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Economic Feasibility Study for the Gaza Construction Materials Logistics Facility (CMLF)

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1. Introduction

The West Bank/Gaza Industrial Estate Development & Management Public Shareholding Company, Ltd. (PIEDCO), the private developer of the Gaza Industrial Estate, has expressed an interest in expanding its industrial property activities adjacent to the General Logistics facility at the Karni Crossing in the Gaza Strip. The 'Promoting Industrial Zones and Investment Mobilization' (PRIZIM) project has been asked by USAID to assist PIEDCO in assessing the feasibility of additional private investment by PIEDCO in the construction and operation of the Construction Materials Logistic Facility (CMLF). This feasibility study is a follow-on activity to the Gaza Integrated Transport Planning Study (GITPS) submitted by The Services Group and The Louis Berger Group to USAID in September 2001 .

The consultants visited the Gaza Industrial Estate and the proposed site for the CMLF between November 9 and 22, 2001. This facility is to be located near the Karni gate and is planned to provide the following services[1]:

- Transport of construction materials between Israel and Gaza,
- Storage,
- Security control, and
- Possible processing of construction materials.

At a meeting with PIEDCO during the site visit, it was established that the project is to be implemented in two phases. Phase 1 is covered by this feasibility study and includes the transport of construction materials between Israel and Gaza, as well as the security control and storage facilities. Phase 2 will cover the processing of construction materials. This feasibility study only covers Phase 1.

The construction materials that this bulk trading facility has been designed to inspect, transport, store and process include:

- Ceramics,
- Tiles,
- Steel,
- Base course,
- Aggregates (Adsiya, Semsem and Folliya gravels), and
- Cement.

Prior to September 2000, construction materials were transported by truck through the following check points:

- Qarara (Sofa),
- Al Muntar (Karni), and

[1] This feasibility study only addresses the transportation, security control and temporary storage facilities aspects of the CMLF. The storage and processing of construction materials have not been included in the study.

- Beit Hanoun (Erez).

Since then, however, the movement of commodities through Sofa and Erez has been prohibited. The only gate now open for the transport of food, clothing and construction materials is at Karni as it is the only entry point equipped with security devices capable of scanning bulky material. Karni, however, was originally only designed to transport goods such as food and clothing, and not construction materials. There is hence a situation where dairy products, vegetables and meat use the same scanners and gates as cement bags. PIEDCO has stated that they believe Gaza is currently suffering from a reduced availability of construction materials because these have to compete for gate access with necessity commodities such as food and clothing. They assume that this bottleneck and reduction in supply leads to a rise in prices which in turn restricts the construction industry and may lead to increased unemployment.

The consultants collected all available data to conduct an economic feasibility study for the development of the proposed Construction Materials Logistics Facility. This study takes into account various alternatives in trade, political climate and economic growth to provide the client with a detailed risk analysis resulting from possible external.

It must be noted here that since the project's resources did not permit a detailed design or graphic conceptualization of the proposed CMLF, fixed and variable costs are based on the consultants' estimates of the size of the facility based on various trade scenarios.

The study showed that increased closures and security measures reduce the demand (due to a downturn in economic growth) for and supply (due to a bottleneck at Karni) of construction materials. As discussed in Section 5.3. below, closures have created bottlenecks that directly reduce the amount of trade volume of construction materials into Gaza. Even though the growth in the construction industry has declined (see Chapter 3), the demand for construction materials has not fallen at the same rate as the reduction in imports, creating bottlenecks in construction materials at the Karni crossing. This bottleneck is all the more apparent during peaceful periods, when the construction industry resumes and the demand for construction materials grows.

The economic analysis shows that the Internal Rate of Return (IRR) for periods of increased trade (due to low tension) is higher than during times of intensified hostilities, more frequent border closures and more demanding security measures. This is primarily due to economies of scale that permit increased quantities of imports to be treated with proportionately smaller increases in variable costs, as well as due to reduced demand of construction materials and revenues during periods of increased tension. The consultant would like to clarify at this stage, that the larger the capacity of the CMLF is, the bigger the CMLF's rate of return will be for periods of low tension.

It is assumed, that certain security procedures will remain in place during more peaceful periods and that the vast majority, if not all of the construction materials, will continue to pass through the CMLF. This is a reasonable assumption, as past experience has shown that security conditions remain tight after periods of intensified hostilities, and that they do not return to the same levels of flexibility. The new CMLF will encourage trade through its facility due its increased capacity and its compliance with tight security measures.

A CMLF can be justified on the grounds that when the demand for construction materials increases, there must be a facility with appropriate capacity that can cope with increased imports into Gaza. If this is not the case, the bottleneck in supplies will reduce quantities imported, and the proportionately larger increase in variable costs (due to economies of scale) will push up prices and restrict the construction industry.

2. Background

Gaza City is the principal city and administrative center of the Gaza Strip. The Strip has an estimated population of 1,178,110 (based on July 2001 estimates) out of which 60% live in urban areas. Gaza is a rectangular coastal area (approximately 140 square miles, 360 square km), on the Mediterranean Sea bordering Egypt to the South and Israel to the North and East. It is a densely populated and impoverished region and includes approximately 395,000 refugees distributed in 8 refugee camps.

The Israel-Palestinian Liberation Organization (PLO) Declaration of Principles on Interim Self-Government Arrangements (the DOP), signed in Washington on September 13, 1993, provided for a transitional period not exceeding five years of Palestinian interim self-government in the Gaza Strip and the West Bank. Under the DOP, Israel agreed to transfer certain powers and responsibilities to the Palestinian Authority, which included the Palestinian Legislative Council elected in January 1996, as part of the interim self-governing arrangements in the West Bank and Gaza Strip. A transfer of powers and responsibilities for the Gaza Strip and Jericho took place between May 4, 1994, and October 23, 1998. The DOP provided that Israel retained responsibilities during the transitional period for external and internal security, as well public order of settlements and Israeli citizens. A permanent status was to be determined through direct negotiations, which resumed in September 1999 after a three-year hiatus. However, the outbreak of the Al Aqsa intifada in September 2000, resulted in widespread violence in the West Bank and Gaza Strip. Continuous civil unrest, Israel's military response, and instability in the Palestinian Authority, are undermining progress towards a permanent settlement.

The Gaza Strip has a small construction industry, some farming, a modest citrus fruit industry, fishing, olive crops and livestock grazing (dairy products). Other small scale family-run businesses include the production of textiles, soap, olive-wood carvings and mother-of-pearl souvenirs. Gaza depends on Israel for nearly 90 percent of its imports (largely food, consumer goods and construction materials) and exports (mainly citrus fruit and other agricultural products).

Some Basic Data on Gaza:

- **Main agriculture products**: Olives, citrus, vegetables, beef and dairy products.
- **Exports** Citrus fruits and flowers (worth US$ 682 million (f.o.b., 1998 est., includes West Bank).
- **Exports partners**: Israel, Egypt and the West Bank.
- **Imports**: Food, consumer goods and construction materials (worth US$ 2.5 billion (c.i.f., 1998 est., includes West Bank)
- **Import partners**: Israel, Egypt and the West Bank.
- **External Debt**: US$ 108 million (1997 est., includes West Bank)
- **Economic aid recipient**: US$ 121 million disbursed (2000, includes West Bank).

Gaza City, historically, played an important role as a port and trade base but lost its importance by the end of the Ottoman period. In 1905 Gaza still exported US$ 1.5 million worth of wheat, barley, corn, dates, sesame, leather and chicken through its port. In the same year, the value of imports reached US$ 750,000. Since then there has been a steady decline in exports. At present, Gaza's trade depends mainly on Egypt and Israel.

Gaza's economic output falls under the responsibility of the Palestinian Authority according to the May 1994 Cairo Agreement. Between 1992 and 1996 economic output declined by approximately one-third due largely to Israel's closure policies which imposed generalized border closures in response to security incidents in Israel. These closures disrupted previously established labor and commodity market relationships between Israel and the West Bank and Gaza Strip. The most serious negative social effect of this downturn was the emergence of high unemployment (unemployment in the West Bank and Gaza Strip during the 1980s was generally under 5%, but by 1995 it had risen to over 20%). After 1997 however, Israel decreased the use of comprehensive closures and, in 1998, Israel implemented new policies to reduce the impact of closures and other security procedures on the movement of Palestinian goods and labor. These changes fueled an almost three-year long economic recovery in the West Bank and Gaza Strip - real GDP grew by 5% in 1998 and 6% in 1999, but fell again with the outbreak of the intifada in September 2000. This triggered tight Israeli closures of Palestinian self-rule areas and caused severe disruption of trade and labor movements.

> "Domestic income and VAT revenues have been reduced due to the lower levels of domestic income caused by disruptions in production and unemployment. Most Palestinian Authority budget revenues derive from import taxes. In 1999, 63 percent of all revenues were from customs and VAT associated with imports from Israel and abroad. As imports have declined due to lower consumer demand and movement restrictions, this portion of revenues has declined. In addition, since early October 2000, such clearance revenues — collected and transferred by Israel to the PA in accordance with the Economic Protocol of 1994 — have been well below the anticipated amounts. PA revenues during the crisis have been an average of US$ 45 million per month—half the monthly average of US$ 90 million during the first 9 months of 2000."
> "The Impact on the Palestinian Economy of Confrontations, Mobility Restrictions and Border Closures, October 1, 2000 – 31 January 2001." Office of the United Nations Special Coordinator.

Trade is very important for the economic well-being of Gaza and the West Bank. Trade in the Palestinian Authority represents a common solution that addresses agricultural production surplus, the size of the domestic market, the need to maintain an increase in production levels and the need to overcome an annual trade deficit of approximately US$ 1 billion. However, delays in shipping, the small volumes of produce exported, and the generally high transaction costs and low returns involved in the entire operation have discouraged many producers.

3. Impact Analysis of Closure on the Construction Industry

The following section analyses the impact of border closures on the construction industry. The first part looks at the demand for construction which is based on the intensity of economic growth. The consultants analyze how closures reducing trade adversely affect economic growth. Since long-term infrastructural development, investment and construction are closely linked with economic growth, an increase in the intensity of closures will negatively affect the construction industry through a reduction in overall demand. The second part looks at how the reduction in available construction materials, due to closures, restricts an expansion of the construction industry. Overall, a rise in the intensity of closures, associated with increased bureaucracy, security demands, logistical challenges and trade duration, affect the Palestinian construction industry adversely in a number of ways.

