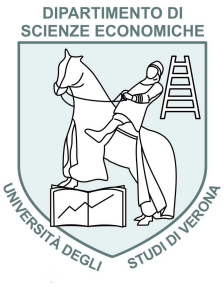

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A feasibility analysis of the Jenin Sustainable Industrial and Logistic District

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A feasibility analysis of the Jenin Sustainable Industrial and Logistic District

Jerusalem, March 2010

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OUTLINE

0. Summary

The study has been funded by the Republic of Italy through the Ministry of Foreign Affairs, Italian Development Cooperation Office. The objective is to assess the technical, environmental, economic and financial viability of establishing an industrial and logistic park in Jenin.

0.1. The context of the initiative

Euro-Mediterranean relations. Relations between the European Union and the Mediterranean countries involve both bilateral and regional cooperation, under what is called the Euro-Mediterranean partnership. The objective of this partnership is to create a common area of stability and shared development in the Mediterranean region, with the goal of developing a free trade zone which will eliminate customs tariffs, promote free market access, establish trade facilities and regulatory policies between the EU and its partners and between Mediterranean partners. Significant progress on trade has been made since the launch of the Barcelona Process and in fact all the association's agreements deal with the commercial liberalization of manufactured products, with free access to exports to the EU and the gradual elimination of tariffs for imports from the EU during a temporary period.

The Middle-Eastern Area. Focusing on the Middle East, specifically Israel, Palestine and Jordan, if at the moment the trade relations cover only a small share of actual capacity, they are gradually increasing, irrespective of the political and institutional situation. Development scenarios in the region predict an acceleration of economic growth, supported both by a significant increase in international funding, particularly in Palestine, and by an increase of foreign investments in the entire Middle -Eastern Area. We must take into account that development will be exponential when the Iraqi reconstruction proceeds in a systematic way, and not at a crawl, as is happening now. This will have important consequences:

- on the economic situation of this country;
- on the development of international investments in the area, with international business delocalization;
- on economic and trade development in the entire Middle Eastern and Mediterranean Area.

The field of logistics and cargo handling plays a central role in promoting the development of these Mediterranean countries. However the development of a permanent, efficient and multimodal transport system in the region, capable of establishing a transport network in the area, is not sufficient.

The role of logistics. Here it's necessary, more than elsewhere:

- to strengthen and modernize the institutional framework and the regulations of transport, promoting coordination among the various administrations of each country, in order to ensure consistency among the different national policies,
- to adapt the existing network to the expected growth in traffic, also establishing the necessary financial frameworks, which are necessary for their realization,
- to ensure an organized, structured, inter-connected transport network,
- to establish a safety action plan, along each corridor,
- to simplify the process of border crossing, harmonizing and simplifying customs practices,
- to provide for transport planning, inter-operability, coordination, multi-modal platforms, logistics and information technology.

All these must to be adapted to the specific needs of the different partners in a very complex area.

EuroMidBridge / EuroMidNetwork. With the aim of finding a solution to these issues, the initiative EUROMID (dle East) BRIDGE (now EUROMIDNET) was set up, in the name of economic development, to overcome difficulties and tensions in the area and to create a larger regional market in the Middle East, as is hoped for an international level ("Corridor for Peace and Prosperity"). Its aim is:

- to create a direct link between northern and southern Europe, on the one hand, and the Mediterranean and the Middle East on the other hand, promoting an increased volume of trade;
- to set up industrial and logistics initiatives.

The initiative directly involves Italian, European and Middle Eastern port and freight village operators, shipping companies and transport companies, the entire logistic system and commercial and industrial enterprises. Therefore, it will be based on a system of mutual convenience and interest, which places the different participants on the same level. In this way EUROMIDNET will be a logistical corridor which, in the manner of a unique integrated system, connects Europe and the Middle Eastern Area, uses the existing infrastructure in Europe, as well as the Italian ports, enters the Middle Eastern region through the Port of Haifa, promotes the industrial area and the logistic platform of Jenin in Palestine to support the economy and transportation, crosses the Jordanian border to the north, attracting investment as well, and accesses the widest regional market by offering an efficient and fast alternative to freight transport.

0.2. Objectives of the project

The strategic location of Jenin. The position of Jenin is logistically strategic as it is in the northern part of the West Bank, about 40 km from Haifa Port, 30 km from Sheikh Hussein border in Jordan and 40 km. from Syria. It is also located about 4 km. south of the arterial road connecting Haifa to Jordan. The Governorate of Jenin is an important territory of 583 square km, with about 256,000 inhabitants, 11% of the total Palestinian population, with 42% in urban areas, 54% in rural and 4% living in refugee camps. It is one of the most important economic areas in the country: agriculture, cattle-breeding, chemical, stone and marble, metal, furniture and wood industries. It is also one of the richest and most fertile agricultural areas of the Middle East (vegetables, olive, fruit and almonds trees and hothouse cultivation), which can develop a flourishing industries in agriculture and food production. The neighbouring Regional Council of Jilboa (Israel) and the Jenin Governorate have good relations and are mutually interested in supporting a project for an industrial and logistic area as a cornerstone for a peaceful neighbourhood and economic progress.

The deterioration of the Palestinian economy. Everyone agrees that peace is not possible without development and vice versa, and numerous studies show the disastrous state of the Palestinian economy and the poverty in which the majority of the population lives. The years of isolation and economic crisis since 2000 have laid waste an entrepreneurial network of already weak SMEs and micro-companies inducing many businessmen and the most highly qualified workers to emigrate and shattering hopes of a better future for those left behind with the effect of weakening the entire social network. Poverty is increasing dramatically and the lack of jobs deprives a great number of families of essential means for their livelihood, exacerbating the already unstable political situation in the area. Violence becomes habitual and damages further the already weak Palestinian economy in an endless cycle of cause and effect. Consumer prices are pushed up, by a precipitous rise in food, beverage, housing and transportation costs. These increase reflects rising prices in Israel, to which the Palestinian economy is still strongly linked, but it is also the result of the Israel border closing regime, which keeps prices high. Regarding foreign trade, the

latest data 2006 shows that imports amounted to 2.835 million U.S. dollars(up 6% from 2005), compared to exports of 339 million U.S. dollars.

Risks. The lack of future prospects creates great inconvenience and a dangerous level of frustration. In this situation, young people are, in fact, the most vulnerable group because they are unable to enter the job market and are pushed into poverty with the subsequent deterioration of the general economic situation and with the effect of fomenting discontent and of increasing the appeal of subversive groups. The current unemployment rate in the region amounts about 25%. In Jenin alone, there are about 5600 graduates who don't work and 13,400 students who are studying in different universities in the West Bank. They won't find work and they don't hope to. In this way, there is an increase in restless unemployment and emigration.

The limits of humanitarian assistance. If one considers the international experience, it's clear that poverty reduction and concrete development cannot be achieved only through emergency assistance and humanitarian aid as if these were the only solutions, and which lead people to believe it's always possible to live with foreign assistance. Humanitarian aid is the greatest source of support in Palestine, but it's necessary to take a new and innovative approach, based on the development of local resources, on the private sector, and especially on the ability to exploit the enormous potential of the Palestinian youth. Otherwise, the injection of foreign financial resources risks creating distortions and negative effects unless the process of economic development is integrated into the institutional, social and cultural environment; in other words a development with strong foundations. The reconstruction of a strong network can only occur within the context of a concrete and shared initiative, in model of measurement which produces tangible, even if modest, results. Otherwise, there will be no credibility. These initiatives are very important as they not only resolve particular problems, but also offer success stories which can be proposed to other West Bank organizations and in the long run also to Gaza.

The Strategic Plan for Jenin development. The initiative in Jenin is intended to create a model of balanced and long-term permanent development, promoting the growth of economic and industrial activities in the Governorate of Jenin, quickly and with a rapid impact on income and on the social status of the population. A specific objective will be the creation of a logistic and industrial complex. With the systematic involvement of local communities and the use of existing potential, it will be possible to create the most appropriate and favourable local background for the economic development area. These are the goals of the Oslo Accords of 1993 which have been reaffirmed in international agreements both in bilateral meetings and in the Quartet statement of May 2008. These are also the goals of the "Palestinian Reform and Development Plan" presented by the Palestinian government. To reaffirm the potential of Jenin, the creation of a mirror industrial area of equal size is planned by Israel, on the border, in the Regional Council of Jlboa. In the future it would be possible to create a large integrated district. The conditions for this development exist, following the signing of an agreement by Israeli and Palestinian governors, which represents not only an important economic achievement, but also progress on the political and diplomatic plan.

Actors. The target groups are the direct and active players of the proposed action: Palestinian Government, Palestinian Industrial Estate and Free Zone Authority (PIEFZA), local institutions and administrative structures in Jenin; economic representatives (businessmen, tradesmen and craftsmen's associations), Chamber of Commerce, Banks and social representatives (unions, schools, associations); newspaper and television opinion makers since they become a means of spreading the word and are persuasive; young people to train in the management of development projects in consideration of the large number of unemployed in this age group. The final beneficiaries of the development project as a whole, to which this action contributes, will be the newly employed people who find work in the activities set up in Jenin, especially in the logistic / industrial area. Job creation not only generates steady family incomes for the

Palestinians, but also makes self-sufficiency possible and gives people pride in their work without their having to depend on charitable support. This contributes to strengthening the social network and demonstrates the need to share a peaceful existence. The final beneficiaries are also local and foreign businesses, which will find in Jenin an efficient and welcoming environment with the advantage of easy connection to the most important markets.

