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MID-EAST TRANSPORTATION STUDY
A SURVEY OF REGIONAL TRANSPORTATION REQUIREMENTS
STAGE I

DEPARTMENT OF TRANSPORTATION
WASHINGTON, D.C. 20590
March 16, 1979

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MID-EAST TRANSPORT STUDY
STAGE 1

Chapter I

Summary of Findings

Stage I of the Mid-East Transport Study identifies a number of transport projects in the Mid-East that are believed economically viable and worthy of detailed prefeasibility and feasibility studies. These projects are of both a capital improvement and institution-building nature.

A most important criterion in prioritizing candidate projects was the extent to which they regionalized the transport system, i.e., their effectiveness in removing the present distortions in the Mid-East transport system and linking the individual transport networks of each country into a coherent regional network serving and augmenting the economic growth of the Mid-East at least cost. A typical example of such a project would be the Jerusalem-Amman rail link connecting the rail system west of the Jordan River with the eastern rail system, and facilitating a rail connection between Egypt (and North Africa) and Europe.

A second important criterion in identifying attractive projects was their intercountry implication, i.e., the extent to which a project could be jointly used or operated by two or more countries, and the magnitude of the consequent economic benefits. A typical example would be a rail line from the southern margin of the Dead Sea to the ports of Eilat and/or Aqaba. This line along the Jordan/Israel border could be jointly operated at an economic level of traffic, whereas two individual lines - one in each country - would each have insufficient traffic for economic operation.

A third criterion was the extent to which the project contributed to an

individual country's economic development. Many projects fall in this category; a typical example is the purchase of railroad rolling stock to eliminate a rail car shortage, or the upgrading of a road link between two cities within a country.

Our analysis was based solely on data available in the U.S., and the level of effort prescribed was not sufficiently intensive to permit a detailed development of costs and benefits for each project. Thus, while the findings are not yet a rigorous instrument for setting priorities, they do provide a set of candidate projects that merit further consideration. It is anticipated that field surveys necessary to support the preparation of scopes of work for the prefeasibility study of each selected project will be accomplished in Stage 2 of the Mid-East Transport Study.

Transport projects were conceptualized under two alternative assumptions:

Assumption 1 - Continuation of the political status-quo, with the borders of key countries remaining closed to regional traffic;

Assumption 2 - Generated traffic flows and changes in flow patterns between the countries after peace materializes, borders are opened to trade, and surpressed demand for transport is released.

Under the assumption of continuation of the status-quo, findings culminated in the identification of 17 transport investment projects in Egypt with a total cost of $1,020 million, 3 in Israel totalling $130 million, and 1 in Lebanon amounting to $33 million. About 50 percent of the investment would be for ports, 25 percent for urban transport, 12 percent for rail, 4 percent

for road and the remaining 9 percent for waterways, aviation, and institutional projects. See Table 1, Assumption 1 Findings.

If peace prospects materialize and, as expected, significant trade and tourism develop between the countries in the Middle East, an additional transport investment of $1,064 million may be feasible. This would go mostly for construction of a standard gauge rail line across the Northern Sinai to replace the former narrow gauge line, for upgrading several of the military roads to civilian standards, for connecting the rail and road systems east of the Jordan River with those in the west, and for converting all rail to standard gauge, including the old Damascus-Medina line and extending it to Mecca and industrial areas in Saudi Arabia. In addition, 4 projects of an institution-building nature were identified. These address major requirements of inter-regional cooperation in transport policy, research and training.

It should be emphasized that projects identified in Table 1 (Assumption 1: Status-quo) would remain in the project selection under Assumption 2 (peace). Thus, if the detailed economic feasibility study verifies that a specific project in Table 1 has a favorable internal rate of return (IRR), the IRR would remain favorable under Assumption 2 (peace). In fact, peace in the Mid East and the subsequent acceleration in economic growth in all countries in the region would probably raise the IRR of projects in Table 1.

The ranking of high, medium, and low in the tables represent our judgment of each project's economic feasibility as determined by a detailed subsequent feasibility study. This measure is useful in dealing with budget constraints, and enables putting together a "package" of projects identified in Tables 1 and 2. For example, if the investment budget is small, the package could

consist of only those projects that have a "high" ranking. This would include 10 projects from Table 1 with an investment cost of $934 million and 11 projects from Table 2 with an investment cost of $315 million, or a total investment of $1,319 million. If the budget constraint is relaxed it would be possible to increase the list to include the medium and low priority projects.

The most immediate benefits of a regionalized transport system would probably go to Jordan, which would win a direct access to Israeli (or Gaza) ports and thereby gain a less costly transport link by sea to its European and U.S. trading partners. Some of the commodities currently transported by road via Turkey or through Lebanese ports, or via the somewhat longer sea route (also requiring a toll payment in the Suez Canal) to the port of Aqaba, could after regionalization conceivably be transported at lower cost through the Israeli ports.

In addition to the immediate benefits generated by savings in transport costs of existing commodity movements, very substantial benefits could be generated over the longer term by the satisfaction of transport demand currently surpressed by distortions in the regional network. These benefits would not be generated immediately because it would take some time for existing distribution patterns to change as regional economies respond to reduced distribution costs.

Most of the countries studied would benefit from the long term development benefits facilitated by a regionalized transport network. A more efficient regional transport network in the Mid East may reduce the competitive edge of European, Japanese, and other suppliers sufficiently to ensure the further development of Middle East industries and the growth of trade between Middle Eastern countries.

TABLE II: MID-EAST TRANSPORT PROJECTS PROPOSALS UNDER

ASSUMPTION 2 (PEACE IN MID-EAST)

Project	Ranking	Estimated Cost ($ million)			Construction Start	Opening Year
		Foreign	Local	Total		
Category A: Regional						
1. Trans Sinai Road (Mitla Pass)	High	18	36	54	1982	1984
2. North Sinai Rail	High	99	60	159	1982	1984
3. North Sinai Road	High	12	27	39	1982	1984
4. Israel-Jordan Highway (Eilat-Aqaba)	High	3	6	9	1984	1986
5. Jerusalem-Amman Rail	High	14	7	21	1982	1984
6. Arid Lands Transport Research Laboratory	High	4	1	5	1981	1982
7. Transport Training Center	High	10	30	40	1982	1983
8. Damascus-Medina Railway	Low	300	200	500	1983	1986
9. Jerusalem-Amman Highway	High	6	9	15	1982	1984
10. Regional Transport Facilitation	High	.36	.14	.50	-	-
11. Coastal Shipping Facilitation	High	1.0	.5	1.5	-	-
TOTAL		467.36	376.64	843.0		
Category B: Inter-Country						
1. Sinai Perimeter Road	Medium	30	90	120	1981	1983
2. Dead Sea-Gulf of Aqaba Railline	High	16	25	41	1982	1984
3. Gaza Port	Low	21	39	60	1983	1985
TOTAL		67	154	221		

TABLE I: MID-EAST TRANSPORT PROJECTS PROPOSALS UNDER

ASSUMPTION I (STATUS-QUO)

Project	Ranking	Estimated Cost ($ million)			Construction Start	Opening Year
Category; Local		Foreign	Local	Total		
1. Egypt Railroad Rolling Stock Replacement and Workshop Improvement	High	100	28	128	1981	1984
2. Alexandria Rail	High	21	20	41	1978	1982
3. Alexandria Port	High	50	62	112	1981	1983
4. Nile Delta Rural Road Improvements	High	1	10	11	1980	1982
5. Heliopolis Urban Rail	High	25	25	50	1978	1982
6. Israel Railroad Rolling Stock	High	30	10	40	1983	1985
7. Cairo Urban Transportation	High	244	176	420	1982	1978
8. Egypt Inland Waterway Improvements	High	30	48	78	1983	1985
9. Ben Gurion Airport Expansion	Medium	10	20	30	1983	1985
10. El Kharga-Qena-Safaga Rail	Medium	30	60	90	1984	1986
11. Aswan Airport	Low	1	2	3	1981	1983
12. Damietta Port	Low	240	110	350	1981	1985
13. Safaga Port	Low	2	5	7	1981	1983
14. Dekheila Port	Low	240	110	350	1980	1985
15. Port Suez	Low	150	50	200	1979	1984
16. Cairo Airport Expansion	Low	12	8	20	1978	1982
17. Suez-Safaga Road Improvement	Medium	1	6	7	1982	1983
18. Strengthening Main Roads, Southern Egypt	Medium	4	28	32	1982	1983
19. Reconstruction of Primary Roads, Nile Delta	High	7	14	21	1981	1983
20. Beersheba Airport	Medium	20	40	60	1986	1989
21. Beirut Port Recontruction	High	25	8	33	1981	1982
TOTAL		1,243	840	2,083		

Chapter 2 - INTRODUCTION

AID was directed by Congress to develop contingency plans and an investment strategy for improving regional infrastructure affecting five countries in the Middle East. In turn AID requested the Office of International Transportation Programs of the Department of Transportation (DOT) to assist in developing transport policy and investment priorities for the region. This study recently became part of a major Executive Branch effort under the direction of the President. Emphasis is placed on identifying economically viable projects that would rationalize individual country transport networks into a coherent regional transport system; link two neighboring countries; or benefit the economy of a particular country.

This draft final report of Stage 1 findings identifies and prioritizes projects appropriate for further consideration under alternative Assumptions 1 and 2, identified in Chapter 1.

Stage 1 findings are based solely upon data available in the U.S. and, though the projects are believed to be viable, the analysis is not a sufficiently rigorous instrument to justify project implementation. Detailed investigation of the projects identified during Stage 1 must be accomplished by subsequent in-depth prefeasibility and feasibility studies which likely will involve field work.

Scopes of work for selected studies will be developed during Stage 2, which follows.

CHAPTER 3 - PRESENT TRANSPORTATION AND POSSIBLE GROWTH

Egyptian Transport Infrastructure

Roads and Vehicles

Roads, the primary mode of transportation in Egypt, in 1975 carried more than 80% of the total freight tonnage and around 75% of passenger travel. The Egyptian road system is in relatively good condition. Of the 27,000 kilometers of roads in the country, about one-half are paved. Primary roads are all paved and the regional roads, mostly unpaved, are usable for normal motor traffic.

In 1974 there were about 231,000 motor vehicles, or about 6 vehicles per 1,000 persons - much lower than for other developing countries such as Korea and Taiwan. However, the motor vehicle fleet in Egypt is increasing rapidly; the annual growth rate between 1970 and 1974 was particularly substantial, amounting to almost 10%. This high growth rate of motor vehicles is largely due to the capacity constraints of the other transportation modes such as rail, and the consequent rise in demand for road transportation service.

Current road projects in progress amount to about 2,800 kilometers, of which construction constitutes 1,700 kilometers or 60% of the total. The remaining 1,100 kilometers include resurfacing, widening, and such minor improvements as shoulder paving. The larger road projects include the widening of the Cairo-Ismailiya, Cairo-Suez and Alexandria-Marsa Matruh roads as well as the widening of the Ismailiya-Port Said and Ismailiya-Suez roads. These total about 700 kilometers of the 1,700 kilometers of construction.

Between 1978 and 1980, traffic on Egypt's road network is expected to grow rapidly - at a 13% annual rate, and at 8% between 1980 and 1985. The tonnage of freight on the road should grow at about 6% by 1980, but will level off to about 2.2% by 1985.

Shipments by inland waterway have been increasing since 1974 and are expected to increase rapidly during the coming decade. Between 1980 and 1985 the volume is projected to rise from 6.4 million tons to 18.1 million tons, (an annual growth rate of about 23%). The relatively abundant waterway capacity makes it likely that it will be able to meet the increasing demand at a relatively low cost. The most important commodities being transported by inland waterway are petroleum, iron ore, phosphate, clay, cement, fertilizer, and coal.

Ports

Egypt has only one major port, Alexandria, on the Mediterranean in the western corner of the Nile Delta. Conditions inhibiting development of other major ports in Egypt are the heavy concentration of population and economic activities in the Nile Valley, far from the coastal area, and the existence of a mountain chain separating the Red Sea coast from the rest of the country. Two other ports of significance are Port-Said on the Mediterranean end of the Suez Canal, and Suez on the Red Sea end. Both of these ports are also located near the densely populated areas of the Nile Delta and Cairo.

Hostilities in 1967 and 1973 seriously affected the operations of Port Said and led to an increase in Alexandria's share of total traffic from 76% in 1966 to 90% in 1975. Alexandria's capacity has been deficient since 1969, causing serious congestion, with the average waiting time for general cargo ships increasing from 3.3 days in 1974 to 6.2 days in 1975. The causes of congestion are numerous and include insufficient and poor equipment, blockage of port clearance facilities by improper storage cargo, inadequate dock transport, and insufficiently trained manpower.

Port congestion, coupled with the projected increase in traffic for Egyptian ports, has resulted in a number of proposals by the Egyptian authorities for increasing capacity. These proposals include the construction of new ports and the rehabilitation and expansion of existing ports. Apart from Alexandria, the only port project presently under implementation is the construction of a new port at Marsa Matruh in the Western Desert. This is a small port, whose proposed expansion was cut back due to insufficient funds and a doubtful economic justification for the project. At this time, a quay with 12 meters depth alongside has been constructed to a length of about 600 meters, sufficient for 4 or 5 small ships. Based on prospects of the Egyptian economy, forecasts for the coming decade show a considerable increase in port traffic. Dry cargo is expected to increase from 19.4 million metric tons in 1980 to 28.3 million tons in 1985, an annual growth rate of about 8%. Traffic growth relates largely to expected increases in imports of wheat, flour, corn and coal and to commodities needed for Egypt's development program.

Shipping

Egypt's strategic location has led to extensive involvement in international shipping. However, nationalization of the Egyptian maritime industry in the early 60's, coupled with the closure of the Suez Canal in 1967, resulted in a sharp decline in shipping activities. Currently, the Government is formulating measures to encourage private shipping. This, combined with the reopening of the Suez Canal, has enhanced the potential for growth. However, the country's development is not, critically dependent upon its shipping industry because the nation's shipping needs can be furnished easily and cheaply by foreign shipping lines.

Railways

At present Egypt has a rail network of about 4,000 kilometers. This network, extensively developed in the flat terrain of the Delta and along the Nile, is standard gauge (1,435 milimeters), with double track for about 951 kilometers of the 4,000 kilometers. Freight traffic on the railways has decrea ed since 1970-71. The shortage of locomotives, cancellation of trains, and unreliability of service have led customers to switch from rail to other transport modes. Mainly because of poor maintenance, the Egyptian Railways has been experiencing a shortage of serviceable motive power. As a result, the rail hauling capacity has declined in recent years. Even though it is cheaper to ship by rail than by road, freight traffic by rail has declined by about 25% in terms of tonnage during 1970-75. In contrast to freight traffic, and despite the deterioration of rail service, passenger traffic has been growing rapidly. Between 1970 and 1975, the number of passenger trips by rail increased at an average annual rate of about 7%.

Inland Waterways

Inland waterways, particularly the Nile, constitute an important transport mode in the densely populated areas of the Delta and the Nile Valley. Because of their relatively low hauling cost and high transport capacity, inland waterways are expected to be a major factor in Egypt's further industrial development. There are two classes of inland waterway: Class I waterways are navigable by vessels with a capacity of up to 920 tons, and amount to a total of 1,495 kilometers; Class II waterways, navigable by small sailing vessels and barges with a capacity of up to 200 tons, are located mainly in the Delta, and total 1,849 kilometers.

Air Transportation

Egypt has one international airport, Cairo Airport, which is the main center of all flight activities, and about 9 domestic airports. Only 3 of the domestic airports are included in Egypt's regular air schedules and these are Abu Simbel, Aswan, and Luxor. Air transportation to Egypt, and within the country, is largely touristic because only a small segment of the population enjoys the standard of living required to permit such travel; about 80% of domestic passengers on internal routes are foreign passengers. Cairo Airport is one of the main transit airports in the Middle East and in 1975 handled about 160,000 transit passengers. Air traffic has been growing since 1975, and between 1971 and 1975 aircraft movements grew at an annual rate of 11%. In terms of passenger traffic (domestic and international) growth has amounted to about 16% annually. Similarly, freight traffic has been growing rapidly since 1975, at an annual rate of about 10%.

The Suez Canal

This large navigable waterway linking the Mediterranean with the Red Sea was constructed during the period 1859-1869. Its length is about 160 kilometers and the present permissible ship draft is 11.6 meters. The Egyptian Government nationalized the Canal in 1956 and its operation has been extremely efficient. The Canal has become the second major foreign exchange earner after cotton. Prior to its closure in 1967 the Canal was the main transport route for Middle Eastern oil to European and other western hemisphere ports; in 1966 about 99% of petroleum passing through the Canal came from the Middle East, of which 93% went to Europe, 6% to North America and 1% to Africa. The Canal was closed on June 5, 1967; its closure accelerated the construction of larger tankers and by 1973, very

large crude carriers unable to transit the Canal accounted for more than 45% of the world's tanker fleet capacity. However, the Canal still has considerable potential for sizeable tankers and for dry cargo vessels on the Western Europe-Mid East run, and for this reason the Egyptian Government has given priority to its upgrading. By mid-1975 the Canal was reopened for traffic. An expansion project financed by a number of donors has been undertaken, with the World Bank contributing U.S. $100 million. In the first stage of the expansion project the depth and width of the Canal will be increased, enabling tankers of up to 150,000 DWT laden and 250,000 DWT in ballast to transit the Canal.

Israeli Transport Infrastructure

Roads and Vehicles

Israel's transportation infrastructure has received high levels of investment since 1970 and, as a consequence, infrastructure and transport services in general are very well developed. Though the road network is quite dense, traffic has reached fairly high levels on certain important road sections. In total there were about 4,331 kms of surfaced roads in Israel in 1976. Road construction since 1970 has amounted to about 300kms per year. The vehicle fleet in 1976 consisted of a total of almost 433,000 vehicles. The number of vehicles per thousand population is about 123, significantly higher than the comparable figure for Egypt.

Railroads

There are about 500 kms. of standard-guage railway linking Tel Aviv to Haifa and Jerusalem, and the Negev phosphate deposits with the Port of Ashdod. There is a long term plan to extend the Beersheba line via the Dead Sea to Eilat. The only important passenger service is on the Tel Aviv-Haifa line. In 1972 the railway carried 14% of freight movement, mainly bulk phosphate. Neither passenger nor freight traffic appears to be growing. The freight service is profitable to the railroad and is competitive both for bulk traffic and for the growing internal trade in containers. However, the railroad passenger service is losing money and the Government subsidizes tariffs from its general revenues.

Ports

There are three deepwater ports - at Haifa and Ashdod on the Mediterranean coast, and Eilat on the Red Sea. Haifa, the largest port, in 1976 loaded and discharged about 4.8 million tons of imports (mostly grain) and exports including a large percentage of phosphate and potash exports. Haifa is also the most important disembarkation point for passenger ships that call on Israel.

Ashdod is oriented more toward exports and handled about 2.7 million tons in 1976, including 1.2 million tons of phosphate and potash exports. Eilat is presently of minor importance (871,000 tons in 1976 excluding oil) except as the terminal for both Israel's oil imports and oil movements through the Eilat-Askellon Pipeline, and as the major destination of Israel's metal imports. However, Eilat could handle large quantities of phosphate, potash and other commodities if Israel's trade with Asian and East African markets continues to grow. The Israeli Port Authority projects the growth of port traffic over the 1976-1986 time period at about 9% per year--considerably less than the 13% growth rate in tonnage over the 1966-1976 time period. Even though container traffic is expected to double in the next five years, both Mediterranean ports will have ample container handling capability to be able to accommodate container traffic originating in Jordan or other Middle East States that do not have convenient access to containerized ports on the Mediterranean.

Airports

International passenger air traffic in Israel increased tenfold in less than 20 years - from 300,000 international passengers in 1960 to about 3 million in 1977. About 500,000 domestic passengers flew within Israel during that year. The facilities at Lod (Ben Gurion International Airport) which handles 80% of all traffic, Jerusalem (Atarot) and Eliat are officially classified as airports. The others at Tel Aviv, Herzliya, Haifa and Marbanaiyim - are small operations and are defined as airfields. The Israel Airport Authority (IAA) projects passenger traffic to grow at an annual rate of 8% until the end of the century, and for air freight cargo to rise from 100,000 tons per year in 1977 to between 1.5 and 2 million tons by the year 2000, representing an annual growth rate of more than 13 percent. Air cargo in 1977 was comprised of agricultural exports (40%) industrial exports (20%) and imported goods (40%). The IAA investment program for the mid-eighty's calls for expanding the Ben Gurion Airport complex, and increasing Eilat's capacity, and is considering the possibility of building an airport at Bersheva. The latter's purpose is to support regional development in the area.

Transport in Sinai

The Sinai region is of special interest because it is this desert area that will be transited by road and rail transportation links connecting Egypt and Israel. In addition, the area has significant touristic potential.

A narrow-guage rail link formerly existed between the Suez Canal and Israeli border, for the approximately 130 miles between El Quantara and Khan Yunis and along the northern coast of the Sinai. This railroad discontinued operations in 1945 and is now completely dismantled;

the railroad right-of-way has been largely converted to a coastal road.