The implication of this analysis is that a reduction in construction supplies and inputs will be accompanied by a domestic decrease in demand for construction linked with a downturn in economic growth. In most cases the construction industry will anticipate economic decline and reduce investment, hence restricting the demand for construction material. This will reduce the likelihood of excess demand or supply bottlenecks occurring at the trading points during periods of increased closure.

3.1. Overall Impact of Border Closures on Economic Growth

Since 1989, in the case of Gaza, and since 1993 for the West Bank, Palestinians seeking to enter Israel or East Jerusalem for any reason – including transit between the West Bank and Gaza – have been required to apply for a permit from the Israeli military authorities. This general closure and permit policy, in effect to the present, has had a serious impact on the Palestinian economy and society. In addition to the general restriction on movement, the Israeli authorities have, since the Gulf War of 1991, intermittently sealed the crossings between Israel and the West Bank and Gaza Strip, either canceling or refusing to honor issued travel permits. Such restrictions have impeded economic activity in general, but especially the flow of Palestinian labor and exports to Israel.

The period 1994 to 1996 witnessed increasing frequency of border closures, as indicated in Table 1. In 1996 such closures disrupted labor and commodity flows on nearly 32 percent of normal business days. The severity of such closures in the 1997 to 1999 period declined substantially such that in 1999 border closures affected only 2.5 percent of working days. Reduced frequency of closures was associated with more rapid economic growth.

Table 1: Border closures imposed on the West bank and Gaza Strip, 1993-2000.

Year	Total Days of Border Closure	Holidays and Weekends during Border Closures Days	Effective Border Closure Days	Lost Days as a Proportion of Potential Work Days
1993	26	9	17	6.13%
1994	89	25	64	23.10%
1995	112	28.5	83.5	29.93%
1996	121	31.5	89.5	31.91%
1997	79	22	57	20.54%
1998	26	11.5	14.5	5.21%
1999	16	9	7	2.53%
2000	75	23	52	18.81%

Source: "The Impact on the Palestinian Economy of Confrontations, Mobility Restrictions and Border Closures, October 1, 2000 – January 31, 2001." Office of the United Nations Special Coordinator.

For the first 9 months of the year 2000, there were border closures on only three days. However, during the last quarter of the year, there were 72 days of such closures raising lost working days to their highest annual level since 1997. There were 21 additional days of border closures imposed in January 2001, raising the total for the reporting period to 93 days (of which 67 were normal working days).[2]

The following section looks at several factors that restrict growth in the Palestinian economy due to closures. These are:

- Investment
- Reduction in Government Expenditure
- Macro Impact in the Short-run
- Reduction in Trade
- Impact on Firms

3.1.1. Investment

Border closures have a less obvious yet detrimental impact on long-term economic development by instigating lower levels of investment and reduced efficiency of investment. These two related but separate effects of closure both imply lower rates of economic growth.

3.1.1.1. Low Levels of Investment

Closure policy can largely explain the difference between substantial interest of local and Diaspora Palestinians to invest in the economy and the actual low levels of investment to date. First, the strong interest is based on an optimistic scenario of long-term economic development; but the demand for investment has diminished under closure policy because of an overall decline in aggregate demand. Second, closure generally interrupts sales and increases operating costs, thus reducing overall profitability as well as the incentive for new investment. Third, investment

[2] "The Impact on the Palestinian Economy of Confrontations, Mobility Restrictions and Border Closures, October 1, 2000 – January 31, 2001." Office of the United Nations Special Coordinator.

is deterred by the increased risk arising from uncertainty in the timing, duration, and intensity of closures. This uncertainty is over and above the strategic uncertainty of interim status and the lack of clarity on the permanent status of the West Bank and Gaza Strip. Fourth, closure has reduced public investments as donor funds have been largely aimed at income maintenance and budgetary support in an effort to cushion the impact of closures. To the extent that investment in public infrastructure is complimentary to private investment, lower levels of private investment also result from the inability to upgrade public infrastructure.

In addition to the above factors that curtail the demand for investment, closure reduces the supply of funds available for investment and increases the cost of such funds. Commercial banks have become much more conservative in their lending practice than they may otherwise be, leading to lower debt-financed investment levels.

3.1.1.2. Reduced Efficiency of Investment

In addition to low levels of investment, the wrong investment decisions are likely to be made in the context of border closures. Instead of developing into an export-oriented economy, the signals sent by the closure policy drive the economy into localized autarky, with production aimed at the local market. This arises from the differential impact of closure on firms depending on the importance of tradable goods in their inputs and output.

Ishac Diwan and Radwan Shaban[3] demonstrate that firms least affected by closure utilize local materials and sell their product in the local market. These firms may even benefit if a foreign competitor is unable to deliver goods to the local Palestinian market. Firms that need imported inputs, such as construction firms, suffer higher inventory costs or sustain interruptions to production and construction. The more reliant on external trade the firm is, the more costly is closure policy.

3.1.2. Reduction in Government Expenditure

Border closure has affected government operations by reducing revenues, increasing expenditure on short-run objectives such as income maintenance and job expansion, and shifting the priorities of donor assistance away from public investment to short-term budgetary and income support. With the negative impact on income and production levels, closure has resulted in revenue losses for the Palestinian Authority.

Border closures also negatively affect the long-term development of public infrastructure and construction works. Border closures increase the Palestinian Authority's expenditures on welfare programs with the objective of mitigating increasing levels of poverty. A significant part of increased public expenditure is due to the substantial increase in public sector employment, some of which may be an effort to alleviate the impact of high unemployment. These greater expenditures and reduced revenues have increased the Palestinian Authority's budget deficits, which have increased the demand for donor budgetary support at the expense of investment in public infrastructure construction. Donor aid has been re-oriented away from long-term

[3] "Development Under Adversity: The Palestinian Economy in Transition", Ishac Diwan and Radwan A. Shaban, 1999.

development projects toward short term employment-generation projects. The latter can be implemented quickly with an immediately visible impact of alleviating unemployment and poverty. Further, the delivery of donor assistance has often been interrupted by closures as imported goods face difficulty in clearance or as aid workers' mobility is hampered. The overall result is hence a shift in donor aid from a long-term development of public infrastructure and buildings to short-term poverty alleviation projects.

3.1.3. Macro Impact in the Short-run

The estimated direct economic impact of the crisis is summarized in the following table. According to the United Nations study[4], these losses consist of:

1. The reduced production and circulation of goods and services (inputs and outputs) estimated at US$ 907.3 million (including losses incurred due to impediments to internal and external trade); and
2. The reduced labor income for workers and their households due to the loss of employment in Israel and Israeli settlements and industrial zones. This loss is estimated at US$ 243.4 million.

Table 2: Estimates of income losses in Gaza and the West Bank by source between October 1, 2000, and January 31, 2001.

Source	Loss (US$)
Domestic Output/Income	907,300,000
Labor Income from Israel	243,400,000
Total	1,150,700,000

Source: "The Impact on the Palestinian Economy of Confrontations, Mobility Restrictions and Border Closures, October 1, 2000 – January 31, 2001." Office of the United Nations Special Coordinator.

In the aggregate, and excluding material damage to property and other losses, the economic impact (i.e. the lost income-earning opportunities) is estimated at US$ 1,150.7 million during the 123-day period between October 1, 2000 and January 31, 2001. It is important to note that these losses are calculated in relation to the level of economic activity prevailing prior to the crisis, rather than in comparison to the income-generating potential of the Palestinian economy. If these income losses are distributed over the 105 working days in Gaza and the West Bank during this period, the average daily loss is estimated at US$ 10.9 million.

The income-earning opportunity losses are equal to more than one-fifth the projected GDP for the year 2000. If the estimated income-earning opportunity losses are distributed over a population of some 3.1 million persons, the per capita income loss is approximately US$ 370 or US$ 3 per person per day. For a family consisting of 5 persons, this loss amounts to US$ 1,850 over the four-month period. While lost labor income is irretrievable, some portion of the domestic output/income losses may be recuperated with the relaxation of mobility restrictions and the resumption of normal economic activity.

[4] "The Impact on the Palestinian Economy of Confrontations, Mobility Restrictions and Border Closures, October 1, 2000 – January 31, 2001." Office of the United Nations Special Coordinator.

Ishac Diwan and Radwan Shaban[5] found out that:

1. Closure has been significantly more costly for the Gaza Strip than for the West Bank, and
2. The cost of closure has increased over the 1993 to 1996 period, whether measured in absolute amounts or as a ration of GNP in 1996. The west Bank and Gaza Strip cost of both closure and permit policies in relation to the 1992 situation, and as a percent of the combined GNP, amounted to 6.5 percent in 1993, 16.3 percent in 1994, 20.6 percent in 1995, and 24.2 percent in 1996.

The short-term and direct economic effects of closure policies are to reduce income to farmers, workers, merchants and business people who cannot reach their places of employment or who are unable to obtain inputs and/or sell their goods and services. This has been true for all economic activities including agriculture, manufacturing, construction, commerce, transportation and services (including those related to tourism).

A United Nations[6] study estimated the effect on GDP of closure policies to amount to US$ 5,400 million in the year 2000. Assuming output is distributed evenly over the work year (consisting of an average of 312 days) estimated GDP was approximately US$ 17.3 million for each working day.

A field survey conducted by the Palestinian Central Bureau of Statistics (PCBS) in October and November 2000[7] sought to measure the effects of the crisis on the level of domestic productive activity. The following table provides PCBS estimates as to the relative contribution of the various economic activities to GDP in 2000. Moreover, the table provides UNSCO estimates of the relative decline by activity based on data from the PCBS field survey from October to November 2000 and the resulting negative impact on total GDP for those months.

On average, the direct economic losses were estimated at 50.7 percent of GDP produced in the period October-November 2000 as shown in the following table. The evidence suggests that all activities have been negatively affected by the crisis and movement restrictions. However, there were disproportionately large losses for **construction**, hotel and restaurant (tourism), agriculture and community, social and personal service activities. Real estate and business services, financial intermediation, education, public administration and defense and transport activities were proportionately less affected. Of the 50.7 percent decline in GDP, construction and manufacturing activities each accounted for about 10 percentage points or about 40 percent the decline.