0.3. The project structure and the main results of the analysis

The project's relevance. The aim of the project is the building of a self-sustainable industrial park, involving an integrated cluster of firms and a logistic port in Jenin. This initiative represents the first pillar of the larger project EuroMid Network It will be of considerable significance to the involved area, and it will be an important opportunity to:

- develop and support the local economy and the whole country, providing an immediate opportunity for creating and expanding firms, operating in identified different sectors of economic development;
- facilitate the manufacture, distribution and export of agricultural and industrial products derived within the West Bank;
- facilitate the importation of products required for consumption by the Palestinian community inside the West Bank;
- generate employment, in a short time, for both skilled and unskilled workers;
- establish relations between the Palestinian and Israeli economies and take advantage of the close proximity of major Israeli industrial and consumer markets and the Israeli port of Haifa;
- improve security through efficient scanning techniques to allow movement;
- open the Palestinian economic enclave;
- encourage Palestinian economic diversification through new trade agreements, new infrastructure, and the adoption of productivity enhancing technologies;
- provide a formal and predictable environment for the facilitation of joint venture operations between Israeli and Palestinian firms and, indeed, foreign firms;
- encourage industrial development projects independent for both energy and water supplies, using technologies with low environmental impact.

The plan. The project of the Jenin Industrial and Logistic Area (JILA) covers an area of about 90 ha destined for industrial use and consists of the following subprojects:

- industrial park (66.34%) of the area);
- land port (27,59%);
- security checkpoint (2,30%);
- power plant from alternative sources of energy (1,94%);
- water management facility (0,62%);
- administrative area development (1,21%).

Main Features.

- The energy plants will use both solar energy and molecular restructuring of industrial and urban wastes. These technologies will be able to ensure self sufficiency.
- The water management facilities will capture rainwater from roofs and from the ground and recycle industrial water to guarantee an 80% level of autonomy.

- The security checkpoints will adopt top level technology.
- The logistic area will be the land port for the Haifa sea port allowing a substantial reduction in the time necessary to check containers coming from the Occupied Territories and requiring a back and forth control.

Transportation. The logistic activities will be modulated conforming to a sophisticated study which will account for the probability of encountering Israeli checkpoints along the routes and the characteristics of the trade firms. This research is of particular importance, because the mobility of goods between the West Bank and nearby countries is one of the critical factors affecting the economic and social development of the Palestinian area.

The socio-economic impact. The investment is expected to generate about 160 factories established in the JILA, about 5000 new direct employment opportunities in Jenin, plus an indirect employment effect in the West Bank area as large as 1.5 times the direct effect. The projections show an average gross national product growth of 30-40% for the Jenin area under the current conditions of labour mobility within the OPTs. The estimated economic internal rate of return for the investment is 89%.

The environmental impact. The environmental impact on the industrial area is minimal. This is a fundamental prerequisite to access grants from the European Commission. Energy sustainability is a project objective pursued not only to reduce the exposure to energy and water cuts, but also to activate an autonomous and independent local development, in line with the emancipation and the identity, which are sought by Palestinian people.

The impact of the project. In terms of the objectives and priorities shown above, the proposed action meets the following requirements:

- it launches a concrete development initiative which has obtained immediate consent and considerable agreement;
- it creates a situation which will provide tangible income benefits, self-respect, and a better quality of life for the Palestinian people, thus reducing the exodus of the more qualified human resources which would remove all hope of an unaided development;
- the concrete and stable creation of a cross-border cooperation between Israel, Palestine and Jordan; it overcomes, through positive results, prejudice, mistrust and resentment, which tend to multiply in a situation of economic crisis, isolation and lack of future prospects ;
- it contributes to creating a new managerial class in Palestine;
- it contributes to modifying, with the incentive of the private sector, the orientation and behavioural practices of decision-makers, who will be use administrative acts in order to support development initiatives.

The role of developmental agencies. The overall objective is to develop the local economy of the Jenin Governorate, to create new jobs in the formal sectors and to contribute to the reduction of poverty in the West Bank. It will be easy to implement and of great utility. It will be available to all countries' developmental agencies with activities in the West Bank area. It is a unique opportunity to play a leading role in coordinating the political actions of international actors at the local level.

The economic returns. It's possible to calculate:

- Project cost: 85 millions euro;
- Economic Rate of Return: 89%;

- Benefit Cost Ratio (B/C): 2.12;
- Economic Net Present Value (B-C): 109 millions euro.

If we consider the direct and indirect JILA project impact on Jenin and West Bank economy we have the following results:

- Economic Rate of Return: 318%;
- Benefit Cost Ratio (B/C): 2.85;
- Economic Net Present Value (B-C): 180 millions euro.

The financial plan. The project involves a public-private partnership, with at least 30% of grants coming from the European Commission, 20% National Public contribution (other international grants), 12% Italian government, 38% Loans (BEI, WB,…). From the financial analysis we have obtained the following results:

- Financial rate of return on investment - FRR(C)= 10%;
- Financial net present value of the investment - FNPV(C)= 47 millions euro.

This means that the project seems able to remunerate all its costs, with a rate that is higher than 5% benchmark.

1. The Jenin district: socio, economic and institutional context

1.1. A general outlook

The aim of the present chapter is to provide an outlook of the general context and local scenario of Jenin Industrial and Logistic Area project.

From the following pages, and particularly from the figures and information here contained, emerges a complex reality that, notwithstanding the positive and recent enhancement, still has the rural society characteristics of the ancient Palestine way of living and it is affected by overall negative climate of the Country.

Jenin is the northernmost Governorate in the West Bank, "squeezed" between Galilee (Israeli territory since 1948) and Samaria (Palestinian ever since), nestled in the mountains but only 40 kilometers far from the main port area, Haifa, and just at a little more far from the Jordan border. Such geographical position could be perceived, as it happens to all the border areas, as penalising, however its relative marginality may become an advantage as soon as the fluidity at will be handled in a less rigid way. In Italy, both Friuli and Trieste since the end of the 80s, after being marginal areas trapped within the iron curtain were transformed in meeting and communication areas and more important, played the geopolitical role of a “connection area” toward new Europeans scenario, at the same way, Jenin could play a strategic and significant role in a new context of peace for the Middle East.

To date, however, the situation is still different and uncertain: despite the recent reopening of the Jalama crossing point, Jenin is still restricted in its small local market, and the few tens of miles that separate it from the major centres of the Palestinian territories become often a far journey, in terms of time, for modern market economy that grow at a rapid pace.

However, the following pages show significant elements of vitality and innovation: Jenin is no longer the "city of bombers" but the centre where, in a few years, one of the most modern universities of the entire area was created, and traditional farming and manufacturers activities are slowly developing into modern industrial facilities.

The "human capital" has several positive aspects, from the preponderance of younger generations to the high grade of schooling, good professional level and quality of the labour force, however constraining external factors still influence the quality of the local entrepreneurship that, with the exemption of few positive examples, seems to be far from liberating the "animal spirits" required for economic growth and expansion.

Therefore, the scenario which emerges is still confusing, as it happens in a phase of transition from an outdated past model to an uncertain future and a present in which a lot of "stop and go" are penalising the growth and innovation stimulus.

May be useful then, although summarily, to analyze strengths and weaknesses - risks and opportunities (SWAT analysis) for a better understanding of the general scenario.

Strength	Weaknesses
Geographical location University Workforce quality Presence of some well-established industrial sectors	Geographical location Domestic Market In fractures network Entrepreneurship Lack of managerial staff Companies too much traditional
Opportunities	**Threats**
Proximity to Haifa's Port Proximity to the other Middle-East countries Realization of the industrial park Availability of a wide range of financial incentives and fiscal special terms Plans and programs for the modernization of the infrastructures networks	Lack of guarantees for the political stability Unexpected closure of the border Suddenly check points closure Competition by the contiguous areas (Jordan)

This brief overview summarizes the terms of debate.

It is now clear how important is, for this area, a rupture with the past, promoting a new model as an engine for a quantum leap towards development, exceeding the stillness of the moment and guiding the local capacities to ensure far more effective use of resource that the international community made available for encouraging the necessary synergies especially with the Israeli infrastructure and business, this will ensure that the economic and productive links, and ultimately a common idea of development, are far stronger than division and separation. The creation of the industrial zone represents such opportunity.

1.2. The social and economic context – the fundamental aspects

The Palestinian territories after Oslo and the Second Intifada. The period following the Oslo Accords of 1994, with the process of the infrastructures construction in the new Palestinian territorial entity, had, as well know, a sudden and profound setback with the second Intifada of 2000. The situation of deep crisis has since gone on for several years, culminating from the Palestinian's political side with the violent conflict between Hamas and Fatah, and in terms of the Israeli-Palestinian relations with the construction of the separation "wall".

To date, the Gaza Strip, controlled by Hamas, is practically a separate entity from the rest of the Palestinian territories, the West Bank, and the "Operation Cast Lead", conducted between December 2008 and the early months of the 2009 by the Israeli forces, has produced additional reasons for the rise of tensions even after the presentation of the UN report (Goldstone Report). In the West Bank, however, continues the process of relative normalization although constant tensions produce new problems, particularly on two fronts:

- the creation of new settlement by Israeli settlers, which in reality has never experienced setback, although recently the Netanyahu government announced a limited freeze (for 10 months) of new developments;
- the closures, barriers and checkpoint that are a major obstacle to the movement of persons and goods within and without the West Bank: up to date it has been estimated that there are over 600 checkpoints, causing severe hardship to the population and to the local production system.