Various military roads run along the norther coastline, through the area, and around the southern perimeter. They are built for military traffic and their asphalt concrete road surface can support heavy though well-distributed military loads such as those imposed by tank carriers. However, there are reports that the roads are narrow--in many places perhaps only 4 meters wide - and that the poor aligrment and steep gradients encountered in the hilly areas of the Sinai may be unsuitable for the levels of commercial traffic that could materialize. In addition, road shoulders in many locations are weak or non-existent, presenting a hazard to high-speed commercial traffic, and the road surfaces may not be able to withstand the high axleloads imposed by heavy trucks which are often overloaded.

Three of these roads - each approximately 120-150 miles long, run in an East-West direction through the northern half of the Sinai. Another approximately 250-mile long perimeter road runs south along the east bank of the Suez Canal and the east shore of the Gulf of Suez to the southern tip of the Sinai and then turns north along the west shore of the Gulf of Aqaba to Eilat. A number of large military airports with runways adequate to accommodate the largest commercial aircraft have been constructed in the Sinai, and several of these, such as the airfields near Eilat and Sharm el Sheikh, are near tourist areas with significant potential. These airfields, from a commercial point of

view, are somewhat primitive, however, and would need terminal buildings, customs inspection facilities, passenger lounges, and other facilities normally found in commercial airports.

Syrian Transport Infrastructure

The Syrian transportation system consists of about 16,000 kilometers of highways, 1700 kilometers of railways, 3 major ports, two international and two secondary airports, and almost 3,000 kilometers of pipelines. Investment in the transportation system has been substantial in the past 8 years, and since 1970, 25% of the highway network, 32% of the railway network, and 40% of the port capacity has been constructed. Inland transportation of both passengers and freight is dominated by highways, which carry about 98% of all inter-city passenger traffic and 96% of freight. However, if the present serious bottlenecks in the railway system are overcome, the role of the railways is expected to expand appreciably in the early 1980s. But highway transportation will remain dominant. International truck transit traffic is substantial on the main highways leading from the Syrian ports to Amman in Jordan and Baghdad in Iraq. In 1975 the international transit traffic of freight by highway reached a peak of almost 3 million tons.

The transportation infrastructure has increasingly become a bottleneck to the development of the Syrian economy. The rapid growth in transportation demand in the 1970s has created an intensive use of existing roads and vehicles at a level that cannot be sustained without detrimental effects. The cost in terms of delays, vehicle wear and tear and accidents is particularly severe on the main highways linking Damascus,

Homs, Aleppo, and the ports, where industrial development has been concentrated and transportation demand has grown most rapidly. There is therefore a great need for large scale investment in new highways and railways in these corridors. At the same time, in an effort to promote a geographically and sectorly more balanced pattern of development, the government is now vigorously pursuing new agricultural and mining projects in the northeast, an area that has so far received relatively little investment in productive industry or the infrastructure to serve it.

The main objectives of Syria's current highway development program are the completion of the primary four-lane highway system, construction or improvement of about 700 kilometers of two-lane primary highways and feeder roads. This would increase the paved network by about 35% between 1976 and 1980 at a cost of US $309 million. In the railway sector, the investment program provides for construction of the Homs-Damascus Line and for rehabilitation of the existing lines from Aleppo and Homs to Tartous. With the opening of these new lines in the early to mid-1980's, the railways should be able to carry 10 - 15% of freight traffic and should relieve the Damascus-Aleppo and Homs-Tartous highways of some of the excessive truck traffic that is now contributing to their rapid deterioration. As part of the port expansion program under the current investment program work is being carried out in the port of Lattakia to raise its capacity from 1.6 million to 3.0 million tons annually by 1980, and at Tartous to raise its capacity to 4.5 million tons by 1980, with emphasis on container-type and roll-on - roll-off cargos. Banias is being expanded for importing crude oil for a planned new refinery.

Jordan's Transport Infrastructure

Highways

Highways are the main mode of transportation in Jordan. The total length of highway network early in 1975 was about 6,000 kilometers, of which about 4,000 kilometers were paved. In general, the highway system adequately connects all populated parts of the country and is by and large adequate to meet present transport demands. However, road vehicle traffic is expected to grow at the fairly high rate of 8% per year, and main highway connections running north and south are expected to become increasingly congested due to this rapid growth in traffic.

Railroads

The railway system in Jordan consists of about 550 kilometers of narrow-gauge line and links the phosphate mines to ports in Syria and Lebanon, and to the Port of Aqaba. A 160-kilometer rail line from the southern phosphate mines to the Port of Aqaba was recently completed.

Ports

The Port of Aqaba on the Gulf of Aqaba provides access to the sea. The volume of exports, mainly phosphate, is expected to rise sharply with the implementation of the ongoing integrated projects for phosphate mining, rail transport, and port facilities.

Airports

Jordan has two airports--one at Amman and one at Aqaba. There are plans for the construction of a large, new international airport at Amman.

Transportation Infrastructure, Lebanon

Due to the civil war which raged in Lebanon in 1975-1976 and recurrent hostilities, no reliable statistics are available to describe the present status of transportation infrastructure. The information presented below dates back to the early 1970's and therefore is quite obsolete, though it does give a good picture of what the situation could be if peace is restored in the Middle East.

Roads

In 1973 the length of the highway network was about 7,000 kilometers, of which 2,000 kilometers were classified as international and primary roads. More than 80% of the highway network, including all primary roads, consisted of two-lane paved roads, many of them developed from tracks with only a few engineering improvements. In the mountainous areas the roads are usually narrow and winding, with steep grades; landslides, rock falls and winter snow frequently interrupt traffic. Along the coast, roads are subject to periodic flooding. Reconstruction to higher standards of part of the primary road system was taking place, and most of the highway network was being improved through rehabilitation and better maintenance.

Between 1961-1971 the vehicle fleet increased at an average annual growth rate of almost 10%. The number of passenger cars increased most rapidly at a rate of about 11% per year. Growth in the vehicle fleet is paralleled by the growth in road traffic. Traffic counts indicated that on the main roads traffic was growing by 13% annually

and average daily traffic levels of 5,000 vehicles were common on the primary roads.

Railways

The railway system consists of about 413 kilometers of line of which 331 kilometers are standard gauge and 82 kilometers are narrow gauge. The narrow gauge section, built in 1895, is part of the old railway from Beirut to Damascus. The standard gauge, built in 1944 for military purposes to establish a railway connection between Egypt and Syria, runs along the coast from the Israeli border through Beirut and Tripoli to join the Syrian and Turkish railways. About 50 km. of the rail line across the Lebanese and Israeli border has completely deteriorated and is not being used. A second standard gauge line built in 1902 runs from Rayak to Homs in Syria, and carries almost no traffic. Neither of the lines allow high speeds: the narrow gauge line operates at average speeds of 20 km. per hour and the standard gauge lines operate at about 45 km. per hour. Both infrastructure and equipment are worn out and generally obsolete. Freight and passenger traffic on the railway have been steadily declining in recent years due to the short transport distances of only 80 to 100 kilometers possible within this small country.

Ports

Lebanon has two main ports, Beirut and Tripoli, of which the former is by far the most important. Total freight traffic, exclusive of oil, at Beirut, increased by almost 6% annually during the 60s and amounted to 3 million tons in 1970. These high growth rates were due in part

to closure of the Suez Canal, and the large increase in transit traffic especially from Iraq and Jordan. Total freight traffic at the Port of Tripoli was growing at an average of 15% per year and amounted to 650,000 tons in 1970. During the early 1970s the capacity of the Port of Beirut was becoming insufficient to handle these increasing traffic volumes and there were plans for expanding the port.

In 1974, traffic in the Port of Beirut amounted to about 4 million tons, of which 3 million tons was for local consumption or processing and 1 million tons as transit for Arab countries mainly Jordan, Iraq, and Saudi Arabia. Three docks were in operation and a four was under construction for container and roll-on, roll-off traffic. Port infrastructure remained uneffected by the war while superstructures such as sheds, warehouses, cargo handling equipment, workshops, telephone and power lines were either destroyed or severely demaged. Total replacement cost has been estimated at about $33 million. However, a measure of traffic resumed in January 1977 and showed an increasing trend despite the lack of facilities

Aviation

Lebanon's only civil airport, Beirut, was one of the most important airports in the Middle East. The growth has been rapid. Passenger traffic increased by 9 percent per year during the 1960s and totaled 1.6 million passengers in 1970. Freight traffic increased by 14.5 percent a year duing the early 1970s and amounted to 58,000 tons in 1970.

The capacity of the Beirut Airport was adequate at that time, but an investment program had been proposed for expansion of the airport and construction of a new runway, which would enable it to accommodate increasing traffic volumes expected in the future.

Existing and Potential Trade

The free flow of trade in a region depends significantly on the adequacy of the transport system. If the transportation infrastructure is incomplete, dilapidated, or nonexistent, the flow of commodities from one point to another takes place inefficiently, if at all.

Almost every conceivable good, including perishables, travels from one coast to the other in the U.S., a distance of some 3,000 miles via train or truck. In the Middle East, however, especially between Egypt and Lebanon, Syria, and Jordan, this is not currently feasible. In this situation the goods are routed via air, which is rather expensive, or ocean freighter which also may be relatively expensive because of the short sea distances between Mid-East countries.

The distance between Egypt (Cairo) and some of its trading partners is:

FROM CAIRO[1/]

TO:	Kilometers	Miles
Beirut, Lebanon	620	400
Damascus, Syria	605	390
Amman, Jordan	560	360
Tel Aviv, Israel	440	285
Baghdad, Iraq	1440	900

[1/] All figures approximate

Such short distances probably could be better served by rail and road links. The commodities identified in Attachment F are, for the most part, susceptible to land transport, in bulk rail cars, containers, refrigerated vans, general freight cars, etc. Attachment F identifies the trade flows between Egypt on the one hand, and three of its neighbors, Lebanon, Syria and Jordan. The latest data available were for 1975, which happened to be a recession year worldwide.

Data in Attachment 5 are summarized in Table 3, below. We see that while the dollar value of Egypt's imports from other Mid-East countries ($102 million) was five times greater than exports ($20 million), the weight factor was only double (90,833 tons, as compared with 45,709 tons). This reflects the fact that Egypt's imports are high value manufactured products (about .9 tons per 1000 dollars) and the exports are low value (about 2.3 tons per 1000 dollars) bulk.

If all this volume were switched to rail (not in existence at present) then we see that as much as 1746 tons could be imported each week (equivalent to 138 20-foot containers each carrying 12.5 tons) and 879 tons could be exported each week (equivalent to 70 20-foot containers). These flows are small in magnitude but nevertheless demonstrate that, even under today's difficult transport conditions, significant trade between Egypt and other Mid-East countries exists.

In order to establish a rail (and road) link between Egypt and her Middle East neighbors, a railroad (and highway) could be built along the northern Sinai, linking existing networks in Egypt and Israel. Such links would facilitate trade in the region and avoid unnecessary

TABLE 3

Egypt's Foreign Trade with Selected Middle East Countries, 1975

A. Imports

	Weight (Metric tons)	Weight per day (metric tons)	Value (Thousands US$)	Value per day (thousands US$)
Lebanon	67,257	184	$83,969	$230
Syria	20,600	56	$14,400	$ 39
Jordan	2,976	8	$ 3,878	$ 11
TOTAL	90,833	248	$102,247	$280

B. Exports

	Weight (metric tons)	Weight per day (metric tons)	Value (thousands US$)	Value per day (thousands US$)
Lebanon	29,394	80	$9,387	$26
Syria	3600	10	$6,447	$18
Jordan	12,715	35	$4,350	$12
TOTAL	45,709	125	$20,184	$56

Source: Attachment 5

transshipment costs and delays. Even though current trade would probably be too small to justify these projects, trade generated by the reduction in transport costs between the countries, and the improved levels of transport service may be sufficient to justify new investments.

Officials of the Israeli Ministry of Industry, Commerce, and Tourism predict that in the first year after normal trade relations are initiated with Egypt commodity trade between the two countries could reach $130 million. The Israelis would export $100 million to Egypt and import $30 million, excluding petroleum products. Additionally, oil imports by Israel from Egypt could amount to $150 million per year.

The Israelis have identified the following commodities for possible export to Egypt:

1) chemicals, including pharmaceuticals, pesticides, and fertilizers
2) machinery, including pumps, electrical machinery and appliances, engines, agricultural equipment, irrigation equipment, and car parts
3) agricultural products and livestock

Israel also envisions the following possible imports from Egypt:

1) textiles and raw cotton
2) agricultural products, including rice, sugar and tobacco
3) furniture

4) chemicals

5) petroleum

Beyond these products specified by the Israelis, we have identified additional commodities with potential for trade between the two countries. We looked at the international trade flows of Egypt and Israel, by volume, with the rest of the world. Those commodities flowing in substantial quantities which one country exports and the other imports are listed on Tables 4 and 5.

Additionally, Egypt trades with Turkey, Iraq, Iran, etc. all of whom would benefit from direct links with Egypt. Time constraints did not allow for empirical analysis of Egypt's trade with these other countries. Finally, all of North and East Africa would be opened to the Middle East.

Table 4

COMMODITIES WHICH EGYPT COULD EXPORT TO ISRAEL

	SITC Number	Commodity	Egypt Exports[1/]	Israel Imports[2/]	Israel 1973-76 Trade Flows by Value of Imports
1	061	Sugar & honey	116,454	220,406	fluctuating
2	0612	Refined sugar	39,253	200,265	fluctuating
3	221	Oil seeds & nuts	9,929	325,292	slowly declining
4	33101	Crude petroleum	3,922,421	n/a	moderately up
5	5	Chemicals	n/a	n/a	fluctuating
6	6612	Cement	24,609	459,676	
7	674	Iron, steel, plate, & steel	19,687	273,270	
8	732	Road motor vehicles	2,273	2,212,530	fluctuating
9	7323	Trucks	1,794	234,047	fluctuating

1/ Egyptian exports to all countries in 1976; metric tons

2/ Israeli imports from all countries in 1974; metric tons; later data not available

n/a: not available

Table 5

COMMODITIES WHICH ISRAEL COULD EXPORT TO EGYPT

	SITC Number	Commodity	Israel Exports[1/]	Egypt Imports[2/]	Egypt 1973-76 Trade Flows by Value of Imports
1	011	Meat, fresh, chilled, frozen	2,242	35,629	significantly up
2	054	Vegetables, fresh, frozen	49,663	177,549	significantly up
3	0813	Vegetable oil residues	38,716	26,926	significantly up
4	221	Oilseeds, nuts, kernels	16,819	24,095	fluctuating
5	5127	Nitrogen, compounds	1,247	57,459	significantly up
	5812	Prod. of poly-. merizing	11,742	38,282	
7	59999	Other chemical prod	892	8,787	
8	63121	Plywood, veneer	129,047	26,138	slightly declining
9	6783	Iron, steel, NES	13,506	51,659	fluctuating
10	841	Clothing not of fur	n/a	4,329	sharply up

1/ Israel exports to all countries in 1975; metric tons

2/ Egypt imports from all countries in 1976; metric tons; later data not available

n/a: not available

Existing and Potential Tourism

Israel

Tourism today is a vigorous industry in Israel. During the past decade, foreign currency earnings from Israeli tourism increased eight-fold from the $430 million earned in 1967. In that year, some 300,000 tourists visited Israel as compared with the nearly 1 million estimated for 1977. The largest rise stems from U.S. tourism which increased 50% by 1977. The present goal (assuming the status-quo) of the Israeli Ministry of Commerce, Industry and Tourism is 2 million tourists annually by 1982. The Government recently approved the construction of nearly 3,000 new hotel rooms in addition to raising its assistance to the industry from IL $100 million to IL $400 million.

Egypt

For Egypt, assuming the status-quo, the Ministry of Tourism projects a 15% annual increase in the number of tourists up to 1980, compared with an annual increase of 6.5% during 1962-1972. This could mean that there would be almost 2 million tourist arrivals in Egypt by 1980. In the mid-1950's about 150,000 foreign tourists arrived in Egypt each year, with Europeans and Americans representing 60% and Arabs 33% of the total. In 1976 the number had increased to about 985,000 foreign tourists (39% European and American, and 55% Arab). Growth in the number of Arab tourists has thus increased at a higher rate than that of other nationalities. Roughly 70-80% of foreign tourists come by air, with arrivals by sea accounting for about 10% of the total. The remaining 10% arrive by road and are primarily Libyan tourists.

If peace prospects materialize, tourism will be an industry that could be expanded rapidly above the projected levels discussed above and would produce early mutual benefits. While the basic infrastructure

appears to exist (though careful checking on the adequacy and safety of the road network in the Sinai will be necessary), substantial coordination between Israel and Egypt will be required before tourist traffic can develop extensively. Coordination will be required for possible joint use and operation [1] of airports, for the control of air traffic, for the scheduling of cruise ships, and for arranging day trips originating from the ample hotel facilities in Israel to sites of interest in Egypt.

Unofficial estimates by the Israeli Ministry of Commerce, Industry and Tourism suggest that, with peace, all tourism for both countries could increase by 50%. From Israel about 100,000 Israeli tourists per year would travel by air and 200,000 per year would go by road to Egypt. From Egypt to Israel the flow would be about 50,000 Egyptian tourists per year, and these would travel mostly by road or rail. (This is exclusive of the pilgrims that could be expected to travel from Egypt to view religious sites in Jerusalem.) In addition, there would be a very substantial number of U.S., European and Arab tourists that would travel between these two countries by air or surface. Preliminary estimates suggest that by 1980 the two-way flow of tourists across the Sinai may be as high as 2 million per year. Since the distance between Cairo and Jerusalem is only about 250 miles, a significant number of these tourists may go by road or rail.

(1) Israel at present has an excess of personnel qualified to operate large civilian airports, such as the former Israeli military airport near Eilat and Sharmel-Sheikh in the Sinai whereas Egypt currently has a shortage.

Mineral Resources and Related Transport Requirements

Egypt

While Israel has been hampered by a scarcity of raw materials and cheap sources of energy, Egypt, on the other hand, possesses large deposits of petroleum, coal, phosphate, iron ore and other minerals. Egyptian oil fields currently produce about 20 million tons of crude per year, while the combined annual output of phosphate and iron ore mines has reached a total of 1,700,000 metric tons. Mineral production forecasts indicate that about 50.5 million tons of crude oil will be produced annually in Egypt by 1982, most of it for export to European markets. Iron ore output is expected to be 3.1 million tons per year by 1980, with an exportable annual surplus of 1.1 million tons. Phosphate production could reach 9.1 million tons yearly in 1985, most of which will be sold to Europe, Asia and perhaps East Africa. While the existing transport infrastructure can adequately serve current mineral production, these large projected increases in output during the next 2 to 6 years will require significant investments in port facilities, railways and highways. The exploitation of the Abu Tartour phosphate deposits alone could require the construction of a new railroad about 370 km long as well as new bulk handling facilities in the port of Safaga.

Israel

As far as Israel is concerned, minerals are limited to potash and smaller amounts of bromides, magnesium and other salts in the Dead Sea, and to small, low-grade phosphate rock and copper deposits in the Negev. Only minor crude oil and natural gas deposits have been discovered. While production of copper ceased in 1976, Israel currently produces 1.2 million tons per year of potash and phosphate each, a combined output of 2.4 million tons annually. Most of Israel's potash and phosphate production is exported to Europe, the U.S. and Latin America. It is transported by road and railway to Israel's Mediterranean ports. We expect that the greatest increase in world demand for those two minerals during the next 10 to 15 years will originate in Asia, however. Thus, construction of a railroad to Eilat or Aqaba, in cooperation with Jordan, may become desirable if Israel is to take full advantage of Asian markets to increase its sales of phosphate and potash production abroad.

Jordan

The mining sector continues to provide the brightest news for the Jordanian economy. The country's mineral wealth lies predominantly in its phosphate reserves which are estimated at about 3,000 million tons (proven reserves are 508 million tons). Rich beds of phosphate exist at Ruseifa, a few miles northeast of Amman, and in the El Hasa area, south of Amman. In 1977 the country's total production of phosphate rock was

about 2 million tons. However, phosphate production is unlikely to reach the plan target of 7 million tons by 1980 but may reach 4 to 5 million tons by that year. Phosphates are Jordan's biggest single export commodity, accounting for 39% of foreign currency earnings in 1976. In view of the worldwide trend toward integrated plants for phosphatic fertilizers, growth of phosphate rock exports is expected to be limited in the long term. As a result, a new fertilizer plant is being constructed south of Aqaba which would enable Jordan to process a substantial volume (1.3 million tons/year) of its phosphate rock deposits. There are also good prospects for exporting 1 million tons of potash per year at peak production if the $428.8 million Arab Potash Project on the southeastern basin of the Dead Sea is executed and if careful marketing is arranged. Present and planned transportation facilities for moving Jordan's mineral production are considered adequate, especially in view of Aqaba's geographical advantage to the Asian market. However, if production of bromides, magnesium and other salts from the the Dead Sea is developed in the future as expected, construction of a railroad to Aqaba or to Eilat with Israel's cooperation may likely be an economically attractive proposition for Jordan.

