

Options for Achieving Internal Economic Connectivity and Effective International Trade for a Viable Palestinian State

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The Unity of the Palestinian Economy a Key for Ending the Occupation

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Faisal Awadallah





M A S

Palestine Economic Policy Research Institute

**Options for Achieving Internal Economic
Connectivity and Effective International
Trade for a Viable Palestinian State**

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2011

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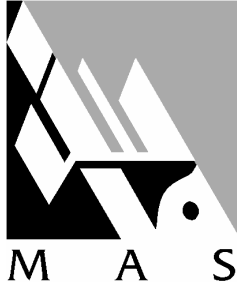
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Foreword

The following study addresses the possibility of constructing a physical connection between the West Bank and Gaza Strip in order to establish and maintain the unity of the national homeland and ensure its economic viability. This study is one of the five papers presented MAS's 2010 annual conference entitled "Palestinian Economic Unity: Key for Ending the Occupation and for Sustainable Development."

This research reviews various proposals and ideas for creating the physical infrastructure needed to connect the West Bank and Gaza Strip; in particular, it focuses on the location of the connecting corridor and possible modes of transportation. Moreover, this study investigates the affects that a secure and efficient connection between the two-wings of the Palestinian state might have on working conditions, cost and the efficiency of transportation. Finally, the study makes suggestions and evaluates various proposals to connect the forthcoming Palestinian State to its neighbors – Syria, Lebanon, Jordan and Egypt.

This research makes a valuable contribution to the literature on this subject. Indeed, it provides a thorough and critical assessment of previous proposals and puts forward new and innovative suggestions, which will enrich the debate and provide policy makers with important new ideas.

I would like to thank the author for making an important and original contribution to the subject and the reviewers who helped ensure that the study is of the highest quality. Finally, I would like to thank The Groupe Agence Française de Développement (AFD) and the Palestinian Ministry of Planning for supporting this research and the Palestine Investment Fund (PIF) for sponsoring the MAS Annual Conference in 2010.

Dr. Samir Abdullah
Director-General

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Abstract

A coherent and effective Palestinian economy is directly related to internal connectivity of transport systems within the West Bank and Gaza Strip and between them. In addition, a sound economy needs free international trade and open borders. This paper addresses the current transportation facilities and mobility for people and goods in the West Bank and Gaza. In addition, it provides a historical background on the mobility and transportation conditions in Palestine. Finally the paper addresses transportation options for a viable Palestinian State in the Palestinian areas occupied by Israel in 1967.

Various studies that evaluated transport needs for a viable Palestinian State, including studies by the PNA, Israel, and the RAND Arc plan were reviewed. The main internal connectivity transport element recommended in this study is a main backbone corridor in the central West Bank from Jinen to south of Hebron and then crosses Israel south of Beit Awwa to a point south of Beit Hanoun. The corridor continues south along the Gaza Strip eastern border to Yasser Arafat's airport and the Rafah border crossing. A spur to the west, located south of Gaza city that leads to Gaza seaport is also needed.

The corridor between the West Bank and the Gaza Strip is recommended to be at-grade level with suitable security measures to protect both Palestinian motorists and Israeli residents along the corridor. It should be under Palestinian control. Short segments of bridges or tunnels may be possible, especially as overpasses or underpasses to Israeli roads and railroads. A continuous bridge or tunnel option is very expensive and could be sabotaged by Israeli extremist. In addition such options (especially a tunnel) could stress drivers and in case of major accidents the corridor could be closed for extended periods.

The study also emphasized that the Palestinian Himma area occupied in 1967 (which is part of the British Mandate Palestine that was a demilitarized zone between 1949 and 1967 as part of the armistice agreement between Israel and Syria in 1949) should be part of the Palestinian State. Thus the study suggests a transport corridor between the West Bank and Himma region along the Jordan and Yarmouk rivers.

Finally, the study recommends at least two border crossings with Jordan, one with Egypt, and one with Syria, as well as a number of border crossings with Israel. In addition, to a safe passage to Lebanon that could be utilized at the first stage with several scheduled convoys per day. The Palestinian State should have at least Gaza's Yasser Arafat airport and Jerusalem airport operational, along with a seaport in the Gaza Strip. Three airways of suitable altitude range should be reserved; namely, between the West Bank and Gaza Strip, north of the West Bank to the Mediterranean Sea, and from Yasser Arafat airport across the Negev desert to Jordan.

1. Introduction

Mobility of people and movement of cargo within a country and to international markets constitute an essential element for a viable economy. The mobility of people and movement of cargo within the West Bank and Gaza, between the West Bank and Gaza, and between the Occupied Palestinian Territories (OPT) and the rest of the world in the past several decades are not reflective of the desirable demand or the demand expected for a Palestinian State. This is true due to occupation restrictions on travel and freight movement. The options for achieving economic connectivity and effective international trade for a viable Palestinian State need viable and efficient transport facilities. However, the state-of-the-art transport facilities could be useless if there is no viable state, especially if occupation restrictions and control continues. Hence, review of transportation and mobility conditions in the West Bank and the Gaza Strip and a historical and transport background of Palestine are essential in understanding the underlying assumptions and the basic needs for effective mobility and freight movement for a viable Palestinian State.

The transportation conditions in the Gaza Strip and the West Bank are addressed separately due to the distinctive characteristics of the two regions, particularly in the current situation.

2. Historical and Transport Background of Palestine

The area of Palestine under British Mandate is the actual area disputed and claimed by some to be Palestine and by others to be Israel (see Fig. 1). Figures 2 and 3 are the maps of the Peel Commission partition plan of 1937, and UN resolution 181, partition plan of 1947 respectively. A review of both maps shows the Palestinian (Arab) State area has been reduced drastically during this ten years period (1937-1947); even though more than 90% of the land of Palestine was owned by Palestinian Arabs or public land, and about two thirds of the population of Palestine in 1947 comprised of Arabs.

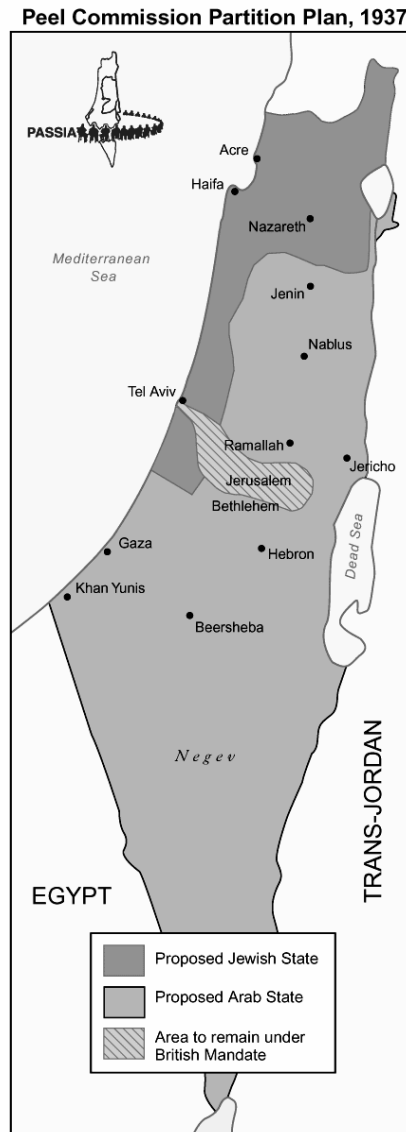
When Britain ended its mandate on Palestine on May 14, 1948; the State of Israel was declared. The Palestinians and Arabs refused the unfair partition plan, but Israel did not adhere to its area as of the partition plan and at the end of the war of 1948, Israel controlled about 77% of British Mandate Palestine (see Fig. 3, Map of Rhodes Armistice Line). This consisted of the entire Jewish State plus about 50% of the Arab state and most of the international areas set by the partition plan of UN resolution 181. Also as a result of the 1948 war, the majority of Palestinians were expelled from their homes and lands or escaped from the war to safer areas, but all were refused from returning to their homes at the end of the war even after UN resolution 194 of 1949 demanded Israel to allow the displaced Palestinians to return to their homes. The ethnic cleansing started several months before the end of British mandate on Palestine on May 14, 1948. The UN resolutions 181 and 194 were never implemented nor enforced by the UN until today. In the 1967 war, Israel occupied the remaining Palestinian territories of British Mandate Palestine in addition to the Syrian Golan Heights and the Egyptian Sinai Peninsula. The Occupied Palestinian Territories (OPT) of 1967 consist of the West Bank, Gaza Strip, and Palestinian Himmah (see Fig. 4). The Egyptian Sinai Peninsula was returned to Egypt as a result of the Camp David Accord of 1979. The OPT and the Syrian Golan Heights remain occupied until today even though UN resolution 242 of 1967 and many subsequent UN resolutions demanded from Israel to withdraw from the territories it occupied in the 1967 war. The Gaza Strip, which is part of the OPT of 1967 is technically still occupied by Israel even though there is no presence of the Israeli army within the Gaza Strip since the summer of 2005 (except for the duration of the war on Gaza Dec 08/Jan 09 and other minor incursions). The current occupation is in the form of total control of access by Israel for travel and goods movement to and from the Gaza Strip.

Figure: 1: Palestine under the British Mandate (1922-1948)



Source: American Task Force on Palestine website, 2007

Figure 2: Peel Commission Partition Plan of 1937

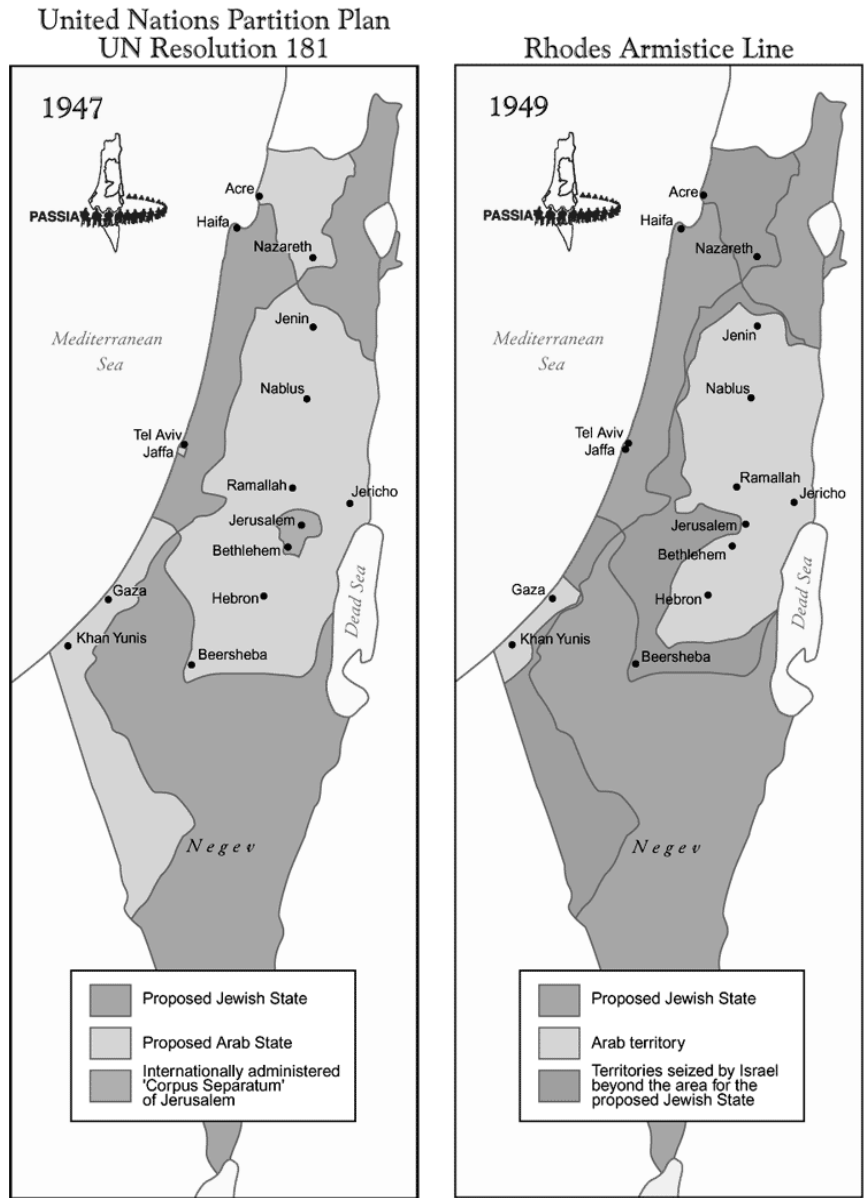


Source: Palestine Royal Commission Report (Peel)
July 1937, London: HMSO

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Source: PASSIA website, 2010