The closures and especially the separation wall, have had a profound effect on the Palestinian economy: a report of UNCTAD (UNCTAD Report on UNCTAD assistance to the Palestinian people: Developments in the economy of the occupied Palestinian territory – 2009) indicates that because of the separation (e.g. the wall) 3551 businesses shut down and roads and the water system of 171 villages were interrupted.
The main economic aggregates have been heavily affected by these events: from 2007 the GDP started to climb but then it had a new decrease in the second half of 2008, the inflation rose strongly (from 2.7% to 9,9% in 2008) and unemployment is at highest level: over 26% (although it was 14,3% in 2000 before the second Intifada).
Today, the macroeconomic situation had been more difficult than previewed in the Palestinian Reform and Development Plan (PRDP) for 2008-2010: inflation was much higher than anticipated, eroding real wealth and incomes of the population, unemployment and poverty have increased. The unemployment rate for the 2008 is estimated at an average of 26 percent in all the Palestinian Territories (40 percent in Gaza and 19 per cent in the West Bank), up from an average of 21,5 per cent in the whole Territories (30 percent Gaza, 18 percent West Bank).
No one sees today clear signs of recovery, the "de facto" separation of Gaza, the tension with Israel, the obvious leadership crisis within the Palestinian Authority (PNA), recently exploded and caused some resignations within the Government of Fayad together with postponement of the Presidential elections, are all factors contributing to the strong state of crisis of the Palestinian economy.

The current situation, West Bank and Gaza general context. The Palestinian territories are composed of two major partitions: on the one hand, the West Bank which covers 5900 km² with 2,345,000 inhabitants in 2007, on the other hand, the Gaza Strip which covers 365 km² with 1,416,500 inhabitants (the land extension is measured from the Green Line, the pre-1967 border).

The West Bank is divided into 11 governorates while Gaza in 5. Among the governorates of the West Bank, the most populous is Hebron (550,000 inhabitants), followed by Jerusalem (362,500 inhabitants, but we have to bear in mind that most of them reside in areas which have been annexed to Jerusalem by the Israelis), Nablus (321,500 inhabitants), Ramallah (278,000 inhabitants) and Jenin (258,000 inhabitants). Demographically, the smaller governorate is Jericho with 41,700 inhabitants.

Overall in the Palestinian territory, based on 2007 Census (Source: PCBs), there were 646,755 households of high average size, equal to 5.8 persons. In the West Bank there were 427,533 households of average size of 5.5 persons (in the Governorate of Jenin the households' size is less than the average, with 5.3 persons).
With regards to labour force (population 15 years and above), in 2007 only 32,1% of the population were employed full-time (full employment) in the West Bank, plus another 4.2% which were under-employed, while in Gaza, for the highly complex difficulties of the area, these figures were respectively 24.9% and 1.8%.

Table 1. 1. Macroeconomic and Social Indicators, 1995-2008

	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008*
Nominal GDP ($USD billion)	4.52	4.44	3.75	3.16	3.62	4.08	4.48	4.39	5.15	6.54
Real GDP Growth (% change)	-2.4	-5.4	-15.4	-9.4	5.8	6.0	6.0	-5.0	4.9	2.4
GDP per capita ($USD)	1400	n.d.	n.d.	1125	n.d.	1317	1410	1363	1337	1331
Exports ($USD billion)	0.64	0.87	0.56	0.52	n.d.	0.64	0.74	0.71	0.92	0.89
Imports ($USD billion)	2.17	n.d.	n.d.	2.88	n.d.	3.48	3.32	3.80	4.43	4.64
External Trade Balance (% of GDP)	-46.2	-57.0	-57.1	-68.6	n.d.	-67.5	-55.2	-66.8	-75.0	-78.5
Unemployment (%)	18.2	14.3	25.2	31.3	25.6	26.8	23.5	23.6	21.5	26.0
***estimated**										

Source: IMF and World Bank

The manufacturing scenario: sectors, enterprises, employment. Although in the medium term the development of the private sector industry could provide new employment, today the scenario is yet too weak: low productivity, too many micro industries, no technologic innovation, restricted local markets, are all factors of low competitivity attitude of the Palestinian industries. In the industrial scenario of Palestinian Territories, some sectors are most relevant :

- extraction and processing of stones and marble, which contributes to about 5% of GDP, especially in the districts of Hebron, Bethlehem, Ramallah and Nablus;
- textile and clothing (15% of Palestinian manufacturing output), with a strong presence especially in Ramallah, Tulkarem, Nablus and Bethlehem;
- food (23% of Palestinian's production in volume, the 13% of manufacturing employment);
- mechanical products, mainly in Hebron, Ramallah and Nablus and also in Jenin;
- construction: currently one of the few sectors which retain vitality, being an ancient and traditional activity in the area, contributing to 2.5% of Palestinian GDP with about 12% of work force.

The total number of companies in the Palestinian Territories is 132,874 from various sectors, 94,205 in the West Bank and 38.669 in Gaza although the currently active companies are in smaller number.

Table 1. 2. Status companies

Area	Status of companies	
	Total	Active companies
Palestinian Territories	132 874	116 804
West Bank	94 205	82 871
Gaza	38 669	33 933

Source: PCBS - Economic Establishments Main Findings – 2008

In 2007, in the manufacturing industry in the West Bank, related to dimension, were as follow:

- 21 firms with more than 100 employees;
- 33 between 50 and 99 employees;
- 245 between 20 and 49 employees;
- 650 between 10 and 19 employees;
- 1.662 between 5 and 9 employees;
- 9200 up to 4 employees.

In practice, of around 11,811 manufacturing firms 78% are micro enterprises, 14% very small enterprises, 5.5% small enterprises, 2% small-medium enterprises, and only 0.5% medium or large.

The infrastructures. The Palestinian infrastructures result to be severely penalized by the events in the area, with a further deterioration after the second Infitada.
International financial aid has been largely used to fill in the vast gaps penalizing the Palestinian productive economic life and the Palestinian Reform and Development Plan budgeted an expenditure of over 400 million dollars for infrastructures

The PNA focused its efforts on modernizing the sector, creating a new legal framework, new institutions and sector-specific agencies such as the Palestinian Energy Authority, the Palestinian Water Authority, PALTEL, Pal-Cell/Jawwal, and the Palestine Electricity Company. New legislation was issued regulating water, electricity and telecommunications systems.

With regard to the energy grid, the Palestinian demand still depends mainly on the Israeli supply, and only the 17% of the demand is satisfied by local resources (i.e. Palestinians).
The total length of the road network in the Palestinian Authority is 5147 km. but only 10.4% of these are main roads (but none of them are highways), and 8, 5% are district roads. The remaining network is local roads.

The international trade. The situation deeply affects the Palestinian international trade keeping the region largely dependent on imports from abroad and especially from Israel with a consequent heavy negative trade balance.

Table 1. 3. Few figures outline the situation (data up to 2008)

Export of goods and services	885 mln $
Import of goods and service	4 640 mln $
Trade balance with Israel	-2 678 mln $
% of inter-exchanges with Israel – Total	80,8%

Source: UNCTAD

The main import sectors, in 2006, were the following:

- energy products and lubricants (26.9% of total Import);
- manufactured products (23.9% of tot.);
- agro-industry (17.7%).

The 61.4% of export consisted of manufactured goods and 14.3% of agro-industry.61.4%.

1.3. Territorial and environmental aspects

The energy resource. To meet the demand for water and energy, the West Bank's territory heavily relays on Israeli networks. Although there are many water springs and artesian wells, 110 localities out of 504 are dependent on Israeli water springs, 112 are supplied by the West Bank Water Department, 49 by other local authorities, 52 have a water spring but as many as 123 are not connected to any water pipe network. The dependence on electricity is far greater:

- on 504 localities, 268 are supplied by IEC (Israeli Electricity Company);
- 24 localities benefit of an electricity network set up by local authorities;
- 8 are served by private generators;
- 38 have no electricity;

- Bethlehem and East Jerusalem districts are connected to the Jerusalem District Electricity Co..

It is to be stressed that the above figures regard the company who manage the electricity grids and water, not to the main supplier of electricity managed by Israeli entities, with the exception of local wells, water springs and private generator. Another figure shows the difficulties of electricity connections in the area, with consequent repercussions on the inhabitant quality of life: on 466 places supplied by electricity, 259 of them are able to guarantee satisfactory lighting to both main and secondary roads, 77 only to the major ones, 130 lack of any type of street lighting.

Waste collection. The collection of solid waste in the West Bank's areas, is a serious issue for the local authorities: in 99 localities (amounting to nearly 20% of total) there is no service (Hebron shows the worst situation having nearly 50% of area not served, and in the governorate of Tubas 60% of the area is not served). In the remaining locations, 310 of them are supplied by local authorities, 76 by private entities and 19 by the UN agency UNRWA.