Syria

Syria's production of phosphate rock started from mines in the Palmyra area in 1972, reaching 800,000 tons by 1977. Exports of phosphate totaled 700,000 tons in 177, half of which was brought by Rumania, the rest going to North Korea, Lebanon,

Poland, and Bulgaria. The North Koreans, however, have already taken 100,000 tons of Syrian phosphate during the first quarter of 1978, and may yet become Syria's major customer. Disappointments in the phosphate sector have arisen not so much through lack of capacity, which now stands at about 1.35 million tons a year, but from the poor quality of Syrian phosphate, which sells at a relatively low price. To this must be added the fact that world phosphate prices have declined lately, and that Syrian revenues from this mineral have suffered proportionately. Nevertheless, current plans call for phosphate production to increase to 4.5 million tons by 1980, of which 4 million will be for export and 0.5 million for use in a triple phosphate fertilizer plant. A railway line is currently under construction with Soviet assistance. It will run from the phosphate mines near Palmyra to Homs, where it will join the existing rail line to the port of Tartous.

Syria's oil production in 1978 was projected to be 15 million tons, most of it for export to Western Europe and the USSR. Barring any new discoveries, oil production is likely to stabilize at that level. With growing sales abroad oil has become Syria's most important export commodity. The country's proven oil reserves stood at 2,150 million barrels at the end of 1977. A 663-km. pipeline (capacity 140,000 b/d, being expanded to 250,000 b/d) from the oil fields in northeastern Syria to the Mediterranean was completed in February 1968,

together with five pumping stations, a terminal at Tartous and a connection to the Homs refinery.

Lebanon

Lebanon's domestic resources of industrial raw materials are scarce. Mineral resources include a small iron ore deposit at Marjaba, about 10 miles northeast of Beirut, which has been mined since 1953 and smelted locally. Abundant limestone deposits suitable for the production of good quality cement have been found south of Tripoli. There are also a few lignite deposits southeast of Tripoli and northeast of Beirut. The existing transport network can adequately accommodate Lebanon's small mineral production.

Attachment 4 contains the maps of the mineral deposits and gives a detailed discussion of mining activity and transport requirements for each deposit. Several new mining related transport projects are described in Attachment 6, Project Briefs.

Agricultural Development Projects and Transport Requirements

There is a great need and significant potential for expanding agricultural production in the Mid-East, and a large number of agricultural development projects have been proposed. Typical would be the ambitious Egyptian scheme for reclaiming 700,000 acres of land in the Northwestern Sinai by piping in water from the Nile.

During the course of this study it was not possible to determine the tonnage of input requirements and production output for each proposed agricultural project. However, the plans of each proposed agricultural project normally include the required internal farm-to-market road system as part of the total infrastructure package required for the project. And, unless there exist some large agricultural development projects that are presently unknown but that would impose a heavy transport demand on the primary transportation system, the transport projects recommended in this report should be able to accommodate all of the agricultural transport demand.

Middle East Aviation Cooperation

The first Middle East Civil Aviation Conference was held in Amman, Jordan, in October 1977 to discuss the problems and challenges facing the Middle East countries. The Conference was sponsored by the Arab Air Carrier Organization (AACO), an industry association.

The three main topics of the Conference were: flight [illegible] ground operations and management, and training for safe[illegible] efficiency.

Many of the problems falling within these categories [illegible] with the haphazard approach to airline and airport deve[illegible] by various countries. Arab scheduled airlines were [illegible] capture seven percent of the total international air tr[illegible] market in 1977. These same airlines have been growing a[illegible] rate of 20-30 percent in recent years. Unless more coord[illegible] is established in the region, continued rapid growth will [illegible] thwarted. One major problem which is curtailing full o[illegible] tional efficiency of airlines serving the area is the la[illegible] standardization in air traffic control systems.

Many Arab states refuse to establish the close coopera[illegible] necessary to implement standardized systems for such [illegible] needs as technical training, air traffic control and [illegible] cations.

Insufficient government grants of funds for airport and [illegible] tion facilities and a hodgepodge of differing flight [illegible] contribute to the tardy installation or application of [illegible] ground functions necessary to support the approximately [illegible] jet transports operated by Middle East carriers.

There are several airports, however, which have attain[illegible] performance standards, notably Bahrain and Jidda in [illegible]

There is at least one airport in the region which has no radar. Flight Information Regions (FIR) often refuse to communicate with one another because of political conflicts between nations.

The need for single sideband communications is apparent throughout the Middle East. Some countries use the U.S. system for flight regulations. British and French systems have been adopted in others, while, in a few cases, combinations of two of the three are in effect.

Lack of equipment, trained staff and properly operated telecommunication facilities are the chief reasons behind these problems, according to AACO.

A major factor in these deficiencies is a lack of financing. Governments have been willing to dole out substantial funds for the purchase of new aircraft, but airports and airways hold a low priority in many Arab lands in the allocation of funds. Politically, it is wiser for a government to provide housing, roads and automobiles to the man-on-the-street than to make expenditures for airports which the latter rarely uses. With the airplane, the problem is different. An airline helps create a national image.

Summarily, the general belief at the Conference was that these problems cannot be solved, but that they can be offset to a large degree by a substantial improvement in the efficiencies of airport services through training as well as improved management organization.

It is hoped that as a result of this conference AACO will be able to work more closely with the Aviation Council of Arab States (CACAS), whose membership is composed of government civil aviation directors.

In order to provide true regional cooperation, AACO and CACAS should allow Israel to become a full member. This would provide maximum efficiency and benefits to projects of mutual concern. U.S. leadership and technical assistance in this area would go a long way toward solving these problems.

6. Review and analyse transportation planning, design and construction capabilities within the countries of the region.

7. Draft scope of work for prefeasibility or feasibility studies of specific transportation projects.

Project Specific Feasibility Studies

Feasibility studies could be prepared following the sector study/master plan. The master plan should provide sufficient information to permit the development of a scope of work for descrete project feasibility studies.

Level of effort

Depends on nature of transport project.

Scope of Work

To be developed as part of previous studies.

Prefeasibility Studies

If the Desk Survey indicates the existance of only a few real transport project possibilities, a sector study/master plan may not be a worthwhile undertaking. If sufficient information is not available to permit project specific feasibility studies, priorities must be set among potential projects and prefeasibility studies may be required. These are not very different from feasibility studies except in the level of effortand degree of refinement of analysis.

OUTLINE OF MID-EAST TRANSPORT STUDY

I. General Description and Objectives of the Study

Work on the Mid-East Transport Study proceeds in two stages: Stage 1 and Stage 2.

Stage 1

Stage 1 is a desk survey divided into two phases: Phase A and Phase B. The objectives of Stage 1 are as follows:

Phase A

i) preliminary assessments of current Mid-East transport needs;

ii) preliminary identification of potentially sound transport improvements to satisfy current transport requirements;

Phase B

i) preliminary assessments of projected Mid-East transport needs over the next 5 years and, alternatively, over the next 10-15 years;

ii) prioritized lists of prospective transport projects to satisfy projected transport requirements.

Stage 2

Stage 2 involves field work. Its objective is to produce prefeasibility studies of specific, high-priority, transport projects on the basis of readily available data in the countries concerned.

II. Stage 1; Detailed Outline of Stage 1 Study

A. Phase A

1. Current Transport; Modal Analyses

i. General

ii. Roads and Road Transport

iii. Railways

iv. Airlines and Airports

v. Seaports and Inland Waterways

vi. Pipelines

vii. International Linkages

2. Transport Policy and Organization

3. Current Economic Activity and Commodity Flows

i. Location and Magnitude of Agricultural, Mineral Extraction and Industrial Activity

ii. Tourism

iii. Resultant Transport Flows

a) General Cargo

1) Exports and Imports

2) Domestic Flows

b) Dry Bulk

1) Exports and Imports

2) Domestic Flows

c) Liquid Bulk

1) Exports and Imports

2) Domestic Flows

d) Passenger Movements

4. Preliminary Assessment of Current Principal Transport Needs

5. Preliminary Identification of Potentially Sound Transport Improvements Based on Current Traffic

Phase B

1. Projected Economic Activity, Commodity Flows, and Travel Demand
2. Incremental Changes in Economic Activity, Trade Flows and Passenger Movements
3. Required Incremental Transport Capacity
4. Present Distribution Cost
   i. Road
   ii. Rail
   iii. Sea/Inland Waterways
   iv. Air
   v. Pipeline
5. Identification of Alternative Trade Routes and Modes.
6. Cost Estimates of Capital Investments for Potentially Feasible Alternative Routes and Modes
7. Selection of Best Alternatives
8. Prioritized List of Prospective Projects for In-depth Studies

III. <u>Stage 2; Detailed Outline of Stage 2 Study</u>

1. Scopes of Work for Prefeasibility Studies of Potentially Sound Transport Projects with high priority.
2. Prefeasibility Studies
   i. Determination of technical, financial and economic feasibility on the basis of readily available data in the countries concerned;
   ii. Conduct of preliminary B/C analyses based on best available estimates of benefits and costs over the project lifespan.

Attachment 3

METHODOLOGY - STAGE 1 (DESK SURVEY)

A. Phase A

1. Objectives

a. Preliminary Assessment of existing economic activity and trade flows, transport modes and routes.

b. Preliminary assessment of current principal transport needs by country and in the region as a whole.

c. Preliminary identification of potentially sound transport projects to satisfy current transport requirements.

2. Methodology

a. Data collection and review of present agricultural, mineral extraction, industrial activity and tourism, with particular attention to locations and magnitudes.

b. Data collection and review of resultant trade flows by commodity category (i.e., general cargo, liquid bulk, dry bulk) and passenger-mile estimates.

c. Data collection and review of current and planned transport infrastructure, policies and organization.

d. Comparison of present transport capacity with present commodity flows and passenger movements in order to arrive at a preliminary assessment of current country and regional transport requirements

B. Phase B

1. Objectives

a. Assessment and quantification of projected transport requirements in the short-run (5 years) and long-run (10-15 years).

b. Identification of alternative trade routes and modes of transportation.

c. Estimation of potential feasibility of alternative routes and modes, based on currently available data in Washington, D.C.

d. Prioritization of prospective transport projects for in-depth evaluation and possible financing, based on magnitude of cost and benefit estimates.

2. Methodology

a. Identification of projected incremental changes in economic activity, trade flows and passenger movements; this is done by:

i. reviewing economic development policy and targets of the several governments;

ii. projecting economic activity and commodity flows in the short-run (5 years) and long-run (10-15 years); and

iii. comparing present with projected economic activity, commodity flows and passenger movements.

b. Identification of required incremental transport capacity in the short and long-run. This is done through a comparison of present and planned transport capacity with projected trade flows and travel demand.

c. Identification of alternative trade routes and modes and estimation of their potential feasibility. This is done by developing rough estimates of the current modal costs of moving major commodities over existing routes/modes and comparing them with the probable costs of moving the same commodities over new routes using the same or different modes.

d. Development of cost and benefit estimates of alternative routes

and modes as a basis for a prioritized list of prospective transport projects for final in-depth analysis and possible financing.

ATTACHMENT 4

EGYPT - MINERAL RESOURCES AND RELATED TRANSPORTATION

MINERAL	FIELD	LOCATION	CURRENT OUTPUT (YEAR)	PROJECTED ANNUAL OUTPUT (BEGINNING YEAR)	EXPORTS (DESTINATION)	TRANSPORTATION	COMMENTS
PHOSPHATE	Abu Tartour	Western Desert	None	7 million tons (1985)	All (Asia, Eastern Europe, East Africa)	Planned railway to Safaga Port. Port needs improvements. (see project briefs)	Phosphate reserves at Abu Tartour are estimated a 1 billion tons, but plans for their exploitation and export through Safaga are still at an early stage, due to the large amount of infrastructure (rail & port) which must still be built.
	Hamrawein	Red Sea Coast	500,700 tons (1977)	600,000 tons (1980) 2.1 million tons (1985)	126,000 tons (1980) 1.6 mil. tons (Asia, East Africa). (1985)	Existing special narrow-gauge railway to Safaga and by truck to Hamrawein Port.	Hamrawein Port, 60 km. south of Safaga, has a qua wall 60 meters long with a depth of 11 meters which serves for loading phosphates. It is not a general purpose port but rather a loading station for a special commodity. However, most phosphate exports will be loaded at Safaga, which is located in a sheltered deep-water bay forming an excellent harbor.
IRON ORE	Aswan	Aswan	185,714 tons (1975)	100,000 tons (1980)	USED DOMESTICALLY	Existing Rail and barges to steel mills at Helwan (south of Cairo)	It is estimated that domestic iron ore requirements will reach 2 million tons by 1980. Thus, if production goes up as projected (3.1 million tons in 1980) there will be a surplus of 1.1 million tons; however, there are no known plans for export of iron ore.
	Bahariya	W. Desert	941,730 tons (1975)	3 mil. tons (1980)		Existing rail to Helwan	
	Scattered Deposits	Sinai	None	N/A	None	Truck ? (see project brief)	Production could be expected to resume after Israeli withdrawal from Sinai
MANGANESE	Near Mereighat	Sinai	None (186,281 tons in 1966)	N/A	None	Truck and/or ship? (see project brief)	Manganese was extracted in the Sinai until the 1967 war. Production could resume after an Israeli withdrawal if further investments are made to rehabilitate the mine.

EGYPT MINERAL RESOURCES AND RELATED TRANSPORTATION

MINERAL	FIELD	LOCATION	CURRENT OUTPUT (YEAR)	PROJECTED ANNUAL OUTPUT (BEGINNING YEAR)	EXPORTS (DESTINATION)	TRANSPORTATION	COMMENTS
COAL		Sinai	None	N/A	None	N/A (see project brief)	Coal fields were opened in the Sinai in 1964, covering a total area of 450 sq. miles. The production of these mines, however, was completely lost in 1967. Subsequently, substantial deposits were found in the W. Desert, but they are not being fully exploited. Over 1 million tons of coal are being imported annually through Alexandria. Most of it is manufactured into coke for production of pig iron. It is projected that coal imports will reach 2 million tons in 1980.
	Kharga Oasis	W. Desert	N/A	N/A	USED DOMESTICALLY	There is a road from Kharga to Asyut. A railroad is planned to Quena for transport of phosphate	
	Bahariya	W. Desert	N/A	N/A		Existing road & rail to Cairo & Helwan used to transport iron ore.	
CRUDE OIL	El Morgan, Ramadan, July, and others	Gulf of Suez	14.4 million tons (1977)	42 million tons (1982)	Most of it by 1982 (Europe)	Ship to Suez	The Egyptian share (334 mn tons) of the world's known oil reserves (@ 90 bn tons) is extremely small (0.4%). The volume of reserves depends on a a number of factors, including geological features and exploration and development efforts. These effort in Egypt have been conducted with varying degrees of intensity since the early part of this century. It was not until the mid 1960s and the early 1970s that the relatively large fields in the Gulf of Suez were discovered. The most likely prospects for further discovery are in the Gulf of Suez, and to a lesser extent in the Sinai. Deep sea exploration in the Red Sea and off the Alexandria shore is extensive, but it is also lengthy and costly. The W. Desert has not proved very productive so far despite large exploration expenditures. However, the Egyptians believe that the W. Desert contains an overlap from the giant Libyan field and the interest shown by foreign companies in the area, previously unsuccessfully explored by the USSR, seems to justify their confidence. U.S., Japanese and German firms are also understood to have expressed interest in exploring in the Sinai, pending an Israeli withdrawal.
	Abu Rudeis, Belayim, Firaun, Sidri, Abu Ghara, SUDR	Sinai	3.5 million tons (1977)	3.8 million tons (1982)	Most of it by 1982 (Europe)	Ship to Suez	
	El Tur	Sinai (Israeli Exploitation)	12,000 b/d (1978)	3.5 million tons (1982)	Currently all to Israel	Ship and possible pipeline to Eilat (see project brief)	
	Shaikhair Khair, and others	Eastern Desert	1.5 million tons (1977)	0.8 million tons (1982)	N/A	Pipeline under construction to Suez and Cairo (see project brief)	
	El Alamein Yedma	Western Desert	0.6 million tons (1977)	0.4 million tons (1982)	N/A	Ship to Alexandria	

EGYPT MINERAL RESOURCES AND RELATED TRANSPORTATION

MINERAL	FIELD	LOCATION	CURRENT OUTPUT (YEAR)	PROJECTED ANNUAL OUTPUT (BEGINNING YEAR)	EXPORTS (DESTINATION)	TRANSPORTATION	COMMENTS
RUDE OIL ntinued)							Exports of crude oil reached an estimated 5.1 mn tons in 1977. They are expected to reach 7.4 mn tons in 1978 and as much as 16.4 mn tons in 1982; they go primarily to Western Europe. The throughput capacity of existing Egyptian crude oil pipelines is about 21.7 mn tons in 1977. In addition, construction has started on the Shukair-Suez/Sotorod (Cairo) pipelines, which will have a final throughput capacity of 12 mn tons. A crude oil pipeline from Damietta to Suez is reported to be planned as a transshipment pipeline for Iranian crude. The project is still under study. The Suez-Mediterranean transshipment pipeline (SUMED) was completed in 1977. Its capacity will initially be 40 mn tons/yr but a second stage will take it to 80 mn tons/yr and there is the possibility of expansion to 120 mn tons. SUMED is not expected to compete with the Suez Canal for oil shipments. The Government expects the two to be complementary.
NATURAL GAS	Abu Madhi	Nile Delta	132,000 tons (1977)	900,000 tons (1980)	USED DOMESTICALLY	Existing pipelines to Talka	Reserves of natural gas at Abu Madi, Abu Gharadeq and Abu Kir are estimated at some 60 mn tons (of oil equivalent). In 1975 and 1976, Egypt found it necessary to import a modest amount of natural gas (less than 100,000 tons/annum) to supplement domestic production in meeting local consumption requirements. Imports from Algeria ceased in 1977. No natural gas has been exported so far as none was planned for export during the period 1977-82. Capacity throughput of natural gas pipelines was about 7 million tons in 1977.
	Abu Ghara - Dung	W. Deserts	264,000 tons (1977)	800,000 tons (1980)		Existing pipeline to Helwan	
	Abu Kir	Offshore near Alexandria	85,000 tons (1978)	1 million tons (1980)		Pipeline under construction to Alexandria	

ISRAEL

MINERAL RESOURCES AND RELATED TRANSPORTATION

MINERAL	FIELD	LOCATION	CURRENT ANNUAL OUTPUT (YEAR)	PROJECTED ANNUAL OUTPUT (BEGINNING YEAR	EXPORTS (DESTINATION)	TRANSPORTATION	COMMENTS
POTASH	Dead Sea	Southern Dead Sea	1.2 million tons (1977)	1.7 million tons (1982)	Most of it (Europe, U.S., Latin America)	By truck to Dimona, Oron and Bar Zin; then by rail to Haifa and other Mediterranean ports. Planned rail line south to Eilat or Aqaba and north to Dead Sea Works. (See project brief)	The Dead Sea Works Co. expects to submit plans to the Government shortly for expanding its potash production capacity by 500,000 tons. Income from exports in 1977 was $50 million. A significant quantity of Israel's muriate of potash has been converted, at Haifa, to nitrate potash, mainly for export. Transport of potash to Eilat Port in order to take advantage of Eastern Markets could be economically increased if a railroad is constructed to that port. Cooperation with Jordan in the transport of potash should be explored.
PHOSPHATE	Oron, Hazeva	Northeastern Negev	1.2 million tons (1977)	N/A	961,300 tons (1977) (Europe, Latin America)	By existing rail to Ashdod. Planned rail extension to Hazeva and south to Eilat or Aqaba (See project brief)	A third deposit with estimated reserves of 120 million tons of good grade ore has been discovered. A railroad to Eilat would enable Israel to take advantage of Eastern markets. Again, cooperation with Jordan should be economically advantageous to both [illegible]

ISRAEL

MINERAL RESOURCES AND RELATED TRANSPORTATION

MINERAL	FIELD	LOCATION	CURRENT ANNUAL OUTPUT (YEAR)	PROJECTED ANNUAL OUTPUT (BEGINNING YEAR)	ISSUES (DESTINATION)	TRANSPORTATION	COMMENT
COPPER	Timna	Southern Negev	None (8,000 tons in 1975)	N/A	None	Truck over existing roads	Timna contains 20 million tons of low-grade copper ore (1.5% Cu). Due to the fall of copper prices in the world markets, and following accumulated losses, the govt. closed the mines in 1976.
CRUDE OIL	Kokhav, Brur, Negba	Near Ashqelon	36,720 tons (1976)	N/A	Used domestically	Existing pipeline to Ashdod and Haifa refineries	In addition to about 34 wells in Israel proper, that country is exploiting some oil deposits in the Sinai. Domestic crude oil production is a very small percentage of Israel's oil requirements. Imports of crude oil and petroleum products rose in value from U.S.$210.6 million in 1973 to U.S. $672 mn in 1976.
NATURAL GAS	Rosh-Zohar, Kidod, Hakanaim, Bartzur	Dead Sea Area	58 million m³ (1976)	N/A	Used domestically	Existing pipeline to Dead Sea Potash works at Sodom, towns in Negev, & to the Oron phosphate plant	1976 production was a 3% decrease from that of 1975.