[5] "Development Under Adversity: The Palestinian Economy in Transition", Ishac Diwan and Radwan A. Shaban, 1999.
[6] "The Impact on the Palestinian Economy of Confrontations, Mobility Restrictions and Border Closures, October 1, 2000 – January 31, 2001." Office of the United Nations Special Coordinator.
[7] "Direct Losses of the Palestinian Economy Due to the Israeli Siege", PCBS, October 1 to November 30, 2000, December 2000 at: www.pcbs.org.

Table 3: Estimates of the West Bank and Gaza Strip's GDP by activity for 2000, proportional losses and impact on aggregate GDP by activity for October to November 2000.

Acivities	Estimated Contribution to GDP by Activity (%)	Estimated Proportional Losses by Activity (%)	Estimated Impact on Total GDP by Activity (%)
A. Economic Activities			
1. Agriculture and Fishing	6.86	-73.84	-5.07
2. Mining, Manufacturing, Electricity and Water	18.51	-53.64	-9.93
3. Construction	12.22	-78.66	-9.61
4. Wholesale and Retail Trade	10.27	-58.98	-6.06
5. Transport	3.49	-34.58	-1.21
6. Financial Intermediation	3.23	-24.62	-0.79
7. Other services	18.47	-26.02	-4.81
2. Public Administration and Defense	9.75	-29.51	-2.88
Households with Employed Persons	0.16	-50.00	-0.08
Public Owned Enterprises	3.54	-60.00	-2.12
Plus: Customs Duties	7.80	-60.00	-4.68
Plus: VAT on Imports (Net)	8.21	-50.00	-4.11
Gross Domestic Prioduct	**100**	**-**	**-50.72**

Source: "The Impact on the Palestinian Economy of Confrontations, Mobility Restrictions and Border Closures, October 1, 2000 – January 31, 2001." Office of the United Nations Special Coordinator.

Assuming that the proportional negative internal economic effects of the crisis and movement restrictions in October-November were similar to those in the December 2000 to January 2001 period, the value of the internal direct losses in income-earning opportunities is estimated at US$ 907.3 million. For the 105 working days during the reporting period, the loss is approximately US$ 8.6 million per day.

3.1.4. Reduction in Trade

Closures largely constrain the mobility of goods and factors of production. Vehicles owned and registered in the West Bank and Gaza Strip are denied entry into Jerusalem and Israel, and permits are largely made invalid. Also vice versa, Israeli registered vehicles are not allowed to enter Gaza. Closures prevent Palestinian expediters from reaching Israeli territory and prohibit Israeli cargo trucks from entering Gaza, and thus, restrict the clearance of Palestinian imports and exports (factors of production or finished goods) through Israeli custom ports.

Limitations on the movement of goods result in a decline in total trade with or through Israel. Generally, during closures Israeli exports to the Palestinian areas decline, but Palestinian exports decline much faster. This asymmetry in the effect of border closure has been calculated by Ishac Diwan and Radwan Shaban[8], who have concluded a correlation coefficient between the number

[8] "Development Under Adversity: The Palestinian Economy in Transition", Ishac Diwan and Radwan A. Shaban, 1999.

of monthly closure days and the total number of trucks crossing the Karni checkpoint in 1996 to be -0.38. The correlation coefficient of closure days with the share of exporting trucks in total truck movement is -0.32 during the same period.

The Gaza Integrated Transport Planning Study[9] has also observed a distinct reduction in the trucking industry:

Table 4: Impact of the intifada on trucking.

Before Intifada		After Intifada	
Average kilometers per year	120,000	Average kilometers per year	40,000
Average load (loaded truck)	35	Average load (loaded truck)	26
Percentage of trips empty (<50%)	40%	Percentage of trips empty (<50%)	50%
Average trips per day	3	Average trips per day	1
Average trip length – round trip (km)	75	Average trip length – round trip (km)	75
Number of days per week operating	6	Number of days per week operating	6

Source: "The Gaza Integrated Transport Study", September 2001, The Services Group (TSG) and the Louis Berger Group, Inc. (LBG) on behalf of the USAID financed Promoting Industrial Zones and Investment Mobilization (PRIZI) Program.

Each time borders are sealed the conditions under which the borders would be selectively opened are harsher than in the past. For example, West Bank cars were initially allowed to enter Gaza with the proper permit. Then, only cars with Israeli license plates were permitted to enter the Gaza Strip. Currently, Israeli Arabs and Jerusalem residents with Israeli license plates are not permitted to enter the Gaza Strip. Travelers with required permits must walk across the Gaza Strip borders. Back-to-back movement of goods is now the norm at Karni, which means that goods have to be unloaded from one truck to another truck simultaneously after passing through a scanner from the Israeli to the Palestinian side.

Due to this prohibition of trucks entering and leaving Gaza, trade has fallen even more drastically and is now faced with the logistical challenge and lengthy procedure of transporting food, consumer goods, clothing and construction materials over conveyor belts equipped with scanners (see photos in Chapter 4 of the existing cargo terminal near the Industrial Estate at Karni).

Palestinian exports have been impeded for much of the reporting period due to the severity of the border, internal and international crossing closures. According to the United Nations study[10], average monthly registered exports to Israel in the first 9 months of 2000 were valued at US$ 42 million. In October and November, the monthly average had declined to US$ 35 million, a decline of 16.5 percent. As compared to the October to November 1999 average of US$ 44.4 million, registered exports in the same period in 2000 were 22 percent lower.

[9] "The Gaza Integrated Transport Study", September 2001, The Services Group (TSG) and the Louis Berger Group, Inc. (LBG) on behalf of the USAID financed Promoting Industrial Zones and Investment Mobilization (PRIZI) Program.

[10] Source: "The Impact on the Palestinian Economy of Confrontations, Mobility Restrictions and Border Closures, October 1, 2000 – January 31, 2001." Office of the United Nations Special Coordinator.

Palestinian imports from Israel have been even more negatively affected by the crisis. For example, the Karni crossing, the only commercial crossing in Gaza functioning during this period, was closed entirely or partially on 18 percent of the days resulting in a significant reduction in goods imports. Trade between Israel and the West Bank has also been reduced due to the internal and border restrictions. In addition, and perhaps more importantly, reduced income of Palestinians has resulted in a significant decline in consumer demand. Registered non-agricultural imports from Israel averaged US$ 157.3 million per month in the first 9 months of 2000. Between October and November, the monthly average declined to US$ 100.2 million, a decline of 36.3 percent. As compared to the October to November 1999 average of US$D 147.3 million, registered imports for the same months in 2000 were 32 percent lower.

External trade contributes significantly to the size of the Palestinian GDP. The production of goods for export generates employment and income. On the other hand, the scarcity of resources and other inputs in Gaza requires the importation of raw materials, equipment and machinery. Thus, the disruption of external trade resulting from mobility restrictions and border closures dampens domestic production, employment and income in a large number of manufacturing, commercial and agricultural enterprises.

3.1.5. Impact on Firms

The impact of closures on firms in the industrial and service sectors is strongly negative. The Palestinian economy's integration with the Israeli economy ever since the 1967 occupation created very strong links between Palestinian and Israeli firms, whether in procuring inputs or supplying output. Closure has increased the cost of operations to such a level that trade between the West Bank and Gaza Strip and with Israel has become very costly and risky. The longer-run impact of reduced trade due to a bottleneck in the movement of goods across the borders would force the Palestinian areas to move toward a closed economy (autarky), with production aimed at the local market using local inputs.

Closure affects firms in several ways. It interrupts the production process, delays the procurement of raw materials and intermediate inputs, interrupts the movement of workers and personnel, and increases the cost of delivering goods and services to customers. Further, closure makes it very difficult to market goods and assure customers of reliable delivery, resulting in a loss of market share. It also increases the financing cost of doing business since collecting receivables becomes difficult and debts increase. At the same time, closure induces Israeli suppliers of inputs to demand advance payment for the West Bank and Gaza Strip firms' purchases. The net result is that sales decline, inventories build up, and operating costs skyrocket.

3.1.5.1. Declining Sales and Competitiveness

Ishac Diwan and Radwan[11] documented the decline in sales for selected West Bank and Gaza firms representing various industrial activities following the spring 1996 closure. The decline in sales was quite steep, ranging from 9 to 90 percent, and averaging 57 percent. Part of the decline

[11] "Development under Adversity: The Palestinian Economy in Transition", Ishac Diwan and Radwan A. Shaban.

in sales is a reflection of reduced aggregate demand that follows closure. Despite effective demand for products, some firms suffer from a reduction in sales due to the interrupted delivery of key inputs that are imported either from or through Israel. These include chemicals, pharmaceuticals, metals, and construction firms. Clearly, these establishments can build up their inventories of inputs or outputs, at a substantial cost, to reduce the impact of closure. This, however, would be fruitful only if the demand for their products and services is local and is relatively immune to closure conditions. The construction industry is closely linked with economic growth and since economic growth declines as the intensity of border closures increases (See 3.2. above) the construction industry is like to remain stagnant until long term economic growth resumes.

3.1.5.2. Increased Costs of Production and Operation

Closures substantially increase firm's costs of production and operation. Inventory costs increase due to the undesired accumulation of inventories (inputs or outputs) or planned higher levels of inventories designed to mitigate the impact of shocks.

Stringent Israeli security procedures add costs and time to most Palestinian logistics chain activities. Security checks and resulting costs for imported goods and border crossing processing fees, would be reduced under a less restrictive trade scenario. Additional logistics costs derive from the following:

Transportation costs increase substantially as a result of border closure. For example, according to Ishac Diwan and Radwan Shaban ("Development under Adversity: The Palestinian Economy in Transition", 1999), the transportation cost for a 40-foot container of consumer goods between the West Bank and Gaza Strip was around NIS 500 (appx. US$ 105) in 1993 and reached NIS 1,500 (appx. US$ 315) in 2000. The increase arises from newly imposed rules that require goods to be unloaded at Karni from one truck to another. This back-to-back system may require goods moving between the West Bank and Gaza Strip to be loaded on three separate trucks, for a journey that is less than 100 miles.