Figure 3: UN Partition Plan, 1947 and Rhodes Armistice Line, 1949



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Source: PASSIA website, 2010

Figure 4: Occupied Palestinian Territories (OPT) of 1967 (West Bank, Gaza Strip and Himmah)



Source: Palestine Center, 2007; original map revised by author to show Himmah region

Understanding the background of this conflict and the current situation is essential to understanding the Palestinian needs for mobility after the establishment of a Palestinian State. The West Bank has an area of 5800 square kilometers (about twice the area of Luxembourg), about 130 km in the north-south direction and 30 to 60 km in east-west direction. Its shortest width is from Jerusalem to the Dead Sea. The Gaza Strip has an area of 365 square kilometers (about the area of the Island of Malta), 40 km along the Mediterranean Sea and 6 to 12 km in the east-west direction. The Palestinian Himmah was an integral part of British Mandate of Palestine. The 1949 Armistice Demarcation line between Israel and Syria left about 65 square kilometers of British Mandate Palestine out of the boundaries of Israel, but in demilitarized zones. Between 1949 and 1967 there were Israeli incursions and control of parts of the demilitarized zones. In addition to the Himmah region, there were two demilitarized zones north of Tiberias Lake for a total area of about 65 square kilometers of demilitarized zones between Israel and Syria (see Fig. 5). A small area of the Palestinian Himmah region remained under Syrian control between 1948 and 1967. The Palestinian Himmah has an area of about 25 square kilometers. It is an excellent recreational and touristic area; where a coast of about ten kilometers on the Tiberias Lake eastern shore and hot water springs are main attractions. All the demilitarized zones as well as the Syrian Golan Heights were occupied in 1967 by Israel.

The 2007 Palestinian population estimates for the West Bank (including East Jerusalem) and the Gaza Strip are 2 345 107 and 1 416 539 respectively (PCBS, 2007). The Palestinian Himmah area was lightly populated by Palestinian Arabs before 1948, but practically no Palestinian inhabitant remained after it became a demilitarized zone between 1949 and 1967.

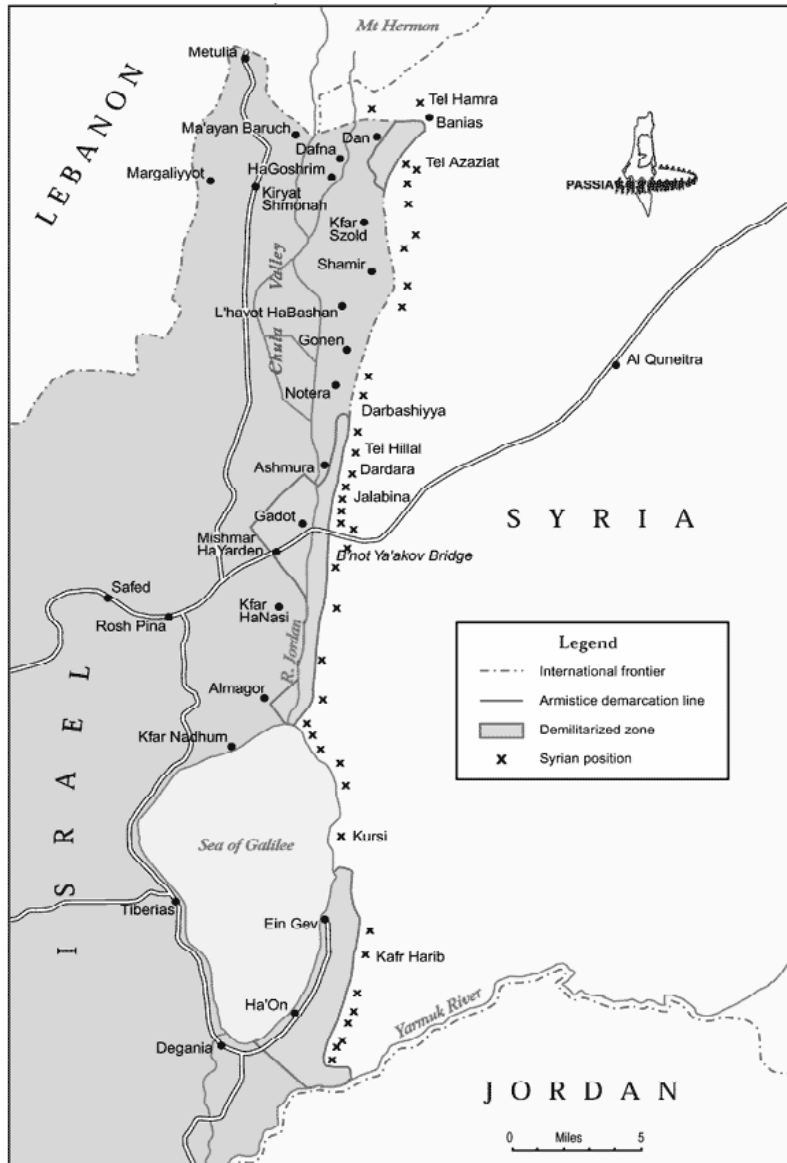
Jerusalem became a divided city as a consequence of the 1948 war. East Jerusalem (which includes the Old City) remained under Arab control until 1967. Israel occupied and annexed East Jerusalem in 1967. Jerusalem was a major transportation hub between the north and south regions of the West Bank.

Between 1948 and 1967, the West Bank was under the jurisdiction of Jordan, while the Gaza Strip was under the jurisdiction of Egypt. There were no transportation links between the West Bank and the Gaza Strip, which were separated by about 40 km Israeli territory (see Figure 4). After the 1967 war the transportation links between the West Bank and Gaza

Strip and the neighboring Arab countries were virtually cut off, except for minor Israel authorized passage to Jordan and after 1979 (as a result of the Camp David Accord) to Egypt. On the other hand, travel between the West Bank, the Gaza Strip, and Israel were permitted after the 1967 war. However, there were on and off restrictions on travel from the West Bank and Gaza Strip. The restrictions on travel by the Israeli army after the establishment of the Palestinian Authority have become most severe, especially after Al-Aqsa uprising in the fall of 2000.

Presently there is no railroad network, a functioning airport or a seaport in the West Bank and Gaza Strip. Before the 1948 Nakbah (catastrophe) there was a railroad passing through the Gaza Strip connecting to Egypt in the south, and to Lebanon, Syria, and Turkey in the north; in addition to a main line connecting Jerusalem to Jaffa (the oldest railroad line in the Arab countries) and minor lines connecting some West Bank towns such as Nablus, Jenin, and Tulkarem. The railroad through the Gaza Strip remained functioning between 1948 and 1967 under the jurisdiction of Egypt. It also remained functioning until the mid 1970's, but under Israeli army control and for their usage only. Also, before the 1948 Nakbah there were several seaports, especially in Haifa and Jaffa and a main airport in Lod; in addition to a petroleum pipeline from Kirkuk, Iraq to Haifa. While, before the 1967 war, there were two functioning airports; Jerusalem International airport, located north of Jerusalem and a United Nations runway strip, located in Al-Montar area in the central part of the Gaza strip. Also before 1967 a small seaport in Gaza was functioning. Therefore, transportation's facilities were not only neglected in the past 43 years in the West Bank and the Gaza Strip, but even were drastically cut back. This in contrast to the region and the world; where transportation had substantial advancements.

Figure 5: Demilitarized Zones between Israel and Syria as of the 1949 Armistice Agreement



Source: PASSIA website, 2010, original source: Sachar, 1981

3. Current Transport and Mobility Conditions in the Gaza Strip

The Gaza Strip has borders from the north and east with Israel and it has a Mediterranean coast of about 40 km from the west, which is controlled and blockaded by Israel. Egypt borders the Gaza Strip from the southwest with a 12 km long border (see Fig. 4). Before the Israeli withdrawal from the Gaza Strip in the summer of 2005; Israeli settlements and military outposts were distributed on about 40% of the Gaza Strip. The roads connecting Israeli settlements in the Gaza Strip with Israel had split the Gaza Strip into four areas. Currently (after the Israeli withdrawal from the Gaza Strip in 2005), the mobility within the Gaza Strip is unimpeded. However, a trip by car from the seacoast in the west to the Israeli border in the east (from most parts of the Gaza Strip seacoast) is only about six kilometers or under free flow traffic conditions (60 km/h), the trip is only six minutes. If the German autobahn was to cross the Gaza Strip; some drivers would take less than two minutes to cross it. The trip from the north border to the south border of the Gaza Strip, which has the longest distance, is about 45 minutes for free flow traffic conditions. Presently there are no railroads in the Gaza Strip, and public transit is mostly taxis and shared taxis with no scheduled public transit service.

The length of paved roads in the Gaza Strip is about 545 km (Palestinian MOT records, 2010), with only one main north-south route, Route Number 4, but currently it passes through mostly urbanized areas and the speed limit does not exceed 50 km/h for most sections.

The border between the Gaza Strip and Israel remain effectively closed. Free travel from the Gaza Strip to Israel or via Israel to the West Bank or Jordan and vice-versa is not allowed by Israel. Very limited permits have been given between 2000 and 2007 and for medical or special conditions. However, after Hamas took over the Gaza Strip in 2007, the situation has become much worst.

Before the 2007 Hamas takeover of Gaza, cargo movements to and from the Gaza Strip was (and still is) completely controlled by Israel. Closure to all cargo movements, for extended durations, in and out of the Gaza Strip was (and still is) common. Thus shortages of many goods in the

Gaza Strip is an often occurrence. In addition, export of agricultural products from Gaza Strip was frequently delayed while hauling in trucks; thus such products are often wasted. Cargo movement through the Israeli border crossings (the only border crossings) must be emptied from truck on one side and loaded onto a truck on the other side (truck back to back arrangement). In addition, all trucks arriving at the unloading/loading line must be pre-inspected via X-rays machines on the Palestinian side with Israeli access to closed circuit TV and connection to inspection databases. Thus trucks are given the ok to proceed based on the Israeli approval. No direct cargo movement from Egypt to and from the Gaza Strip was allowed. Cargo between Gaza Strip and Egypt are only allowed via Israel.

The 12 kilometer border between Egypt and the Gaza Strip is highly fortified and sealed, which was constructed during Israel occupation (physical presence) of the Gaza Strip. Furthermore, Palestinian houses and portions of refugee camps adjacent to the border with Egypt have been demolished in order to have a so called “security strip” with a width of about 500 meters along the length of the border between Gaza Strip and Egypt (known as Philadelphi Route). There is only one border crossing between the Gaza Strip and Egypt, the Rafah crossing, which used to be monitored by EU representatives stationed on the crossing. It also used to be monitored by closed circuit televisions and through border control databases at real time processing by Israel. No cargo is allowed through this crossing; Cargo from/to Egypt must pass via Israel (Karem Abu Salem crossing). Also, only Palestinians from the Gaza Strip are allowed to use this border crossing. All visitors to Gaza Strip regardless of nationality can only enter (or exit) the Gaza Strip through Israel border crossings with the Gaza Strip (Egypt recently made some exceptions to such regulations/restrictions under humanitarian pressures, but continues to generally adhere).