JORDAN-SYRIA-LEBANON MINERAL RESOURCES AND RELATED TRANSPORTATION

COUNTRY	MINERAL	FIELD (LOCATION)	CURRENT OUTPUT (YEAR)	PROJECTED ANNUAL OUTPUT (BEGINNING YEAR)	EXPORTS (DESTINATION)	TRANSPORTATION	COMMENTS
JORDAN	PHOSPHATE	Ruseifa (north of Amman), El Hasa (south of Amman)	2 million tons (1977)	4.6 million tons (1980)	1.79 million tons (South and East Asia, Eastern Europe, France, Italy)	Existing narrow-gauge railroad to Aqaba Port	Jordan's proven reserves of phosphate rock are about 508 million tons. Total unproven reserves are estimated at about 3 billion tons. Phosphate rock is the country's most valuable known natural resource and major source of export earnings (39% of domestic commodity exports in 1976). Phosphate exports by 1980 should account for more than 50% of foreign currency earnings. Jordan, however, is still a small producer in terms of world production. The largest phosphate exporter is Morocco (31% of world exports), which has more than half of the world's known phosphate reserves (40 billion tons). The rise of Jordan's phosphate rock exports has been impressive, but they may not reach the plan target of 7 million tons by 1980. However, they are likely to reach a level of 4-5 million tons by around 1980, and gradual expansion beyond that in pr[illegible]ion to the growing world market should be pos[illegible]le considering the geographical advantage to the Asian market, as well as to Eastern European countries. The newly expanded railroad from the mines to Aqaba is slated to have a carrying capacity of about 5 million tons by the end of 1978, using bottom discharge wagons of 42 ton-capacity each. Phosphate storage capacity at Aqaba is now 180,000 tons. Aqaba's loading and storage facilities are currently being expanded.

JORDAN-SYRIA-LEBANON MINERAL RESOURCES AND RELATED TRANSPORTATION

COUNTRY	MINERAL	FIELD (LOCATION)	CURRENT OUTPUT (YEAR)	PROJECTED ANNUAL OUTPUT (BEGINNING YEAR)	EXPORTS (DESTINATION)	TRANSPORTATION	COMMENTS
JORDAN cont'd							
	POTASH	Dead Sea (Eastern shore of the southern basin of the Dead Sea)	None	1.2 million tons (1985)	Most of its (South and East Asia)	By truck over recently completed highway to Aqaba Port. Possible rail line to Eilat or Aqaba in cooperation with Israel. (See project brief)	Construction of production facilities for 1.2 million tons of potash per year is underway. The project, which also includes an associated township, a water supply system, storage facilities at the site, and a truck fleet to transport potash from the site to Aqaba for shipment overseas, has a total cost of U.S. $428.8 million. Commercial production will start in mid-1982, reaching full capacity in 1985. A loading dock is to be built 15 km south of Aqaba for loading both potash and the production of a phosphatic fertilizer plant. There are good prospects for exporting about 1 million tons of potash per year at peak production if careful marketing is arranged.

JORDAN-SYRIA-LEBANON MINERAL RESOURCES AND RELATED TRANSPORTATION

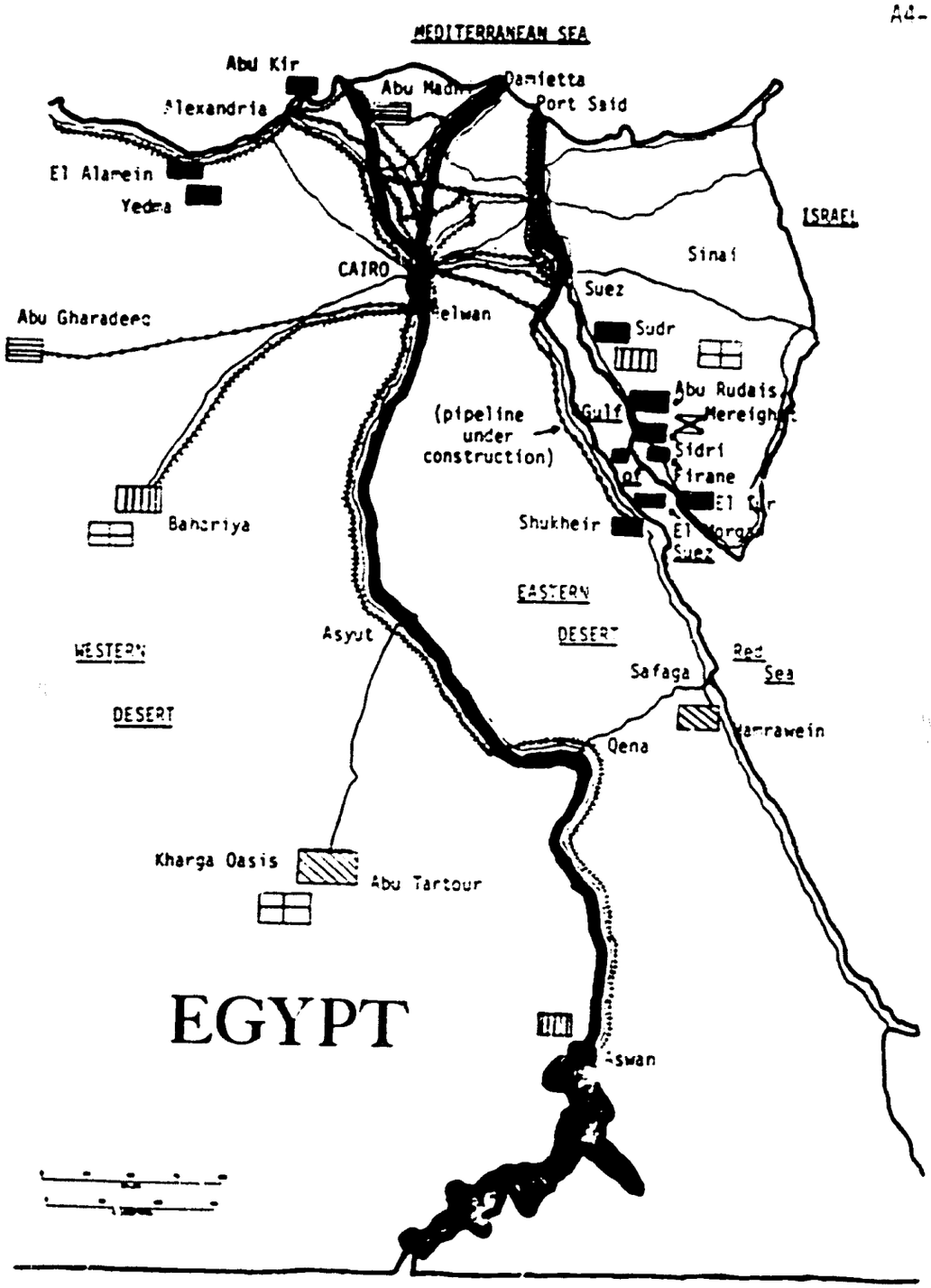
COUNTRY	MINERAL	FIELD (LOCATION)	CURRENT OUTPUT (YEAR)	PROJECTED ANNUAL OUTPUT (BEGINNING YEAR)	EXPORTS (DESTINATION)	TRANSPORTATION	COMMENTS
SYRIA							
	PHOSPHATE	Palmyra (Central Syria)	800,000 tons (1977)	4.5 million tons (1980)	700,000 tons (Eastern Europe, North Korea)	By truck over existing roads to Tartous Port. Railway line under construction from Palmyra to Homs.	Phosphate prices have declined in 1978 in comparison with previous levels, and Syrian revenues from this mineral have suffered proportionately. However, current plans call for phosphate production to increase to 4.5 million tons by 1980, of which 4 million will be for export and 0.5 million for use in a triple phosphate fertilizer plant within the country. A railway line from the phosphate mines near Palmyra to Homs, where it will join the existing rail line to the port of Tartous, is presently under construction with Soviet assistance.
	CRUDE OIL	Karachuk, Suweidiya, Rumelan, Jbeisseh (North-eastern (Syria)	8.4 million tons (1977)	15 million tons (1978)	Most of it; (Western Europe, USSR)	Existing pipeline to Homs, Tartous and Banias	According to the Organization of Arab Petroleum Exporting Countries (OAPEC) Syria's oil reserves are estimated at 11,900 million barrels. Proven oil reserves at the end of 1977 stood at 2,150 million barrels. With growing sales abroad, oil has become Syria's most important export commodity. The outlook is enhanced by recent findings which prove that not all of Syria's oil is of high sulphur content, as previously feared. Royalties for the transit of foreign crude through Syrian territory were for many years more valuable than indigenous oil production. The pipeline system from the Kirkuk fields in Northern Iraq via Homs to the terminals at Tripoli in Lebanon and at Banias in Syria consist of three separate pipelines with a total annual capacity of about 55 million tons. Shipments to Banias and Tripoli ceased in April, 1976 due to a dispute between

JORDAN-SYRIA-LEBANON MINERAL RESOURCES AND RELATED TRANSPORTATION

COUNTRY	MINERAL	FIELD (LOCATION)	CURRENT OUTPUT (YEAR)	PROJECTED ANNUAL OUTPUT (BEGINNING YEAR)	EXPORTS (DESTINATION)	TRANSPORTATION	COMMENTS
SYRIA cont'd							Syria and Iraq over prices and freight rates. The Trans Arabian Pipeline Company (Tapline) pipeline from the Abu Hadriya fields in Saudi Arabia to the terminal at Saida in Lebanon consists of one pipeline with an annual capacity of about 25 million tons. Operation of the Tapline was discontinued in April, 1975, but pumping resumed in 1976.
	IRON ORE	Rajo area (not far from the railroad running northwest from Aleppo), other scattered deposits.	N.A. (believed to be small)	N.A.	Used domestically	Existing road and rail	West German firms are currently building a steel works for semi-finished products at Hama. The plant will be situated next to the existing Polish-built iron-bar factory. One aim in the development of any further iron and steel processing plants in Syria will be to make maximum use of the country's own deposits of about 530 million tons of iron ore. The development of these deposits may require additional investments for transport.

JORDAN-SYRIA-LEBANON MINERAL RESOURCES AND RELATED TRANSPORTATION

COUNTRY	MINERAL	FIELD (LOCATION)	CURRENT OUTPUT (YEAR)	PROJECTED ANNUAL OUTPUT (BEGINNING YEAR)	EXPORTS (DESTINATION)	TRANSPORTATION	COMMENTS
LEBANON	IRON ORE	Marjaba (10 miles northeast of Beirut)	N.A.	N.A.	Used domestically	Existing road and rail	Lebanon's mineral resources are limited to some iron ore, lignite and limestone deposits. No commercially viable petroleum reserves have been found.
	LIGNITE	Southeast of Tripoli, Northeast of Beirut	N.A.	N.A.	Used domestically	Existing road and rail	

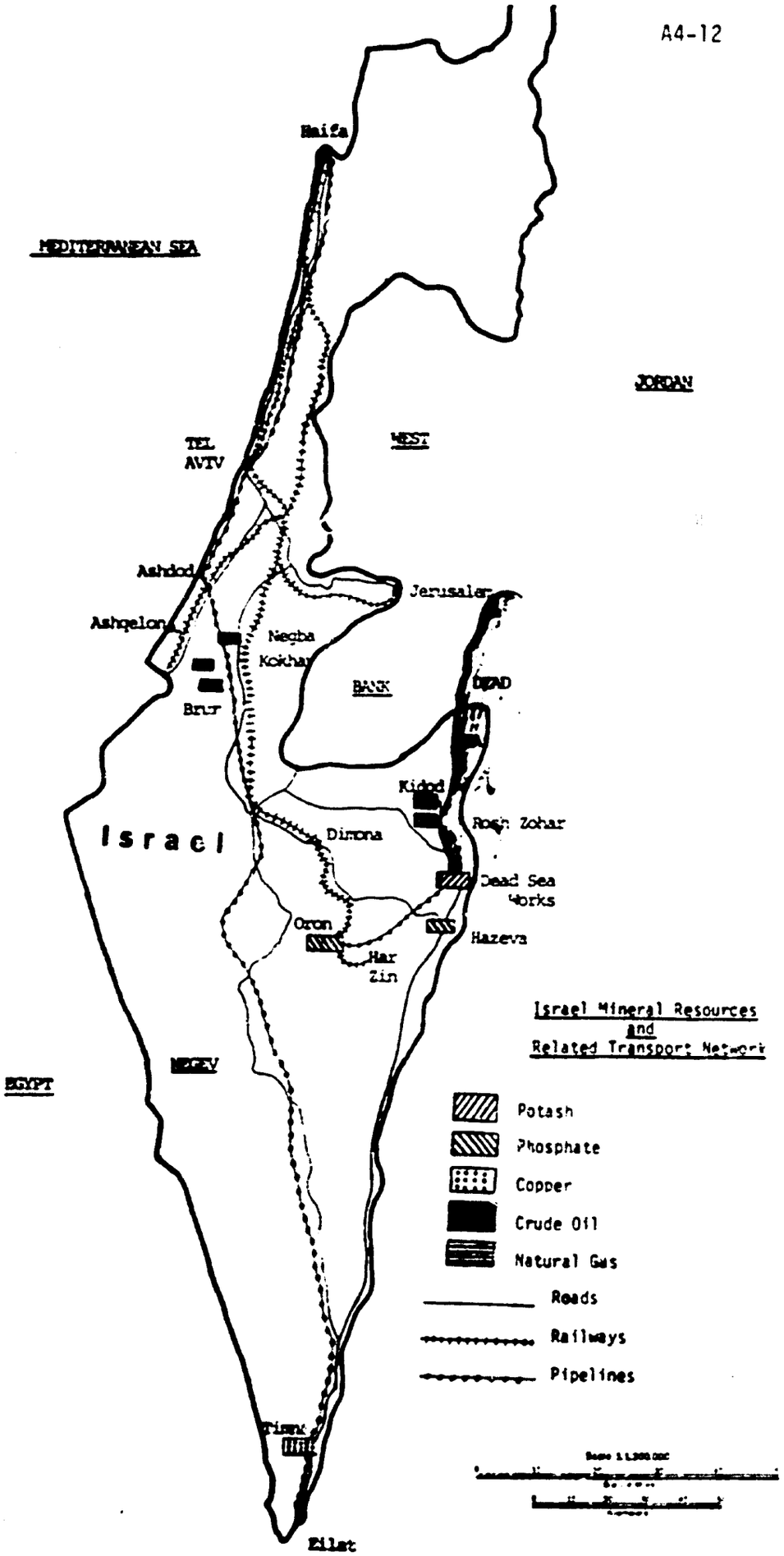


EGYPT: MINERAL RESOURCES

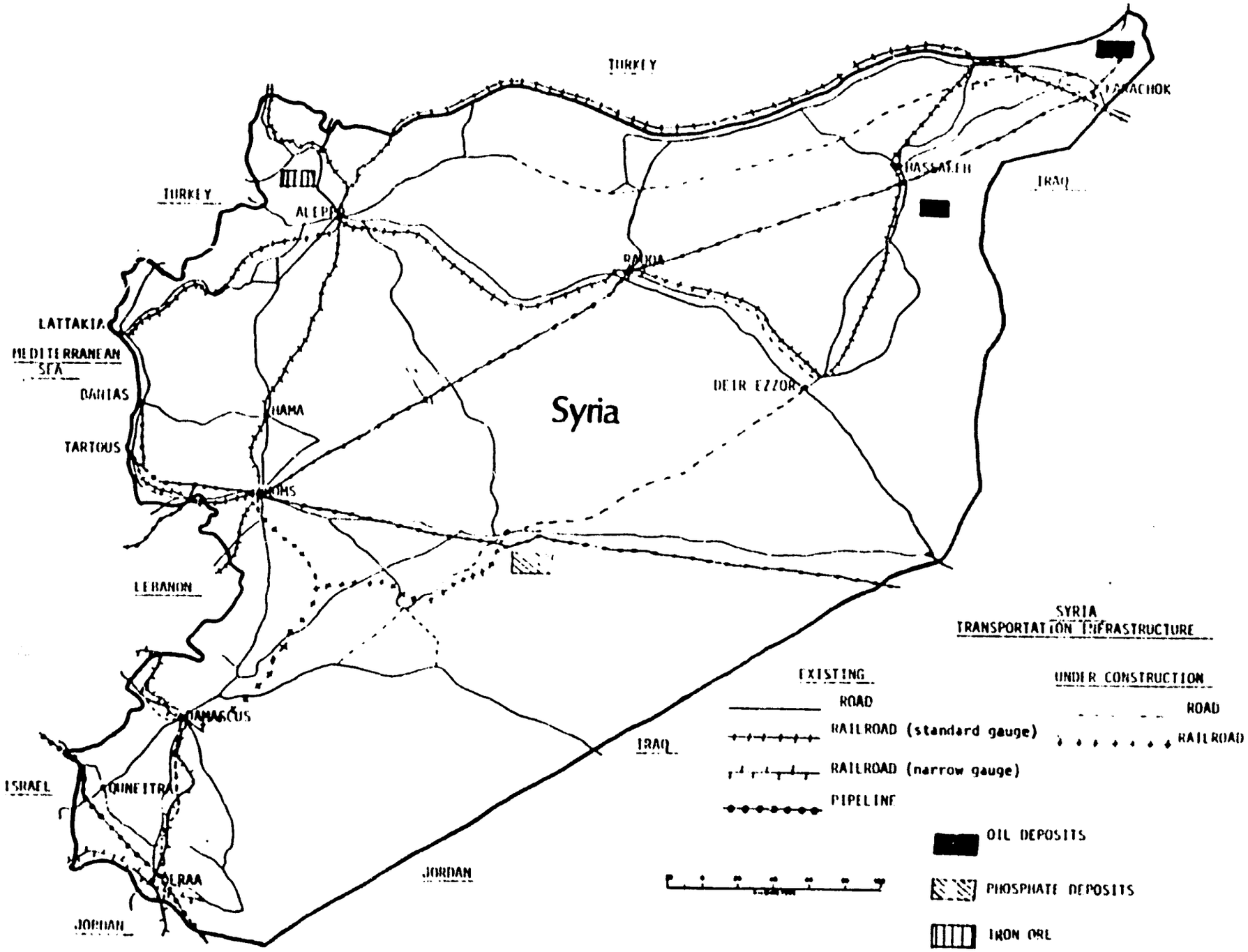
AND

RELATED TRANSPORT NETWORK

- Phosphate
- Iron Ore
- Manganese
- Coal
- Crude Oil
- Natural Gas
- Roads
- Railways
- Pipelines



Israel Mineral Resources and Related Transport Network


TURKEY
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DEIR EZZOR
Syria
LEBANON
DAMASCUS
ISRAEL
QUNEITRA
DERAA
JORDAN
JORDAN
IRAQ
SYRIA
TRANSPORTATION INFRASTRUCTURE
EXISTING
ROAD
RAILROAD (standard gauge)
RAILROAD (narrow gauge)
PIPELINE
UNDER CONSTRUCTION
ROAD
RAILROAD
OIL DEPOSITS
PHOSPHATE DEPOSITS
IRON ORE

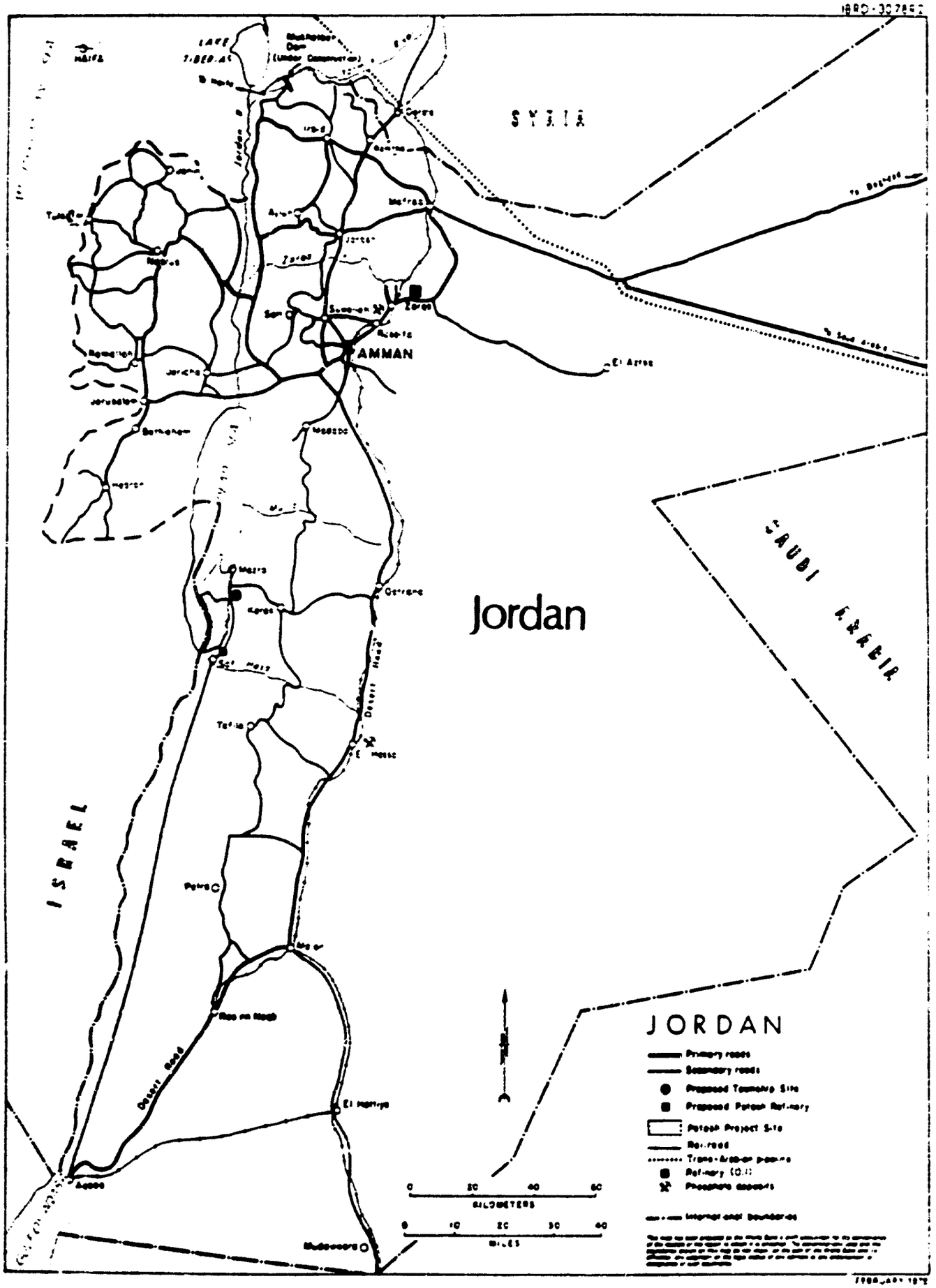

SYRIA
Jordan
SAUDI ARABIA
ISRAEL
AMMAN
JORDAN
Primary roads
Secondary roads
Proposed Tourism Site
Proposed Potash Refinery
Potash Project Site
Railroad
Trans-Arabian pipeline
Refinery (Oil)
Phosphate deposits
International boundaries
KILOMETERS
MILES

TABLE 1

Egyptian Imports from Lebanon
(1975)

All commodities = $83,969,000

Egypt imported an average of $230,000 worth of products a day.