1.4. Social and cultural Aspects

Living conditions of the households. Some data may be provided on the living conditions of the households:

- kitchen with tap water is present in 97.4% of households in urban areas, in 92.7% in the rural ones and in 97% in the refugee camps;
- bathroom with tap water: 96.9% urban areas households, 91.3% rural areas households and 94.1% in refugee camps;
- water closet:96.3% urban areas households, 89.6% rural areas households and 99.1% in refugee camps;
- connection to water mains:96.2% in urban areas, 99.7% in refugee camps, 76.1% in rural areas where there is a greater use of wells, water springs and reservoirs;
- more common is the connection to electricity grid which reaches almost all households: only 0.4% in rural areas is not connected.

The most relevant data are represented by the higher percentages in refugee camps rather those in rural areas which result to be more backward: it should be underlined, however, as now, even in a state of very high social degradation, most refugee camps have now assumed characteristics of new conurbations with services, often provided by international organizations.

Education – cultural activities and institutions. In all Palestinian territories the levels of schooling are very high, with many Colleges and Universities (in Jenin is located one of the most prestigious academic institutions, the Arab American University, the first Palestinian private college adopting the criteria of the American educational system). In the Scholastic Year 2007/2008, there were:

- in the Universities and University colleges 167.984 students of both sexes (nearly 55% females) and 4.527 teachers (18% females);
- in the Community Colleges 12.972 students (45% females) and 547 teachers (20% females).

In the Scholastic Year 2006/2007, the graduates were 21.779 (nearly 60% females) in the Universities, and 3.496 in the Community Colleges (of which nearly the 50% were females). Besides the presence of schools, Colleges and Universities, a good level of cultural liveliness underlines the area of the West Bank: up to 2008 196 cultural centres were active. The centres implemented at least 3.091 different initiatives, during the

same year, including meetings, public lectures, training courses, concerts, activities which have been attended by 218.751 participants (particularly to the courses, concerts and art exhibitions).

The technological dissemination within residents. Unfortunately, the information's available are dating back to 2004, a period now too far away for a sector where the growth rates are very high. It may be indicative, however, to provide some figures:

- in 2004 in the West Bank 28.4% of households owned a computer, a figure, however, influenced by the higher rates of Jerusalem (45.6%);
- only 9.8% of households were connected to the Internet, but the percentage was much higher Jerusalem (20.1%) and in Ramallah (13.7%);
- at a highest rate seems to be the use of computer between the population 10 years and above, in the West Bank the figure is equal to 37.6% of residents (42.1% among men and 32.9% among women), with higher levels in Ramallah (40.7%) and in Jerusalem (47.7%).

1.5. The Financial Aid for the productive development and the Sustainable Industrial Zone

A proper financial arrangement can be only prepared once there is a complete and detailed business plan. In this stage, apart from indicating the available elements for a potential box of tools, the possible combinations of the same are identified in order to involve the largest possible number of tools and subjects. To obtain this result, three key points emerge from the project:

- The project "Jenin" presents the characteristics of an integrated intervention that includes infrastructure, transport, sustainable technologies, renewable energy, environmental, technology transfer, SME development, social follow-up, capacity building and promotion of local players. This is important for being able to meet the minimum criteria required by many funding sources and to ensure that the project in its single parts and in its entirety may be eligible.

- The geographical and economic dimension of the project, the objective conditions of the Palestinian economy, the difficulty in attracting investors from outside without offering the opportunity of a distribution platform and the limited financial capacities of many countries, including Italy, means that this project differs from other similar ones, which are managed by a single country in a bilateral logic, for the direction of a multilateral project of which Italy is a promoter and could be a coordinator but it requires the active participation of other subjects. In some cases, only the multilateral connotation, independent from a direct interest by the Italian companies, may activate the source of funding especially in case of trust funds.

- The multilateral connotation and the openness towards other European countries are also important for the involvement of their companies. While in the case of small areas it is possible to think of a promotion which is exclusively national, in the case of Jenin this does not appear possible at the moment. Opening a larger market attracts investments even from Palestinian companies including investments from the Gulf countries.

In addition, there are two further elements:

- an important variable for the activation of funding sources is not only the bankability and viability of the project but, because of the Palestinian situation where any initiative struggles to take off, certainty and speed in its implementation would immediately attract even funding sources which are currently unidentified;

- the system of political and commercial guarantees, taking into consideration the conditions and also the solvent state of the Palestinian Authority; the creation of a specific guarantee fund by means of a prudent multiplier to cover part of the activities and investments shall be required.

Starting from this premise, the funding sources are divided into 10 blocks. Modalities, types of financing, activities and projects to be financed, recipients, terms and conditions of access and use are different:

- EC funding: facility NIF of the ENPI; PEGASE program; European Union initiatives; (a lot of this program and initiatives are based on the contribution of donors from different place who pool their funds according to the indications of various financial UE Tools);
- BEI and FEMIP fund;
- National cooperation; as well as the Italian Cooperation (financial aid and direct intervention) the following cooperation: American (USAID); German (GTZ); French (AFD); Japanese and British (DFID– UK AID) shall operate in support of registered Palestinian companies;
- World Bank and related Bodies (IBRD) also those specialised in guarantees loans (MIGA);
- UN agencies ; UNDP, UNIDO, UNCTAD;
- Italian agencies for the internalization: Simest, ICE, SACE;
- Palestinian funds: Palestinian Investment Fund –PIF;
- investment funds for Palestine of the Gulf countries;
- the participation of private investors not only in terms of direct investment – the base of the present study – but also for sharing the costs of facilities and services;
- banks operating in Palestine such as Arab Bank ad HSBC but also others, some of them are Islamic banks.

Of course, each of these categories of funding source presents its own methods of approach, terms and purposes, as well as the possibility of access is different: in some cases, in fact, there are programs for institutional Palestinian subjects only (for example, the creation of networks and infrastructures), in others special attention is devoted to the development of enterprises and, as a consequence, private individuals have access to them.

In general, the funding sources mentioned above, as regards the industrial development and hence the implementation of Jenin industrial zone, are structured according to the following three fundamental pillars:

Table 1. 4. The funding sources pillars

Intervention Areas	Intervention's beneficiaries	Sources/programmes
Networks and infrastructures realisation	Funding to the Palestinian Authorities (on national and local scale)	UN with NIF ENPI, BEI and Femip, World Bank e IBRD, ONU, National cooperation, Gulf Countries Funds.
Direct financial aids to the companies	Grants and soft loans to the Palestinian companies.	EPCGF **(**European Palestinian Credit Guarantee Fund), national Cooperation's, BEI/FEMIP, PIF, international banks.
Participation in venture capital for the new firms	Palestinian companies	SIMEST, international Banks and Agencies.
Loans and investments guarantees	Palestinian companies, companies from other countries.	MIGA, SACE, EPCGF, Femip

For each of these financials source is given below a synthetic description of specific programs and activities in the Palestinian Territories:

Sheet 1 - PEGASE

Promoter: European Union

Programme: PEGASE

Charatteristics and Objective. PEGASE is the European Union's mechanism to support the Palestinian people through implementation of the Palestinian Authority's Reform and Development Plan (PRDP). It includes:

- The direct delivery of targeted and carefully monitored direct financial support to the Palestinian population, either through the PA's own Single Treasury Account (STA) or via direct payments to eligible companies and individuals in full transparency, co-operation and agreement with the PA;
- Assistance for the PA's implementation of medium to large-sized development projects as set out in the PRDP, with substantial technical assistance and careful control and monitoring of contracting and payment.

PEGASE is a mechanism which is open to all donors, including those outside the EU, and international organisations. Donors who contribute to PEGASE contribute to the considerable reduction of transaction costs for the Palestinian Authority and to increased ownership, transparency and effectiveness, in line with their Paris Declaration undertakings.

Modalities: with regard to direct financial aid to private companies, PEGASE promotes and supports together with other players the European Palestinian Credit Guarantee Fund.

Sheet 2 - EPCGF (European Palestinian Credit Guarantee Fund)

Promoters:

- Federal Republic of Germany (through KFW Entwicklungsbank);
- European Union (through KFW Entwicklungsbank);
- European Investment Bank.

Program: European Palestinian Credit Guarantee Fund

Objectives: EPCGF is a development programme for the Palestinian Authority financed by the European Commission and the Federal Republic of Germany through KfW Entwicklungsbank and European Investment Bank to enhance SME competitiveness and, on a sustainable basis, support income generation, employment creation, and poverty reduction.

Tools:

a) **Fund Facility**

The Credit Guarantee Fund currently stands at EUR 29 million. EPCGF makes available partial credit guarantees to participating partner banks to cover an agreed percentage of the commercial risk associated with lending to credit worthy SMEs who are unable to furnish the bank with the required collateral. With the existence of the Credit Guarantee scheme in Palestine, credit worthy SMEs who are unable to furnish banks with required collateral, will be able to have access to the necessary financing. As the needs and demands grow, EPCGF is committed to find additional capital through existing and new sources.

Eligible borrowers. Privately-owned viable SMEs with 20 employees or less which can meet prudent credit evaluation and criteria set by EPCGF. Those businesses must be able to:

- generate sufficient cash flow to sustain operation and repayment of the loan;
- lack or unable to provide the bank with sufficient collateral.

Start-up operations are not covered under the program. Credit worthy SMEs who have been in operation for a minimum of 2 years are eligible.

b) Loans

Loans are available to finance:

- Working capital (raw materials, inventory, receivables, etc);
- Working capital loans may be repaid over a period of three years with 6 months grace period;
- Capital investments (fixed assets, equipment and machinery, refurbishments, etc);
- Capital Investment loans may be re paid over a period of 5 years with 12 months grace period.