Even though, the Rafah border crossing provides the only access for the Palestinians from/to the Gaza Strip to/from the world; it repeatedly has been closed by order of the Israeli army even before the Hamas takeover in 2007. In 2006, the Rafah border crossing has been closed often and sometimes for weeks; leaving the Palestinian people in the Gaza Strip without access to any place in the world. Thus, the Gaza Strip became a large prison, with most people cannot drive more than half an hour in any direction by car. Photos 1 and 2 present Palestinian stranded at the Egyptian side of the Rafah border crossing in August 2006. For the past

three years (since June 2007 Hamas takeover of Gaza strip), the Rafah border crossing has been closed by Israeli orders and it only opened for very limited times and for humanitarian conditions.

The Gaza Strip is virtually closed, but imports for basic survival needs are permitted by Israel intermittently. Figure 6 shows the border crossings with the Gaza Strip. The Beit Hanoun/Erez terminal was used for the passenger travel, but currently it is virtually closed with limited humanitarian cases for travel of passengers and some limited medical supplies. Nahal Oz crossing is only used for the supply of petroleum products imports (diesel, benzene, and cooking gas). Al- Montar/Karni terminal is the main freight terminal with the Gaza Strip; but in the past years, Sufa terminal was also used especially for humanitarian aid products. Karem Abu Salem/Kerem Shalom crossing is a freight terminal, which was established particularly for freight movement between the Gaza Strip and Egypt (only via Israel). Finally the Rafah border crossing between Egypt and the Gaza Strip is for passenger travel only and was mostly closed for the past few years. The number of trucks passing Karni crossing are given in Table 1.



Photo 1: Palestinians stranded for weeks at the Rafah Crossing to the Gaza Strip. The picture above show shuttle buses on the day when Israel allowed Palestinians to return to Gaza Strip, August 2006



Photo 2: Palestinians stranded for weeks at Rafah crossing to the Gaza Strip. The picture shows the passport control for the day when Israel allowed Palestinians to return to the Gaza Strip, August 2006

Figure 6: Border Crossings with Gaza Strip



Source: PalTrade, Gaza Report, 2010

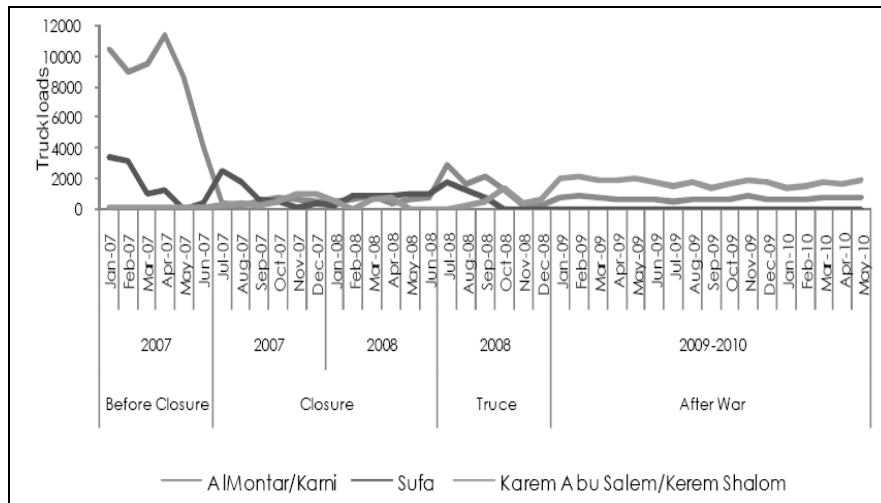
Table 1: Freight Trucks Crossing Al-Montar (Karni) Border Crossing between the Gaza Strip and Israel

Year	Number of Trucks per year	Average trucks per day
2001	133500	366
2002	134466	368
2003	144364	396
2004	101028	277
2005	114812	315
2006	56659	155
2007	52211	143

Source: Israel official website for Karni crossing, 2008

Figure 7 shows the drastic reduction of the truckloads through the Gaza Strip crossings since the closure of 2007. Yet, the values between 2001 and 2007 are also below normal. No control (or limited control) of goods movement between the Gaza Strip and Israel before 1994 was administered. There are virtually no exports from the Gaza Strip from June 2007 until preparation of this report. The exports have practically stopped.

Figure 7: Trends of Truckloads Movement across the Gaza Strip Crossings 2007-2010



Source: PalTrade, Gaza Report, 2010

An airport was built in the extreme southeast corner of the Gaza Strip and started operating at the end of 1998. Regular air carrier flights were scheduled from and to this airport (1st named Gaza Airport, and later Yasser Arafat Airport) for about three years (1998 -2001). The International Air Transport Association (IATA) airport code is GZA and the International Civil Aviation Organization (ICAO) airport code is LVGZ. The airport has one runway, which is 3080 meters long and 60 meters wide asphalt pavement. The orientation of the runway is 10/190 (mostly north-south), and at it is at an elevation of about 100 meters above mean sea level. The airport flights and passengers departing/arriving needed Israeli permission. Travelers on the scheduled flights had to go to the Rafah border crossing in a bus before entering the airplane or when leaving an airplane after arriving. The Rafah border control is about one kilometer from the airport and it was then under full Israeli control. At the Rafah border control, the passengers and their luggage were processed by Israeli border control personnel. The airport is closed since 2001. The Palestinian Airlines owned and operated three aircrafts, two Fokker 50, and one Boeing 727, which were operated on few routes and most flights were either to Cairo or Amman, but also had limited scheduled flights to Doha, Qatar, Abu Dhabi and Dubai in the United Arab Emirates, Jeddah, Saudi Arabia, Larnaca, Cyprus, and Istanbul, Turkey.

The seaport in Gaza city is basically a fishing boats marina. The sea is blockaded by Israeli warships. Only fishing boats from Gaza are allowed to fish at a maximum distance of three miles from the coast, but often fishing boats are not allowed to leave shore at all. Several solidarity boats reached Gaza, from Cyprus during the siege, but certainly with Israeli approval. Other boats were denied entry into Gaza fishing port. At the end of May 2010 Israeli commandos attacked a Turkish aid flotilla in international waters sailing to thwart the Gaza blockade, which left nine passengers dead and hundreds injured.

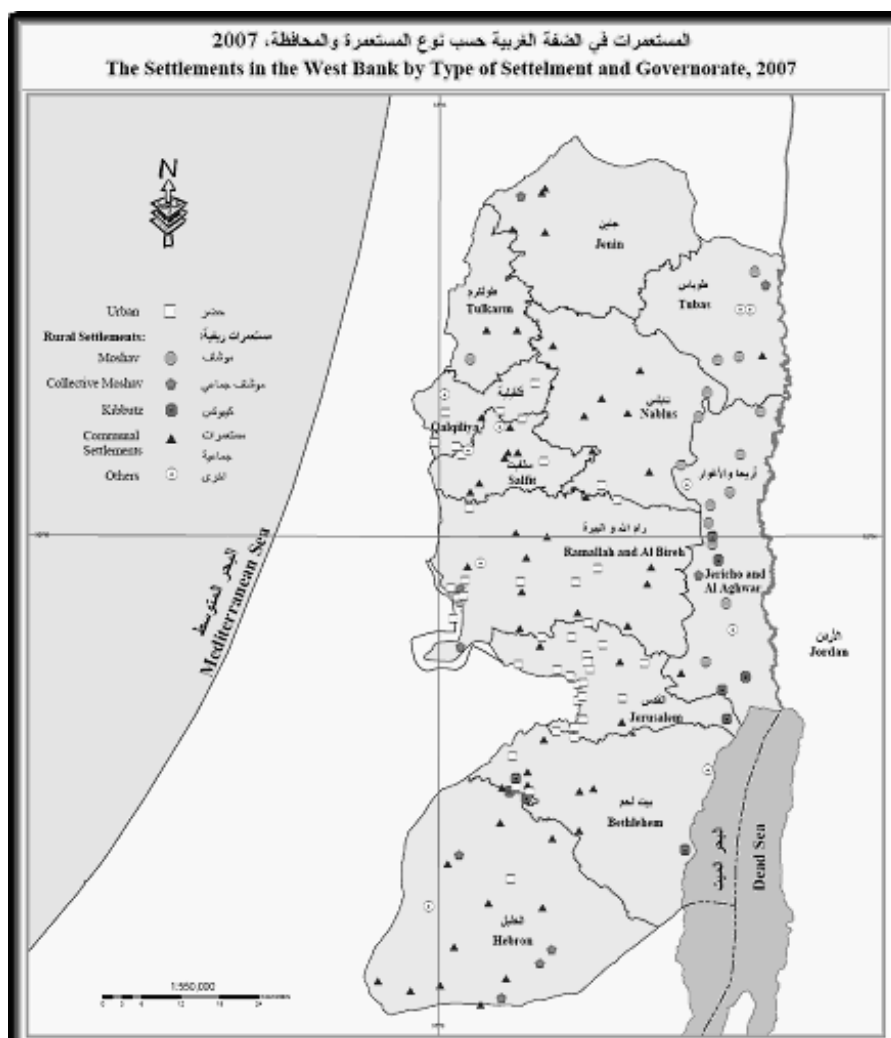
The planned Gaza seaport estimated construction budget is 69 million Euros, of which the Netherlands pledge to donate 23 million Euros, and France pledged another 20 million Euros. The planned seaport in the 1st phase is for 11.0 meters draft and 240 meters marginal wharfs, which would be equipped with cranes and used for both container and roll-on/roll-off operations. The breakwater length for the port protection was planned for 730 meters. The second and third stages of the seaport would mainly increase the wharfs lengths, deepen the draft to 14 meters and increase the storage area (Shaath, 2005).

4. Current Transport and Mobility Conditions in the West Bank

Unlike the Gaza Strip, the West Bank still remains under direct Israeli occupation and has hundreds of Israeli settlements throughout the West Bank. Figure 8 shows a map of the locations of Israeli settlements throughout the West Bank. Most of the land where the settlements were built belongs to Palestinians; who were forcefully deprived from their land. The settlements and their web of road network have mutilated the West Bank and have been a continuous source of tension and violence. Even though the area of the West Bank is more than 15 times the area of the Gaza Strip (The West Bank is about one fourth the area of Israel); the mobility is currently worse than that of the Gaza Strip. The West Bank unlike the Gaza Strip has mostly mountainous terrain. It is surrounded from all sides by Israel, except from the east; where it borders Jordan. There are no railroads in the West Bank and public transit is very poor. Few scheduled bus service exist on routes in the West Bank, but most of the public transit is handled via shared taxis.

