Tafila, Ma'an, Aqaba

Table 5-3-2 Expansion Coefficient for Estimate of Overall Investment Demand
by Jordanian Prospective Enterprises

Ser.No.	ISIC		Existing Location	Preferred Candidate Sites	Interest Degree (%)	Expansion Coefficient
A150	369	Glass & Non-Metal Mineral	Amman	A2	100	7
O010	381	Fabricated Metal	Amman	A2	100	9
O012	381	Fabricated Metal	Amman	A2	100	9
S046	383	Electrical Machinery	Amman	A2	80	3
S067	383	Electrical Machinery	Amman	A2	80	3
S040	331	Wood & Cork Furniture	Amman	A3	60	9
S070	356	Plastic Products	Amman	K2	50	2
A005	369	Glass & Non-Metal Mineral	Amman	M2	100	7
A159	311	Food manufacturing	Balqa	A3	100	10
A274	381	Fabricated Metal	Irbid	A1	100	9
A117	290	Mining	Irbid	A3	100	1
A266	351	Chemicals	Irbid	K3	100	2
A122	322	Wearing Apparel	Irbid	M2	70	12
A134	323	Leather Products	Irbid	M2	100	4
O045	369	Glass & Non-Metal Mineral	Irbid	M2	100	7
A109	311	Food manufacturing	Jerash	K2	100	10
O092	381	Fabricated Metal	Karak	K1	50	1
A207	381	Fabricated Metal	Karak	K2	100	1
O047	341	Paper	Karak	K2	70	1
O063	381	Fabricated Metal	Karak	K2	100	1
O071	369	Glass & Non-Metal Mineral	Karak	K2	80	1
O077	381	Fabricated Metal	Karak	K2	100	1
O094	311	Food manufacturing	Karak	K2	100	1
O101	381	Fabricated Metal	Karak	K2	90	1
O090	381	Fabricated Metal	Karak	K3	50	1
O098	369	Glass & Non-Metal Mineral	Karak	K3	90	1
A223	381	Fabricated Metal	Tafila	T1	80	1
A226	331	Wood & Cork Furniture	Tafila	T1	70	1
A231	369	Glass & Non-Metal Mineral	Tafila	T1	75	1
A232	381	Fabricated Metal	Tafila	T1	100	1
A247	331	Wood & Cork Furniture	Ma'an	M2	70	1
A244	951	Industrial Services	Aqaba	A1	100	1
S099	381	Fabricated Metal	Aqaba	A1	80	1
A185	342	Printing	Aqaba	A2	100	1
A189	311	Food manufacturing	Aqaba	A2	70	1
A192	381	Fabricated Metal	Aqaba	A2	100	1
A195	311	Food manufacturing	Aqaba	A2	80	1
A196	311	Food manufacturing	Aqaba	A2	100	1
A197	322	Wearing Apparel	Aqaba	A2	50	1
A198	322	Wearing Apparel	Aqaba	A2	100	1
A200	322	Wearing Apparel	Aqaba	A2	100	1
A201	381	Fabricated Metal	Aqaba	A2	100	1
A202	342	Printing	Aqaba	A2	100	1
A241	381	Fabricated Metal	Aqaba	A2	100	1
A242	369	Glass & Non-Metal Mineral	Aqaba	A2	100	1
A246	381	Fabricated Metal	Aqaba	A2	100	1
S086	311	Food manufacturing	Aqaba	A2	100	1
S087	331	Wood & Cork Furniture	Aqaba	A2	100	1
S092	369	Glass & Non-Metal Mineral	Aqaba	A2	100	1
S093	381	Fabricated Metal	Aqaba	A2	100	1
S094	381	Fabricated Metal	Aqaba	A2	100	1
S095	381	Fabricated Metal	Aqaba	A2	100	1
S097	381	Fabricated Metal	Aqaba	A2	100	1
S098	381	Fabricated Metal	Aqaba	A2	100	1
A243	381	Fabricated Metal	Aqaba	A3	70	1
S090	369	Glass & Non-Metal Mineral	Aqaba	A3	100	1
S091	369	Glass & Non-Metal Mineral	Aqaba	A3	100	1

Table 5-3-3 Estimated Overall Investment Demand of Jordanian Investors

ISIC	Preferred Candidate Sites		K-1		K-2		K-3		T-1		T-2		M-1		M-2		Δ-1		Δ-2		Δ-3		Total		
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	
290 Mining																					1	4.3%	1	0.7%	
311 Food manufacturing			11	57.9%																	4	7.7%	10	43.5%	
322 Wearing apparel															12	38.7%					3	5.8%		15	
323 Leather Products															4	12.9%							4	2.8%	
331&332 Wood & cork/furniture									1	25.0%					1	3.2%					1	1.9%	9	39.1%	
341 Paper			1	5.3%																	2	3.8%		3	
351 Chemicals							2	50.0%															2	2.1%	
356 Plastic products			2	10.5%																				2	1.4%
362&369 Glass & Non-metal mineral			1	5.3%	1	25.0%	1	25.0%	1	25.0%			14	45.2%					9	17.3%	2	8.7%	28	19.3%	
381 Fabricated metal	1	100.0%	4	21.1%	1	25.0%	1	25.0%	2	50.0%							10	90.9%	27	51.9%	1	4.3%	46	31.7%	
383 Electrical machinery																			6	11.5%			6	4.1%	
951 Industrial Services																	1	9.1%					1	0.7%	
No Answer																									
Total	1	100.0%	19	100.0%	4	100.0%	4	100.0%	4	100.0%	0	0	0	0	31	100.0%	11	100.0%	52	100.0%	23	100.0%	145	100.0%	

/1 Enterprises changed their minds.