- Increased trucking costs. Israeli trucking costs often cost twice as much as similar services offered by Palestinians.
- Increased handling for back-to-back transport. Grain shipment charges from Haifa to Bir Zeit have doubled since the Intifada.
- Loss of product due to delays and spoilage at border crossings.
- Damage resulting from security inspection methods.
- Deposits required by most shipping lines for containers transported into Gaza and the West Bank. This includes the following charges:
  - 20' container – US$ 2,000
  - 40' container – US$ 4,000
  - Refrigerated unit – US$ 30,000
- High labor costs. Many Palestinians are restricted from crossing the border into Israel to work in jobs they held before the intifada. Israelis now perform these functions at a higher salary.
- Higher insurance premiums paid to haul goods into problem areas; some companies cannot obtain insurance at any price for these areas.
- Extra hours worked on finished goods to ensure extra customer orders are in the pipeline for on-time delivery.
- Expenses for Israeli security truck escorts.

- Increased reserve inventories to compensate for uncertain deliveries from ports and across borders. Many companies maintain at least two months reserve.
- The lack of financial planning or analysis causes some companies to pay high demurrage and storage charges while correcting documentation errors or omissions.
- Prices increases without notice for some finished goods and raw materials purchased from Israel. Companies must pay the increased prices to meet customer demand.
- Theft of cargo at the ports for incoming shipments.
- Higher interest rates for letters of credit since the intifada.

Financing costs increase, as it becomes difficult for personnel to cross borders to collect payment and bad debt. Many Israeli suppliers have started to demand advance payment during closures instead of payment-upon-receipt to protect themselves from collection difficulties. With increased financing difficulties, liquidity problems arise as banks tighten their credit line or become unwilling to extend additional credit. The Gaza Integrated Transport Planning Study[12] concluded that under pre-intifada conditions, larger well established businesses had little trouble obtaining banking services and financing sources. The outbreak of hostilities however had an important effect in restricting access to trade financing services, primarily because it has been accompanied by a dramatic economic downturn, worsening the cash flow problems faced by most Palestinian companies, which in turn further reduced the availability of services.

To the extent that some inputs are imported and some outputs are exported, closure increases the cost of clearance, storage and shipping since company staff are unable to do the work. Firms have had to rely increasingly on Israeli agents for shipping and clearance at higher costs. During periods of closure, delayed delivery of goods at Israeli ports increases storage costs. There have also been numerous instances of spoilage of perishable goods due to the transportation bottleneck.

Some firms react to reduced sales by laying off workers, scaling down the number of shifts in operation, or shortening the operation schedule. Firms are more likely to keep workers who have job-specific skills and to continue paying their wages, in order to save the cost of training new workers when sales begin increasing again.

[12] "The Gaza Integrated Transport Study", September 2001, The Services Group (TSG) and the Louis Berger Group, Inc. (LBG) on behalf of the USAID financed Promoting Industrial Zones and Investment Mobilization (PRIZI) Program.

3.2. Impact of a Reduction in Construction Materials on the Construction Industry

"The construction sector experienced rapid growth in the early to mid 90's, fueled by optimism and political and economic development. However, during periods of strict and prolonged border closure construction has been affected negatively by the lack of supplies (such as cement and steel) that are imported from or through Israel. By 1997, the boom in construction had tapered off."
"Development Under Adversity: The Palestinian Economy in Transition", Ishac Diwan and Radwan A. Shaban, 1999, pp 31.

The Karni terminal is located to the east of Gaza city near the village of Nachal Oz and is the Gaza strip's only checkpoint for goods, raw materials, food and merchandize transferred between Gaza and Israel.

The terminal is operated by the Israeli Airport Authority (IAA) and is generally open between 7:00 am and 5:00 pm. These working hours are strongly affected by the prevalent security conditions. As discussed in Chapter 4 below, the transportation arrangements at Karni between Israel and Gaza involve complicated logistics and lengthy security and administrative procedures, so that there is a potential supply bottleneck of construction materials.

The consultant visited Karni on numerous occasions and observed the complicated logistics involved in transferring bulky and heavy construction materials from Israel into Gaza. The consultants also obtained statistics on the trade volume of several construction materials that demonstrate a distinct decline in imports into Gaza. The following table clearly shows a distinct reduction in imports of construction materials during the intifada:

Table 5: Imports of construction materials into the Gaza Strip in 2000 and 2001.

Construction Materials	2000 Annual Total	2001 Annual Total	Percentage Change
Ceramics (m^2)	1,737,758	1,715,463	- 1.2 %
Tiles (m^2)	54,588	11,239	- 79.4 %
Steel (ton)	41,556	36,674	-11.7 %
Base Course (ton)	101,829	33,127	- 67.4 %
Gravel Adsiya (ton)	260,602	212,738	- 18.3 %
Gravel Semsem (ton)	329,425	175,415	- 46.7 %
Gravel Folliya (ton)	257,552	52,304	- 79.6 %
Cement (ton)	273,137	252,193	- 8.3 %

Source: Statistics compiled by the Louis Berger Group, Inc.

The consultants noted decreases of up to 79 percent for Folliya gravel and tiles, 67.4 percent for base course and 46 percent for Semsem gravel between 2000 and 2001. All construction materials had noticeable decreases, except ceramics that only fell by 1.2 percent. These differences may be even more drastic, had the measurements been taken since the beginning of the intifada and compared with data from before September 2000.

The decrease is partly due to a fall in demand for construction materials due to an overall decline in the construction industry and economic growth, but the decrease can also be explained by increased security measures and the shutting down of the Erez and Sofa crossing points. Increased security measures, complicated administrative procedures and logistics, and a lack of transfer mechanisms are very likely created by a bottleneck in the supply of construction materials to Gaza.

Chapter 3 hence shows that with an increase in tensions and intensified security measures and more closures, the construction industry slows down due to a reduction in demand in line with a downturn in economic growth. This is accompanied by a reduction in inputs of construction materials into the Gaza Strip due to supply bottlenecks at the terminal. The implication of this is that the observations made by the consultant on supply bottlenecks at the Karni crossing are less obvious than they would otherwise be if the construction industry were operating under pre-intifada levels. The fall in demand for construction materials due to an overall downturn in the economy and the construction industry 'hides' the problems faced by the complicated and lengthy logistics and procedures at the Karni crossing point. Supply bottlenecks are however a reality in times of reduced hostilities and improved trading conditions. It will be during those times that a new and improved facility will have to be operational to transport construction materials efficiently and in a timely manner. Experience has shown, that after periods of increased tensions, safety procedures do not return to the same degree of flexibility as they did before the outbreak of hostilities. It is hence very likely that the current security measures will persist (even after the current intifada) and create a distinct supply bottleneck at the crossing point. This will push up prices of construction materials and limit any potential expansion in the construction industry and infrastructural development.

4. Current Features of the Karni Crossing and Gaza Industrial Estate

4.1. Operational Information

The Karni terminal is located east of Gaza City, near the settlement of Nachal Oz. It is the Gaza strip's only checkpoint for goods, raw materials, food and merchandize transferred between Gaza and Israel.

Although the Palestinian Authority has its own Customs personnel assigned at this location, the cargo security inspections at this location are the responsibility of the Israel Airport Authority (IAA). There are no Israel Customs Authority personnel assigned to this location, as this is not considered an international port of entry or departure. Private firms provide staffing to cover security, administration, loading and unloading, equipment operation, maintenance, and cleaning.

There are two separate inspection facilities at this location, one for the Palestinian Authority and one for the Government of Israel. The Palestinian side can be divided into 2 major areas:

1. One parking lot for trucks waiting for inspection and the processing of export documents and one parking lot for empty trucks awaiting cargoes from Israel.

2. A large wall with large sheds on both the Israeli and the Palestinian sides. This wall has 23 gates, to allow communication and transfers of various goods, distributed as follows:
   - Animals (4)
   - Big cargoes or full trucks (5)
   - Palletized cargoes (8)
   - Cases (6)

The inspection methods used include back-to-back trailer exchange and item inspection. The Israeli facility has 23 gates in the wall, 8 of which have pallet size scanners. On the day of the Consultants' visit to the facility, only 2 scanners were operational. Reportedly this is a consistent problem as a result of mechanical defects and manpower shortages.

Hours of operation differ widely. The Israeli facility operates five and a half days a week from 7:00am to 4:00pm. However, the main entrance gate to the Israeli side of the inspection facility closes at 1:00pm each day. The Palestinian side operates 7 days a week from 7:00am to 8:30pm.

These times, however, are strongly affected by the overall security situation and current events. Until approximately April 2002, the terminal was operated throughout the night as well, but due to the current intensification of hostilities, operations have been shut down from dusk until dawn. The security levels are determined by the Israeli police force.

Prior to the intifada, Palestinian and Israeli cargo security inspectors did inspection jointly, but this practice has been discontinued.

The Palestinian Authority requires cargo shipment applications to be submitted at least 24 hours in advance of shipment. The application includes information on the shipper, destination, quantity and contents. Copies of this document go to Palestinian Customs, PIEDCO and Palestinian Preventive Security. It appears that the Palestinian shippers have problems with having their paper work completed properly and being aware of the hours for the cargo security inspection procedures.

One day is usually required for inspection, but sometimes there is a 2 to 3 day delay. If a truck arrives at the Israeli side of Karni on a Friday, the goods may have to wait until Tuesday to cross the border. The consultant has observed overall that the passage of goods is slow, complicated, and full of logistical and administrative burdens.

The consultant concluded that trucks arriving from the West Bank are checked more thoroughly than trucks arriving from Israel. Generally speaking, imports into Gaza from Israel pass through the following procedures:

1. The Israeli truck arrives at the Karni terminal and is admitted by order of arrival.
2. The Israeli driver is required to identify himself at the entrance gate and receives a special identification card with the truck's and driver's personal details.
3. The Israeli driver pays the required fees and receives a receipt.
4. The Israeli driver, in possession of a receipt and an identification card, visits the coordination center and is sent to the waiting area.
5. Here he will be called to one of the transportation bays on the Israeli side to unload his cargo directly on to conveyor belts.
6. At the same time a Palestinian truck enters the Gaza Industrial Estate (GIE) safe zone and after receiving permission, pulls up behind a large concrete wall on the Palestinian side and loads the cargo from the conveyor belts after they have passed through scanners.
7. After unloading, the Israeli driver has to leave the facilities and returns his pass at the entrance.
8. The Palestinian driver leaves the secure zone at the Karni crossing and enters the Gaza Strip.

This process varies slightly according to the nature of the products and commodities that pass through the border. For certain toxic chemicals and other commodities, there is a private facility on the Israeli side that allows trucks to jump the queue after paying a facilitation fee.