Eligible loans:

- new loans to existing clients at the participating partner bank who have currently no outstanding loan;
- new loans to new clients at the bank;
- new loans to current clients in arrears if the following conditions are met: (i) the "old" loan is rescheduled or restructured; and (ii) the cash flow of the project as a whole (old and new loan) enables business to repay. Only the new loan is eligible for the guarantee;
- loan maturities are for more than one year and up to five years with a maximum amount of USD 50,000.00 or its equivalent. Loans under the guarantee program are limited to once every two years.

Sheet 3 - Facility for Euro-Mediterranean Investment and Partnership (FEMIP)

Promoter: European Investment Bank EIB (BEI)

Program: Facility for Euro-Mediterranean Investment and Partnership (FEMIP)

Fund facilities and Objectives:

a) Loans:

- **Credit lines:** develop SMEs through lines of credit to EIB financial partners, which on-lend to their customers.
    - **Beneficiaries:** SMEs

- **Individual loans:** develop the Mediterranean partner countries' economic infrastructure, with special emphasis on private sector growth and the creation of an environment conducive to private investment.

    - **Beneficiaries**: private and public sector promoters

b) **Private equity:** promote the creation or strengthening of the capital base of productive enterprises and companies established in partnership with EU-based companies.

    - **Beneficiaries:**
        - SMEs;
        - Private mid-cap compagnie;
        - Investment funds;
        - Microfinance institutions.

c) **Technical assistance:** improve the quality and development impact of FEMIP operations by:

- strengthening the capacity of Mediterranean partner countries and promoters;
- Financing upstream studies and activities focusing on directly or indirectly strengthening private sector growth.

    - **Beneficiaries:** All FEMIP clients

Sheet 4 USAID - Palestinian Enterprise Development PED

Promoter: USAID

Program: Palestinian Enterprise Development

Objectives:

- USAID focuses on Palestinian Enterprise Development and Investment Promotion by enhancing the competitive environment for the private sector through firm-level technical assistance designed to enhance firms' competitiveness, technology, and management;
- USAID assists struggling SMEs to revise business plans and apply for credit so that they can engage productive private assets in their respective communities.

Beneficiaries: SMEs

Sheet 5 GTZ Private Sector Promotion Program

Promoter: GTZ (german cooperation)

Program: Private Sector Promotion Program

Objectives. SMEs in the Palestinian territories are strengthened in the long term, enabling existing income and employment opportunities to be secured and new ones to be created.

Modalities. The program supports enterprises and their trade associations. It is also involved in improving the general economic policy conditions and the services available to SMEs. The program comprises three components:

- chambers and trade associations as well as local authorities in selected areas are strengthened, enabling them to launch economic development initiatives and improve the services they offer to SMEs;
- in selected national private-sector organizations, available potential is developed and improved. The focus is on promoting specific value chains; the export opportunities of Palestinian enterprises are to be improved through better market information and an improved quality infrastructure.

Sheet 6 PIF Loan Guarantee Program to Support Small and Medium-Sized Enterprises in Palestine

Promoter: Palestinian Investment Fund. The loan guarantee program will be established through partnership among the Palestinian Investment Fund (PIF), the American Overseas Private Investment Corporation (OPIC), and the Aspen Institute. OPIC is a governmental organization working to develop and encourage investment in the private sector while the Aspen Institute is an international non-profit organization seeking to encourage open dialogue through the Middle East Investment Initiative (MEII).

Program: Loan Guarantee Program to Support Small and Medium-Sized Enterprises in Palestine

Objectives. The general objective of creating a loan guarantee program is to stimulate and establish financing programs for SMEs in the banking sector, towards enabling them to play a pivotal role in improving economic activity. The program particularly aims at accomplishing the following:

- facilitate the ability of SMEs with good credit to obtain the financing necessary for developing their operations;
- provide clear and organized bases for lending without prolonged and complex procedures.
- support SMEs in ways that ensure the continuity of their work and their development as a main support base for the national economy.

Beneficiaries: the program will benefit SMEs' owners and employees in different sectors and will also benefit the banking sector by stimulating its activities and enabling it to provide larger loans.

Resource and actions:

- the amount of guarantees provided by the partners will amount to US $160 million;
- the amount of loans provided by banks that have program guarantees will reach up to US $228 million;
- the allotted period for providing these facilities is 10 years;
- each loan amount will range between US $10,000 and US $500,000.

Sheet 7 Italian Cooperation Soft Loan

Promoter: Italian Cooperation for the Development

Program: Soft Loan for Palestinian SMEs to purchase machinery from Italian companies

Objectives. To provide a financial tool to support Palestinian SMEs for the purchase of equipment, raw materials, repairs to facilities and small buildings (which do not exceed 30% of the total loan required). The

loans have to be used for the purchase of goods manufactured by Italian companies; it is possible to obtain up to a maximum of 35% of the loan for expenditures made locally.

Beneficiaries: SMEs Palestinians with, at least 65% of the share capital, is held by private investors and in which at least 40% of the capital is held by private entrepreneurs of Palestinian nationality.

Terms for soft loan:

- projects of a total value between 50,000 to 500,000 Euros;
- repayment of the loan within a period not exceeding 6 years;
- interest rate for the end user no more than 4% annually;
- participation at risk by the applicant: it is required to participate with own funds for a share amounting at least to 25% of the project's costs.

Modality. The total investment is estimated in 25 million Euros to be split in three annual instalments starting from 2010 which shall be granted to the Palestinian financial authorities. The Ministry of Finance and the Ministry of Economy Palestinians have to identify the banks who will lend the funds and to whom companies must submit the required document. Italian suppliers (whose name will be explicitly mentioned in the application) will be paid directly by the Palestinian banks.

1.6. Institutional and regulatory framework

Institutional framework. The Jenin district framework is incorporated in the autonomous Palestinian territories governed by the PNA (Palestinian National Authority) through its national and local organizations.

Generally speaking, agencies and public institutions involved in the economic development are the following:

- the Ministry of Economy (MONE - Ministry of National Economy), which has the specific scope of creating the conditions for the growth of the economy in its entirety and for the development of private enterprises; it also deals with the development of a broad range of business services of high value and contributes to the creation of the right conditions for establishing economic and trade relations between Palestine and other countries;

- Palestinian Investment Promotion Agency (PIPA), an agency created in 1998 (following the promulgation of the law on promotion of investments, which will be dealt with below), with the task of becoming the "operational arm" of the Ministry of the economy especially for encouraging foreign investors and for assisting them to deal with the facilities and incentives provided by the aforementioned law;

- Palestinian Industrial Estates and Free Zones Authority (PIEFZA) is an independent agency of the PNA and the body appointed for encouraging, promoting, overseeing the creation of areas and industrial zones in the Palestinian Territories, including the creation of efficient support services for investors helping their activities and trying to minimize bureaucracy: It seems clear that the PIEFZA is certainly one of the key players in the scenario for the creation of an industrial zone in Jenin.

Besides these public entities and agencies, there are other subjects who are associative in nature and they are worth a mention:

- Palestinian Trade Center (Paltrade) is the organization responsible for supporting the competitiveness and capacity to act in the Palestinian markets, throughout structures and initiatives supporting the development and promoting economic and manufacturing relationships; up to date there are around 350 between the main economic operators in the country who are part of it;

- Palestine Federation of Industries (PFI) is the organization of industrial entrepreneurs, founded in 1999 that, apart from representing the interests of the corporation, provides the usual information services, technical services and support to enterprises and local associations of industrial entrepreneurs;

- Federation of Palestinian Chambers of Commerce, Industry and Agriculture, which is the umbrella organization of the 14 local chambers of commerce and business associates at least half of Palestinians as in many other countries, and unlike Italy, the Chambers of Commerce Palestinians are private organizations promoting and supporting companies which operate in its territory, although the subscription to the local chambers of commerce is required.

Locally, the institutions of reference are: the Governorate, the Municipalities, and the Chamber of Commerce. The relationships with the local authorities are obviously extremely important, because start-ups are required to obtain from the Municipality, the "Business License", as well as the necessary approvals by the local Fire Department.

Jenin Chamber of Commerce was founded in 1953 and currently has several thousand companies registered in its Registers (over 3500). In addition to its institutional duties (business registration, processing and dissemination of information and statistics on the economic situation of the area, tax assistance and bureaucratic economic operators), the Chamber organizes promotional initiatives (participation in fairs and events), encounters between operators, promotes training, undertake territorial marketing activities in the area.

Economic and territorial planning. From a planning point of view, the main document of reference is actually the Palestinian Reform and Development Plan for 2008-2010 (PRDP), adopted at the Paris Conference of 17 December 2007. This plan, of course global and comprehensive in its nature, contains a particular emphasis (as regards economic development, and production) for the development of the private sector: "The Palestinian private sector must be the engine of sustainable economic growth" (PRDP, P.5).

And again: "It needs (i.e. the private sector) to generate productive employment, producing high value-added goods and services, and enhancing national prosperity. We are committed to creating an enabling environment for private sector growth. "(PRDP, p.5).

In detail, the PRDP provides under the program called "Industrial Capacity Development", a specific action plan to create industrial areas and parks, including a specific project denominated "Build border industrial parks - Jenin & Tarqumiya" for which a 30 million dollars investment has been attributed for the years 2008-2010 (PRDP - Annex 4: Reform and Development Programs - Detail - p.55).