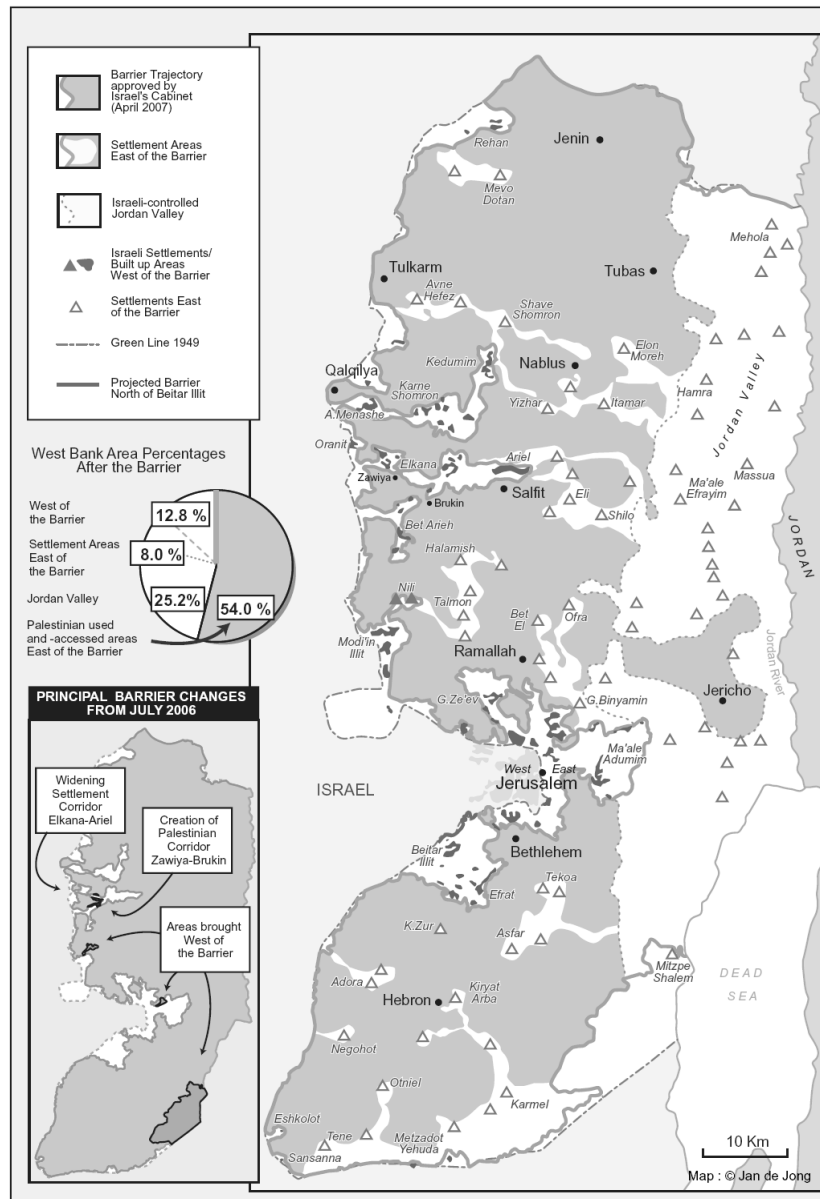
The West Bank - Israel border (1949 armistice line, also called the green line) is located in inhabited and mountainous areas, which is difficult to establish or enforce. In addition, East Jerusalem is an integral part of the West Bank that was occupied in 1967; thus there were no restrictions on travel for Palestinians from East Jerusalem or the West Bank to West Jerusalem and any part of Israel. The building of the Segregation Wall since 2002 (most sections of the wall has been completed) has barred Palestinian from the West Bank to travel to Israel or even to East Jerusalem. The wall does not only separate the West Bank from Israel but also encompasses large areas of the West Bank (see Fig. 9), and in many cases separating Palestinians from Palestinians (see photo 3). In addition to settlement roads, hundreds of checkpoint and roads closure exists in the West Bank. Roads are closed with embankments, concrete blocks, iron gates or trenched sections. The peak of road closures in the West Bank was between 2002 and 2004. Photographs 4 and 5 show an example of a closed section of Ramallah - Birzeit road.

Figure 8: Israeli Settlements in the West Bank, 2009



Source: Palestinian Central Bureau of Statistics, 2009.

Figure 9: The Segregation Wall in West Bank, 2007



Source: Foundation for Middle East Peace website, Washington, USA, 2010



Photo 3: Nine-meter-high Wall Splitting the Palestinian Community of Abu Dis, East of the Old City of Jerusalem



Photo 4: Birzeit – Ramallah road trenched and closed with embankment at two locations about one kilometer apart, forcing all passengers to depart transit vehicles and walk for about one kilometer and ride vehicles on the other side of the road closure, October 2002

The only mode of transportation currently available in the West Bank is highways/streets, which also is subject to neglect and poor maintenance. There is a high standard highway network connecting the Israeli settlements in the West Bank together, and with the activity centers within Israel. These highways were planned and designed to serve the Israeli settlements and not the Arab communities, thus many of such highways are more of barriers between Arab towns and villages, rather than a facilitator between them.



Photo 5: Traffic Jam caused by the Birzeit-Ramallah road closure (the orange vehicles are shared taxis), October 2002

The travel of Palestinians from the West Bank outside the country is also highly restrictive. Even travel to Israel, which was without restrictions in most periods since the occupation in 1967; it is now highly restricted after the erection of the Segregation Wall. Travel outside Palestine and Israel for Palestinian from the West Bank is only possible through the Allenby Bridge border crossing with Jordan (also known as Karama or King Hussein crossing). The bridge is open for 14 hours per day (8:00 - 22:00); on Fridays and Saturdays it is only open for about 4 hours (8:00 - 12:00). This arrangement became only possible since 2009. However Allenby bridge crossing was only open on the average 6 hours per day for the years 2001-2009. The bridge is completely closed on few holidays per year. Table 2 provides the number of passengers' crossing the Allenby Bridge per year.

There are about 4125 km of paved inter-city roads in the West Bank (Palestinian MOT Records, 2010); including about 1000 km of roads considered Israeli settlements' roads or by-pass roads, where Palestinians had and still have some restrictions of use on parts of such roads. Travel within the West Bank by motor vehicles has the longest trip of about three hours for travel of about 180 km of mountainous winding roads, if unimpeded.

Table 2: Passengers Crossing the Allenby Bridge between the West Bank and Jordan*

Year	Annual Passenger Traffic	Average Annual Passenger Daily Traffic
2001	793085	2173
2002	509135	1395
2003	573485	1571
2004	853752	2339
2005	1058526	2900
2006	1056814	2895
2007	1278729	3503
2008	1501474	4114

Source: Israel official website for the Allenby Bridge, 2010

*Some passenger crossing the bridge may be going to or coming from Israel

Any Palestinian in the West Bank cannot travel an hour by a motor vehicle without a check point or road closure. There are many areas in the West Bank blockaded by the Segregation Wall, which has only one or two entrances/exits, including cities such as Qalqelia. Some enclaves are so limited in area that a person cannot travel more than one kilometer in any direction. Furthermore, some enclaves had only one entrance/exist and it was opened and closed via a gate and this gate was opened few hours in the morning and afternoon to allow the school children to go to their schools and everyone living in such areas must accustom his/her work and errands to coincide with the schedule of the opening and closing of the gate (see photos 6 and 7). Thus the mobility within the West Bank for the Palestinians is a nightmare and it is beyond facilitating mobility for Israeli settlers or security reasons.



Photo 6: Kirbat Jabrah, Tulkarem Governorate (October 2003): Palestinian schoolchildren from the village of Kirbat Jabrah waiting for Israeli soldiers to open the gate so that they may return to their homes

Source: PECDAR, 2004



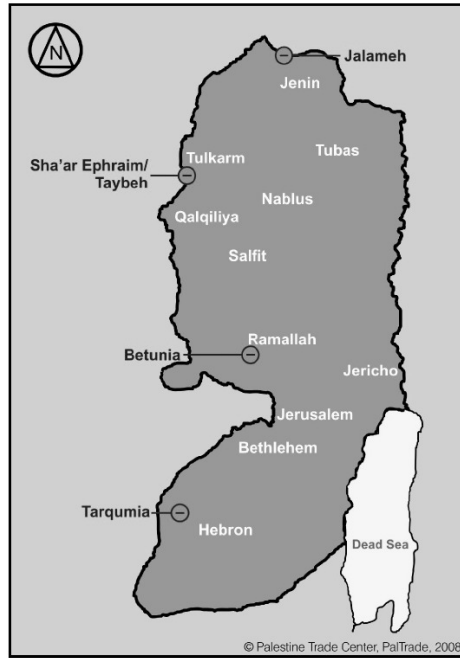
Photo 7: Kirbat Jabrah, Tulkarem Governorate (October 2003)

Source: PECDAR, 2004

Figure 10 shows the border crossings between the West Bank and Israel. These are recent border crossings, and few years earlier there were no

official border crossings between the West Bank and Israel. However, the building of the Segregation Wall restricted trade between the West Bank and Israel to the established crossings.

Figure 10: Border Crossings between the West Bank and Israel



Source: PalTrade, West Bank Report, 2010

Table 3 provides the number of trucks crossing Allenby Bridge border crossing between the West Bank and Israel. The number of trucks using Karni border crossing are much higher than the number of trucks using the Allenby Bridge. The reason is that all the freight to the Gaza Strip is through crossings with Israel, mainly Karni; while also most of the trading with the West Bank is also through Israel and not through Jordan (Allenby Bridge crossing).

Table 4 provides the truckloads for incoming and outgoing trucks between the West Bank and Israel for the month of May 2010. Thus in comparison with the Allenby Bridge crossing (the only crossing between the West Bank and a country other than Israel, namely Jordan); the truckloads for each of the four crossings (imports and exports) between the West Bank and Israel exceeds truckloads traffic for the Allenby Bridge crossing.

Table 3: Freight Trucks Crossing the Allenby Bridge between West Bank and Jordan

Year	Number of Trucks per Year	Average Number of Trucks per day
2001	8161	22
2002	9726	27
2003	8147	22
2004	8625	24
2005	9767	27
2006	10159	28
2007	11455	31
2008	13634	37

Source: Israel official website for the Allenby Bridge, 2010

Table 4: Freight Movement between West Bank and Israel for the Month of May 2010

		Taybeh	Tarqumia	Al-Jalameh	betunia
Exports	Total monthly (Excluding Empty Trucks)	1,996	2,267	2,143	805
	Empty Containers and bins	1,704	1,855	1,093	0
	Average per day (Excluding Empty Trucks)	77	87	82	32
	Registered but unprocessed trucks	0	0	3	3
	Rejected during processing trucks	1	0	3	0
	Total monthly (Excluding Empty Trucks)	5,206	3,973	2,310	1,039
Imports	Empty Containers and bins	148	294	105	0
	Average per day (Excluding Empty Trucks)	200	152	89	42
Operation Days	Actual Opening Days (Import and Export)	26	26	26	25

Source: PalTrade, West Bank Report, 2010

Table 5 shows the value of Palestinian imports and exports 2000 - 2007. The value of Palestinian exports and imports in million US dollar in 2007 were 513.0 and 3,141.3 respectively; of which 73% for the import is from Israel and 88% of the export is to Israel. As expected the Palestinian foreign trade faces huge deficient, especially in terms of percentages. Table 6 shows that about 5% of the value of exports in 2000 was transported by air. It should be noted that Gaza Airport was open in this year and some of the exports, especially flowers occurred via this airport. The airport was opened only for about three years from the end of 1998 until early 2001.