As discussed in Chapter 3, the consultants visited the Karni trading terminals during the intifada. This period of increased tension, intensified security demands and reduced trade has limited economic growth and hence reduced demand for construction materials. This reduction in demand 'hides' the potential problem of supply bottlenecks that would otherwise occur if the economy were to continue growing again at higher levels.

Based on previous experience and observations during the last few years of hostility, security measures would not return to the same degree of flexibility once more peaceful periods resume. This means that the Karni crossing point will remain the only operational trading terminal for Gaza in the foreseeable future. A return to periods of relative calm will stimulate economic

growth and infrastructural development, but a supply bottleneck at Karni means that an increase in the demand for construction materials cannot be met by an expansion in supply.

The following pictures show the current trading facility in the GIE at the Karni Crossing from the Palestinian side.

Picture 1: Conveyor belt and gate in concrete wall from the Palestinian side.

Picture 2: Open gate and conveyor belt transporting merchandize from Israel into the Gaza Strip after having passed through the scanner in the background.

Picture 3: Open gate and conveyor belt importing fresh fruit and vegetables into Gaza from Israel. The crates have just passed through the scanners on the Israeli side and are now arriving on the Palestinian side.

Picture 4: Proposed new site for the CMLF, immediately adjacent to the GIE and the existing trading terminal at the Karni crossing. The Israeli-Gaza Strip border with fortified fence is visible to the right of the picture.

4.2. Pricing Structure

Handling fees for construction materials at the Karni crossing depend on the size of the loads and the types of construction materials. Revenues are allocated 60 percent to Israel and 40 percent to Palestinians. The handling fees are designed to cover all the fixed and variable costs of the facility.

The following fees are per truck carrying loads on average of 40 tons (prices include freight and handling charges):

Table 6: Prices presently charged by the GIE for imports of different construction materials.

Type	Unit	Fee (US$)
Cement	Bulk	21.00
	Bags	36.75
Aggregates	Full trailer	23.10
	Semi trailer	18.90
Steel	Semi trailer	73.50
Container	20 feet	31.50
	40 feet	42.00

Source: Statistics compiled by the Louis Berger Group, Inc. Last revised 7/12/00.

Table 7: Prices of construction materials requiring special handling.

Size of Vehicle/Trailer	Fee (NIS)
Truck	52.50
Semi trailer	73.50
Full trailer	77.70
20 foot container	31.50
40 foot container	42.00

Source: Statistics compiled by the Louis Berger Group, Inc.

5. Trade and Demand Analysis

5.1. Current Trade

The following section outlines the quantities of current imports of the different construction materials from Israel into Gaza. For a more detailed breakdown of quantities imported into Gaza, please see the tables in Annex 1 and the economic feasibility study in Annex 2.

5.1.1. Ceramics

The consultant noted that the quantity of imports did not vary significantly between intifada and pre-intifada estimates. The annually amount of imported ceramics into Gaza varies between 1,700,000 and 1,750,000 square meters.

5.1.2. Tiles

The imports of tiles into Gaza before the outbreak of current hostilities amounted to between 50,000 and 60,000 square meters per year and during the intifada only between 10,000 and 20,000 square meters per year.

5.1.3. Steel

Steel is transported in bundles of rods on open deck trucks of 20 to 40 tons each. Currently, imports into Gaza amount to between 30,000 and 40,000 tons per year. Imports before the intifada amounted to between 40,000 and 50,000 tons per year.

5.1.4. Base course

The amounts of base course imported into Gaza vary by over 60 percent from before and during the intifada. Before the outbreak of hostilities, imports amounted to approximately 100,000 tons per year, during the intifada this fell to only between 30,000 and 40,000 tons per year.

5.1.5. Gravels (including Adsiya, Semsem and Folliya)

The gravel is transported on 40-ton trucks and originates from quarries within Israel. The estimated quantities of imports based on data acquired during the intifada range between 300,000 to 400,000 tons per year. Pre-intifada imports amount to between 800,000 and 900,000 tons.

5.1.6. Cement

The cement is currently transported in sacks that pass through scanners and secure gates on a small conveyor belt into Gaza. The estimated quantities imported into Gaza during and before the intifada amount to between 200,000 and 300,000 tons per year. The consultant did not notice a great change in quantities imported before and during the intifada.

5.2. Demand Analysis

The Gaza Integrated Transport Planning Study[13] found that the decrease in trade resulting from restricted logistics flow and increased border closures is seen in Gaza, where strict Israeli security inspection policies are in effect. Many West Bank companies have stopped shipping to Gaza because of logistics delays, pipeline unreliability and inability to support marketing efforts.

Gaza's construction industry has temporarily slowed down since the beginning of the intifada, but is expected to grow again, once the current situation becomes more peaceful.

This growth in the construction industry is also supported by a continuous growth in the population and Gross Domestic Product. Population growth amounted to 4.5% on average since 1994. The Gaza Strip had a population of 1,138,126, which grew to 1,178,119 in 2001. Future estimates amount to 1,472,333 for 2005, 1,871,333 for 2010, 2,241,206 for 2015 and 2,617,823 for 2020. More people in the Gaza Strip require more housing, hence demand for construction materials is likely to increase with population growth.

Currently, the average amount of people sharing the same household is very large, indicating a distinct shortage of housing in the Gaza Strip. The table below shows the average occupancy rates for different types of housing. One can see that on average 8 people live in villas, between 7 and 8 in houses and between 6 and 7 in apartments. These are high occupancy rates which suggest crowded homes and poor standards of living.

Table 8: Average occupancy rates for different types of housing.

Type	No. of Housing Units	No. of Households	No. of Persons	Average Occupancy Rate per Residence
Villa	740	740	5,957	8.0
House	68,512	76,581	562,450	7.3
Apartment	61,768	65,362	424,760	6.4
Studio	634	634	2,001	3.1
Tent	203	203	895	4.4
Marginal	821	836	4,334	5.1
Others	60	60	252	4.2
Not Stated	80	81	471	5.8
TOTAL	**132,818**	**144,497**	**1,001,120**	**5.5**

Source: Palestinian Central Bureau of Statistics.

The Gross Domestic Product (GDP) has also increased during more peaceful periods. In 1997, GDP amounted to US$ 3.9 billion and grew to US$ 4.0 billion in 1998 and US$ 4.3 billion in 2000. As a result the construction industry also expanded in the late 90s as it is closely linked with economic growth. According to World Bank sources, GDP per capita grows at an average of 3.3 percent per annum.

[13] "The Gaza Integrated Transport Study", September 2001, The Services Group (TSG) and the Louis Berger Group, Inc. (LBG) on behalf of the USAID financed Promoting Industrial Zones and Investment Mobilization (PRIZI) Program.

One can hence expect that an end to the current conflict will lead to economic growth that will lead to an expansion in the construction industry. Not all construction will involve new investments. Many buildings have been destroyed and much of the construction will be in the form of replacement investment, renovations and infrastructure rehabilitation. According to the Gaza Ministry of Housing, between September 2000 and June 2002, a total of 715 houses have been completely destroyed and 1,310 partially damaged. During the same period 130 government and public buildings have also been partially or fully destroyed. Total investments required to rebuild the infrastructure are estimated at US$ 21,935,335 (US$ 15,372,753 for houses and US$ 6,562,582 for public buildings).

The United Nation report found that "that upwards of 3,000 structures have been partially or totally damaged during the reporting period. While most of the documented damage has been to housing, numerous shops, workshops, offices and private vehicles have also been hit. In addition public buildings and infrastructure, as well as medical facilities have been damaged. The value of such damage has been estimated in the tens of millions of USD."[14]

This growth in the construction industry during the 90s is also reflected by increase in the number of construction firms in Gaza and the West Bank. The following table shows a distinct increase in the number of new construction companies registered during the early 90s with a peak in 1995 of 81 new firms registered. After 1995 fewer firms registered, but nevertheless (and in spite of the ongoing intifada), 35 new firms entered the market in 2001, compared with only 8 in 1999. This relatively high number of new firms during periods of increased tension and conflict suggests that there is a very large demand for housing in the Gaza Strip due to population growth and destruction of housing and other buildings.

Table 9: Summary of newly registered construction firms between 1990 and 2002 by size of operations.

Registration Year	Registered Companies in each Rank[2]						
	Rank 1A	Rank 1B	Rank 2	Rank 3	Rank 4	Rank 5	Total
1990[1]	1	0	1	1	1	1	5
1991[1]	1	0	2	2	0	0	5
1992[1]	1	0	2	2	1	1	7
1993[1]	2	2	2	0	2	0	8
1994[2]	9	11	13	3	2	0	38
1995[2]	11	29	23	10	6	2	81
1996[2]	3	9	8	16	8	10	54
1997[2]	0	3	5	9	3	3	23
1998[2]	0	3	5	1	3	1	13
1999[2]	1	1	1	0	5	0	8
2000[2]	0	0	7	1	1	0	9
2001[2]	0	0	5	5	3	22	35
Jun 2002[2]	0	0	2	1	1	2	6
TOTAL	**24**	**56**	**69**	**46**	**32**	**40**	**267**

Source: All figures received from the Palestinian Contractors Union.
[1] Estimate made by the Director of the Palestinian Contractors Union (there are no official records since the Palestinian Contractors Union was only established in 1994).

[14] Source: "The Impact on the Palestinian Economy of Confrontations, Mobility Restrictions and Border Closures, October 1, 2000 – January 31, 2001." Office of the United Nations Special Coordinator.

[2] Figures received from records of the Palestinian Contractors Union.

Table 10: Classification and ranking of construction companies.

Rank	Capital (US$)	Equipment Value (US$)	Experience and Value of Projects (US$)	Office Area (Company Premises m^2)	Managerial and Technical Staff (min.)
1A	650,000	650,000	8,000,000	175	8
1B	400,000	400,000	3,000,000	140	8
2	250,000	250,000	1,000,000	120	6
3	100,000	100,000	300,000	75	4
4	50,000	50,000	100,000	50	3
5	25,000	25,000	N/A	30	2

Source: Palestinian Contractors Union

5.3. Bottlenecks

In spite of the large potential demand of construction materials into Gaza, trade is unlikely to grow under the current conditions. Trade for Gaza used to move primarily through the crossings at Karni and Erez up to September 2000, after which all trade was consolidated to Karni alone. On average, 51 percent of Gaza's exports pass through Karni and 23 percent of its imports. Since the outbreak of the intifada, the Karni checkpoints would have had to increase its export capacity by approximately 50 percent and its imports by about 77 percent in order to comply with late 1990s transport volumes. This poses severe demands on the Karni checkpoint which to date has not yet been met.