SITC	Commodity	Weight (metric tons)	Value (thousands US$)
013	meat tinned	849	3971
022	milk and cream	287	305
032	fish tinned	324	423
051	fresh dried fruits and nuts	1777	1944
075	spices	274	379
211	hides & skins, undressed	244	237
231	rubber, crude & synthetic	387	296
243	wood, shaped	1847	454
262	wool, animal hair	432	817
274	sulphur, etc	1100	103
282	Iron & steel scrap	3992	409
292	crude vegetable matter, NES	288	169
421	fixed vegetable oils, soft	466	424
51	chem. elements, compounds	3360	1202
53	Dyes, tanning color	867	740
541	medicinal products	8	473
581	plastic materials	5001	4233
599.1	starch, inulin, gluten, etc.	549	447
611	leather	382	1030
629	rubber, including tires	3039	6289
631	veneer, plywood, etc.	5517	2867

SITC	Commodity	Weight (metric tons)	Value (thousands US $)
641	paper and paperboard	7455	4588
642	articles of paper	4428	2500
651	textile yarn and thread	732	2831
653	woven textiles, non cotton	55	510
655	special textiles, etc.	397	683
662	clay, refractory bldg prod.	1673	535
663	other nonmetal mineral mfrs.	437	539
664	glass	3299	943
672	iron, steel, primary forms	669	448
674	iron, steel plate, sheet	640	260
678	iron, steel tubes, pipes	823	414
69	metal mfg, NES	1161	1421
711	power machinery, non-elec.	1471	3011
714	office machines	43	799
715	metal working machinery	67	160
717	textile, leather machinery	287	1780
719	machinery, NES, non-elec.	713	1831
72	electrical machinery	1394	4412
732	road motor vehicles	8567	25,015
812	plumbing, heating, lighting equipment	617	397
841	clothing, not of fur	19	184
861	instruments, apparatus	50	591
862	photographic	54	505
891	sound recorders	17	245
892	printed matter	832	1267
893	articles of plastic	127	868

SITC	Commodity	Weight (Metric tons)	Value (thousands US$)
894	toys, sporting goods	78	198
895	office supplies	162	416
899	other mfg. goods	N/A	287
	TOTAL	67,257	83,948
	per day (divide by 365)	99	230

Source: United Nations, World Trade Annual, 1977

TABLE 2

Exports from Egypt to Lebanon

(1975)

All commodities = 9,387,000

Egypt exported an average of $25,700 worth of products a day

SITC	Commodity	Weight (metric tons)	Value (thousands of US$)
042.2	rice, glazed or polished	3700	1742
948	cereal	1788	360
051	fresh & dried fruits nuts	6538	1156
054	vegetables, fresh	6754	1255
075	spices	373	285
221	oil seeds, nuts	267	168
291	crude animal matter, NES	332	153
292	crude vegetable matter, NES	1298	573
651			
651	textile yarn & thread	201	723
652	cotton fabrics, woven	304	938
655	special textile products	88	122
671	pig iron, etc.	4125	473
892	printed matter	404	664
	TOTAL	26722	8,600
	per day (divide by 365)	73	23.5

Source: United Nations, World Trade Annual, 1977.

Regional Master Plan

Rationale/Purpose

If the Desk Survey indicates the possibility of a variety of potential alternatives and the significant alteration of trade patterns over time, the next step may be the preparation of a sector study/master plan.

Level of Effort

One development economist, one or more transportation economists, one general transportation engineer, one specialist in each transport mode to be looked at for a period of six months to a year, possibly a management specialist and financial analyst.

Scope of Work

1. Analyse the commodities currently produced for trade or potentially suitable for trade in each involved country and estimate the capital investments required to initiate or increase production.

2. Analyse in detail the regional markets to identify and quantify the demand for regionally produced goods.

3. Analyse modal transport costs by major commodity groups and by trading partners.

4. Identify potentially beneficial changes of increase in regional trading patterns and the required change in transportation patterns associated with these changes in trade including an assessment of the time frame within which such changes might occur.

5. Identify potentially feasible transportation investments to improve existing or provide new facilities, priority rank ordered and with order of magnitude estimates of capital investments.

Original Scope of Work: Mid-East Transport Study

MID-EAST DEVELPMENT

REGIONAL TRANSPORTATION SURVEY AND TRANSPORTATION PROJECTS STUDIES

Desk Survey

Level of Effort

One transport economist and one transport engineer for two to three weeks.

Scope of Work

1. Review existing trade patterns using published data from national and international sources.

2. Review existing data on various modes of transportation within the involved countries as well as current and planned intercountry trade routes and modes of transportation.

3. Develop rough estimates of the current modal costs of moving major types of commodities in intercountry trade.

4. Identify alternative routes and modes of transportation for moving commodities in intercountry trade which appear to be technically feasible.

5. Develop rough cost estimates of the capital investments and operations and maintenance cost for potentially feasible alternative routes and modes.

6. Review and assess the potential impact of tourism on the transcort sector.

7. Estimate the potential feasibility of alternative routes/modes by comparing the costs of moving major types of commodities over existing routes using currently available mode with new routes using the same or dirrerent modes.

3. Develop scope of work for a field oriented master plan and/or pre-feasibility studies of potentially sound transport projects.

TABLE 3

Egyptian Imports from Syria
(1975)

All Commodities = $14,400,000

Egypt imported an average of $39,450 worth of products a day.

SITC	Commodity	Weight (metric tons)	Value (thousands US$)
05	fruits & vegetables	8986	5554
12	tobacco & Mfrs	320	461
21	hides, skins, furs	30	106
262	wool and animal hair	1599	3870
292	crude vegetable material, NES	433	214
332 332	petroleum products	6630	120
611	leather	187	588
651	textile yarn & thread	228	1033
664	glass	411	165
719	machinery, NES, non-elec.	58	211
732	road motor vehicles	428	1403
	TOTAL	19360	13725
	per day (divide by 365)	53	37

Source: United Nations, World Trade Annual, 1977

TABLE 4

Exports from Egypt to Syria
(1975)

All commodities = $6,447,000

Egypt exported an average of 17,700 worth of products a day.

SITC	Commodity	Weight (metric tons)	Value (thousands US$)
051	fresh & dried fruits and nuts	644	126
262	wool & animal hair	70	275
265	vegetable fiber, excluding cotton	364	287
571	explosives, pyrotech prod.	500	267
651	textile yarn & thread	502	1701
652	cotton fabrics, woven	805	2850
655	special textile products	253	318
892	printed matter	130	119
	TOTAL	3273	5943
	per day (divide by 365)	9	16

Source: United Nations, World Trade Annual, 1977

TABLE 5

Egyptian Imports from Jordan
(1975)

All Commodities = $3,878,000

Egypt imported an average of $10,600 worth of goods a day

SITC	Commodities	Weight (metric tons)	Value (thousands US$)
262	wool & animal hair	171	403
581	plastic materials	413	232
611	leather	93	418
653	woven textiles, non-cotton	65	277
685	lead	979	437
732	road motor vehicles	60	243
841	clothing, not of fur	12	216
	TOTAL	1793	2235
	per day (divide by 365)	4.9	6.1

Source: United Nations, World Trade Annual, 1977

TABLE 6

Egyptian Exports to Jordan
(1975)

All Commodities = $4,350,000

Egypt exported an average of $11,900 worth of products a day.

SITC	Commodity	Weight (metric tons)	Value (thousands US$)
042.2	rice glazed or polished	4072	2087
054	vegetables, fresh	1431	209
652	cotton fabrics, woven	122	322
661	cement, etc., building prod.	2800	172
672	iron, steel, primary forms	2000	460
841	clothing, not of fur	60	168
892	printed matter	111	159
	TOTAL	10596	3577
	per day (divide total by 365)	29	9.8

Source: United Nations, World Trade Annual, 1977

ATTACHMENT 6 PROJECT BRIEFS

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt/Israel PROJECT CATEGORY Regional

MODE: Road RANKING High

1. Name of Project

Trans Sinai Road (Mitla pass)

2. Project Description

Improvement of the Trans-Sinai road through the Mitla Pass. Improve to civilian road standards the width, alignment, and grades of the 250 km military road between Suez and Eilat.

3. Project Objectives, Benefits, and Justifications

The proposed project will assist in:

(a) Development of Sinai's tourism potential;
(b) Strengthening the transport link between Egypt, Jordan, and the Persian Gulf States; and
(c) Serve as an inducement to the exploitation of the area's mineral resources.

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1979

(b) Approval of funding by: mid 1980

(c) Completion of engineering by: end 1981

(d) Start of project construction by: 1982

(e) Completion of project construction by: 1984

5. Financing Plan:

(a) Total cost of project: $54 million

(b) Foreign exchange cost of project: $18 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1982	6	12	18
1983	6	12	18
1984	6	12	18

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement:
Heavy road construction equipment.

7. Consultant and Training Requirements:
Consultants only for the feasibility study.

8. Estimates of Financial and Economic Rates of Return:
Not complete.

9. Agency in charge of Planning and Project:
None.

10. Agency or Agencies in Charge of Project Execution:
None.

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt/Gaza Strip

PROJECT CATEGORY Regional

MODE: Rail

RANKING High

1. Name of Project: North Sinai Rail Link

2. Project Description Construct a new standard gauge 130-mile railway linking El Qantara on the Suez Canal and Khan Yunis in the Gaza Strip.

3. Project Objectives, Benefits, and Justifications:
This project would connect the Egyptian and Israeli rail systems; thereby linking Egypt by rail to the other Arab States and Europe. However, a significant obstacle remains in that the Syrian, Jordanian and Persian rail systems are of a different (narrower) gauge. This would interfere more with freight than passenger operations. The linkage between Egypt and Israel would be particularly beneficial in accommodating the trade and tourism between the countries, and would enable Egypt (without container ports at present) to use Israel's modern container facilities.

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1979

(b) Approval of funding by: Mid 1980

(c) Completion of engineering by: 1981

(d) Start of project construction by: 1982

(e) Completion of project construction by: 1984

5. Financing Plan:

(a) Total cost of project: $159 million

(b) Foreign exchange cost of project: $ 99 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1982	33	20	53
1983	33	20	53
1984	33	20	53

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement:

Rail line construction equipment

7. Consultant and Training Requirements:

Consultants probably required for feasibility study.

8. Estimates of Financial and Economic Rates of Return:

Not established

9. Agency in charge of Planning and Project:

Not yet determined

10. Agency or Agencies in Charge of Project Execution:

Not yet determined

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt/Gaza Strip

PROJECT CATEGORY Regional

MODE: Road

RANKING High

1. Name of Project:

North Sinai Road

2. Project Description

Improve to civilian road standards the width, alignment, and gradients of the 200 km long road from El Qantara to Khan Yunis in the Gaza strip.

3. Project Objectives, Benefits, and Justifications:

The proposed project would assist in:

a) Providing a good road link between Egypt, the Gaza strip and Israel,

b) Facilitating the flow of tourism by bus and passenger cars between the above and Israel,

c) providing a road link for heavy commercial trucks between the above countries.

4. Conceivable Project Timing

(a) Completion of feasibility study by:
1979

(b) Approval of funding by:
mid 1980

(c) Completion of engineering by:
end 1981

(d) Start of project construction by:
1982

(e) Completion of project construction by:
1984

5. Financing Plan:

(a) Total cost of project:
$39 million

(b) Foreign exchange cost of project:
$12 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1982	4	9	13
1983	4	9	13
1984	4	9	13

(d) Status of project in development:
Conceptual

(e) Status of project in development plan and budget.
None

(f) Status of aid commitment:

6. Equipment Requirement:
Heavy road construction machinery

7. Consultant and Training Requirements:
Consultant for feasibility study

8. Estimates of Financial and Economic Rates of Return:
Not completed

9. Agency in charge of Planning and Project:
None

10. Agency or Agencies in Charge of Project Execution:
None

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Israel/Jordan

PROJECT CATEGORY: Regional

MODE: Highway

RANKING: High

1. Name of Project: 4 lane express highway between Eilat and Aqaba, Jordan (both are seaside resorts) in the Gulf of Aqaba.

2. Project Description: The cities of Eilat, Israel and Aqaba, Jordan are approximately 8 kilometers apart. Both are developing as international seaside resorts. With large increases in tourists expected in Eilat (and in Israel) of 20% per year to 1990, a 4-lane expressway between Eilat and Aqaba may be attractive.

3. Project Objectives, Benefits, and Justifications: With peace, tourism could double in the near future from 1 to 2 million persons/yr. A new airport is scheduled to open in Eilat in 1979 or 1980. Many tourists will be coming on chartered airplanes from Europe. As both Eilat and Aqaba develop as international resorts it is expected that many tourists would want to visit both resorts if only for day-long excursions. This proposed highway would initiate tourist traffic between the two cities. In addition each city is a major port and freight traffic might be generated. Such a highway also would lead to the formation of a land-bridge to Saudi Arabia which is only 25 kilometers from Eilat.

4. Considerable Project Timing:

   (a) Completion of feasibility study by: 1981

   (b) Approval of funding by: Mid-1982

   (c) Completion of engineering by: End-1983

   (d) Start of project construction by: 1984

   (e) Completion of project construction by: 1986

5. Financing Plan:

(a) Total cost of project: $9 million (1978 dollars) based on $1 million per kilometer for design, appropriation of land and construction.

(b) Foreign exchange cost of project: $3 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1984	1	2	3
1985	1	2	3
1986	1	2	3

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement: Road construction

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: Not completed

9. Agency in charge of Planning and Project: Joint Israeli/Jordan agency

10. Agency or Agencies in Charge of Project Execution: Joint Israeli/Jordan agency

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Israel/Jordan PROJECT CATEGORY Regional

MODE: Railroad RANKING High

1. Name of Project:

Jerusalem-Amman Railroad.

2. Project Description
Construction of a single-track, standard gauge railroad utilizing trains capable of handling 20 ton/axle loads. The line would be approximately 72 kilometers long.

3. Project Objectives, Benefits, and Justifications:
This line would connect Egypt and Israel with Jordan and Syria. In addition, the West Bank would be connected with the Gaza Strip; this would be important should the two entities be combined to form a Palestinian State. This line could be the impetus for greatly increased trade not only between Egypt and Israel and the West Bank, but also among all Arab countries in the Middle East and North Africa. Regional benefits could be significant since this project would help link the continents of Africa and Asia. But one disadvantage remaining is that the rail lines in Jordan, Saudi Arabia and Syria are of different gauge (narrower). This would present no interface problems for passengers but would pose an obstacle for freight movements.

4. Conceivable Project Timing

(a) Completion of feasibility study by: early 1980

(b) Approval of funding by: mid 1980

(c) Completion of engineering by: end 1981

(d) Start of project construction by: 1982

(e) Completion of project construction by: 1984

5. Financing Plan:

(a) Total cost of project: $21 million (1978 dollars) for 72 kilometers. The line would cost approximately $10 million if it stretched from Jerusalem to the Jordan River (34 km).

(b) Foreign exchange cost of project: $14 million (rough estimate).

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1982	4.7	2.3	7
1983	4.7	2.3	7
1984	4.7	2.3	7

(d) Status of project in development: conceptual stage.

(e) Status of project in development plan and budget: not in budget.

(f) Status of aid commitment: none.

6. Equipment Requirement:
Special rail track-laying equipment, heavy earth moving equipment, rock drills.

7. Consultant and Training Requirements:
Israeli/Jordan capability deemed adequate.

8. Estimates of Financial and Economic Rates of Return:

None.

9. Agency in charge of Planning and Project:

None.

10. Agency or Agencies in Charge of Project Execution:

None.

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: To be selected

PROJECT CATEGORY Regional

MODE: Training

RANKING High

1. Name of Project:

Arid Lands Road Research Institute

2. Project Description:

The project would consist of integrating the road research efforts in the Middle East by creating a research institute for construction, maintenance and operation of roads and road vehicles in the arid lands of the Mid-East. The institute would draw heavily upon the existing expertise in the area (Kuwait, Syria, Israel). A small laboratory with extensive proving grounds and for a few expatriate staff would be newly built.

3. Project Objectives, Benefits, and Justifications:

The Institute's purpose would be to promote research and the exchange of technical information adapted to the particular conditions of the Middle East and North Africa in the fields of road infrastructure, traffic and safety. The Institute itself would serve as both a research center and a clearinghouse of technical information on highway transportation for all Middle Eastern countries. Benefits would be decreased costs of roads and road vehicle operation, and the symbolic value of increased integration and unification in the region. Note: The International Road Federation Conference in Cairo April 9-15,1978, has adopted in the form of a resolution this type of research institute. Mr. John P. Zedalis of DS/ENAR had suggested this type of research effort.

4. Conceivable Project Timing:

(a) Completion of feasibility study by: Early 1980

(b) Approval of funding by: Mid 1980

(c) Completion of engineering by: End 1980

(d) Start of project construction by: Early 1981

(e) Completion of project construction by: Mid 1982

5. Financing Plan:

(a) Total cost of project: $900,000 (expatriate staff) Total: $4.9 millio
1,000,000 equipment
3,000,000 testing ground

(b) Foreign exchange cost of project:

$3.9 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1981	1.6	.5	2.1
1982	1.7	.5	2.2
1983	.2		.2
1984	.2		.2
1985	.2		.2

(d) Status of project in development:
Proposed as resolution at the Cairo April 9-15, 1979, International Road Federation Conference.

(e) Status of project in development plan and budget:

none

(f) Status of aid commitment:

none

6. Equipment Requirement:

Heavy road construction equipment, laboratory equipment.

7. Consultant and Training Requirements:

Expatriate instructors for 5 years

8. Estimates of Financial and Economic Rates of Return:

Not available

9. Agency or Agencies in Charge of Project:

Possibly the International Road Federation

10. Agency or Agencies in Charge of Project Execution:

None selected.

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: To be selected

PROJECT CATEGORY: Regional

MODE: Multi-modal

RANKING: High

1. Name of Project:

   Regional Transport Institute

2. Project Description:
   A training institute for personnel involved in the operation, maintenance and administration of transport. Training facilities would be constructed and staff recruited.

3. Project Objectives, Benefits, and Justification:
   With transport in the Middle Eastern countries burgeoning, the problems of technical training, safety, etc., are exacerbated. One solution may be a regional training center - a technical college of sorts with departments corresponding to each mode. The school would train planning, management and operating personnel for each transport mode. This training center would be funded by governments participation in it. All countries in the Middle East would be eligible to join.

4. Conceivable Project Timing

   (a) Completion of feasibility study by:
   Early 1980

   (b) Approval of funding by:
   mid 1980

   (c) Completion of engineering by:
   end 1981

   (d) Start of project construction by:
   early 1982

   (e) Completion of project construction by:
   mid 1983

5. Financing Plan:

(a) Total cost of project:
$40 million

(b) Foreign exchange cost of project:
$10 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1982	15	5	20
1983	15	5	20

(d) Status of project in development:
conceptual

(e) Status of project in development plan and budget:
none

(f) Status of aid commitment:
none

6. Equipment Requirement:

Training aids in operation and maintenance of transport equipment

7. Consultant and Training Requirements:

Consultants needed for design and operation of the training facility

8. Estimates of Financial and Economic Rates of Return:

Not available

9. Agency in charge of Planning and Project:

None

10. Agency or Agencies in Charge of Project Execution:

None

11. Comments

At one time Jordan had proposed establishment of an Arab Air University in Jordan. It has been reported that only Sudan and Abu-Dhabi showed any significant interest in the project.