In January 2010 has been published by the PNA the Document "Palestine: Moving Forward – Priority Interventions for 2010", for the final year of the national planning cycle (i.e. the PRDP), and the PNA has already begun to prepare the new Palestinian National Plan (PNP) 2011-2013, that will be completed in the summer of 2010 and will inform the budgets of the PNA for 2011 through 2013. In this Document, the priority has been given in four thematic areas:

- finalize the building of central and local government institutions;
- upgrade public service delivery to all citizens throughout the Palestinian Territory occupied in June 1967;
- launch major projects to build strategically significant infrastructure;
- improve and promote the image of Palestine internationally.

The PNA has categorized as high priority initiatives to be implemented through 2010 and beyond, a number of 201 development projects in the four areas above.

Legal framework. The regulatory framework on foreign investment in Palestine is based on Law No. 1 of 1998 "Law on the Encouragement of Investment in Palestine." Currently, however, a series of changes and amendments have been presented and they are waiting to be ratified by the PLC (Palestine Legislative Council) since 2005. The Act provides for a non-discriminatory treatment against foreign companies wishing to invest in Palestine, with specific guarantees for profit repatriation to the country of origin. Moreover, the law contains a series of measures encouraging investment, such as tax and customs exemptions, to be granted by complying with certain conditions (art.22 of Law 1 / 88). Other important laws for productive investments are the Labour Law and especially the Industrial Zones Law (Law No.10 of 1998). It is especially to this piece of legislation that it has to be referred for the understanding the legal framework encouraging investment in the Territories through PIEFZA, the state agency established by that law.
Income tax exemption. The law n. 10/1998 regarding investment inside industrial estates and free zones gives 2 additional years of tax holiday to what is given by law n.1/1998 regarding encouragement of investment in Palestine.

Table 1. 5. Income and tax exemption

Amount	Investment outside IE/FZ	Investment inside IE/FZ
$100,000- $ 1 million	5-year tax holiday - 10% income tax on net profits for an additional 8-year period.	7-year tax holiday - 10% income tax on net profits for an additional 8-year period.
$ 1 - $ 5 million	5-year tax holiday - 10% income tax on net profits for an additional 12-year period.	7-year tax holiday - 10% income tax on net profits for an additional 12-year period.
Over $ 5 million	5-year tax holiday - 10% income tax on net profits for an additional 16-year period.	7-year tax holiday - 10% income tax on net profits for an additional 20-year period.

Source: PIEFZA

Fixed Assets Exemptions. All goods, materials, ingredients, machines and foreign vehicles imported into the Industrial estates / Industrial Free Zones or for the consumption and use of staff employees enjoy exemption from customs duties, related fees and import licenses.

Customs Duties Exemptions:

- equipment and heavy machinery and their imported spare parts;
- furniture imported for hotels, electrical appliances, and electronics imported for tourism enterprises, hotels and hospitals;
- a price increase in the value of fixed assets when increase is a result of rising prices outside the investor’s contract;
- the exemption period may be extended for two years if local input in the equipment, machines, and fixtures exceed 60%;
- the exemption period may be extended up to five years depending on the nature and location of the enterprise;
- additional exemptions may be granted to enterprises engaged in export, provided export percentage is not less than 30% of the total;

- exemption from payment of VAT on specific items, VAT refunds.

Free Movement of Capital and profits - Investors also benefit from:

- full Capital Repatriation, including profits and dividends;
- unrestricted movement of foreign exchange.

Export Exemptions:

- goods produced and sold outside Palestine are exempted from export taxes, and any other taxes;
- goods produced and sold within Palestine shall be regarded as regular imports.

Local Market Sales. A company established at an Industrial Estate and Free Zone may sell a maximum of 20% of the annual value of its production to the local market, provided that:

- all raw materials used in the goods sold to the local market shall be subject to the fees and customs duties imposed on any similar product available in the local market;
- if a similar product is not available on the local market, only 80% of the fees and customs duties imposed on these products shall be paid.

Rules of origin incentives. A Palestinian product is given preferential customs treatment according to existed trade agreements. While each agreement defines its own rules of origin, generally, a product will be stamped "*Made in Palestine*" for export, if not less than 35%-40% of its out of factory value, has been processed in Palestine.

Investment guarantees:

- protection for all investors and investments and grants specific incentives for projects creating or expanding economic activities in certain sectors;
- prohibition of discrimination against any investor on the basis of nationality;
- prohibition of expropriation of investment in the event of expropriation for a public purpose, enterprises will be compensated fair market value;
- protection of all confidential information unless the investor gives his written consent or a court order from a Palestinian court compels disclosure;
- preferential treatment permitted on a narrow basis arising from bilateral or multilateral agreements.

Risk Insurance Investment Guarantees. Long-term Political Risk Insurance covers up to $3-5 million for foreign direct investors per project during a 15-year period. Co-insurance is also available to increase investment coverage capacity. The investment Guarantees fund is administered by the multilateral investment Guarantee Agency (MIGA) and is funded by the World Bank.

Benefits for Investors:

- free transfers of foreign currency and freedom for repatriation of income generated from investment in Palestine;
- investors may invest in any sector of the Palestinian economy under the free admission principle.

Banking and Insurance. (Source: IPBF – IPCRI Guide to investment, Trade and Cross Border Business between Israel and Palestine – 2009 – pag.86).

Banks in Palestine are currently regulated by Law No. 2 of 2002, but the PMA has drafted a new law which is intended to serve as its replacement. The draft law aims to address numerous issues that are neglected by

the current law, such as microfinance and e-banking. The new law specifies certain requirements for the establishment of a bank in Palestine and eases the process for opening branches of foreign banks.

Insurance in Palestine is supervised by the Palestinian Capital Markets Authority (PCMA) and governed by four laws: the Jordanian Law No. 5 of 1965; Law No.76 of 1965; Law No. 2 of 1966; and, No. 1 of 1967 (www.pcma.ps). Insurance is available to cover air, land and sea travel, movable and immovable property, and personal matters, such as life, theft, health, employees, and vehicles

Regolamentation and authorizations. The process to follow to set up a new company in the Palestinian territories has been, lately, outlines by the PIC (Palestine Investment Conference) through the guidebook "Investment Guide to Palestine – 2008" (How to Start a Business: A Step by Step Guide –pag.87 – 89) which is given here. Keep in mind that, obviously, value related to taxes, fees and charge are relative to 2008 and in some cases may have been changed.

"How to Start a Business: A Step by Step Guide"

Step 1: Obtain a Temporary Copy of Certificate of Registration From the Ministry of National Economy. The purpose of this temporary registration certificate is to enable the entrepreneur to open a bank account prior to depositing the initial capital in the bank. No charge levied.

Step 2: Deposit the Initial Capital in the Bank. This normally has to be 25% of initial capital plus official bank fees (1/1000 of stated capital). Upon payment, a receipt is obtained and supplied back to the Ministry of National Economy.

Step 3: Select a Company Name and Reserve Proposed Name. Once a name is selected the Ministry will check whether the name has been taken by someone else, and if not will approve it. Fee: $221.

Step 4: Hire a Local Lawyer to Sign the Company Documents. Although it is recommended to hire a lawyer for the drafting of the articles, it is not required. The documents must, however, be signed by a lawyer once drafted. Fees charged range between $200 and $3,000. For example, a company starting up with $11,000 would be charged around $500-700.

Step 5: Register With the Commercial Registry. Documents required include:

- Articles of association;
- By-laws;
- Copies of shareholder identification cards;
- Verified company name.

The fee to be paid is broken down as follows:

- Name verification: $22
- Application fee: $81
- Signature verification fee (signing before the Company Register: $24 per signature; minimum two required to form a Ltd or seven to form a Plc).

1/1000 of the stated capital.

Step 6: Payment of Registration Fees. The fees noted in Step 5 have to be paid at a local bank. The fees should be paid upon submission of the registration documents. The Ministry of National Economy would not review the application until the fees are paid.

Step 7: Register for Income Tax and VAT. The registration number for income tax and VAT is the same. In most cases, accountants register the company for tax (over 90% of cases). There is a fee for accountants, which starts at $400/per annum. However, there are no official fees.

Step 8: Register With Chamber of Commerce. Cost of registration depends on the company's capital and varies from chamber to chamber. As a guide, the fees for the Ramallah Chamber of Commerce are as follows:

- Grade Excellent: companies whose registered capital is over 50,000 JD pay an initial fee of $140 plus an annual fee of $140;
- Grade A: companies whose registered capital is 15,000 to 50,000 JD pay an initial fee of $106 plus an annual fee of $106;
- Grade B: companies whose registered capital is 6,000 to 15,000 JD pay an initial fee of $70 plus an annual fee of $70;
- Grade C: companies whose registered capital is below 6,000 JD pay an initial fee of $35 plus an annual fee of $35.

Step 9: Obtain Business License From Municipality. Normally costs between $120-700.

Step 10: Obtain and Legalise Special Company Books. All corporate and financial records must be legalised by the Companies Controller and auditors. While this applies to all forms of companies, supervision is more stringent with respect to public shareholding companies compared to others.

Step 11: Obtain Approval From Fire Department. The cost of this varies according to the area of the business to be registered, but is in the region of $0.20 / square meter / year. For example, registering 100 m2 in Ramallah costs ILS 80 annually, while 1,000 m2 costs ILS 650.