Table 11: Imports to and exports from the Gaza Strip by Entry Passage in 1996 to 1998 ('000 US$).

Entry Passage	Exports						Imports					
	1996	1996 %	1997	1997 %	1998	1998 %	1996	1996 %	1997	1997 %	1998	1998 %
Al-Muntar (Karni)	12,253	36	27,645	63	23,324	55	154,020	29	102,933	18	114,394	22
Beit Hanoon (Erez)	20,884	64	15,626	27	19,080	45	375,084	70	454,254	81	384,234	77
Qarara (Sofa)	-	-	-	-	-	-	9,961	1	14,724	1	5,345	1
Total	33,137	100	43,271	100	42,404	100	529,104	100	557,187	100	498,628	100

Source: "The Gaza Integrated Transport Study", September 2001, The Services Group (TSG) and the Louis Berger Group, Inc. (LBG) on behalf of the USAID financed Promoting Industrial Zones and Investment Mobilization (PRIZI) Program.

Although, as discussed above in Chapter 3, demand for construction materials will have slowed down, it is unlikely to have fallen to the same extent as the amount of trade that will now have to take place through Karni alone, due to the closure of the Erez and Sofa crossing points. This is especially significant in the case of Erez as most of Gaza's cement was imported through this check point before the intifada.

The Gaza Integrated Planning Study[15] concluded that transport services, although problematic, do not represent major logistics constraint. For most cargoes, the increase in transport costs and time have been less of a constraint than the problems at the borders and gateways. The critical bottlenecks affecting these logistics chains are the border crossings and the gateways. The security procedures, including 100 percent inspection of Palestinian imports at the ports, gates and borders, and tight restrictions on Palestinian truck movements, severely hamper material flow and degrade customer service.

The impact of the bottlenecks varies with the type of cargo. For low value cargoes (such as construction materials), the cost of storage while waiting for inspections, and the increase in inventory required to compensate for the uncertainty of delays significantly increase the delivery costs thereby reducing profitability and sales.

[15] "The Gaza Integrated Transport Study", September 2001, The Services Group (TSG) and the Louis Berger Group, Inc. (LBG) on behalf of the USAID financed Promoting Industrial Zones and Investment Mobilization (PRIZI) Program.

6. Cost Analysis

6.1. Facility Design

The following section describes the CMLF and the tasks that the facility will have to fulfill in order to comply with future trade levels as estimated by the consultant based on current demand and potential future growth (as discussed in Chapter 5 above). The facility will include several temporary storage facilities with silos (for aggregates, cement and other construction materials that require X-ray scanning) on both the Israeli and Palestinian sides, as well as 4 security facilities, equipped with X-ray scanners, CCTVs and conveyor belts to transfer the cargo through a large concrete separating wall between Israel and Gaza. The facility specified by the consultant will also have one or two secure courtyards surrounded by tall concrete walls with two solid steel doors each to accommodate trade of steel and other bulky construction materials that do not require scanning.

6.1.1. Transport of Gravel (including Adsiya, Semsem and Folliya)

The facility for aggregates will have two short-term storage facilities, one on the Israeli side and one on the Palestinian side, each measuring between 14,000 to 20,000 square meters[16]. The Israeli truck immediately enters the temporary storage facility on the Israeli side without having to wait for clearance. Due to the relatively large storage capacity of the facility, trucks can immediately enter without having to wait for previous trucks to unload their cargo.

The control for entering the storage facility will be through a simple lifting barrier and a weighing scale that will determine the type of aggregates, weight and supplier.

The Israeli truck unloads its cargo in the storage facility on the Israeli side and leaves the facility. The aggregates are then loaded on to conveyor belts and transported through the separating wall directly on to Palestinian trucks, or into a different location within the Palestinian temporary

[16] This is calculated according to the following:
Using an average density for gravels of about 2.5 tons per m^3, a work year of 267 days and an average dwell time of 10 days, the following emerges:
1. Base Course: 100,000 tons/year (or 40,000 m^3/year). At 267 days, this would be 150m^3/day. Average temporary storage = 150 x 10 = 1,500 m^3. Allow a 250 percent surge factor, i.e. total maximum storage is 3,750m^3.
2. Gravel Adsiya: 260,000 tons/year (or 105,000m^3/year). With same parameters as for base course, total maximum storage is 9,750m^3.
3. Gravel Semsem: 330,000 tons/year (or 132,000m^3/year). With same parameters as for base course, total maximum storage is 12,300.m^3.
4. Gravel Folliya: 258,000 tons/year (or 103,200m^3/year). With same parameters as for base course, total maximum storage is 9,700m^3.

The materials will be stored in piles at a height of 10 to 12m. For cones, the volume is given by r^2 x h. From this a 50m-diameter cone base emerges with a truncated top of 7m radius, and would store about 10,700m^3 of gravel. If the height were reduced to 10m, the volume capacity would drop only to 10,210m^3.
A total of 4 material piles are necessary to avoid mixing commodities, and that storage piles of 50m diameter should be adequate for all reasonable contingencies (and a 30m diameter pile should handle all the base course requirements).
A surface area measuring 11,700m^2 (180m x 65m) will be large enough for loading and unloading. Addiding additional space between piles for a 20 percent overflow of any one commodity, the facility will measure 14,000 m^2.

storage facility. Depending on the types of gravel transported, the capacity of the conveyor belt is estimated to range between 1,000 and 1,500 tons per hour for unrefined, or 150 to 200 tons per hour for fine gravel.

6.1.2. Transport of Cement

The transport of cement will take place through two methods. The first will be to increase the number of existing scanners, gates and conveyor belts and dedicate their use solely for cement and other similar construction materials that can be transported in bags on wooden pallets. The facility will require 4 such terminals (consisting of gates, scanners and conveyor belts) to fulfill future demand of cement and other construction materials that require scanning. Each inspection facility will be equipped with CCTV surveillance cameras and scanners and measure 2 x 5 meters.

The 2nd method will be to build pipes running through the separating wall into storage silos on the Palestinian side if the cement is transported in bulk.

In both cases, a temporary storage facility will have to be constructed on the Palestinian side to avoid the complicated logistics involved in coordinating the simultaneous arrival of Israeli and Palestinian trucks that would have to unload and load their cargo at the same time. For cement being transported in bulk, a silo will have to be used, and for bags a covered storage facility will be required.

6.1.3. Transport of Steel

Steel is transported in bundles of rods on open deck trucks. The trucks will deliver their steel into a special secured courtyard, or, if this courtyard is temporarily filled, into a temporary storage facility (this can be the same facility which handles gravel). This secured courtyard will be surrounded by tall concrete walls and have two steel doors, one with access to the Israeli side and the other to the Palestinian side. Security requirements will be fulfilled as surveillance equipment and other security devices will monitor the courtyard. If the steel has been unloaded into the temporary storage facility, then, once the steel has been unloaded, the rods are transported by forklift and/or tractor into the special courtyard once space has become available.

Once the Israeli transport vehicles have left the courtyard, the Israeli door is shut and the Palestinian door is unlocked. Palestinians enter, load the cargo and transport the steel to a temporary storage facility on the Palestinian side.

Currently, steel is transported using a similar mechanism, but since there is only one such courtyard in existence, the procedure is very lengthy and is usually operated based on a schedule where the Israelis unload during the day, and the Palestinians enter and load their vehicle during the evening or at night. The consultants suggest that two courtyards are built so that loading and unloading can occur at the same time. This will facilitate the logistics involved and speed up the overall process.

The size of each courtyard is estimated at 2,000 square meters, which is big enough to permit the maneuvering of trucks and the loading and unloading of the steel rods.

6.1.4. Other Construction Materials

Other construction materials include ceramics, tiles and base course. Depending on their packaging and final shape and form, these will either be transported on wooden pallets through the four scanner facilities or, if in large and bulky form, transferred in 20- or 40-foot containers through the large courtyards by forklift and/or tractor described above (See 5.1.3. on steel). Security requirements for containers are less stringent than for other commodities, as these are inspected at the ports or points of shipment and sealed.

The consultant estimates that between 200 (for 20-foot containers) and 100 (for 40-foot containers) such containers will be transported per month (the consultant has observed that 40-foot containers are used more frequently than 20-foot containers on a ratio of 2:1). This is likely to increase under improved security conditions. Since the 2,000 square meter courtyards are designed to cope with a capacity of approximately 100 to 200 containers per month, a second courtyard will be required to cope with excess demand.

To summarize, the facility will include 1 or 2 temporary storage facilities on each side (Israel and Gaza), 4 sets of X-ray scanner facilities, conveyor belts and gates, 1 or 2 20,000 square meter secure courtyards surrounded by tall concrete walls with 2 doors each and equipped with surveillance equipment, as well as administrative buildings.

Section 6.2. below describes the costs involved in the construction and operation of the CMLF as described above. The services provided are designed to relax the complicated logistics involved in coordinating the unloading of Israeli trucks at the same time as the loading of Palestinian vehicles as is now typically the case. At the same time security measures will be fully implemented.

6.2. Fixed Costs

The consultants would like to clarify at this stage that the facility as described is conceptual only and that, since the project's resources did not include a detailed drawing of the proposed facility, the following cost estimates are merely estimates of cost ranges based on estimated capacities that the CMLF will have to process and transport.

6.2.1. Land

The land is estimated to measure 340 x 250 meters (i.e. 85,000m^2)[17].

[17] Note: Even though the estimates for gravel amounted to between 14,000 and 20,000 m^2, the consultant estimated a total surface amounting to approximately 85,000m^2 since the facility will be designed to simultaneously handle cement, steel and other construction materials.

The land costs, including the required earthworks, are in the range of **US$ 0.7 to US$ 1.0 million**.

6.2.2. Site Infrastructure and buildings

These works include the main complex - the transport and logistics facilities (covered temporary storage facilities/warehouses and the secured courtyards) - as well as fences, roads, parking areas, potable water supply, sewage and electricity. The cost will range between US$ 1.5 and US$ 2.0 million.

The facilities will also include 8 to 10 gate houses that will amount to a total of approximately US$ 200,000.

Equipment and machinery will amount to approximately US$ 300,000.

The total cost will hence amount to between **US$ 2.0 million to US$ 2.5 million**.