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Regional

PROJECT CATEGORY Regional

MODE: Rail

RANKING LOW

1. Name of Project: Reconstruction of Hejaz Railway from Damascus to Medina and Yenbo Industrial Area.

2. Project Description: Reconstruct and convert to standard gauge the 224 km rail link from Damascus to Amman and the 1056 km link from Amman to Medina and Yenbo.

3. Project Objectives, Benefits, and Justifications:

This project would link Saudi Arabia, Jordan and Syria with railways in Western Europe and, if the Jerusalem-Amman rail link is also constructed; with railways in Egypt and North Africa. Thus, the rail system in each country would become part of a regional rail system. The resulting economies of scale might improve the financial and economic viability (presently low because of the small size of rail in each country) of the rail system in the Mid East, and this could result in substantial reductions in cost of shipping bulk commodities and utilized cargo.

4. Conceivable Project Timing:

(a) Completion of feasibility study by: Mid 1980

(b) Approval of funding by: 1980

(c) Completion of engineering by: 1982

(d) Start of project construction by: 1983

(e) Completion of project construction by: 1985

5. Financing Plan:

(a) Total cost of project: $500 million

(b) Foreign exchange cost of project: $300 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1983	100	67	167
1984	100	67	167
1985	100	67	167

(d) Status of project in development: conceptual

(e) Status of project in development plan and budget: not included

(f) Status of aid commitment: none

6. Equipment Requirement:

heavy railline construction equipment

7. Consultant and Training Requirements:

Consultants in railway feasibility studies, detailed engineering

8. Estimates of Financial and Economic Rates of Return:

not established

9. Agency or Agencies in Charge of Project:

none designated

10 Agency or Agencies in Charge of Project Execution:

none designated

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Israel/Jordan

PROJECT CATEGORY Regional

MODE: Highway

RANKING High

1. Name of Project:

Jerusalem-Amman Highway Improvement

2. Project Description

Widening to four lanes and upgrading the existing two-lane highway (about 72 km) in order to accommodate a substantial increase in the volume of freight and passenger traffic.

3. Project Objectives, Benefits, and Justifications:

It is expected that a peace settlement involving Israel and Jordan will generate a substantial increase in the volume of highway traffic between Jerusalem and Amman. The existing two-lane road will likely be unable to accommodate the additional freight and passenger traffic.

The Jordanian Government has already expressed interest in this project which upgrades the road between two major population and tourism centers in the region. Before the 1967 war tourism had developed into a very important industry for Jordan. Most of it consisted of religious pilgrims to the Holy Christian and Muslim places of Jerusalem. After the War, tourism fell dramatically but it has more than recovered since 1974, when the Jordanian Government decided to allow its visitors to cross over to the West Bank. As for Israel, the growth of tourism in that country has been spectacular, increasing from 619,000 tourist-visitors from abroad in 1975 to more than 1 million in 1977. With the onset of peace, the number of tourists visiting the area served by the Jerusalem-Amman highway can be expected to increase substantially, thus requiring improvement of the existing road.

The project would also facilitate direct overland access for Israeli and West Bank products to the Arabian Peninsula through Jordan. The proposed four-lane highway would also offer Jordan an adequate road connection to Israel's Mediterranean ports, which the country can utilize for its large volume of European imports.

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1979

(b) Approval of funding by: 1980

(c) Completion of engineering by: 1981

(d) Start of project construction by: 1982

(e) Completion of project by: 1984

5. Financing Plan: U.S. $15,000,000 (Based on U.S. $210,000/km for similar project in Jordan: Amman-Wadi Seer Highway widening)

(a) Total cost of project: $15,000,000

(b) Foreign exchange cost of project: $6,000,000

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1982	2	3	5
1983	2	3	5
1984	2	3	5

(d) Status of project in development: conceptual

(e) Status of project in development plan and budget: Not included.

(f) Status of aid commitment: None

6. Equipment Requirement: Heavy road construction

7. Consultant and Training Requirements: none

8. Estimates of Financial and Economic Rates of Return: Not available

9. Agency in charge of Planning and Project: Joint Israeli/Jordanian Agency

10. Agency or Agencies in Charge of Project Execution: Joint Israeli/Jordanian Agency.

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Regional

CATEGORY Regional

MODE: Multi-Modal

PRIORITY High

1. Name of Project:

Regional Transport Facilitation

2. Project Description

Assist in establishment and operation of task forces in each country to study customs and transit problems and identify means of improving the system of customs clearance and weight limitations.

Promote exchange of information between participating countries, including an annual regional conference.

3. Project Objectives, Benefits, and Justifications:

A labor intensive project with considerable potential for high payoff, this project is intended to stimulate regional commerce and protect roads by regularizing customs formalities, by reducing transit time across borders and by enforcing weight limitations.

Management and technical assistance inputs will be directed to seaport and airport customs formalities and procedures, to customs operations at border crossings, and to load limit restrictions and their enforcement.

The potential savings that might accrue, though not yet quantified, could be substantial. Reducing the time required for customs clearance, standardizing forms preparation, and minimizing damage to road surfaces are three avenues by which cost reductions in international cargo movements could be achieved.

4. Conceivable Project Timing

(a) Completion of feasibility study by: mid 1979

(b) Approval of funding by: end 1979

(c) Completion of engineering by:

(d) Start of project by: end 1979

(e) Completion of project by: early 1984

5. Financing Plan:

(a) Total cost of project: $500,000

(b) Foreign exchange cost of project: $360,000

(c) Financial requirements by year (cash flow analysis, foreign exchange and local currency)

Year	Foreign Exchange	Local Currency	Total
1979	40,000	10,000	50,000
1980	90,000	35,000	125,000
1981	90,000	35,000	125,000
1982	60,000	25,000	85,000
1983	50,000	20,000	70,000
1984	30,000	15,000	45,000

(d) Status of project in development:

Can reduce bottlenecks and encourage freer trade flow.

(e) Status of project in development plan and budget:

None

(f) Status of aid commitment:

None

6. Equipment Requirement:

Perhaps a staff vehicle

7. Consultant and Training Requirements:

Technical services, training, travel, and international conference support costs are principal elements.

8. Estimates of Financial and Economic Rates of Return:

Likely to be relatively high, for the investment

9. Agency in Charge of Planning the Project:

Customs Departments, with AID support

10. Agency or Agencies in Charge of Project Execution:

Customs Departments

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Regional

PROJECT CATEGORY Regional

MODE: Water Transport

RANKING High

1. Name of Project:
   Coastal Shipping Facilitation

2. Project Description:
   Trig/barge or similar system for moving Ro-Ro, container or bulk cargoes between Mid-East countries and to other Mediterranean ports.

3. Project Objectives, Benefits, and Justifications:
   Coastal Maritime Trade Project
   A study of the changing face of international shipping in the Mid-East region in the content of new trade patterns is likely to reveal opportunities for investment in coastal maritime transport services. This could provide improved lower-cost water transport of container, Ro-Ro and bulk cargoes to improve the competitiveness of regional products in regional markets. It might also facilitate trade between Mid-Eastern and other Mediterranean countries and Europe.

4. Conceivable Project Timing:

   (a) Completion of feasibility study by: 1980

   (b) Approval of funding by: 1979

   (c) Completion of engineering by: - -

   (d) Start of project by: 1979

   (e) Completion of project by: 1981

5. Financing Plan:

(a) Total cost of project: $1.5 million

(b) Foreign exchange cost of project: $1.0 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1979	330,000	170,000	500,000
1980	330,000	170,000	500,000
1981	330,000	170,000	500,000

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement:

Vehicle for consultant transportation

7. Consultant and Training Requirements:

Almost 100% of funds go to consultant costs and in-service training of nationals at the mid-management level

8. Estimates of Financial and Economic Rates of Return:

Probable return on investment in trig/barge or other marine transport system would be quantified at the feasibility study stage.

9. Agency or Agencies in Charge of Project:

Establish a Regional Committee, supported by consultants and technical assistance.

10. Agency or Agencies in Charge of Project Execution:

Regional Martime Trade Committee

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY Inter-Country

MODE: Road

RANKING High

1. Name of Project:

Sinai Perimeter Road

2. Project Description:

Improvements to civilian standards of grades, width and alignment of the military Sinai perimeter road from El Qantara to Sharm el Sheikh (400 kms) and from Eilat to Sharm el Sheikh (200 kms).

3. Project Objectives, Benefits, and Justifications:

This road improvement project would generate savings in vehicle operating costs for the tourist bus, commercial truck, and passenger car traffic expected to materialize along the perimeter. In addition, the project would encourage traffic growth.

4. Conceivable Project Timing:

(a) Completion of feasibility study by: 1979

(b) Approval of funding by: mid 1980

(c) Completion of engineering by: end 1980

(d) Start of project construction by: 1981

(e) Completion of project construction by: 1983

5. Financing Plan:

(a) Total cost of project: $120 Million

(b) Foreign exchange cost of project: $30 Million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1981	10	30	40
1982	10	30	40
1983	10	30	40

(d) Status of project in development: Conceptual.

(e) Status of project in development plan and budget: None.

(f) Status of aid commitment: None.

6. Equipment Requirement: Heavy road construction equipment.

7. Consultant and Training Requirements: Consultant for feasibility study.

8. Estimates of Financial and Economic Rates of Return: Not completed.

9. Agency in charge of Planning and Project: None.

10. Agency or Agencies in Charge of Project Execution: None.

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Israel/Jordan

PROJECT CATEGORY Inter Country

MODE: Railroad

RANKING Average

1. Name of Project:
   Railroad-Dead Sea to Gulf of Aquba

2. Project Description:
   165 kilometers. Single track, standard gauge, diesel trains with 20 tonnable load capacity.

3. Project Objectives, Benefits, and Justifications:
   Objective is to carry potash and other freight from the Dead Sea to the seaport at Eilat for export. It would take 3 million tons per year of freight in order to make the project feasible. The Israelis can generate only 1 1/2-2 million tons. It is possible that the Jordanians could generate another 1 million tons from their potash operations at the Dead Sea, in which case the project would be economically attractive.

4. Conceivable Project Timing:

   (a) Completion of feasibility study by:
   Israelis have done some study.

   (b) Approval of funding by:
   1980

   (c) Completion of engineering by:
   Mid-1982

   (d) Start of project construction by:
   Mid-1982

   (e) Completion of project construction by:
   1994

5. Financing Plan:

(a) Total cost of project: Estimated to be $41 million (165 kms. at $250,000 per km.

(b) Foreign exchange cost of project: $16 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1982	2	3	5
1983	7	11	18
1984	7	11	18

(d) Status of project in development: None

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement: Rail construction

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: Not completed

9. Agency in charge of Planning and Project: Joint Israeli/Jordanian agency

10. Agency or Agencies in Charge of Project Execution: Joint Israeli/Jordanian agency

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Gaza Strip

PROJECT CATEGORY Inter Country

MODE: Port

RANKING Low

1. Name of Project: Gaza Port

2. Project Description: This project involves construction of a new small port to accommodate 3 to 4 coastal vessels, with a quay of about 500 meters length and a depth of about 7 meters.

3. Project Objectives, Benefits, and Justifications: The benefits of this project would be symbolic in that the West bank and Gaza would have an independent port connection with the Mediterranean. This port could also be used by the other Arab states, especially Jordan and Egypt. Economic benefits might accrue if the existing Israeli ports at Haifa and Ashdod reach the limits of their capacity. An intensive feasibility study considering the total Mid-East region would be required to establish the feasibility of this investment.

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1980

(b) Approval of funding by: Mid-1981

(c) Completion of engineering by: 1982

(d) Start of project construction by: 1983

(e) Completion of project construction by: 1985

5. Financing Plan:

(a) Total cost of project: $60 million

(b) Foreign exchange cost of project: $21 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1983	7	13	20
1984	7	13	20
1985	7	13	20

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement: Dredging and Port construction equipment

7. Consultant and Training Requirements: Consultants required for feasibility study and for detailed engineering.

8. Estimates of Financial and Economic Rates of Return: Not complete

9. Agency in charge of Planning and Project: None

10. Agency or Agencies in Charge of Project Execution: None

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY Local

MODE: Rail

RANKING High

1. Name of Project:
Purchase of locomotives, spares and improvement of the maintenance shops for the Egyptian railways

2. Project Description
This project would include the purchase of about 100 locomotives, emergency cranes and associated spares, and the improvement of existing workshops for repairing and rebuilding heavy handling equipment.

3. Project Objectives, Benefits, and Justifications:
There is a severe shortage of serviceable motive power in the Egyptian railways, primarily because of inadequate maintenance and the inability to rebuild locomotives. The project would replace the equipment that must be scrapped, and would put the future maintenance program on a sound basis. It would also provide the facilities and develop the technical ability for rebuilding heavy equipment.

4. Conceivable Project Timing

(a) Completion of feasibility study by:
1980

(b) Approval of funding by:
mid-1981

(c) Completion of engineering by:

(d) Start of project construction by:
first equipment orders in mid-1981

(e) Completion of project construction by:
equipment purchased by 1984

5. Financing Plan:

(a) Total cost of project:
$128 million

(b) Foreign exchange cost of project:
$100 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1981	2	6	8
1982	38	2	40
1983	30	10	40
1984	30	10	40

(d) Status of project in development:
Conceptual

(e) Status of project in development plan and budget:
None

(f) Status of aid commitment:
None

6. Equipment Requirement:
None

7. Consultant and Training Requirements:
Intensive training in equipment maintenance and rebuilding.

8. Estimates of Financial and Economic Rates of Return:
Not complete

9. Agency in charge of Planning and Project:
Probably will be Egyptian Railway Admin. (ERA)

10. Agency or Agencies in Charge of Project Execution:
Probably the ERA

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY Local

MODE: Rail line

RANKING High

1. Name of Project: Alexandria Urban Transport

2. Project Description

a. Purchase of 200 buses
b. Purchase of 10 train units.
c. Completion of workshops, garages, warehouses.

3. Project Objectives, Benefits, and Justifications: The present fleet is working at its full capacity and there is an urgent need for additional units to satisfy the increasing demand. Also, there is a great need for constructing workshops in order to cope with rebuilding and maintenance needs.

The project aims at increasing passenger transport capacity from 448 million passengers in 1977 to 550 million in 1982.

4. Conceivable Project Timing

(a) Completion of feasibility study by: Done

(b) Approval of funding by:

(c) Completion of engineering by: Done

(d) Start of project construction by: 1978

(e) Completion of project construction by: 1982

5. Financing Plan:

(a) Total cost of project: $41 million

(b) Foreign exchange cost of project: $21 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1978	1	2	3
1979	5	5	10
1980	5	5	10
1981	5	5	10
1982	5	4	9

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: Included in the Five-Year Plan (1978-1982)

(f) Status of aid commitment: None

6. Equipment Requirement: None

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: Not yet completed

9. Agency in charge of Planning and Project: Alexandria Public Transport Authority (A.P.T.A.)

10. Agency or Agencies in Charge of Project Execution: A.P.T.A.

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY Local

MODE: Ports

RANKING High

1. Name of Project: Port of Alexandria Improvements

2. Project Description:

a) Improvement of port's facilities:
   i) Provide new docks
   ii) Loading and unloading equipment
   iii) Automatic devices for ship movement

b) Balancing the water and land area connection: i) provide access to inland waterways to remove cargo from the ports.
   ii) Improve accessibility of the rail system to the port of Alexandria

c) Creation of a freight center.

3. Project Objectives, Benefits, and Justifications:

Such improvements will help to avoid the present congestion problem, which involves transport and time costs. The capacity of the port will increase from 11 million to 16.1 million ton/yr. The improvement of rail access will help remove cargo from the port without use of additional land and storage facilities. The highway system now carries 83% of the total tonnage transported from the port to Cairo and other cities. Much of the cargo is of such a nature that it could be transported at a lower cost by railway or inland waterway. The projected demand for the service of this port is shown in Table I.

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1980

(b) Approval of funding by: Mid-1981

(c) Completion of engineering by: 1982

(d) Start of project construction by: 1983

(e) Completion of project construction by: 1985

5. Financing Plan:

(a) Total cost of project: $112 million

(b) Foreign exchange cost of project: $50

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1983	5	7	12
1984	20	30	50
1985	25	25	50

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement: Dredging, heavy construction equipment and floating equipment.

7. Consultant and Training Requirements: Consultants for feasibility study

8. Estimates of Financial and Economic Rates of Return: Not completed

9. Agency in charge of Planning and Project: Probably the Alexandria Port Authority

10. Agency or Agencies in Charge of Project Execution: Alexandria Port Authority

TABLE I

Forecasted Service of Alexandria Port

(In thousands of Metric tons)

Type of Cargo	1980	1985	2000
I. General	1754	1383	7207
II. Neo-Bulk	1097	995	2091
III. Special	875	507	1347
IV. Dry-Bulk	4552	4780	14661

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY: Local

MODE: Road

RANKING: High

1. Name of Project: Nile Delta Rural Road Paving

2. Project Description: This project consist of paving approximately 117 km of rural roads in the Nile Delta.

3. Project Objectives, Benefits, and Justification: About 20% of the small rural roads in the Nile Delta have sufficient traffic levels to justify an all weather pavement. These roads are used mostly by small and low-income farmers who would be the direct beneficiaries of the project.

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1980

(b) Approval of funding by: Mid-1981

(c) Completion of engineering by: End-1980

(d) Start of project construction by: 1981

(e) Completion of project construction by: 1982

5. Financing Plan:

(a) Total cost of project: $10 million

(b) Foreign exchange cost of project: $1 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1981	.5	4.5	5
1982	.5	4.5	5

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement: Simple road paving equipment

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: Not available

9. Agency in charge of Planning and Project: None

10. Agency or Agencies in Charge of Project Execution: None

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY: Local

MODE: Light Rail

RANKING: High

1. Name of Project.

Heliopolis Metro.

2. Project Description
   a. Rebuild existing units.
   b. Extension of lines.
   c. Extension of workshops to cope with the maintenance requirements for the new units.
   d. Purchase of new units.
   e. Construction of workshops and garages.

3. Project Objectives, Benefits, and Justifications:

The present fleet is working at its full capacity and there is an urgent need for additional units to satisfy the increasing demand, generated from:

a. Expected increase in tourism.
b. Urbanization.

Also, there is a great need to develop the existing workshops in order to cope with rebuilding and maintenance needs.

4. Conceivable Project Timing

(a) Completion of feasibility study by:

(b) Approval of funding by: done.

(c) Completion of engineering by: done.

(d) Start of project construction by: 1978.

(e) Completion of project construction by: 1982.

5. Financing Plan:

(a) Total cost of project: $50 million.

(b) Foreign exchange cost of project: $25 million.

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1979	6.25	6.25	12.5
1980	6.25	6.25	12.5
1981	6.25	6.25	12.5
1982	6.25	6.25	12.5

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget:
It is included in the Five Year Plan (1978-1982).

(f) Status of aid commitment: Not known

6. Equipment Requirements:

No special requirements

7. Consultant and Training Requirements:

probably none

8. Estimates of Financial and Economic Rates of Return:

not available

9. Agency in charge of Planning and Project:
Heliopolis Metro Co. (H.M.C.)

10. Agency or Agencies in Charge of Project Execution:
H.M.C.

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Israel

PROJECT CATEGORY Local

MODE: Railroad

RANKING High

1. Name of Project: Purchase of rolling stock

2. Project Description: Purchase of locomotives and all types of freight cars as demand warrants.

3. Project Objectives, Benefits, and Justifications: Additional rolling stock will be needed in Israel in the short-to medium term. Record cotton crops have been achieved in Galilee using new irrigation techniques. Dead Sea potash sales rose 72% in 1977 and will achieve large increases in the medium term. Industrial exports were up 20% in 1977, agricultural exports rose 30% in 1977. These figures are expected to be repeated over the medium term (3-5 years). This may portend a need for increased railroad capacity.

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1980

(b) Approval of funding by: Mid-1981

(c) Completion of engineering by: 1981 (Selection of supplier)

(d) Start of project construction by: 1983 (First deliveries)

(e) Completion of project construction by: 1985 (completion of deliveries)

5. Financing Plan:

(a) Total cost of project: Total cost of project: 2,200 horsepower locomotives cost $500,000 (1979 price) each. General freight boxcars cost $38,000 (1979 price) each. Average price of all types of boxcars is $32,000 (1978 price) each. Total cost estimated at $40 million.

(b) Foreign exchange cost of project:

$30 million

(c) Financial requirements by year: (Cash flow analysis, foreign exchange and local currency)

Year	Foreign Exchange	Local Currency	Total
1983	5	5	10
1984	12	3	15
1985	13	2	15

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement: None

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: None

9. Agency in charge of Planning and Project: None

10. Agency or Agencies in Charge of Project Execution: None

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY Local

MODE: Light Rail

RANKING High

1. Name of Project:

Urban Passenger Transport for Cairo

2. Project Description

a. Additional units for the present fleet.

b. Develop the existing workshops.

c. Meet needs for rebuilding and maintaining the existent rail line in order to meet future transport demand.

3. Project Objectives, Benefits, and Justifications:

A commuting problem has been developing in Egypt's main urban centers, especially in the Cairo vicinity, due to the increased mobility of workers.