Table 5: Value on Imports and Exports and Current Main Indicators, 2000- 2007

Value in Million US Dollars								
Indicators	2000	2001	2002	2003	2004	2005	2006	2007
Total Palestinian Exports	401.0	290.3	240.9	279.7	312.7	335.4	366.7	513.0
Total Palestinian Imports	2,382.0	1,515.6	2,033.6	1,800.3	2,373.2	2,666.8	2,758.7	3,141.3
Palestinian Net balance Trade	1,981.0	1,743.3	1,274.7	1,520.6	2,060.6	2,331.4	2,392.1	2,628.3
Total National Exports	295.0	217.8	178.0	195.7	216.1	234.6	263.7	347.6
Total Re Exports From Palestine	106.0	72.6	62.9	84.0	96.6	100.8	103.0	165.3
Total Exports From West Bank	323.0	251.9	208.1	234.4	272.8	294.2	332.8	490.7
Total Exports From Gaza Strip	78.0	38.4	32.7	45.2	35.0	41.2	33.9	22.3
Total Palestinian Imports From Israel	1,739.0	1,352.0	1,117.0	1,309.6	1,747.9	1,872.9	2,002.2	2,307.0
Total Palestinian Exports to Israel	370.0	273.0	216.0	256.0	281.1	290.6	326.6	455.0
Total Exports From West Bank to Israel	311.0	235.5	189.4	217.0	246.1	253.4	292.6	448.0
Total Palestinian Imports by Road	2,129.0	1,811.0	1,283.2	1,521.8	2,102.2	2,410.6	2,336.9	2,631.4
Total Palestinian Imports by Pipes and nets	253.0	157.4	150.5	278.4	130.4	256.1	421.8	509.9
Total Palestinian Exports by Road	383.0	290.3	240.9	276.9	312.7	335.4	366.7	513.0
Total Palestinian Exports of Services to Israel	129.1	84.8	66.3	73.1	92.6	127.7	131.3	121.8
Total Palestinian Imports of Services From Israel	83.1	66.2	49.0	61.6	94.0	119.1	123.2	104.7
Palestinian Net balance Trade in services	46.0	18.5	17.3	11.5	-1.5	8.6	8.1	17.2

Source: Palestinian Central Bureau of Statistics, 2009

**Table 6: Palestinian Trade Values by Means of Entry/Exit
in Million US Dollars (1999-2000)**

Entry/ Exit Means	Total Value of Exports		Total Value of Imports	
	1999	2000	1999	2000
By Land	372	381.7	2,815	2,128.3
By Air	0	18.5	0.7	1.2
Total	372	400.5	2,815.7	2,129.5

Source: Palestinian Central Bureau of Statistics, 2002

Tables 7 and 8 show the main trading partners of the PNA between 1996 and 2004 based on the value of imports and exports. The overwhelming trading partner with the PNA (Palestine) is Israel. For example in 2004 Israel obtained 90% of the Palestinian exports and provided the PNA areas with more than 73% of its imports. The other main trading partners for the same year for exports were the Arab countries combined with 6%, and EU with 2%; and for the imports, the highest trading partners other than Israel were the East Asia countries with 11%, EU with 8%, and Arab countries combined with 3%.

The only airport in the West Bank is Jerusalem airport; but it remained closed for Palestinians since 1967. The International Air Transport Association (IATA) airport code is JRS and the International Civil Aviation Organization (ICAO) airport code is OJJR. The airport has one runway; which is 1965 meters in length, and has a 45 meters wide asphalt pavement. The orientation of the runway is 120/300 (closest to SE - NW orientation), and at it is at an elevation of about 750 meters above mean sea level.

Table 7: Palestinian Imports by Country Group in Thousand US Dollars (1996-2004)

Region	Imports								
	1996	1997	1998	1999	2000	2001	2002	2003	2004
American	28,876	29,294	39,420	99,868	66,966	52,242	8,198	42,911	55,943
Arab	26,569	56,146	85,411	81,070	39,668	36,781	31,074	45,722	65,100
European Union	148,625	178,903	226,217	484,644	263,605	358,829	161,151	154,564	205,141
Eastern Europe	6,534	10,046	12,113	29,541	26,570	26,976	23,089	19,931	17,619
Israel	1,619,337	1,852,380	1,833,123	1,853,648	1,739,541	1,351,581	1,117,129	1,309,642	1,747,850
Asian	176,751	95,571	150,780	431,981	218,781	183,261	157,105	205,337	258,117
Others	9,587	16,219	28,038	26,474	27,675	23,973	17,861	22,162	23,479
Total	2,016,279	2,238,559	2,375,102	3,007,226	2,382,806	2,033,648	1,515,607	1,800,269	2,373,249

Source: The World Bank – Jerusalem Office, 2006

Table 8: Palestinian Exports by Country Group in Thousand US Dollars (1996-2004)

Region	Exports								
	1996	1997	1998	1999	2000	2001	2002	2003	2004
American	815	17	82	365	71	128	203	961	1,700
Arab	19,054	19,059	11,558	9,638	29,122	14,576	15,093	14,977	19,357
European Union	244	878	1,647	1,519	1,675	2,453	8,921	7,041	6,958
Eastern Europe	1	2,096	45	7	0	28	1	9	13
Israel	319,000	359,866	381,515	360,462	369,680	272,983	216,326	255,981	281,149
Asian	353	1,499	-72	7	308	181	83	374	1987
Others	0	7	71	150	0	1	240	336	1,524
Total	339,467	380,424	394,846	372,148	400,856	290,350	240,867	279,679	312,688

Source: The World Bank – Jerusalem Office, 2006

5. Transportation Needs for a Viable Palestinian State

The Palestinian State should consist of the Occupied Palestinian Territories (OPT) in 1967, namely the West Bank (including East Jerusalem), Gaza Strip, and Palestinian Himmah. The Himmah and several areas of British Mandate Palestine along the Syrian border were demarcated as demilitarized zones in the 1949 armistice agreement. Hence, roughly one half of these areas would be Palestinian and the other half would be Israeli. The Himmah is the most coherent and closest to the West Bank. The official position of the United Nations as outline in numerous resolutions and the consensus of the international community is the establishment of a Palestinian State in the OPT. In addition, lack of implementation of the Palestinian right of return as dictated by the UN resolution 194 is a major regional continuous source of agony, tension, and volatility. Thus additional area of the Gaza Strip or/and the West Bank would ease some of the overcrowding in the Gaza Strip (about two thirds of its current population are refugees), facilitate space for returnees, and could be a trade-off for delayed withdrawal from Israeli settlements in the West Bank or land exchange for settlements in the West Bank adjacent to Israel. However, with or without additional territory, the addressed mobility options are not affected. Peace, security, and mobility require innovated transportation network options.

The overwhelming majority of Palestinians believe nothing less than a state on the whole of Palestine (Israel, West Bank, Gaza Strip and Palestinian Himmah) with the return of all the refugees is a righteous and fair solution. The trauma of eviction from their homes and living through miserable conditions in refugee camps for decades, the horrors of wars and the huge sacrifices suffered to regain their legitimate national rights cannot be compensated.

Despite the above facts, most of Palestinians realize the difference of what is right and what is feasible and are willing to settle for about 23% of Palestine (i.e., the Occupied Palestinian Territories in 1967) that compose a viable sovereign Palestinian state with suitable mobility. Numerous UN resolutions stated clearly that the occupation of land in the 1967 war is illegitimate and all Israeli settlements built on these occupied land are

illegitimate also (e.g. UN resolutions 242, 338, 446, and 452). However, the main issues of Jerusalem, the right of return, and Israeli settlements in the West Bank are the most difficult to be agreed upon by Israel, especially with the overwhelming balance of power on its side (military, nuclear, economic, political, media, etc.).

It is not feasible to achieve proper mobility and freight movement for the OPT without a viable Palestinian State and vice versa. A viable Palestinian state should have full sovereignty with geographic continuity and full control of its borders and natural resources. The following sections of the study presents the envisioned mobility and freight movement needs for a viable Palestinian state and for a sustainable peace.

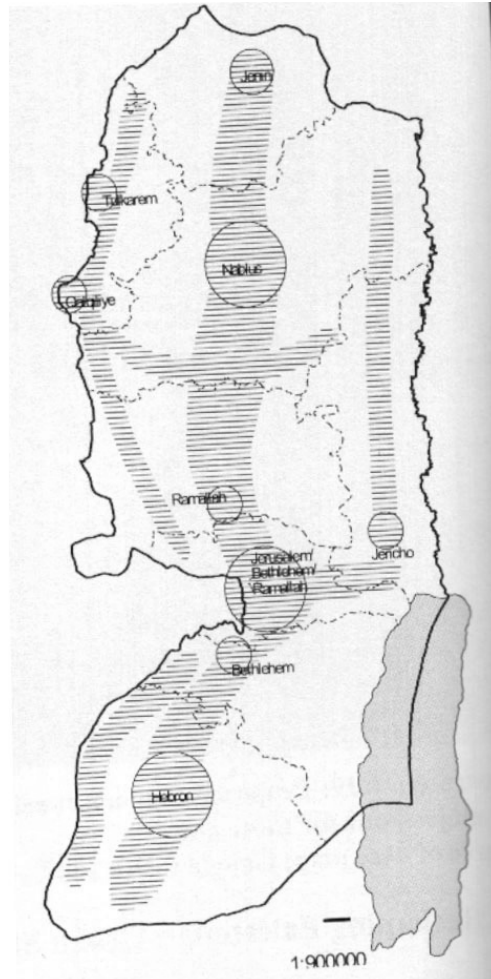
5.1 Internal Connectivity

The current situation of the existing of hundreds of Israeli settlement connected by roads and highways that divide the West Bank into a chessboard of Palestinian isolated cities and towns must end. Israeli settlements and their web of highways are a main source of friction and volatility. It is impossible to envisage any stability or peace with settlements and settlement roads that are spread throughout the West Bank. The internationally undisputedly illegal settlements confiscated Palestinian land and chocked the indigenous Palestinians into enclaves and cantons with limited access and mobility for the claimed sake of safety for settlers. Reasonable stages of withdrawals may be needed. But a rapid implementation is essential in order to gain confidence and credibility of the process.

The Palestinian Ministry of Planning developed some general concepts for the Regional Plans for the West Bank (MOPIC, 1998). The urban development is expected to be most dominant in the north-south central axes in the West Bank in the mountainous region along the cities of Jenin, Nablus, Ramallah, Jerusalem, Bethlehem, and Hebron. However, the plan also envisions future urban development in two other north-south axes along the east and west parts of the West Bank; as well as two east-west development axes. Fig. 11 provides an illustration of the national physical developments. Thus along such urban developments; transportation corridors need to be established.

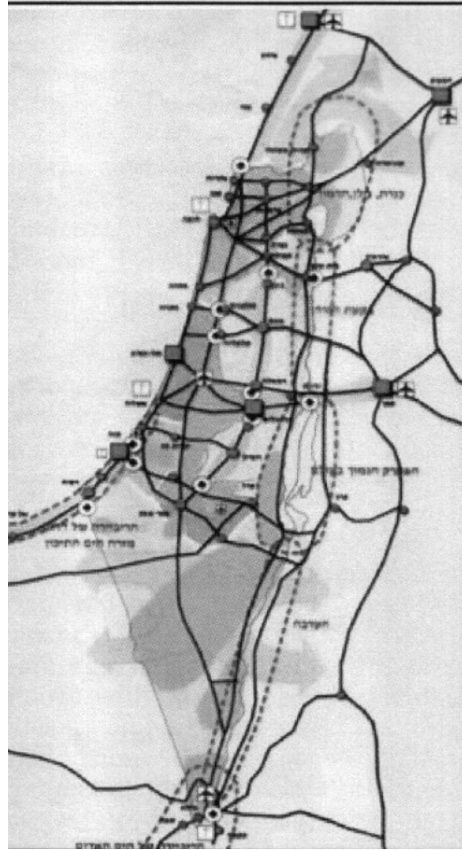
Israel 2020 National Strategic Plan (Israel Ministry of Economic Development, 1997) includes a peace scenario that provides general concepts for the highway system in the region. Fig. 12 shows an illustration of regional highways within Israel, the West Bank and Gaza as well as the surrounding region. It is noted that this illustrative figure does not include direct highway connection between the West Bank and the Gaza Strip.