6.2.3. Handling Equipment

This will include conveyor belts (including elevators, multiple powered systems, hoppers and screens, and mobility capability) for aggregates, as well as cranes, forklifts, silos, piping and pumps used to transport the construction materials from Israel into Gaza.

The total machinery will amount to approximately **US$ 1.0 to US$ 1.6 million**.

6.2.4. Security Screening Equipment

The cost of different scanners and other related security equipment will range between **US$ 1 to 2 million**.

6.2.5. Administration Facilities

The buildings to house the administration facilities will range between **US$ 0.2 to US$ 0.3 million**.

Table 12: Summary of total fixed costs.

Item	Low Range (US$)	High Range (US$)
Land	700,000	1,000,000
Site Infrastructure and Buildings	2,000,000	2,500,000
Handling Equipment	1,000,000	1,600,000
Security Equipment	1,000,000	2,000,000
Administration Facilities	200,000	300,000
TOTAL	**4,900,000**	**7,400,000**

Source: Estimates made by The Louis Berger Group, Inc. based on potential trade capacity requirements.

Total fixed costs are hence estimated at between US$ 4,900,000 and US$ 7,400,000.

6.3. Variable Costs

The consultant has estimated the following variable costs based on a pre-determined capacity that will fulfill trade requirements during periods of economic growth.

6.3.1. Staffing

Following staff will be required:

- Management team (2 to 3 people)
- Material handling team (10 to 15 people)
- Cleaning and maintenance team (3 to 5 people)
- Security team (depending on overall security situation can range between 10 to 25 people)
- Customs representatives (2 people)

The annual costs per position are estimated at (based on Israeli fees[18]):

Table 13: Summary of staffing salaries[19].

Staff	Units	Individual Costs (US$)	Low Range (US$)	High Range (US$)
Management team	2-3	30,000	60,000	90,000
Material handling team	10-15	12,000	120,000	180,000
Cleaning and maintenance team	3-5	12,000	36,000	60,000
Security team	10-25	20,000	200,000	500,000
Customs team	2	30,000	60,000	60,000
TOTAL			**476,000**	**890,000**

Source: Estimates made by The Louis Berger Group, Inc. based on potential trade capacity requirements.

6.3.2. General Operating and Administrative Costs

Annual operating costs (electricity, fuel, power, water, rent of land, depreciation of machinery, repairs and maintenance, office supplies, etc.) have been estimated at between US$ 650,000 and US$ 1,100,000, depending on the quantities transported and current security requirements.

Total variable costs are hence estimated at between US$ 1,126,000 and US$ 1,990,000.

[18] Note: Between 70 and 80 percent of the staffing is provided by Israel. The consultant has not made any adjustment for the lower salaries paid to Palestinians, since this difference is relatively insignificant for the overall outcome of the feasibility study and since this fluctuates according to security requirements and economic activity.
[19] It is likely that some of these positions (e.g. security and customs) will be paid by the government, although for the purposes of this feasibility study the consultants assume that this cost will have to be covered by the CMLF.

7. Economic Analysis

7.1. Assumptions

The economic feasibility study consists of three sheets (see Annex 2) – the first summarizes costs, the second revenues and the third includes the calculation of the actual cash flow and the Internal Rate of Return (IRR).

7.1.1. Costs

Costs are broken down into fixed and variable costs. All the costs are based on the consultant's estimates as described under section 5 above. Since a technical drawing was not part of this assignment, the costs are based on a range of estimates based on past and current imports into the Gaza Strip.

The minimum and maximum costs are based on the consultant's perceptions of varying sizes of the proposed CMLF based on current and potential future demand, availability of investment and funding sources and the types of construction materials to be transported over the borders. Due to the high volatility in trade between Gaza and Israel and the uncertainty of future political events and how long the current hostilities will last, the consultants base the economic feasibility study on averages between the minimum and maximum cost figures for future calculations.

It is assumed at this stage that the developers will provide 30 percent of the total investment as equity and finance the remaining 70 percent of the investment in annual installments over a period of 15 years at 9.5 percent interest.

7.1.2. Revenues

Sheet 2 summarizes the revenues generated by the CMLF on each construction material. The consultant has estimates for 1999 through to 2002. Since the intifada started in September 2000, the feasibility study assumes that 2000 data represents imports prior to the intifada, and that the 2001 figures are imports during the uprising. The Low Range columns (1999 figures only) are hence quantities imported and revenues obtained during the intifada, and the High Range columns (2001 figures only) are estimates on imports obtained before the outbreak of hostilities. Due to logistical difficulties and timing, the consultant could not obtain complete data sets for 1999 and 2002, and hence did not include them in the study.

The average change in imports of all construction materials amounts to a reduction of 39 percent during the intifada. The percentage changes vary considerably however among the different construction materials. The reduction in imports for ceramics only fell by 1 percent and for ceramics 8 percent, compared with larger changes for Semsem gravel (47 percent), base course (67 percent), tiles (79 percent) and Folliya gravel (80 percent).

The consultants assume that during times of reduced tensions, the demand for construction materials increases at the same rate as the growth in GDP per capita in the Gaza Strip, i.e. at 3.3

percent per annum (see Section 5.2). In the case of increased tensions, the demand for construction materials will fall due to an overall slowdown in the construction industry. The consultants hence assume annual growth rates of only 2 percent.

The following table lists the prices that the CMLF will have to charge per ton of construction materials, if it wishes to maintain an IRR of over 10 percent during periods of increased tensions. It is noteworthy at this stage that although the practice to date is that fees are charged on each truck or container transported into Gaza from Israel, the consultant has chosen to base his feasibility study on prices charged per ton. The rational behind this is that during the field visits, the consultants have observed that many of the trucks are overloaded by up to 50 percent of their capacity, and that hence different quantities of merchandize are transported for the same processing fee. In order to reap the full benefits of the proposed CMLF, prices will have to be charged on the amount of materials transported into the Gaza Strip.

Table 14: Recommended fees to be charged by the CMLF.

Type	Unit	Fee charged by GIE (US$)
Ceramics	Square meters	0.45
Tiles	Square meters	0.45
Steel	Tons	1.95
Base course	Tons	1.75
Gravels (Adsiya, Semsem and Folliya)	Tons	1.75
Cement	Tons	1.85

Source: GIE

7.1.3. Economic Analysis

The economic analysis is based on pre-intifada estimates. Since this is hopefully the norm that the economy will return to, the consultants based these estimates on quantities imported into Gaza before and during 2000. Nevertheless, for the purpose of a full economic and risk analysis, the consultants also included estimates and calculated the IRR based on trade figures obtained during the intifada (2001).

It is assumed, that certain security procedures will remain in place during more peaceful periods and that the vast majority, if not all of the construction materials, will continue to pass through the CMLF. This is a reasonable assumption, as past experience has shown that security conditions remain tight after periods of intensified hostilities, and that they do not return to the same levels of flexibility. The new CMLF will encourage trade through its facility due its increased capacity and its compliance with tight security measures.

The difference in revenues during the intifada and from before hostilities broke out is based on the quantities traded (with a distinct reduction in overall trade by 39 percent). The difference in variable costs was derived by taking the average of the cost ranges estimated by the consultant, and adding 20 percent (approximately half of 39 percent) for the costs under the pre-intifada situation. The reason for not increasing variable costs at the same rate as imports processed is that due to economies of scale, variable costs tend to increase at a slower rate than increases in quantities traded and revenues obtained. Fixed costs, however, are assumed to increase by 39 percent according to the increase in quantities imported into Gaza.

The following section briefly discusses the assumption under each line header of Sheet 3 of the economic analysis.

7.1.3.1. Fixed Costs

Fixed Costs amount to 30 percent of the total investment. These expenses take place during the first year of construction, assumed to take place over a 12-month period in 2003.

7.1.3.2. Variable Costs

Variable costs accrue during the first year of operations, i.e. from 2004 onwards. Due to economies of scale, variable costs do not increase at the same rate as demand for construction materials and hence instead of increases of 3.3 percent, the consultant chose annual increases of 2 percent for variable costs.

7.1.3.3. Annual Debt Payment

This is the debt repayment by the developers of their 70 percent loan over a 15-year period at an interest rate of 9.5 percent.

7.1.3.4. Net Operating Income

These are the revenues that accrue to the CMLF from all construction materials. They increase by 3.3 percent per year, which corresponds to the estimated growth in GDP per capita in Gaza.

7.1.3.5. Cash Flow

The cash flow is calculated by subtracting fixed and variable costs and annual debt payment from the net operating income.

7.1.3.6. Internal Rate of Return (IRR)

The IRR is calculated from the cash flow over the 15-year period. The IRRs under the current price estimates amount to 40.5 percent for pre intifada estimates and to only 10.4 percent during periods of hostility.

7.2. Results

The Internal Rate of Return of 40.5 percent for relatively peaceful periods is distinctly higher than the IRR of 10.4 percent for trade through the proposed CMLF during the intifada.

This large difference in the rates of return is primarily due to the economies of scale assumed by the consultants in his calculation which will occur once trade increases during periods of relative

calm, as well as due to an overall slowdown in economic growth, construction and a demand for construction materials (and hence revenues) during the intifada.

Economic growth will stimulate the construction industry and in turn increase the demand for construction materials. The new facility will provide the capacity of increased demand and reduce the likelihood of bottlenecks occurring at the terminal.

The higher IRR during non-intifada periods indicates that the facility will provide a high rate of return once trade increases. This will not only increase the profitability of the CMLF, but also help to stimulate infrastructural development and long-term economic growth.

8. Conclusion

The economic analysis shows that CMLF operations during periods of reduced tension and closures provide higher returns and IRRs. This is primarily due to the economies of scale pushing up variable costs at a slower rate than increases in quantities imported through the facility, as well as due to a slowdown in demand for construction materials and a resulting reduction in revenues during the intifada. This is however only under the assumption that the CMLF is built large enough to cope with increased trade.

The CMLF's primary objective should be to maintain a continuous flow of imports during periods of intensified tensions, which fulfills all security measures and does not restrict supplies when demand increases and economic growth resumes.

Past experience of recent conflict has shown that security measures do not return to the same degree of flexibility as they did before the outbreak of hostilities. This means that even when the current intifada is over, it is very likely that Karni will remain the only crossing point to remain open for imports into Gaza. This means that any potential increase in demand for construction materials created by economic growth will not be met with increased supplies due to a bottleneck at the Karni terminals. This will increase prices of construction materials, limit the growth of the construction industry, reduce infrastructural development and pose a considerable limiting factor for economic growth.