Industrialization has causes a large number of villagers to commute to towns to work, while urban workers are often forced by the housing crisis to work far from their jobs. Even school children and university students face the prospect of commuting to class.

An example of this proposed project which should be taken into consideration for all the main urban centers of Egypt is the Helwan surburban rail line. This line carries 10 million passengers a year between the tiny three-platform terminal at Bab-al-Loug in Cairo and the Helwan industrial complex to the south. Arriving at Bab-al-Loug in the evening, most of these workers catch buses to the northern suburbs of Shobra and Shobra al-khaima, a daily journey of 100km.

A further justification for the above mentioned project is a new urban district which is being built at Helwan to house workers who form a significant part of 2 million or so people who move in and out of Cairo each day. However, the net effect of the new town construction on Cairo-Helwan commuting is not presently known.

Perhaps this specific line or other similar line could be integrated with the proposed Cairo subway system.

4. Conceivable Project Timing

(a) Completion of feasibility study by: Done

(b) Approval of funding by:

(c) Completion of engineering by: Done

(d) Start of project construction by: 1978

(e) Completion of project construction by: 1982

5. Financing Plan:

(a) Total cost of project: $420 million

(b) Foreign exchange cost of project: $244 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1978	11	16	27
1979	58	40	98
1980	58	41	99
1981	59	39	98
1982	58	40	98

(d) Status of project in development and funding:

(e) Status of project in development plan and budget:

The project is included in the Five-year Plan (1978-1982)

(f) Status of aid commitment:

6. Equipment Requirement:

rail line construction equipment

7. Consultant and Training Requirements:

None

8. Estimates of Financial and Economic Rates of Return:

Not available

9. Agency in charge of Planning and Project:
Cairo Transport Authority (C.A.T.)

10. Agency or Agencies in Charge of Project Execution:

C.A.T.

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY: Local

MODE: Inland Waterways

RANKING: High

1. Name of Project: Inland Waterways Improvement

2. Project Description: Improve the capacity of Egypt's inland waterways (Nobaria and Beheira canals, Nile river) by dredging, widening, constructing locks, bank protection, increasing and modernizing the barge fleet, and upgrading workshops.

3. Project Objectives, Benefits, and Justifications: Capacity constraints in the inland waterway system of Egypt are such that much of the traffic that would normally be carried by inland waterway because of its low cost will travel by highway instead. This results in higher-than-necessary transportation costs, especially with the projected increase in transport demand for bulk commodities such as wheat and phosphates.

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1980

(b) Approval of funding by: 1981

(c) Completion of engineering by: 1982

(d) Start of project construction by: 1983

(e) Completion of project construction by: 1985

5. Financing Plan:

(a) Total cost of project: $78 Million

(b) Foreign exchange cost of project: $30 Million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1983	10	16	26
1984	10	16	26
1985	10	16	26

(d) Status of project in development: Identified in Egypt's 5 Year Plan

(e) Status of project in development plan and budget: Not approved

(f) Status of aid commitment: None

6. Equipment Requirement: Dredging equipment

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: Not completed

9. Agency in charge of Planning and Project: Probably Roads and Waterways Authority

10. Agency or Agencies in Charge of Project Execution: Probably the Road and Waterways Authority

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Israel

PROJECT CATEGORY Local

MODE: Aviation

RANKING Medium

1. Name of Project: Study of traffic growth at Ben Gurion Airport (Tel Aviv) to determine need for increased capacity.

2. Project Description: Study of traffic growth and airport expansion requirements.

3. Project Objectives, Benefits, and Justifications: Even without any prospects of peace, El Al's traffic is projected to increase significantly - 20% a year for agricultural exports, 15% over the next 5 to 7 years for general cargo. The number of passengers carried in 1978 is forecasted to be 18% greater than the number in 1977. This may portend a need to increase the capacity of Ben Gurion airport

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1980

(b) Approval of funding by: Mid-1981

(c) Completion of engineering by: 1982

(d) Start of project construction by: 1983

(e) Completion of project construction by: 1985

5. Financing Plan:

(a) Total cost of project: $30 million

(b) Foreign exchange cost of project: $10 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1983	3	7	10
1984	4	6	10
1985	3	7	10

(d) Status of project in development: Active Consideration by Israeli's

(e) Status of project in development plan and budget: None

(f) Status of any commitment: None

6. Equipment Requirement: Heavy construction equipment

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: Not completed

9. Agency in charge of Planning and Project: None selected

10. Agency or Agencies in Charge of Project Execution: None selected

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY Local

MODE: Rail

RANKING Medium

1. Name of Project:
El Kharga - Qena - Safaga rail line

2. Project Description
This project would consist of a newly constructed single tract standard gauge rail line from the phosphate deposits in El Kharga via the Nile City of Qena(230 km) to the Port of Safaga (140 km) on the Red Sea.

3. Project Objectives, Benefits, and Justifications:
This project appears to provide the least cost transport solution for exploiting the phosphate deposits at El Kharga in the Western desert. (However, the detailed feasibility study should also consider the alternative of barging the mine products from Qena to a Mediterranean port). In addition, the Qena-Safaga link might stimulate the economy in the upper Nile area. Beneficiaries of the project would be mostly the mine operators. It may also enable expansion of production in the mines thereby creating additional employment.

4. Conceivable Project Timing

(a) Completion of feasibility study by:
1980

(b) Approval of funding by:
mid 1981

(c) Completion of engineering by:
1983

(d) Start of project construction by:
1984

(e) Completion of project construction by:
1986

5. Financing Plan:

(a) Total cost of project:
$90 million

(b) Foreign exchange cost of project:
$30 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1984	10	20	30
1985	10	20	30
1986	10	20	30

(d) Status of project in development:
Conceptual

(e) Status of project in development plan and budget:
None

(f) Status of aid commitment:

6. Equipment Requirement:

Heavy rail construction equipment

7. Consultant and Training Requirements:

Consultant probably required for feasibility study, and for part of the detailed engineering.

8. Estimates of Financial and Economic Rates of Return:

Not completed

9. Agency in charge of Planning and Project:

None

10. Agency or Agencies in Charge of Project Execution:

None--

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt PROJECT CATEGORY Local

MODE: Aviation RANKING Low

1. Name of Project: Aswan Airport

2. Project Description:
   a) Constructing an extension to the passenger building
   b) Paving roads inside and outside the airport area.
   c) Reinforcing the runway
   d) Extending the apron

3. Project Objectives, Benefits, and Justifications: After undertaking these projects the capacity of the airport will increase to the point that future demand will be adquately met. International traffic is expected to continue to increase particularly if the current relative degree of stability in the Middle East is maintained or improved.

4. Conceivable Project Timing

   (a) Completion of feasibility study by: Done

   (b) Approval of funding by: status unknown

   (c) Completion of engineering by: Done

   (d) Start of project construction by: 1978

   (e) Completion of project construction by: 1980

5. Financing Plan:

(a) Total cost of project: $3 million

(b) Foreign exchange cost of project: $1 Million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1975	0	1	1
1979	.5	.5	1
1980	.5	.5	1

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: In consideration

(f) Status of aid commitment: None

6. Equipment Requirement: Earth moving equipment

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: Not avialable

9. Agency in charge of Planning and Project: Not known

10. Agency or Agencies in Charge of Project Execution: Not known

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY Local

MODE: Ports

RANKING Low

1. Name of Project: Damietta Port

2. Project Description: Construction of a new port that will serve the needs of the eastern side of the Nile Delta principally for timber and grain. The expected trans-shipment of cargo is: 300,000 tons/year in the first stage; second stage, 3 million; third stage 6 million 1/. The estimated service of the port is shown in Table 1.

3. Project Objectives, Benefits, and Justifications: This new dry-bulk port would provide the additional capacity for timber and grain movements that cannot be economically handled by expansion of existing ports. Benefit would be mostly in the area of reduced harbor concestion. The faster ship turn-around time will reduce vessel operating costs, and if these savings are passed on to the Egyptian economy, the cost of timber in housing and the cost of food grains may well be lower. The low-income groups in Egypt would then constitute a large proportion of the beneficiaries.

4. Conceivable Project Timing

(a) Completion of feasibility study by: July 1979

(b) Approval of funding by: not known

(c) Completion of engineering by: July 1980

(d) Start of project construction by: July 1981

(e) Completion of project construction by: First stage 1985

5. Financing Plan:

(a) Total cost of project: First stage - $350 million

(b) Foreign exchange cost of project: $240 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1981	75	12	87
1982	150	50	200
1983	150	50	200
1984	150	50	200
1985	75	112	187

(d) Status of project in development: Studies committed

(e) Status of project in development plan and budget: Studies committed, construction not yet.

(f) Status of aid commitment: None

6. Equipment Requirement: Floating, mobile and cargo handling equipment.

7. Consultant and Training Requirements: Not yet known.

8. Estimates of Financial and Economic Rates of Return: Not yet known.

9. Agency in charge of Planning and Project: Ports and lighthouses adm.

10. Agency or Agencies in Charge of Project Execution: Ports and lighthouses adm.

TABLE I

Forecasted Service by Damietta Port

(In thousands of Metric tons)

Type of Cargo	1980	1985	2000
I. General Cargo	-	1399	6749
II. Neo-Bulk Cargo	-	867	2083
III. Special Cargo	-	1626	3952
IV. Dry Bulk Cargo	-	1019	3958

1/ The prefeasibility study leaves some major questions outstanding:

a) The coastal engineering implication, i.e., whether the observed coastal erosion will jeopardize the harbor entrance and whether the annual dredging costs for removing the sand deposited by the littoral drift and surf will be accepted or become prohibitive.

b) The hinterland connections. The existing railway and road connections would be inadequate for the additional transport needs and the Damietta branch of the Nile River is unsuitable for modern river craft, mainly because of low and narrow bridges which would have to be replaced by new ones with greater clearance.

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY Local

MODE: Ports

RANKING Low

1. Name of Project: Port of Safaga

2. Project Description : Construction of bulk handling facilities in order to accommodate the transport and storage of phosphate output.

3. Project Objectives, Benefits, and Justifications: In general the port of Safaga could become a regional center of economic activity and the major Red Sea outlet for Upper Egypt. The improvement of hinterland connections combined with the power potential at Aswan can provide significant development consequences for Upper Egypt. The main objective of this project is to accommodate the need for transporting phosphate from the large phosphate deposits in the Western Desert near Abu-Tartous to the Port of Safaga for export.

Beneficiaries - mine operators, transporters, general economy

Type benefit - savings in transport costs and induced economic development

4. Conceivable Project Timing

(a) Completion of feasibility study by: Completed January 1977

(b) Approval of funding by: Mid-1980

(c) Completion of engineering by: 1981

(d) Start of project construction by: 1982

(e) Completion of project construction by: 1983

5. Financing Plan:

(a) Total cost of project: $7 million

(b) Foreign exchange cost of project: $2 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1982	1	2.5	3.5
1983	1	2.5	3.5

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement: Dredging equipment

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: Not Complete

9. Agency in charge of Planning and Project: None

10. Agency or Agencies in Charge of Project Execution: None

Note:

In order for the Port of Safaga to accommodate all the above mentioned demand, the hinterland connections should be improved. A number of such improvements would be the following:

a) Construction of a railway from Abu-Tartous via Quena in the Nile Valley to Safaga in order to accommodate the need for transporting phosphates from the site to the port for export. The deposits of phosphate can well be many times bigger than the estimated 1,000 million tons figure. The main drawbacks to exploiting the phosphate reserves have been the following:

   i) Low quality of ore - 26 phosphoric pentoxide

   ii) The distance for utilities and transport network length

   iii) World decline in phosphate price but projections for 1990's indicate that world demand for phosphate will rise especially in the developing countries of South and East Asia.

b) Improving the road (165 km) that connects the port with the closest area of significant economic activity, the Nile Valley.

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY Local

MODE: Ports

RANKING Low

1. Name of Project: Dekheila Port

2. Project Description: Construction of:

   a) Special pier with deep water for very large carriers
   b) Four container cranes (this type of cargo packaging is becoming very popular in Middle East Ports. Each of these cranes is estimated to cost $3 million.1/
   c) Four container berths
   d) Construction of jetties
   e) Five general cargo berths

   1/ 50% of cargo comes in boxes or trailers

3. Project Objectives, Benefits, and Justifications: It will increase the total capacity of the port by 5.5 million tons per year of general cargo, to cope with the expected expansion of foreign traffic and avoid congestion. (See Table 1) Also, the idea for construction of this container port came after a proposal made by an industrial group to establish near the city of Dekheila a sponge iron plant to be supplied by imported ore via a special pier with deep water for very large ore carriers. The annual capacity of this steel complex is estimated to be close to 4.5 million tons/yr.

4. Conceivable Project Timing

   (a) Completion of feasibility study by: July 1978

   (b) Approval of funding by: not known

   (c) Completion of engineering by: 1979

   (d) Start of project construction by: February 1980

   (e) Completion of project construction by: Stage I - 1985

5. Financing Plan:

(a) Total cost of project: Stage I: $350 million

(b) Foreign exchange cost of project: $240 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1980	162	12	175
1981	100	50	150
1982	75	75	150
1983	100	50	150
1984	100	50	150
1985	62	37	100

(d) Status of project in development: General layout of 40 million in tons/capacity agreed.

(e) Status of project in development plan and budget: Steel complex in 5-yr plan and budget, rest of port not yet committed.

(f) Status of aid commitment: None

6. Equipment Requirement: Floating mobile and cargo handling equipment

7. Consultant and Training Requirements: Not yet known

8. Estimates of Financial and Economic Rates of Return: Not yet known

9. Agency in charge of Planning and Project: Alexandria Port Authority

10. Agency or Agencies in Charge of Project Execution: Alexandria Port Authority

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY Local

MODE: Ports

RANKING Low

1. Name of Project: New Adabiyah Port and Floating Equipment for Suez Port

2. Project Description:

a) Improvement of both ports
b) Rehabilitation of equipment for Suez Port
   i) 3-tug/fire fighting boats
   ii) 2 floating cranes
   iii) Small craft
c) Improvement of the ports' hinterland connections; as an example, a new rail-line should be built between Fayed and Qarb El Hag.

3. Project Objectives, Benefits, and Justifications: A master plan has been carried out, resulting in proposals for further development of Suez and Adabiya. The plan treats the two ports as a whole and the proposals of the study thus distributes the different port activities to both Suez and Adabiya. The main objective is to increase the capacity of Red Sea Ports by 3 million tons.

4. Conceivable Project Timing

(a) Completion of feasibility study by: Dec. 1973, Suez: already done

(b) Approval of funding by: not known

(c) Completion of engineering by: Dec. 1978

(d) Start of project construction by: 1979

(e) Completion of project construction by: First stage 1984: Suez: within 6 months.

5. Financing Plan:

(a) Total cost of project: $200 million (for Suez only)

(b) Foreign exchange cost of project: $150 million (for Suez only)

(c) Financial requirements by year.

Year	Foreign Exchange	Local Currency	Total
1980	124	12	137
1981	99	49	150
1982	100	25	125
1983	100	25	125
1984	-	25	25

(d) Status of project in development: Feasibility and engineering underway by consultants.

(e) Status of project in development plan and budget: It is included

(f) Status of aid commitment: None

6. Equipment Requirement: Mobile and handling equipment

7. Consultant and Training Requirements: Not yet known; Suez, not required

8. Estimates of Financial and Economic Rates of Return: Not yet known

9. Agency in charge of Planning and Project: Ports and lighthouse administration

10. Agency or Agencies in Charge of Project Execution: Ports and lighthouse administration

PROJECT BRIEF FOR THE MID-EAST PROJECT

COUNTRY: Egypt

PROJECT CATEGORY: Local

MODE: Aviation

RANKING: Low

1. Name of Project:

Cairo International Airport

2. Project Description

The plan for this airport consists of a fairly large number of relatively small items which are responsive to real needs. A summary of the plan, with a total proposed expenditure of $20 million, is shown in Table 1.

3. Project Objectives, Benefits, and Justifications:

(Where possible give quantitative estimates for major outputs and evaluation). The only large item of the proposed list with high priority is the construction of a new passenger terminal. The terminal reportedly will have a capacity of about 5-million passengers per year in 1980, in addition to the present terminal which can accommodate well over a 2 million. The planned ultimate capacity would be 10 million passengers per year. The traffic at Cairo (1975) totalled about 2.6 million and the forecast for 1980 indicates approximately 5 million. Revenues accruing from tourism rose by 64.4% in 1977. It is estimated that they will almost double by 1980. U.S. and European tourists increased by over 16 in 1977. It is estimated without taking into account the expected tourism from Israel, that the total number of tourists will double by 1980. Such expected statistics justify the above proposed projects.

4. Conceivable Project Timing

(a) Completion of feasibility study by: done

(b) Approval of funding by: Not yet approved

(c) Completion of engineering by: done

(d) Start of project construction by: 1978

(e) Completion of project construction by: 1982

5. Financing Plan:

(a) Total cost of project: Approximately $20 million (See Table)

(b) Foreign exchange cost of project: Approximately $12 million

(c) Financial requirements by year (cash flow analysis, foreign exchange and local currency)

Year	Foreign Exchange	Local Currency	Total
1978			
1979			
1980			
1981	SEE TABLE 1, Attached		
1982			

(d) Status of project in development feasibility study completed

(d) Status of project in development plan and budget: yes

(e) Status of aid commitment: none

6. Equipment Requirement:

Earthmoving and construction machinery.

7. Consultant and Training Requirements:

Some expertise required in aviation feasibility studies.

8. Estimates of Financial and Economic Rates of Return:

Not completed

9. Agency in Charge of Planning and Project:

Cairo Airport Authority.

10. Agency or Agencies in Charge of Project Execution:

Cairo Airport Authority.

TABLE I

CAIRO INTERNATIONAL AIRPORT

INVESTMENT PLANS, 1976-1980

(000 $)

	1976	1977	1978	1979	1980	Total
I- Airport Improvement and Development						
Facilities for passengers on domestic lines	----	3500	1000	----	----	4500
Lighting for runway	1850	1200	----	----	----	3050
Tarmac Improvement	362	1250	937	----	----	2549
Repaving of Runway 5/23	----	----	750	----	----	750
Re-paving of Runway 16/34	437	375	----	----	----	812
Re-paving of adjacent roads, sidewalks	----	375	500	----	----	875
Completion of fences, parking area	25	250	----	----	----	275
Runway	75	325	----	----	----	400
Air conditioning	305	500	20	---	---	825
Telecommunication, radar	----	----	----	625	625	1250
Generator; cable renewal	----	----	125	125	1177	1427
Storage area and garage	----	75	250	----	----	325
Garbage trucks, cranes, etc.	270	375	125	62	62	894
Lorries (trucks) and pick-up trucks	----	250	50	50	62	412
Fire station equipment	----	750	250	----	----	1000
Tools and appliances	212	125	50	87	87	561
Automobile shelters	----	----	50	25	----	75
Research and studies	----	50	25	25	25	125
Total	3536	9400	4132	999	2038	20105

(cont'd.)

II- Replacement and Renewal						
New tower	1000	1050	----	----	----	2050
Lighting : Runway 5/23 and auxiliaries	----	325	----	----	----	325
Improvement of water and sewerage networks	25	----	[illegible]	50	137	517
Garbage incinerator	----	75	----	----	----	75
Utility Maintenance and improvement	350	170	75	75	75	745
Establish and improvement of telecommunications	----	1275	----	----	----	1275
Total	1375	2895	380	125	212	4987
III- Passenger facilities, Building No.2						
Passenger building	12	1400	7875	8000	7212	24500
Tarmac	----	----	1500	1250	1205	3955
Research and studies	92	50	----	37	----	180
Training of Planning Staff	12	----	----	----	----	12
Total	116	1450	9375	9287	8417	28647
Grand Total	5927	13745	13887	10411	10667	53739

Source : Cairo Airport Authority

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY Local

MODE: Road

RANKING Medium

1. Name of Project:

   Suez - Safaga Road Improvement

2. Project Description: This project consists of rehabilitating, reconditioning and reconstructing where necessary the 430 km long road along the West Coast of the Gulf of Suez, between Suez and Safaga.

3. Project Objectives, Benefits, and Justifications: This desert road connecting the coastal towns along the gulf of Suez between Port Suez and Port Safaga carries sufficient traffic to merit consideration of upgrading to it's original design standards. Benefits would be primarily in savings in vehicle operating costs, and these savings would be passed on to the low-income population in the road's zone of influence. Tourism may also be boosted in the area if the road is improved.

4. Conceivable Project Timing

   (a) Completion of feasibility study by: 1980

   (b) Approval of funding by: Mid-1981

   (c) Completion of engineering by: End-1981

   (d) Start of project construction by: 1982

   (e) Completion of project construction by: 1983

5. Financing Plan:

(a) Total cost of project: $7 million

(b) Foreign exchange cost of project: $1 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1982	.5	3	3.5
1983	.5	3	3.5

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement: Simple road construction equipment

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: Not available

9. Agency in charge of Planning and Project: None

10. Agency or Agencies in Charge of Project Execution: None

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt

PROJECT CATEGORY: Local

MODE: Road

RANKING: Medium

1. Name of Project: Strengthening and widening of main roads in Southern Egypt.

2. Project Description: This project consists of strengthening the pavement and widening the carriageway of 700 kms. of main roads in Southern Egypt.