The cost of registering a company depends on both the company's capital and type, but is likely to range between $1,000 and $5,000. The whole process usually takes less than a month, and is expected to take less than that as soon as PIPA introduces its new procedures.

1.7. International local and regional context: why Jenin?

1.7.1. April 1994 - protocol on economic relations

In September 1993 Israel and the Palestine Liberation Organization signed the Declaration of principles on Interim Self-Governing Arrangements, which outlined the gradual handover to the Palestinian Authority of responsibility over the West Bank and Gaza Strip. The advent of self-rule and easing of political and social tensions were expected to usher in a period of rapid economic growth and higher living standards for Palestinians. Expectations, especially those of private investors, were buoyed by the Protocol on Economic Relations agreed in April 1994, which outlined the Palestinian Authority's responsibilities in key economic areas and envisaged close economic cooperation between Israel and the Authority, as well as by the Authority's commitment to institution-building and to a private-sector-led, outward-oriented development

strategy. Donors pledged generous support, which was gradually to shift away from emergency aid and toward public investment projects.

1.7.2. The industrial zones in the mid 90's

At the time of the agreement, there was much talk of industrial zones, a World Bank brainchild, that would line the Israel/Gaza border and would be fed by cheap Palestinian labour. In mid-February**1994**, Palestinian Authority economy, trade and industry minister Ahmed Qrei' announced that work would soon begin on a Gaza Strip "industrial park", to be followed by similar projects in Jenin and Tulkarem in the West Bank. According to the February 23rd *Palestine Report*, the US would pay for the Gaza park, Israel for the Tulkarem park, and Germany for the Jenin park. Other industrial zones are planned for Rafah and Beit Hanoun (in the Gaza Strip) and Hebron, Bethlehem, Qalqilya, and Ramallah.
On 23rd of May **1995** Foreign Minister Shimon Peres met with PA Chairman, Yasser Arafat, and it was decided that the five industrial parks would be built at Jenin, Hebron, Tulkarm, the Karni Crossing Point and the Erez Crossing Point. A joint concept paper has been concluded between Israel and the PA on this matter.
In addition, Foreign Minister Peres discussed with PA Chairman Arafat a major international plan, involving the World Bank and the private sector both in Israel and abroad, for the joint development of the Industrial Parks.

1.7.3. September 1995 – the interim agreement

On 28th of September 1995, the Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip was signed in Washington, D.C. It sets forth the future relations between Israel and the Palestinians. To the main body of the agreement are appended seven annexes dealing with: security arrangements, elections, civil affairs (transfer of powers), legal matters, economic relations, Israeli-Palestinian cooperation, and the release of Palestinian prisoners. In particular, regarding the industrial cooperation ". seek ways to increase Palestinian industrial output through, inter alia, the promotion of a program of industrial [I: parks] [P: zones] in accordance with an agreed concept and in cooperation with all relevant institutions".

1.7.4. Industrial zones in the late 90's

Apropos of Industrial Zones, and particularly the Karni Industrial Zone, in 1997 the West Bank stressed that "Export-oriented industrial production is one of the main promising sectors to create sustainable employment and to stimulate overall economic growth. To improve industrial competitiveness and current living standards in the West Bank and Gaza, it is vital that Palestinian industry expand and move into higher value-added activities, better quality goods, and more sophisticated markets. The recently signed trade agreements between the PA and the United States and European Union together with a well-educated workforce and relatively low wages make the WBG an attractive option for investors, both local and foreign. Palestinian and Israeli investors' demand for industrial space and for reliable access to labour and markets remains strong, provided certain guarantees are met. Private entrepreneurial groups are moving forward with plans for developing these estates."

And, in turn, in July 1997, Israel asserted that the preparations for the establishment of the Karni Industrial Zone in Gaza had reached an advanced stage, with ground work already under way. Negotiations regarding the operation of the zone were being conducted by Israel and the Palestinian Authority at an accelerated

pace. Israel allocated seven million dollars for the Karni security arrangements. Preparations were also being conducted for the establishment of an industrial zone in the Jenin area.

1.7.5. The Palestinian laws for industrial estates and industrial free zones

The Palestine National Authority, in 1998, approved two important laws that support the Industrial Estates and Industrial Free Zones. Palestinian law distinguishes between an industrial estate, " a geographically defined areas designated to service a number of businesses that carry out industrial activities and services" and an industrial free zone, " a geographically defined area assigned to service one or more beneficiaries for export related activities having a special customs and tax provisions", in fact extraterritorial customs and duty free areas established with the aim of attracting direct foreign investments and joint ventures in export-oriented manufacturing activities.

The *Palestinian Investment Promotion Law* (Law n.1/1998): this law supports the PNA's goals of encouraging and promoting investment, providing guarantees to all investors operating in Palestine, granting incentives and providing an appropriate environment for investments.

For the article 2. The Investment Law aims to achieve the development objectives and priorities in Palestine by promoting investment through the followings:

- establishing the Agency, an institution responsible for encouraging and promoting investment in Palestine;
- providing guarantees to all Investors and Investments operating in Palestine;
- granting the Incentives to Investors;
- providing the appropriate environment for encouraging investment in Palestine.

The principal general provisions of the Law are that it:

- prohibits the nationalization of any investment in Palestine;
- excludes the expropriation of investments except in exceptional cases;
- guarantees to all investors access to foreign currencies for the purposes of their enterprise activities as well as free transfer out of Palestine of all financial resources, including capital, profits, dividends, royalties, and the like.

More importantly, the Law provides for income tax incentives, depending on the amount of investments, as follows:

- for direct capital investments between the equivalent of US$ 100,000 and US$ 1.0 million, an exemption from income tax during the first five years and a preferential income tax rate of 10 % (instead of the general tax rate of 37.5 % presently applicable for personal and corporate income in the WBG) during the following eight years;
- for investments between US$ 1.0 million up to US$ 5.0 million, a tax exemption during the first five years and a reduced income tax rate (10 %) during a further 12 years;
- for investments exceeding a value of US$ 5.0 million, an income tax exemption during the first five years and a reduced rate (10 %) during 16 years;
- for special projects, to be approved by the Council of Ministers, the period of preferential income tax treatment following the first five years of exemption can be extended to 20 years.

Finally, the Law contains provisions for the establishment of the „Palestinian Investment Promotion Agency“ whose function is to promote and facilitate investment in Palestine. Pending the creation of this Agency, its functions are being assumed by the Ministry of Economy and Trade.

The *Industrial Estates and Free Zones law* (Law n. 10/1998). This law provides the legal framework for the interaction, authorities and responsibilities between the government and the developers, and supports the government's goals of economic development and regional stability through trade, cooperation and grater employment.

The Law essentially defines the establishment, organization and functions of the „Palestinian Industrial Estate and Industrial Free Zone Authority“ - PIEFZA, an autonomous agency to be in charge of all aspects of the development, establishment and operation of industrial estates (and free zones) in Palestine.

Specifically, the main responsibilities of PIEFZA with regard to industrial estates will be to (inter alia – art.5):

- prepare a comprehensive policy for the establishment and development of industrial estates and industrial free zones in Palestine;
- develop industrial estates either directly or through developers and enter into concession contracts and agreements with such developers;
- act as a „one-stop shop“ agency for entrepreneurs planning to invest in industrial estates, with the authority to issue all required permits and licences required, thus avoiding the need for entrepreneurs to deal with a variety of government agencies to obtain such permits and licences;
- establish the public facilities (off-site infrastructure) required by industrial estates directly or by a third party;
- determine the fees for services provided by PIEFZA within the industrial estates;
- supervise, and publish reports on, the performance and development of industrial estates.

PIEFZA (art. 18), directly or at a request submitted to it, may recommend the Council of Ministers to declare any suitable place in Palestine to be an industrial estate and/or industrial free zone. If the industrial estate or the industrial free zone is established on a leased land, the lease period may not exceed forty-nine years.

PIEFZA(art. 25) shall determine the conditions of the concession deed, term, master lay-out, general specifications of buildings and infrastructure of the industrial estate or industrial free zone, operations and maintenance plan and type of activities and services to be carried out, all in accordance with the regulations and instructions of the concession deed.

If (art.24)a developer fails to develop and operate the industrial estate or industrial free zone, he may, subject to approval by PIEFZA, delegate to a third party, the performance of his duties as indicated in the concession deed.

The objective of these laws is clearly in line with that which was under discussion at the international level: to promote the industrial sector, the regional stability through trade, and to create additional employment.

1.7.6. August 1998 – the Israeli - Palestinian economic relations

Analysing the state of Israeli-Palestinian Economic Relations in August 1998 the Government of Israel considered the Palestinian economic prosperity an important Israeli interest. This concept derived from the understanding that the peace process needed to be backed by economic arrangements that would result in improving the socio-economic situation in the region.

"In the nature of things, the Israeli economy and the Palestinian economy are closely interrelated; an increase in the standard of living of the Palestinians is therefore an important goal for the achievement of good neighbourly relations between the two peoples. Israel and the Palestinian Authority cooperate closely in locating employment opportunities and in creating jobs for Palestinians. For example, a number of successful job fairs which have provided employment, mainly in the field of construction, have taken place. Israel and the Palestinian Authority also cooperate in creating employment opportunities in the industrial zones at Erez and Karni. About 3,500 workers are employed today at Erez, while the plans for Karni call for the creation of tens of thousands of jobs".