Figure 11: Regional Physical Development



Source: Palestinian MOPIC, 1998, obtained from Sadaqa, 2009

Figure 12: The Peace Scenario as Part of Israel 2020 Master Plan

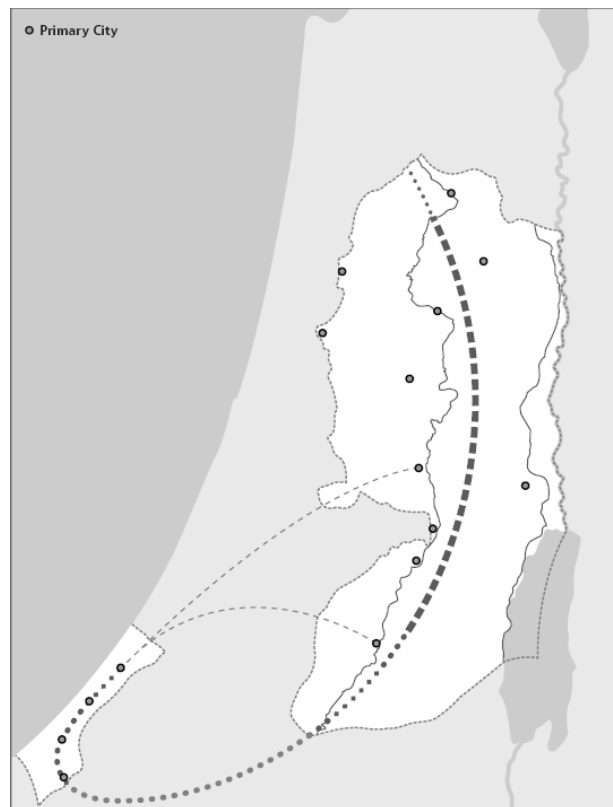


Source: Israel Ministry of Economic Development, 1997, obtained from Sadaqa, 2009

The general concept of the RAND Corporation Arc Plan (Suisman et al. 2005) is a main transportation corridor from the northern part of the West Bank (with possible continuation to Haifa) passing through the east ridge of the mountains of the West Bank to the south most part of the West Bank near Dhariyya (Hebron governorate) and then across Israel to the Gaza strip (Fig. 13). No details were provided on how the corridor passes through Israel and under what arrangement. However, the transportation corridor was envisioned to include an expressway, high-speed rail tracks, national water carrier, energy transmission, telecommunication lines, and a national linear park. Each of the infrastructures has east-west braches to the main cities. The corridor between the West Bank and Gaza is not

defined in terms of form or control, but it also includes two safe passages from Beit Hannoun crossing to Tarqomia and Latrun entry points in the West Bank, similar to safe passages used intermittently and for short periods in the late 1990's. Al-Atrash and Zaboun, 2009 criticized the Arc plan as ambiguous on several main issues, such as not addressing the status of the settlements, particularly the Arc passes within or very near to several settlements. Also the issue of East Jerusalem as the main transportation hub in the West Bank was not addressed. It also avoided addressing Jerusalem airport, while implying that Gaza airport would be used by Palestinians in the West Bank. An issue which was addressed by the RAND Corporation Arc plan is the right of return of the Palestinians to their homes within Israel and characterized it as neither sensible nor pragmatic and the return should only be limited to the Palestinian State (Al-Atrash and Zaboun, 2009).

Figure 13: RAND Corporation ARC Option



Source: Suisman et al. 2005

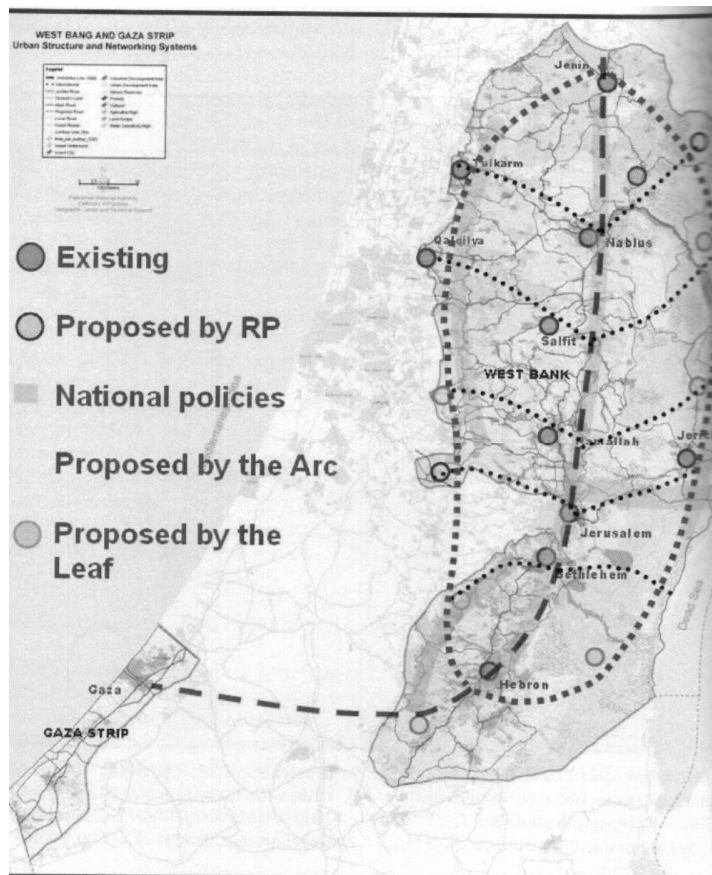
Another option for internal connectivity is proposed by Sadaqa, 2009 as a Leaf concept (Fig. 14). This concept envisions north-south as well as east-west transportation corridors and urban development. In addition, the concept includes a connection corridor between the West Bank and Gaza. Furthermore, the north-south transport corridor in the western portion of the West Bank within the Leaf concept passes through Israeli territories to the west of West Jerusalem. This research has addressed thoroughly the demographic concerns of Israel and space constraints for Palestinian based on the population growth and scenarios for Palestinian returnees to the West Bank. The study concludes, it will be very difficult to accommodate only one million of the Palestinian returnees in the West Bank and the Gaza Strip.

All concepts outline above for internal connectivity in the West Bank and Gaza Strip are general and provide only crude concepts. This is reasonable since it is not possible to envision a detail transportation network given the numerous future scenarios and high uncertainty. If only the percentage of Palestinian returnees is considered; thus a small variance in this percentage would substantially affect urban and regional physical development needs and hence the long term transportation planning concepts. But what is clear in the research of Sadaqa, 2009 that with only one million returnees to the West Bank and Gaza; it would contribute to very high urban densities for urban areas of more than 50% of the West Bank and the entire Gaza Strip.

In reference to the various discussed plans for regional development and internal connectivity; a main backbone transportation corridor in the north-south axes in the central region of West Bank, mainly to the east of the major West Bank cities, is a common concept. This study confirms the need for such a corridor, especially if it connects to the Gaza Strip and continues along the eastern border of the Gaza strip. There is currently a security strip within the Gaza Strip at the eastern border that may be partially utilized for construction of this main north-south highway along the eastern border of the Gaza Strip and leading to both Yasser Arafat Airport and to the border crossing with Egypt. Also, an east-west transport corridor should spur from this north-south axis to Gaza Seaport using the right-of-way for the former Netsirm settlement to the south of Gaza City. This main corridor should be planned for multiple modes of transport. Other main transport corridors in the West Bank are essential, but with lower significance than the main central north-south axis. At least a north-

south corridor adjacent to the Jordan River and the Dead Sea shore (partially overlapping with current Route 90), and a concept of main highway in the western part of the West Bank in the north-south direction and turns to the eastward near the town of Ni’aleen to reach Jerusalem are recommended. In addition, there is a need to utilize the current east-west main highways used for Israeli settlements south of Nablus, Route 1 from Jerusalem to the Jordan River, and the east-west settlement route south of Bethlehem. Hence, the internal connectivity should have a hierarchy of transportation corridors and highway network; the main corridors have been outlined, but regional and local roads system needs to be addressed after agreement on the main corridors conceptual plans.

Figure 14: The Leaf Conceptual Plan



Source: Sadaqa, 2009

5.2 Jerusalem

Jerusalem is a spiritual, cultural, economical attraction and a transportation hub. Many options for access, control and mobility were addressed as concepts by politicians and academicians for the holy city (particularly the first three options addressed below); the following are suggested alternatives:

- ✧ Open City: Access to the city is allowed to all (Israelis, Palestinians and international visitors); however, control over the people leaving the city to the West Bank and the Israeli territories could be performed via checkpoints.
- ✧ Divided City: Divided close to the truce line of 1948 with minor adjustments on both sides, especially in order to provide access for Israelis to the Wailing Wall.
- ✧ Greater Jerusalem: Greater Jerusalem may constitute an area of about 20-30 km radius, which would include Bethlehem and could also include Ramallah. Special arrangements for shared or/and international control need to be agreed upon.
- ✧ Divided-Connected City: The Arab neighborhoods of Jerusalem contiguous to the West Bank should have unimpeded mobility to/from the West Bank and Palestinian Control. The Old City and areas of East Jerusalem around the Old City walls (mainly Wad-el-Jouz and Shiek Jarak,) would have Palestinian control with special arrangements. Both Palestinians and Israelis (and certainly international visitors) would have access to this part of the city. Connection points between East and West Jerusalem are open towards East Jerusalem; but they are open and controlled for passage of Israelis, Jerusalemites, and international and Palestinian visitors in the western direction. Likewise, entrance to the old city and special arrangement area from the surrounding Palestinian East Jerusalem areas is unimpeded but some control may be executed for persons exiting special arrangement area towards Palestinian full control areas. The Israeli settlements in East Jerusalem have to be phased out. Attarot industrial park and Jerusalem International airport need to be handed to Palestinian control at the onset of a settlement, while other settlements could be cordoned and connected to West Jerusalem and for a temporary period. Figure 15 shows a map of a preliminary concept of a divided-connected city, which is recommended by the author based on providing most Palestinian sovereignty on East Jerusalem and still maintaining the special status of Jerusalem to be open for worshippers and visitors from throughout the world.

5.3 West Bank – Gaza Strip Corridor

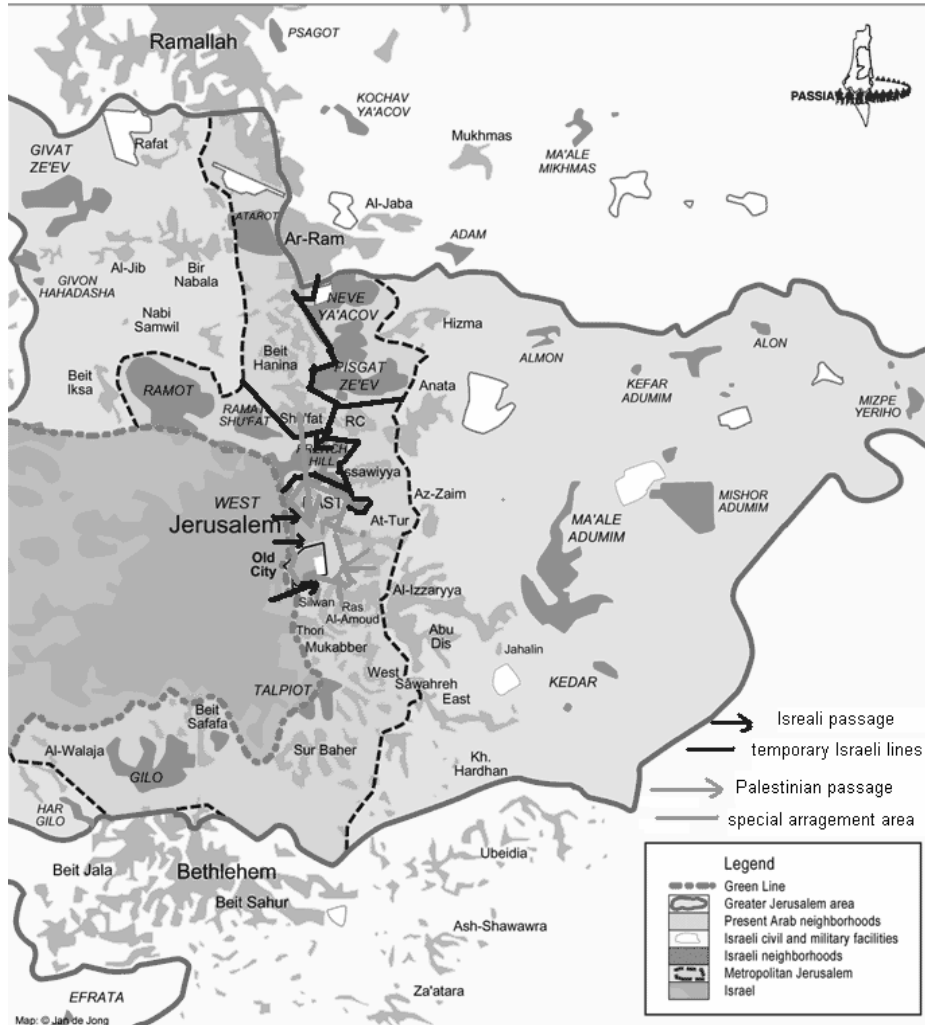
There are numerous past and current examples of parts of a country separated by another country or even an enclave of a country in a neighboring country. Such examples include the United States and Alaska, Oman territories within or separated by the UAE, and the Spanish enclave of Llívia within France. All such examples are with friendly neighbor states. An example of an enclave with serious tensions between the neighboring countries was West Berlin surrounded by East Germany between the end of World War II and fall of the Berlin Wall in 1989. During this period four corridors each include a highway and a railroad connected West Berlin to each of Hamburg, Hannover, Frankfurt and Munich. In addition waterways connection via rivers and channels was possible (Soffer, 2010). None of the corridors were exclusive for travel for West Berlin – West Germany only, but the facilities were shared with travelers within East Germany. It should be noted even for this example it was the same people separated by occupation forces (or control) of other countries. In the case of the West Bank – Gaza Strip corridor; serious tensions still remain between Palestine and Israel and it assumed to continue in the near future, thus security issues and unimpeded control over the corridor are of paramount importance.