3. Project Objectives, Benefits, and Justifications: About 90% of the main roads in southern Egypt carry sufficiently high traffic levels to be candidates for improvement. Strengthening and widening the pavements would reduce maintenance cost and travel time. The reduced maintenance cost savings would accrue directly to the government's income. Travel time reduction and vehicle operating cost savings would accrue to the low-income users of the roads.

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1980

(b) Approval of funding by: Mid-1981

(c) Completion of engineering by: End-1981

(d) Start of project construction by: 1982

(e) Completion of project construction by: 1983

5. Financing Plan:

(a) Total cost of project: $32 million

(b) Foreign exchange cost of project: $4 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1982	2	14	16
1983	2	14	16

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: not included

(f) Status of aid commitment: None

6. Equipment Requirement: Simple road construction equipment

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: Not yet available

9. Agency in charge of Planning and Project: None

10. Agency or Agencies in Charge of Project Execution: None

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Egypt PROJECT CATEGORY: Local

MODE: Road RANKING: High

1. Name of Project: Reconstruction and paving of primary roads, Nile Delta.

2. Project Description: This project consists of reconstruction and paving of 134 kms of primary roads in the Nile Delta.

3. Project Objectives, Benefits, and Justifications: About 60% of the total kilometrage of main roads in the densily populated Nile Delta have, because of poor maintenance and high traffic levels, deteriorated. Vehicle operating cost and journey time are therefore unnecessarily high. Road improvement would produce savings in transport costs and, because of the competitive nature of the Egyptian road transport industry, these savings would be passed on to the shipper and passengers using the roads. A large porportion of these users are in the low-income classes.

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1980

(b) Approval of funding by: Mid-1980

(c) Completion of engineering by: 1981

(d) Start of project construction by: 1981

(e) Completion of project construction by: 1983

5. Financing Plan:

(a) Total cost of project: $21 million

(b) Foreign exchange cost of project: $7 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1981	2	19	21
1982	3	18	21
1983	2	19	21

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement: Road construction machinery

7. Consultant and Training Requirements: Local resources probably sufficient

8. Estimates of Financial and Economic Rates of Return: None

9. Agency in charge of Planning and Project: None

10. Agency or Agencies in Charge of Project Execution: None

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Israel

PROJECT CATEGORY Local

MODE: Aviation

RANKING Medium

1. Name of Project: Feasibility study for planned International Airport Beersheba.

2. Project Description: Israel has planned an international airport to be built at Beersheba in 1990.

3. Project Objectives, Benefits, and Justifications. A new feasibility study may be needed to ascertain the capacity requirement and timing of construction of the planned airport. Given the latest estimates for tourism in the next 3-5 years this airport may: (1) need to have greater capacity, and/or (2) be built in the 1980's.
Benefits would accrue to the tourism industry and general economy.

4. Conceivable Project Timing

(a) Completion of feasibility study by: 1980

(b) Approval of funding by: 1981

(c) Completion of engineering by: 1985

(d) Start of project construction by: 1986

(e) Completion of project construction by: 1989

5. Financing Plan:

(a) Total cost of project: $60 million

(b) Foreign exchange cost of project: $20 million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1986	5	10	15
1987	5	10	15
1988	5	10	15
1989	5	10	15

(d) Status of project in development: Conceptual

(e) Status of project in development plan and budget: None

(f) Status of aid commitment: None

6. Equipment Requirement: Heavy construction equipment

7. Consultant and Training Requirements: None

8. Estimates of Financial and Economic Rates of Return: Not completed

9. Agency in charge of Planning and Project: None designated

10. Agency or Agencies in Charge of Project Execution: None designated

MID-EAST TRANSPORT SURVEY
PROJECT BRIEF

COUNTRY: Lebanon

PROJECT CATEGORY Local

MODE: Ports

RANKING High

1. Name of Project:

Beirut Port Reconstruction

2. Project Description:

Repair the damage done to the port caused by the civil war. Repairs will include new transit sheds and warehouses, break bulk cargo handling equipment, container and roll-on/roll-off equipment, and miscellaneous maintenance and marine equipment.

3. Project Objectives, Benefits, and Justifications:

This project has the objective of assisting the government in the reconstruction of the part following the damage caused by the civil war. The capacity of the port would be restored to pre-war level thereby removing a critical bottleneck for resumption of economic growth.

4. Conceivable Project Timing:

(a) Completion of feasibility study by:
1979

(b) Approval of funding by:
mid 1980

(c) Completion of engineering by:
end 1980

(d) Start of project construction by:
1981

(e) Completion of project construction by:
1982

5. Financing Plan:

(a) Total cost of project:
[illegible] million

(b) Foreign exchange cost of project:
[illegible] million

(c) Financial requirements by year:

Year	Foreign Exchange	Local Currency	Total
1981	[illegible]	[illegible]	15
1982			15

(d) Status of project in development:
conceptual

(e) Status of project in development plan and budget:
none

(f) Status of aid commitment:

6. Equipment Requirement:
No special equipment required

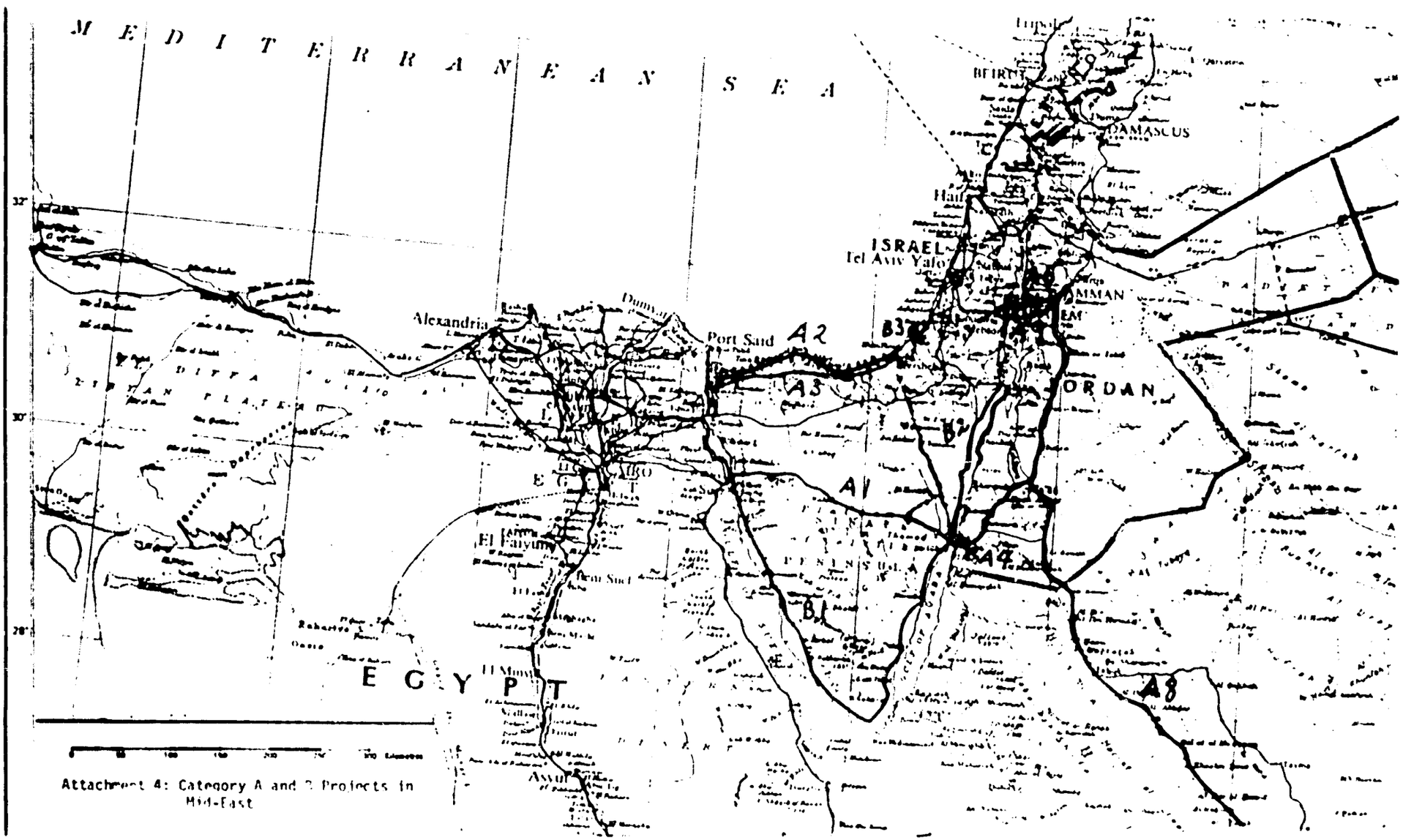
7. Consultant and Training Requirements:
Consultant required for feasibility study and detailed engineering.

8. Estimates of Financial and Economic Rates of Return:
None available

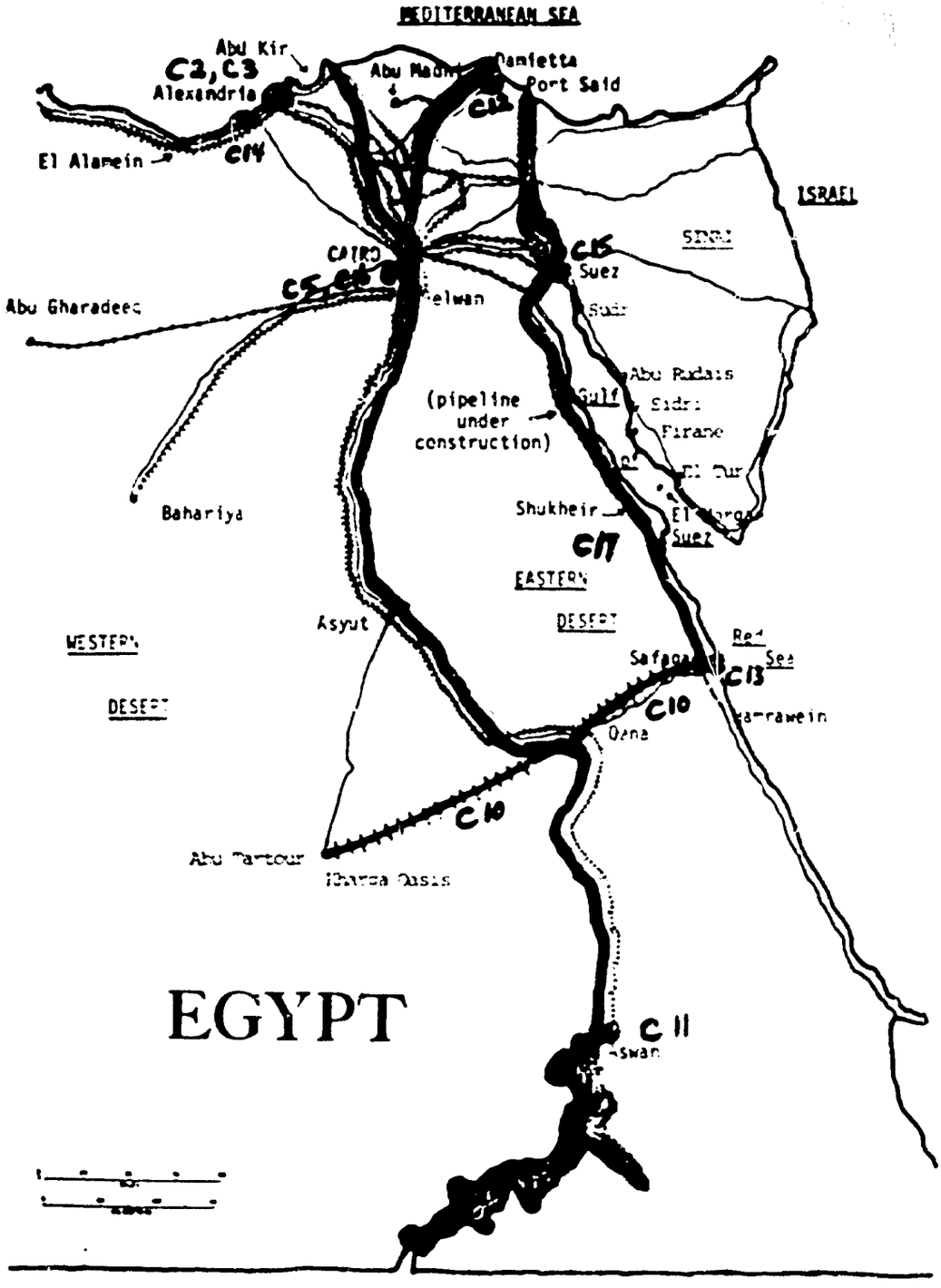
9. Agency or Agencies in Charge of Project:
Probably the Societe' de Gestion et d'Exploitation de Port de Beyrouth (SGE)

10. Agency or Agencies in Charge of Project Execution:

probably the SGE



Attachment 4: Category A and B Projects in Mid-East

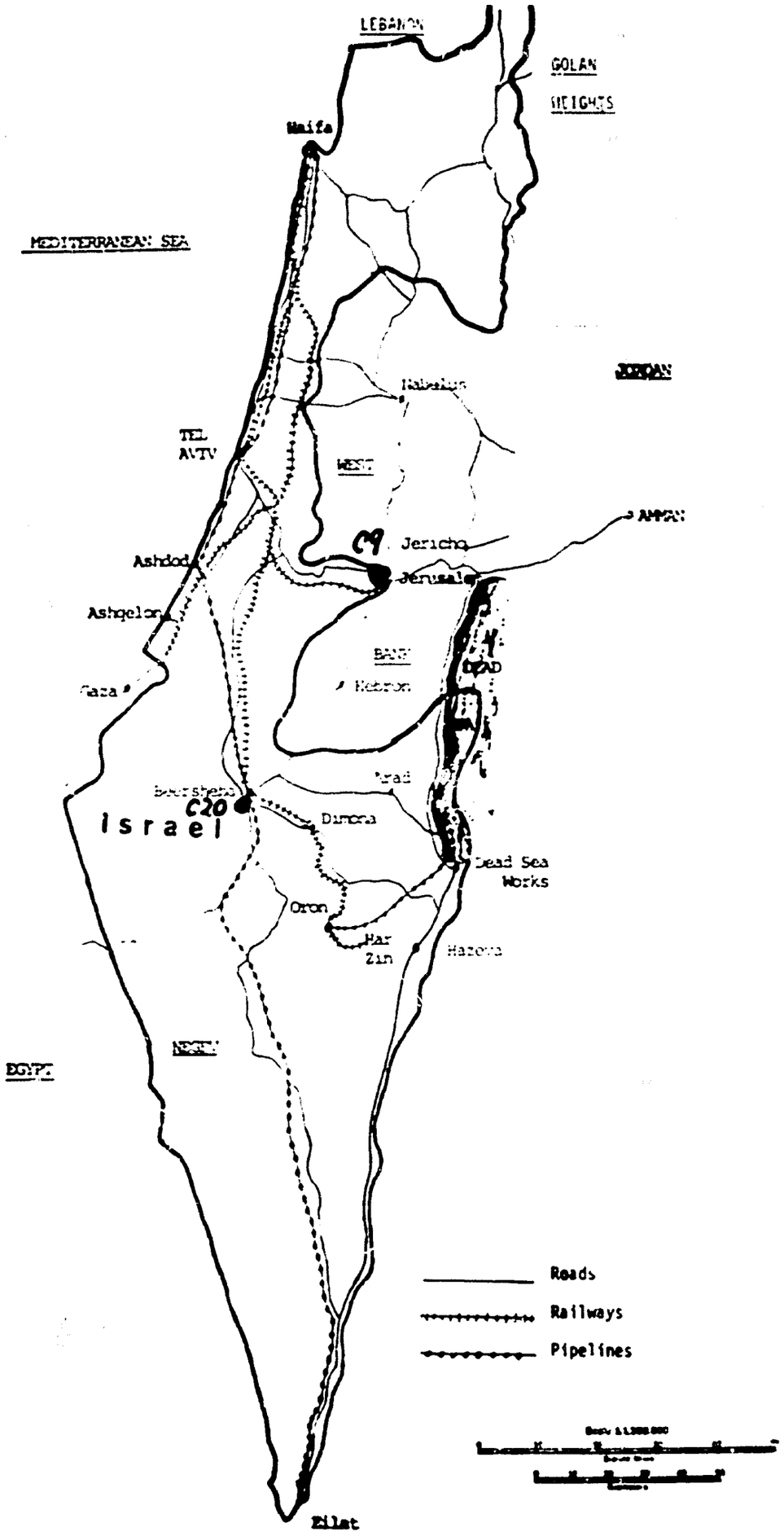


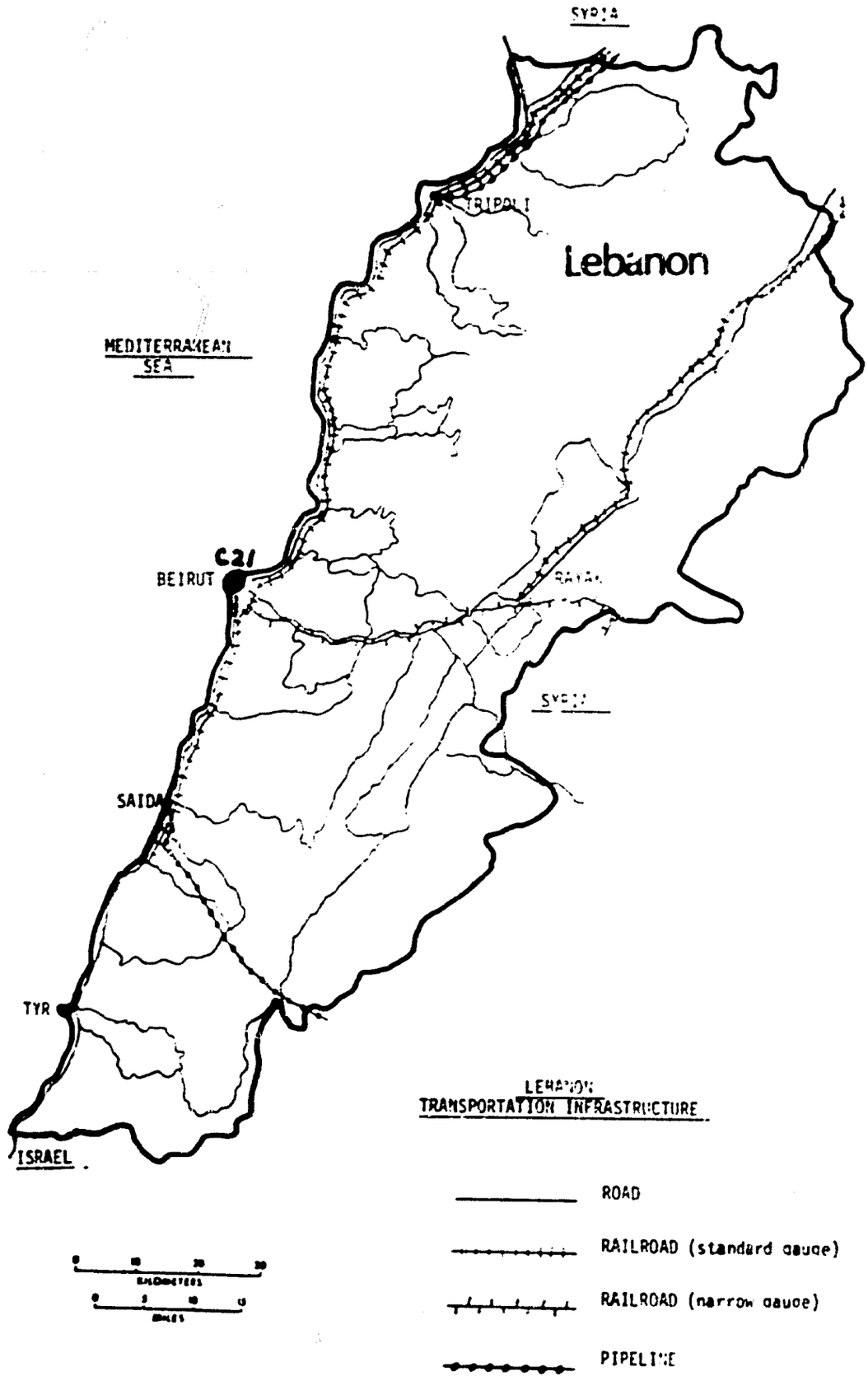
Attachment 4: Category C Projects in Egypt

Roads

Railways

Pipelines


LEBANON
GOLAN
HEIGHTS
Haifa
MEDITERRANEAN SEA
JORDAN
Nablus
TEL
AVIV
WEST
AMMAN
Jericho
Ashdod
Jerusalem
Ashqelon
BANK
Hebron
Gaza
Arad
Beersheba
Israel
Dimona
Dead Sea
Works
Oron
Har
Zin
Hazeva
NORTH
EGYPT
Eilat
Roads
Railways
Pipelines


SYRIA
TRIPOLI
Lebanon
MEDITERRANEAN SEA
C21
BEIRUT
BAALBEK
SYRIA
SAIDA
TYR
ISRAEL
LEBANON
TRANSPORTATION INFRASTRUCTURE
ROAD
RAILROAD (standard gauge)
RAILROAD (narrow gauge)
PIPELINE

ATTACHMENT 7

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