Table 5-3-4 Expansion Coefficient by Industrial Category for Estimate of Overall Investment Demand of 8 Foreign Countries

Classification	Israel				Saudi Arabia				Egypt				Germany			
	Population	No. of	Sampling	Expansion	Population	No. of	Sampling	Expansion	Population	No. of	Sampling	Expansion	Population	No. of	Sampling	Expansion
		Samples	Ratio	Coefficient		Samples	Ratio	Coefficient		Samples	Ratio	Coefficient		Samples	Ratio	Coefficient
311 Food manufacturing	397	75	0.19	5	76	75	0.99	1	124	75	0.60	2	1,756	92	0.05	19
313 Beverage industries	46	5	0.11	9	15	15	1.00	1	11	5	0.45	2	1,421	5	0.00	284
314 Tobacco	2	1	0.50	2	3	3	1.00	1	3	3	1.00	1	32	5	0.16	6
321 Textile	212	40	0.19	5	23	23	1.00	1	74	40	0.54	2	1,073	40	0.04	27
322 Wearing apparel	201	50	0.25	4	32	32	1.00	1	124	40	0.32	3	1,032	40	0.04	26
323 Leather products	19	5	0.26	4	9	5	0.56	2	25	5	0.20	5	225	5	0.02	45
324 Footwear	37	15	0.41	2	7	7	1.00	1	69	15	0.22	5	136	15	0.11	9
331,332 Wood & cork / Furniture	173	25	0.14	7	45	45	1.00	1	139	25	0.18	6	1,954	25	0.01	78
341 Paper	124	5	0.04	25	8	5	0.63	2	23	5	0.22	5	702	5	0.01	140
342 Printing	279	20	0.07	14	23	20	0.87	1	43	20	0.47	2	1,933	20	0.01	97
351,352 Chemicals/Other chemicals	313	60	0.19	5	96	90	0.94	1	96	50	0.52	2	1,853	50	0.03	37
353 Petroleum refineries	19	5	0.26	4	4	4	1.00	1	69	5	0.07	14	96	5	0.05	19
355 Rubber products	52	5	0.10	10	1	1	1.00	1	2	2	1.00	1	322	5	0.02	64
356 Plastic products	354	15	0.04	24	23	15	0.65	2	58	15	0.26	4	1,718	15	0.01	115
362,369 Glass & glass products	370	75	0.20	5	19	19	1.00	1	75	75	1.00	1	1,549	75	0.05	21
Other non-metal mineral																
371,372 Iron & steel	303	5	0.02	61	11	5	0.45	2	17	5	0.29	3	2,068	5	0.00	414
Non-ferrous metal																
381 Fabricated metal	359	50	0.14	7	28	28	1.00	1	49	49	1.00	1	1,203	50	0.04	24
382 Machinery	170	25	0.15	7	26	25	0.96	1	71	25	0.35	3	5,910	39	0.01	152
383 Electrical machinery	514	5	0.01	103	48	35	0.73	1	88	5	0.06	18	3,267	6	0.00	545
384 Transport equipment	141	30	0.21	5	32	32	1.00	1	90	20	0.22	5	831	20	0.02	42
385 Professional equipment	483	15	0.03	32	12	5	0.42	2	16	5	0.31	3	1,164	5	0.00	233
390 Other manufacturing	773	9	0.01	86	11	11	1.00	1	87	11	0.13	8	2,666	5	0.00	533
Total	5,341	540	0.10	10	552	500	0.91	1	1,353	500	0.37	3	32,911	532	0.02	62