A World Bank report (World Bank, 2005 a) outlined how convoys could be employed to connect Gaza to the West Bank. Another World Bank report (World Bank, 2005 b) outlines how freight could be transported between the West Bank and Gaza by truck back to back method (currently used on crossings between Israel and that of Gaza and the West Bank) or by door to door methods. Both of the World Bank reports were prepared in 2005, in response to the need to reactivate the safe passages used between the West Bank and Gaza Strip in late 1990's; thus they do not attempt to address the corridor linking the West Bank and Gaza Strip when a Palestinian state is established.

Weiner and Morrison, 2007 argued that a link between the West Bank and the Gaza Strip is not required of a state by international law. They cite that UN Security Council resolution 242 does not call for a safe passage or confer a right to safe passage. Furthermore, they argue that prior to 1967 the West Bank and the Gaza Strip were non-contiguous and thus the “maximalist demands – return to the 1949 armistice lines that existed prior to the six day war of 1967” does not include such a safe passage. This argument deletes the history of the region prior to the establishment of Israel in 1948 and voids UN resolutions on partition and the right of return.

Thus the section on the historical and transportation background of Palestine in this study is essential to show that the Palestinian people had free mobility before 1948 and suffered the most outrageous crimes in 1948 Nakbah (catastrophe); and hence accepting a solution of a state on the OPT of 1967 with suitable mobility and connectivity is a major sacrifice by the Palestinians towards a “viable” peace.

Figure 15: The Preliminary Concept of “Jerusalem Divided-Connected City”



Source: PASSIA website, 2010, original map revised by author

Weiner and Morrison, 2007 concluded if a safe passage is to be provided between the West Bank and the Gaza Strip; it must be under Israel sovereignty and also Israel must maintain control on the crossing points. This is justified mainly due to security reasons. Hence, Israel should have the right to thoroughly search and check the passengers, luggage, and vehicles using the safe passage and deny usage to any person based on security concerns. Furthermore, cargo must continue to have back to back arrangement or/and any suitable security inspection methods by Israel (Weiner and Morrison, 2007). This arrangement would maintain the Israeli dominance on Palestinian economy and curtail the sovereignty of an envisioned Palestinian state.

Al-Dwaik, 2007 used a Geographic Information System (GIS) program to obtain the best route for a corridor linking the West Bank to the Gaza Strip. The criteria for the path alignment were: a) Israel city centers that limit where the path can run, b) topographic, technical and environmental considerations, c) existing main Palestinian road network, and d) existing and planned Israeli routes to minimize the number of intersections with the proposed corridor. The result of the analysis showed several possible solutions for the proposed corridor path with the lowest cost path running to the south of Beit Hannoun (Erez) crossing and connecting to the West Bank near the village of Beit Awwa, south-west of Hebron.

The following options are provided for travel of people and goods between the West Bank and the Gaza Strip to ensure a viable state and viable peace:

1. A Four-Way Connection Point: Similar to the United Nation partition plan of 1947, an East-West connection between West Bank and the Gaza Strip would be provided and a North-South connection between northern and southern Israel would be also provided (see Fig. 9). This would entail providing additional territory for the Gaza Strip and/or the West Bank. Hence, such an arrangement would also address the retuning of some Palestinian refugees.
2. Transportation Corridor: To provide a main transportation corridor between the West Bank and Gaza, that should have the shortest distance (or close to shortest distance), cross least number of roads, and pass through the least populated areas. The corridor would provide free access for Palestinians between the West Bank and Gaza. The following is a brief analysis of various options:

- ✧ Bridge: The construction cost is several folds more expensive than an at-grade option. Three separate bridges are needed to accommodate future demand, namely one for each highway direction and a third for railroad and utilities conduits. It is feared that not all three bridges would be built at the 1st stage due to the high cost and unjustified demand at the current time; thus the other bridges may never be built in the future due to changing politics and Israel not fulfilling its international obligations, as it has done in many situations in the past.

The bridge provides semi-continuous access between Israeli areas north and south of the bridge. However, there is a high security risk of terrorists blowing portions of the bridge or heavy machinery could knock columns of the bridge. On the other hand, the bridge may need to be fenced or enclosed at the sides by concrete walls for security from passengers using the bridge against Israelis and for safety to passengers using the bridge from Israeli attacks.

The bridge causes a view disruption to the landscape. It requires high technical support for the design, construction, operation and maintenance. Seismic design is required in a high earthquake risk area. Furthermore, the structural service life of a bridge is limited to 50-80 years.

- ✧ Tunnel: The construction cost is rather high and comparable to the bridge option and could be more expensive, depending on the depth below natural surface, soil conditions, and other technical details. Again, three tunnels are required and most likely they will not be built in the future due to the high cost. In addition to the construction cost, a tunnel option would have a very high operational cost compared to the other options, particularly due to lighting and ventilation needed for the tunnel all the time. Furthermore, the maintenance cost is also high, and the service life of tunnels is limited to about 50-80 years. Seismic conditions are essential to be included.

The tunnel would provide continuous access between Israeli areas north and south of the tunnel. However, it could be subject to sabotage, especially for the cut and cover option (which is the

most likely for most of the alignment with a meter or two of earth cover) such as digging with heavy machinery.

Long tunnels cause fear and psychological problems to many drivers and could attribute to very disastrous accidents, especially in case of fire. Finally, if one tunnel is constructed, then any major accident could result in the closure of the tunnel for extended periods of time.

- ✧ Depressed Surface: The right-of-way is dug to a clearance of a vehicle, about five meters, and supported on the sides by retaining walls. However, the top is not covered like a tunnel. The construction is more than twice as expensive as an at-grade arrangement. It causes a physical barrier between Israeli land north and south of the corridor. However, the Israeli roads and railroads may be connected at-grade level. The sides of the corridor need to be fenced or banded by concrete walls as a security measure for the safety mainly for the passengers of the corridor.
- ✧ At-grade: The defined right-of-way should be surrounded by security areas (fenced, banded with concrete barriers, etc.). This is the least expensive option (in construction, operation and maintenance costs) and the most practical arrangement for a corridor between the West Bank and the Gaza Strip. The corridor right-of-way should be about 100 meters in order to be sufficient to include an expressway, railroads (high-speed passenger tracks and freight tracks), water and petroleum pipelines, electric high voltage cables (or lines), communication transmission lines and security margins. Four to seven underpasses/overpasses are needed to cross Israeli north-south roads and railroads; in addition, short sections of depressed highways, tunnels or bridges should be feasible as long as the total of these sections do not exceed few kilometers.

This corridor is vital for Palestinian mobility between the West Bank and the Gaza Strip, especially for cargo movement between the West Bank and Gaza (planned) seaport. This corridor would also provide mobility between Egypt and Jordan via the State of Palestine. Security arrangements and UN peace force could eliminate threats on both sides.

The at-grade option is recommended. Figure 16 shows a map of a preliminary horizontal alignment suggested for the at-grade corridor. It is noteworthy to indicate that there are numerous Israeli settlements surrounding the Gaza Strip. The great majority of these settlements are very small in size and just a residential development of a military outpost or a very small farm community. It seems from the location of these settlements that they are deliberate to block any connection between the West Bank and the Gaza Strip, especially the density of Israeli settlements in the other areas of the Negev Desert is very sparse. The RAND suggested path tries to avoid disruption of settlements surrounding the Gaza Strip. However, the RAND suggested path within Israeli boundaries is more than 50% longer than the suggested alignment in this study. Furthermore, the suggested alignment allows the existing settlements to continue to be connected with each other and with Israeli main southern cities with minimal disruptions.

The capacity of a three lane expressway in each direction if it has ideal geometric design and under ideal traffic and weather condition is 2300 passenger cars per hour per lane (HCM, 2000). However, segments of the corridor may have less than ideal geometric design condition due to moderate slopes and thus the capacity may be reduced to 1800 vehicles per hour per lane, or lower as function of increase percentages of trucks and buses. Thus if only passenger cars are using the corridor with an average occupancy of 3 passengers per vehicle; then the corridor passenger capacity would be 16200 passenger per hour per direction (5400 x 3). In the case there is a reserve bus lane; about 1000 buses per lane per hour could be accommodated, and thus for a bus capacity of 50 passengers, then the passenger hour capacity (way capacity) for one bus lane is 50 000 passengers. It is appropriate to indicate that the entire public transit bus fleet in the West Bank and Gaza Strip is less than 1000 buses (Dajani et al. 2010) and more than 50% of the current bus fleet has a capacity of less than 22 passengers per bus.

**Figure 16: West Bank – Gaza Strip Corridor:
Preliminary Alignment**



Source: Global Security website, 2010, original map revised by the author

The proposed high-speed train has a speed of 200 km/h or more; the maximum number of train carriages could range between 6 and 12, depending mainly on the trains' tractive effort and stations' platform length. The seating capacity per carriage also varies depending on the various carriages seating arrangement and may include double deck design. Hence the carriage seating could range from 50 to 100 seats. Thus assuming the high-speed train is of a capacity of 750 passengers, then for five minutes headway between trains, hourly volume capacity would be 9000 passengers per hour. The travel time from Jenin to Gaza would be about one to one and a half hours for a cruising speed of 200 km/h and including stops at main cities' stations in the West Bank (or stops near the main cities).

It must be noted that the high speed rail tracks cannot be used by freight trains. Thus four train tracks would be needed; two for each direction, one for high-speed trains and the other for freight trains.