A new CMLF will provide the Gaza Strip with the required capacity to cope with increased trade volumes during periods of relative calm and improved economic growth, and at the same time still provide the Israeli authorities with the same degree of security as during the intifada.

Annex 1

Breakdown of Imported Construction Materials through the Karni Crossing Point from Israel into the Gaza Strip from January 1999 to March 2002

Figure 1: Breakdown of imported construction materials through the Karni crossing into the Gaza Strip, 1999

	Paints (ton)			Ceramics (m)			Tiles (m)			Steel (ton)			Base Course (ton)			Gravel Adsiya (ton)			Gravel Semsem (ton)			Gravel Folliya (ton)			Cement (ton)		
Month	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel
January	,	-	,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	,
February	,	,	,	-	-	-	-	,		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
March	,	,	,	-	-	-	-	,	,		-	,	-	-	-	-	-	-	-	-	-	-	-	-		-	,
April	,	,	,	-	-	-	-		,		-	,	-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
May	,	,	,	-	-	-	-		,	,	-	,	-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
June	,	,	,	-	-	-	-		,	,	-	,	-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
July	,	,	,	,	-	,	-	-	,	,	-	,	-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
August	,	,	,	,	-	,	-		,	,		,	-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
September	,	,	,	,	,	,	-				-		-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
October	,	,	,	-	,		-	,	,	,		-	-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
November	,	,	,	,	,	,	-	,			-		-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
December	,	,	,	,	,	,	-	,		,	-	,	-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
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Annual Total	, ,	,	, ,	,	,	,		,	,	,		,													,		,
Total (Sources)		, ,			,			,			,															,	
Direct: Imported directly from foreign countries																											
W.B.: Imported from the West Bank																											
Israel: Imported from Israel																											

Source: Data assimilated by the Louis Berger Group, Inc. from official records of the Israeli Airport Authority and the GIE.

Figure 2: Breakdown of imported construction materials through the Karni crossing into the Gaza Strip, 2000

Month	Paints (ton)			Ceramics (m)			Tiles (m)			Steel (ton)			Base Course (ton)			Gravel Adsiya (ton)			Gravel Semsem (ton)			Gravel Folliya (ton)			Cement (ton)		
	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel
January	,	,	,	,	,	,	-			-	-		-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
February	,	,	,	,	,	,	-			-	-		-	-	-	-	-	-	-	-	-	-	-	-	,	-	
March	,	,	,	,	,	,	,			,	-	,	-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
April	,	,	,	,	,	,	-			,			-	-	,	-	-	,	-	-	,	-	-	,	,	-	,
May	,	,	,	,	,	,	-	-		,	-		-	-	,		-	,	-	-	,	-	-	,	,	-	,
June	,	,	,	,	,	,	-		,	,			-	-	,	-	-	,	-	-	,	-		,	,	-	,
July	,	,	,	,	,	,	-		,	,	-	,			,	-		,	-	-	,	-		,	,	-	,
August	,	,	,	,	,	,	-		,	,	-				,	-		,	-		,	-		,	,	-	,
September	,	,	,	,	,	,	-	,	,	-	-		-	-	,		-	,	-		,	-		,	,	-	,
October				-	,	-	-	-	-			-	-	-	-	-	-		-	-		-	-		,	-	-
November				,	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-		-	
December				,	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
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Total (Sources)	, ,			, ,			,			,			,			,			,			,			,		

Direct: Imported directly from foreign countries

W. B.: Imported from the West Bank

Israel: Imported from Israel

Source: Data assimilated by the Louis Berger Group, Inc. from official records of the Palestinian Ministry of Economy, Industry and Trade.

Figure 3: Breakdown of imported construction materials through the Karni crossing into the Gaza Strip, 2001

	Paints (ton)			Ceramics (m)			Tiles (m)			Steel (ton)			Base Course (ton)			Gravel Adsiya (ton)			Gravel Semsem (ton)			Gravel Folliya (ton)			Cement (ton)		
Month	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel
January				,	-	,	-	-	-		-	,	-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
February				,	-	-	-	-		-	-	,	-	-	-	-	-	-	-	-	-	-	-	-	,	-	,
March				,	,	,	-		-		-		-			-	-	,	-	-	,	-	-		,	-	,
April				,	,	,	-	,			-		-	-	,	-	-	,	-	-	,	-	-	,	,	-	,
May				,	,	,	-	-	-	,	-	,	-	-	,	-	-	,	-	-	,	-			,	-	,
June				,	,	,	-		-	,	-		-	-	-	-	-	,	-	-	,	-	-	,	,	-	,
July				,	,	-	-		,	,	-	,	-	-	,	-	-	,	-	-	,	-	-	,	,	-	,
August				,	,		-	-		,	-	,	-	-	,	-	-	,	-	-	,	-	-	,	,	-	,
September			,	,	,	-	-	-		,	-		-	-		-	-	,	-	-	,	-	-	,	,	-	,
October				,	,	,	-	,	,	,	-		-	-	,	-	-	,	-	-	,	-	-		,	-	,
November				,	,	,	-	-	-	,			-	-	,	-	-	,	-	-	,	-	-	,	,	-	,
December				,	,	-	-	-		,			-	-	,	-	-	,	-	-	,	-	-	,	,	-	,
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Total (Sources)		,			, ,			,			,			,			,			,		,			,	
Direct: Imported directly from foreign countries																											
W. B.: Imported from the West Bank																											
Israel: Imported from Israel																											

Source: Data assimilated by the Louis Berger Group, Inc. from official records of the Palestinian Ministry of Economy, Industry and Trade.

Figure 4: Breakdown of imported construction materials through the Karni crossing into the Gaza Strip, 2002

	Paints (ton)			Ceramics (m)			Tiles (m)			Steel (ton)			Base Course (ton)			Gravel Adsiya (ton)			Gravel Semsem (ton)			Gravel Folliya (ton)			Cement (ton)		
Month	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel	Direct	W. B.	Israel
January				,	,	,	-	-		,			-	-	-	-	-	-	-	-	,	-	-	-	,	-	,
February				,	,	,	-	-	-	,	-	,	-	-	-	-	-	-	-	-	,	-	-	-	,	-	,
March				,	,	,	-	-		,	-		-	-	-	-	-	-	-	-	,	-	-	-	,	-	,
Monthly Average				,	,	,	#DIV/ !	#DIV/ !		,		,	#DIV/ !	#DIV/ !	#DIV/ !	#DIV/ !	#DIV/ !	#DIV/ !	#DIV/ !	#DIV/ !	,	#DIV/ !	#DIV/ !	#DIV/ !	,	#DIV/ !	,
Annual Total			,	,	,	,			,	,		,									,				,		,
Total (Sources)		,			,			,			,									,					,	
Direct: Imported directly from foreign countries																											
W. B.: Imported from the West Bank																											
Israel: Imported from Israel																											

Source: Data assimilated by the Louis Berger Group, Inc. from official records of the Palestinian Ministry of Economy, Industry and Trade.

Annex 2

Economic Cost and Benefit Analysis

Figure 5: Fixed and variable costs and terms of repayment

Economic Feasibility Study for the CMLF
Sheet , Calculation of Fixed and Variable Costs

FIXED COSTS	Min	Max	Average
Land	$, .	$, , .	$, .
Site Infrasructure	$, , .	$, , .	$, , .
Buildings	$, , .	$, , .	$, , .
Handling Equipment	$, .	$, .	$, .
Security Screening Equipment	$, , .	$, , .	$, , .
Administration Facilities	$, .	$, .	$, .
Total Fixed Costs	**$, , .**	**$, , .**	**$, , .**

VARIABLE COSTS	Min	Max	Average
Staffing			
Management	$, .	$, .	$, .
Materials Handling	$, .	$, .	$, .
Cleaning and Maintenance	$, .	$, .	$, .
Security	$, .	$, .	$, .
Customs	$, .	$, .	$, .
STAFF TOTAL	$, .	$, .	$, .
Other			
General & Administrative Costs	$, .	$, .	$, .
Operating Costs	$, .	$, , .	$, .
Total Variable Costs	**$, , .**	**$, , .**	**$, , .**

DEBT AND EQUITY	Min	Max	Average
Debt Component	$, , .	$, , .	$, , .
Equity Component	$, , .	$, , .	$, , .
Annual Debt Payment	$, .	$, .	$, .

Figure 6: Quantities imported and revenues obtained by the CMLF

Economic Feasibility Study for the CMLF
Sheet , Calculation of Revenues

REVENUES

Item	Unit	Fee	Low Range	High Range	Low Range Revenue																
Ceramics	Square meters	$.	, , .	, , .	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, , .	$, , .	$, , .	$, , .
Tiles	Square meters	$.	, .	, .	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
Steel	Tons	$.	, .	, .	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
Base Course	Tons	$.	, .	, .	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
Gravel (Adsiya)	Tons	$.	, .	, .	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
Gravel (Semsem)	Tons	$.	, .	, .	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
Gravel (Folliya)	Tons	$.	, .	, .	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
Cement	Tons	$.	, .	, .	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
Total Revenues					**$, , .**	**$.**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**

Based on intifadah quantities ( )	Item	Percentage Increase:	High Range Revenue																
Based on pre-intifadah quantities ( )	Ceramics	$.	$, .	$.	$, .	$, .	$, .	$, .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .
	Tiles	$.	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
	Steel	$.	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
	Base Course	$.	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
	Gravel (Adsiya)	$.	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
	Gravel (Semsem)	$.	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, , .	$, , .
	Gravel (Folliya)	$.	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
	Cement	$.	$, .	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
	Average:	**$.**	**$, , .**	**$.**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**	**$, , .**

Figure 7: Economic Analysis

Economic Feasibility Study for the CMLF
Sheet , Calculation of Cash Flow and IRR

Intifadah Estimates																
Fixed Costs	$, , .	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.
Variable Costs	$.	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .
Annual Debt Payment	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
Net Operating Income	$.	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .
Cash Flow	-$, , .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
IRR	**. %**															
Pre-Intifadah Estimates																
Fixed Costs	$, , .	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.	$.
Variable Costs	$.	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .
Annual Debt Payment	$.	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .	$, .
Net Operating Income	$.	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .
Cash Flow	-$, , .	$, .	$, .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .	$, , .
IRR	**. %**															