Classification	South Korea				Singapore				Japan				U.S.A			
	Population	No. of	Sampling	Expansion	Population	No. of	Sampling	Expansion	Population	No. of	Sampling	Expansion	Population	No. of	Sampling	Expansion
		Samples	Ratio	Coefficient		Samples	Ratio	Coefficient		Samples	Ratio	Coefficient		Samples	Ratio	Coefficient
311 Food manufacturing	87	75	0.86	1	78	78	1.00	1	133	100	0.75	1	559	75	0.13	7
313 Beverage industries	33	14	0.42	2	5	5	1.00	1	17	7	0.41	2	122	5	0.04	24
314 Tobacco	0	0	-	-	2	2	1.00	1	0	0	-	-	21	5	0.24	4
321 Textile	174	49	0.28	4	14	14	1.00	1	57	53	0.93	1	192	40	0.21	5
322 Wearing apparel	75	51	0.68	1	27	27	1.00	1	133	53	0.40	3	186	40	0.22	5
323 Leather products	31	11	0.35	3	5	5	1.00	1	5	5	1.00	1	22	5	0.23	4
324 Footwear	35	15	0.43	2	15	15	1.00	1	2	2	1.00	1	34	15	0.44	2
331,332 Wood & cork / Furniture	30	28	0.93	1	29	29	1.00	1	28	28	1.00	1	330	25	0.08	13
341 Paper	60	14	0.23	4	5	5	1.00	1	31	7	0.23	4	254	5	0.02	51
342 Printing	28	28	1.00	1	17	17	1.00	1	24	24	1.00	1	371	20	0.05	19
351,352 Chemicals/Other chemicals	214	84	0.39	3	54	54	1.00	1	273	66	0.24	4	625	50	0.08	13
353 Petroleum refineries	16	8	0.50	2	4	4	1.00	1	19	7	0.37	3	164	5	0.03	33
355 Rubber products	41	9	0.22	5	5	5	1.00	1	38	7	0.18	5	139	5	0.04	28
356 Plastic products	17	17	1.00	1	19	19	1.00	1	62	19	0.31	3	325	15	0.05	22
362,369 Glass & glass products	79	78	0.99	1	79	79	1.00	1	68	68	1.00	1	207	75	0.36	3
Other non-metal mineral																
371,372 Iron & steel	138	6	0.04	23	9	9	1.00	1	125	7	0.06	18	426	5	0.01	85
Non-ferrous metal																
381 Fabricated metal	26	50	0.66	2	50	50	1.00	1	159	66	0.42	2	572	30	0.09	11
382 Machinery	118	27	0.23	4	30	30	1.00	1	313	33	0.11	9	887	25	0.03	35
383 Electrical machinery	218	5	0.02	44	12	12	1.00	1	411	7	0.02	59	719	5	0.01	144
384 Transport equipment	132	20	0.15	7	20	20	1.00	1	185	27	0.15	7	443	20	0.05	22
385 Professional equipment	25	7	0.28	4	5	5	1.00	1	97	7	0.07	14	477	5	0.01	95
390 Other manufacturing	51	14	0.27	4	16	16	1.00	1	163	7	0.04	23	195	5	0.03	39
Total	1,678	610	0.36	3	500	500	1.00	1	2,343	600	0.26	4	7,270	500	0.07	15

**Table 5-3-5 Expansion Coefficient for Estimate of Overall Investment Demand
by Foreign Prospective Enterprises**

Ser.No.	ISIC	Description of ISIC	Preferred District	Expected Factory Lot Area (ha)	Expansion Coefficient	Preferred I.E. Type
I. Israel						
6003	322	Wearing apparel	Aqaba	less than 0.2	4	GIE
A25	384	Transport equipment	Aqaba	1.0~1.9	5	EPZ
A30	384	Transport equipment	Aqaba	0.2~0.4	5	GIE
6015	384	Transport equipment	Ma'an	0.5~0.9	5	GIE
6017	322	Wearing apparel	Karak	1.0~1.9	4	GIE
A37	351	Chemicals	Karak	1.0~1.9	5	GIE
A5	322	Wearing apparel	Not fixed	0.2~0.4	4	GIE
A8	322	Wearing apparel	Not fixed	0.2~0.4	4	GIE
A28	384	Transport equipment	Not fixed	1.0~1.9	5	GIE
II. Saudi Arabia						
7005	311	Food manufacturing	Aqaba	more than 10.0 ha	1	GIE
7002	369	Glass & Non-Metal Mineral	Aqaba (A3)	0.2~0.4	1	EPZ
III. Egypt						
8001	356	Plastic products	Aqaba	0.2~0.4	4	EPZ
IV. South Korea						
2022	322	Wearing apparel	Aqaba	0.5~0.9	1	EPZ
V. U.S.A.						
4009	382	Machinery	Aqaba	1.0~1.9	35	EPZ

Table S-3-6 Estimated Overall Investment Demand of Foreign Investors

Promising Industrial Estate Sites/Export Processing Zones		Karak			Tafila			Ma'an			Aqaba			Not Fixed			Total	
Country	ISIC	GIE	EPZ	Sub-Total	GIE	EPZ	Sub-Total	GIE	EPZ	Sub-Total	GIE	EPZ	Sub-Total	GIE	EPZ	Sub-Total	EPZ	Sub-Total
Israel	322 Wearing apparel	4		4							4		4	8		8		16
Israel	351 Chemicals	5		5												5		5
Israel	384 Transport equipment				5		5	5		5	5		10	5		5	5	20
Saudi Arabia	311 Food manufacturing							1		1			1			1		1
Saudi Arabia	369 Glass & non-metal mineral										1		1			1		1
Egypt	356 Plastic products										4		4			4		4
South Korea	322 Wearing apparel										1		1			1		1
U.S.A.	382 Machinery										35		35			35		35
Total		9		9				5		5	10		56	13		13	46	83