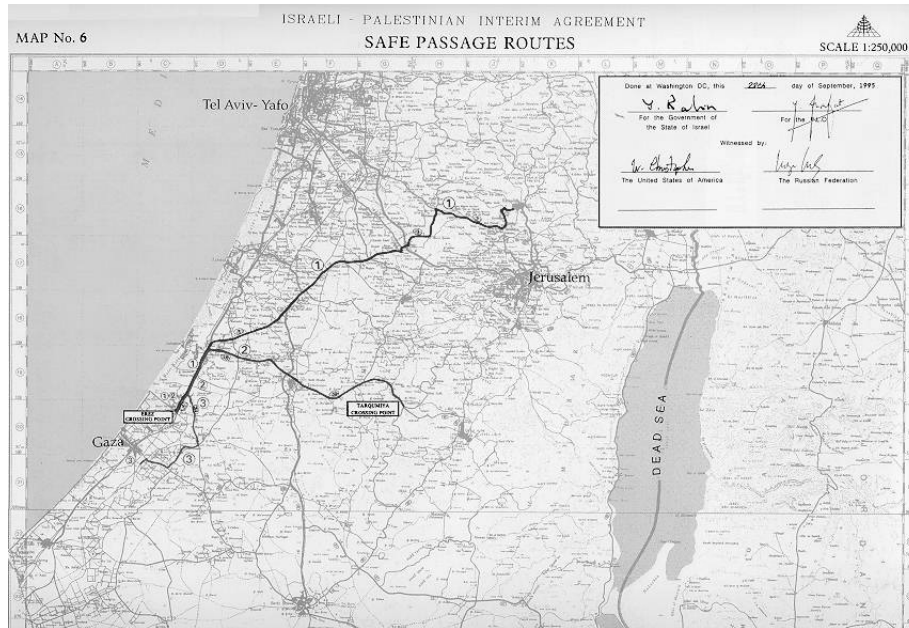
The demand analysis of cargo commodities is a very complex task, especially to consider the population estimates for the West Bank and Gaza Strip based on the natural growth and number of returnee; the usage of Gaza seaport for cargo to and from Jordan and Iraq and assuming the Gaza Seaport will compete with Israeli ports in time of peace or would it have a monopoly for cargo to the Palestinian State and Arab countries? Furthermore, would the West Bank-Gaza Strip corridor be used as transit for visitors and business between Egypt and North Africa on one side and the Arab countries in Asia on the other side, including pilgrimage to Mecca? In addition, the pilgrimage to Jerusalem by Christian and Muslims and annual tourism could exceed the population of Palestine by several folds assuming a scenario of peace, stability, and prosperity. Hence, for this preliminary planning stage, the most important aspect is to reserve a sufficient right-of-way and ensure a high standard geometric design.

3. Use of Israeli Highway Network: This could be the most convenient and economical option, especially for motorist and goods movements from the northern and central parts of the West Bank to and from Gaza. This was the case after the occupation of 1967 and until the establishment of the PNA. However, this arrangement has its disadvantages in terms of security for Israeli and Palestinian motorists; in addition to possible Israeli restrictions on travel and movement of goods. Thus, this option is not viable for a Palestinian State unless after decades of peace and stability, or unless it is in addition to a Palestinian controlled corridor.

The safe passage option via the Israeli highway network was tried for several years in the mid to late 1990's, as a part of the interim agreement arrangement (Israeli-Palestinian Interim Agreement, 1995). Figure 17 shows a map of the safe passages between the West Bank and the Gaza Strip as agreed upon by the interim agreement of 1995. The safe passages were opened during daylight hours only and for passengers and vehicles that obtain a safe passage permit by Israel (Israeli-Palestinian Interim Agreement, 1995). Use of the Israeli roads network may be performed with special control such as usage of

Global Positioning System (GPS) instruments for Palestinian vehicles using Israeli highways; the vehicles could be permitted on a specific path and deviation from this path could be detected in real time and location at control centers.

Figure 17: The West Bank – Gaza Strip Safe Passages as of the Interim Agreement, 1995



Source: Israeli-Palestinian Interim Agreement, 1995

5.4 West Bank – Palestinian Himmah Corridor

The Palestinian Himmah is an integral part of British Mandate Palestine, which is part of the OPT of 1967. In the Peel Commission partition plan of 1937 it was part of the suggested Palestinian State including a corridor along the Jordan River (Fig. 2). The Palestinian Himmah was a demilitarized zone as consequence of the 1949 armistice agreement. Thus a highway connecting the West Bank to the Palestinian Himmah adjacent to Jordan and Yarmouk rivers is proposed. The highway (transportation corridor) right of way is suggested to be 60 to 100 meters and fenced on both sides. However, wider sections may be needed where the Jordan

River is very winding and the topography is very steep adjacent to the Jordan River. This highway length is about 33 to 38 km. It will not cross any Israeli highways or roads since it is adjacent to the Jordan and Yarmouk rivers, except for the Israeli existing crossing to Jordan near Bisan (Bet She'an); any other future crossing to Jordan should be accommodated. Furthermore, the West Bank – Palestinian Himmah corridor would provide Palestinians with direct access to Syria. Intuitively, any viable peaceful solution to the Middle East conflict must include an Israeli withdrawal from the Syrian Golan Heights and the Lebanese Shabaa farms. Indeed the Palestinian issue is the most complex aspect of the Arab-Israeli conflict; however, a comprehensive solution is a prerequisite to ending this conflict and establishing a lasting and meaningful peaceful resolution.

5.5 Lebanon - West Bank Safe Passage

Travelling from the northern part of the West Bank to Lebanon would take about one hour, if allowed to go through Israel. It is about 75 km using existing Israeli highways. Currently, it may take two days to travel via two other countries, namely, Jordan and Syria. Therefore, the safe passage arrangement from the West Bank, north-west of the city of Jenin to Lebanon and vice versa is a feasible and necessary solution. At the minimum, this includes several scheduled convoys per day for each direction, but the safe passage may be in several forms that could provide continuous access at an agreed upon time after an initial resolution of the conflict.

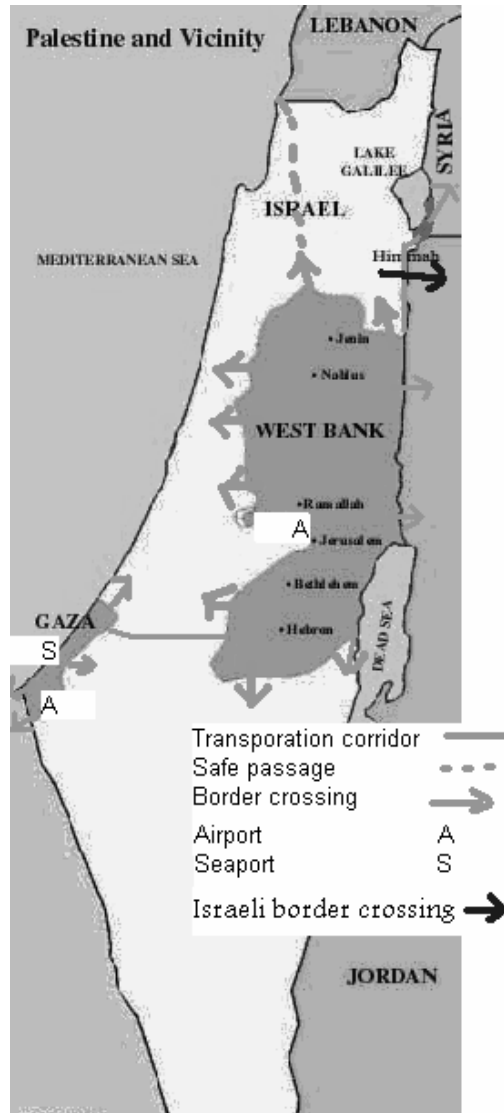
5.6 International Access

Currently cross borders mobility for Palestinian in the West Bank is limited to one border crossing to/from Jordan (Allenby Bridge) and for Palestinians in Gaza Strip to one border crossing to/from Egypt (Rafah); in addition to few border crossings to/from Israel. A viable Palestinian State needs cross border travel, airports and seaports. At least two border crossings to/from Jordan are needed (along Allenby and Damiah bridges), one or two crossings to/from Egypt, and one to/from Syria (via Palestinian Himmah area). The international border crossings need to be open 24 hours a day and every day per year as the common practice in international border crossings worldwide. In addition, the exiting Jerusalem airport (near Ramallah) and Gaza airport should to be rehabilitated and become

operational again. An airport south-east of Jerusalem has been proposed, but a preliminary review of the location's topography shows it would be very difficult to construct fairly level runways of a length of 3.5 km in such an area. The international access should also include three airways across Israel for civil aviation: One close to the alignment of the West Bank – Gaza Strip corridor, one north of the West Bank toward the Mediterranean Sea, and the third airway route from Yasser Arafat airport across the Negev Desert to Jordan. A suitable attitude range should be set according to takeoff and landing paths to the Palestinian airports.

Gaza (Yasser Arafat) airport's single runway could accommodate landings and takeoffs for most commercial aircrafts including wide body aircrafts (such as Boeing 747); while Jerusalem airport could only handle small to medium size aircrafts and for short to medium range destinations. The minimum headway for landings or takeoffs is about one to three minutes for a single runway; the minimum headway is a function of safety and depends on the aircraft type and visibility conditions, among other factors. Thus the hourly runway capacity for Yasser Arafat Airport is about 30 to 50 aircrafts per hour for an average of 200 passengers per aircraft or 8000 persons per hour; while Jerusalem airport hourly runway capacity is also about 40 aircraft for an average of 80 persons per aircraft, or a 3200 passengers per hour. However, the existing terminals need substantial expansion to handle the capacity of a single runway; in addition to the need of apron areas and taxi-ways. In comparison Amman Queen Alia Airport has two parallel runways with a length of 3666 meters each. The planned expansion for the terminal is to handle nine million passengers per year, or more than three times the current capacity (Queen Alia International Airport website, 2010). The single runway capacity for each of Gaza and Jerusalem airports is very low for a scenario of peace and prosperity, where tens of millions of Christian and Muslim pilgrimage are expected to visit Palestine annually, especially in peaking demand patterns.

Figure 18: Overall Conceptual Sketch of Palestinian Transportation Needs for a Viable Palestinian State



Source: Palestine Center, 2007, original map revised by author

A seaport needs to be built and become operational in the Gaza strip. A seaport is essential for the economic development and sovereignty for a

Palestinian State. The general planning concept by Shaat, 2005 and the Ministry of Transportation for the Gaza seaport is reasonable for the preliminary planning stage for a small size seaport. The general concept consists of 11 meters draft in the 1st phase with 240 meters of marginal wharf. If average ship length using Gaza seaport is 40-50 meters (large ships' length could exceed 150 meters), then the seaport would have about five berths. In addition to the marginal wharfs that are used for containers and roll-on/roll-off operation; pier wharfs are recommended for bulk cargo such as petroleum products, chemicals, grain, and coal. A harbor area surrounded mostly by breakwaters is essential for wave protection and to provide anchoring area for ships waiting for a free berth. The draft of a seaport is one of its most important characteristics that determine the ship size and loading capacities possible in the port. An eleven meter draft seaport receives small and medium size ships. The 2nd stage of the seaport is for 14 meters draft, which allow medium to somewhat large ships to be accommodated in Gaza Seaport.

Just to offer a comparison with the two main seaports in Cyprus (Greek section), Larnaka and Lemesos have draft of some of the berths up to 14 meters. However, the total length of quay (wharfs and piers, which determines the number of berths for various size ships) for both seaports is 2466 meters, which is more than ten times the planned length for Gaza Seaport. The two main seaports of Cyprus have container capacity in 2007 of 377037 TEU's (Twenty-foot Equivalent Units) and a total of 2.3 million metric tons of cargo (imports and exports) (Cyprus seaport Authority website, 2010). Thus in comparison with the population of Cyprus of 800 000 inhabitation (only 80% in the Greek section); the planned Gaza Seaport will not be sufficient to handle all the imports and exports of the West Bank and Gaza (even taking in consideration that Cyprus is an island and almost all the imports and exports come via sea with only a very small percentage via air). On the other extreme, Singapore, which is a city state of an area about twice the area of the Gaza strip (710 square kilometers) and a population about three times that of the Gaza Strip (about 5 million) has one of the largest and busiest seaports in the world with a draft of up to 20 meters (Maritime Singapore website, 2010); while Singapore's Changi Airport is a main hub in Southeast Asia.

Figure 18 shows a map of the locations of international embarkation and suggested border crossings for the envisioned Palestinian State.

6. Conclusion

Segregation based on race, ethnic origin or religion certainly does not ensure security and peace. However, when segregation is coupled with severe travel restrictions on a particular people and their goods movement; this definitely breeds mistrust, alienation, and more instability and hostility. Without appropriate mobility and freight movement; a Palestinian State would not be viable and vice versa.

Walls of concrete, hatred, and/or discrimination cannot protect nor can provide a solution. Mobility needs roads and bridges that pave the way for peace.

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