1.7.7. 1999 – the Palestinian industrial estates program

The Palestinian Industrial Estates program (IEP) was launched in 1999 with a view to increasing private-sector employment, attracting foreign and inward private investment (including from Israel, the Palestinian diaspora and Arab countries), contributing to the growth of Palestinian economy, and generating foreign exchange earnings by promoting non-traditional exports.

The IEP sought to address the physical need for expanded, accessible, and well-serviced industrial land. It also sought to establish a sound policy framework under which IEs were to operate. This framework, captured in the Palestinian Industrial Estate and Free Zone Law (PIEFZL), is based on a public-private partnership concept. In addition, PIEFZL established an "industrial free zone" model, whereby enterprises that produce goods primarily for export are exempt from customs and other taxes if they operate on an industrial estate which is part of the IEP.

This private-public partnership became a reality with the construction of the Gaza Industrial Estate (GIE) at the Karni (Al Montar) border crossing. The Palestinian Industrial Estate Development and management Company - PIEDCO, a private developer, signed a long-term lease agreement to develop and operate the GIE. At the same time regulatory authority, the Palestinian Industrial Estates Free Zones Authority – PIEFZA, was established to oversee site development and operations. Five years after the launch of the IEP, the GIE remained the only industrial estate of the nine originally identified. These were Rafah Industrial Estate, Jenin Industrial Estate, Nablus Industrial Estate, Khadoury Technology Development Center, Tarqumyia Industrial Estate, Jerico Free Industrial Estate, Qalqelia Industrial Estate and Dier El Balah Industrial Estate.

1.7.8. 2006 – the peace valley plan

In July 2006, Japan announced a plan for peace called "Corridor for Peace and Prosperity," which would be based on common economic development and effort, rather than on continuous contention over land.

Japan proposed its concept of creating "the corridor for peace and prosperity" in cooperation with Israelis, Palestinians and Jordanians. The concept was to work collaboratively to materialize projects that promote

regional cooperation for the prosperity of the region, such as establishing an agro-industrial park in the West Bank and facilitating the transportation of goods.

Japan said it was ready to prepare a feasibility study for establishing an agro-industrial park and to finance a project to facilitate the transportation, mainly, products produced from the above-mentioned agro-industrial park to the above-mentioned distribution center of goods.

In March 2007, the government of Israel adopted an important, precedential decision, designating the "Valley of Peace" plan as a "National Project" for all intents and purposes, which would entail promotion of and cooperation on economic development for Palestinians.

The Valley of Peace plan extends over the Great Rift Valley, spanning 520 kilometers of the Israeli-Jordanian border, from the Red Sea in the South, to the Yarmouk River in the North. 420 of those kilometers are on our border with Jordan, with whom we now have peaceful relations. 10% of this route extends over the future border with the Palestinians, who are in need of economic encouragement, as well as financial aid.

The first projects would include the digging of the Peace Carrier, to carry water from the Red Sea to the Dead Sea; the cooperative development of agriculture and tourism; the establishment of a joint Israeli-Jordanian airport; the creation of railway connections between Jordan and Israel; the establishment of an industrial area in Jenin and an agro-industrial area in the Jericho-Demya region, with the aid of the governments of Germany and Japan; and the development and establishment of incubators for technological initiative.

The railway - transportation connection. The plan takes into account a railway - transportation connection between Jordan and Israel, a link that will shorten distances, decrease costs, and develop new shipment opportunities between Europe and America and the Middle East region. The Europeans are also proposing the laying of two future railway tracks to connect Europe and the Middle East. A track in the North can be built between Irbid in Jordan and Haifa in Israel, and another track in the South can be built towards the Red Sea, tying Akabah, the Red Sea and the Ashdod port in a single rail web. Railways of this kind can facilitate integration of the Middle East with Europe and generate economic momentum

The industrial area in Jenin. In the region of North Samaria, potential has been created for the development of an industrial area. The government of Germany has agreed to allot some $30 million to the establishment of such an area, and other governments are willing to encourage their private companies to open branches in the region. The towns of the Jezreel Valley are also showing interest in this possibility. The area can be used to develop industry in the fields of textile, wood, and food products, and to develop a logistical service array that can support this industry on the Israeli side. An industrial area of this kind can generate tens thousands of jobs for the entire area, as has already happened in the Jordanian industrial zone.

Agro-industrial development in Jericho: the Jericho region can serve as an agricultural centre for the entire Middle East. The government of Japan has offered to aid in the development of industrial agriculture in Jericho, including a knowledge-rich industrial agriculture park, as well as an airport on the Jordanian side, capable of distributing agricultural produce to the entire region. This project will enable the West Bank to export produce to markets throughout the entire Middle East and raise the quality of life in the region.

In August 2007, Foreign Ministers of Israel, Jordan, the Palestinian Authority, and Japan met in Jerico, and formally agreed to go ahead with this plan.

On November 2007 the leaders of Israel, Palestine and Turkey signed a landmark agreement to establish joint industrial zones in the West Bank set to create employment for thousands of Palestinians.

The Ankara agreement paved the way for the establishment of industrial zones first in Tarqumia and then in Jenin under the leadership of the Turkish Union of Chambers and Commodities Exchanges (TOBB).

1.7.9. After Annapolis

At the summit in Annapolis in 2007, joint Israeli-Palestinian industrial zone projects were designated as an object of future collaboration and a peace-building initiative between Israel and the Palestinian Authority (PA). Major industrial zones backed by the World Bank and European Union are slated to be constructed in the West Bank. At the same time of the Annapolis conference, in a trilateral meeting held in Jerusalem on 19th of November 2007, Tony Blair, along with the Palestinian Prime Minister Salam Fayyad and Israel's Minister of Defense Ehud Barak, expressed a commitment to revive the Palestinian economy and improve living standards. Four projects were picked out as key:

- a north *Gaza* emergency sewage treatment project;
- the construction of an agro-industrial park in *Jericho***;**
- the development of industrial zones, in the area of Tarqumiya, Jenin and other locations which will create large employment opportunities both in the short and the long term. Moreover, it will improve services for the Palestinian industries and offer opportunities for regional and international business cooperation;
- the tourism sector.

The projects of planned Quick-Impact Projects, advanced by Quartet Representative Blair, Palestinian prime Minister Fayyad and Israeli Defence Minister Barak were embedded in the PRDP, with the intention to provide quick wins, create employment and encourage additional private investment.

1.7.10. The Palestinian reform and development plan – PRDP – 2008-2010

The Palestinian Reform and Development Plan (PRDP) was presented by Prime Minister Salaam Fayyad at the Paris Donors Conference on December 17, 2007. The three-year plan aims to lay the foundations for a future Palestinian state and build its infrastructure and economy. It has been widely endorsed by donor governments, including the EU and the United States, along with the International Monetary Fund and the World Bank.

The PRDP presents a coherent development plan that reflects a frank assessment of the PA's absorptive capacity for project implementation. The development agenda contains priority investments in governance, social, economics and private sector, and infrastructure development worth $ 1,895 billion over three years. The development budget increases progressively over this three year period – from $ 492 in 2008 to $ 634 in 2009 and to $ 769 in 2010 – reflecting pragmatic assumptions by the PA of its own absorptive capacity.
Regarding the Economic and Private Sector Development, the PRDP envisions an open, free market economy based on the private sector, which it seeks to develop through:

- economic programs targeted at agriculture, industry and services, tourism, and the construction of new, affordable housing;
- the building of economic capabilities, such as the industrial and tourism sectors;
- targeted support for small- and medium-sized enterprises;

- seeking further markets for the Palestinian economy.

In the economic development , the focus is varied, but with an emphasis on developing the capacity and competitiveness of the agricultural ($ 66 million), industrial ($ 78 million) and Enterprise investment & development ($ 52 million), reflecting an aim of triggering a Palestinian trade-driven recovery.

The Quick-Impact Projects, which are incorporated in the PRDP are designed to provide near-term stimulus and to illustrate the positive impact of parallel actions by the PNA, Israel and donors to create the proper environment for Palestinian business to flourish. They are selected based on this criteria: a) the ability to create economic stimulus , create jobs and revitalize the labour market (Through grater Youth, women and micro-enterprise participation); b) the ability to build export-oriented businesses and supply chain linkages that can be replicated throughout the occupied territory; c) the reliance on commitment from Israel to remove existing restriction and create an environment for the re-emergence of investment and private sector growth.

In particular, among other projects (2008-2010):

Program: Trade Infrastructure and Facilitation
Projects:

- improved institutional arrangements at border crossing (Costs: $ 24 m);
- improved infrastructure at border crossings (Costs: $ 6m);
- supporting marketing and export promotion; Implementation of trade agreements; Implementation of Paris Protocol (Costs: $ 6m).

Program: Enterprise Investment and Development
Projects:

- enterprise learning fund-focus on export-oriented SMEs (Cost: $ 24m);
- micro-finance and micro-credit services for rural and urban entrepreneurs (Costs: $ 9m);
- finance & credit services to encourage establishment of businesses in "strategic" sectors –e.g. trade services & logistics (Costs: $ 16 m);
- build PNA capacity to oversee the provision, financial investment and credit services (Costs: $ 3m).

Program: Agribusiness Development
Projects:

- agro-industrial park (Jericho) (Costs: $ 24m) development of post-harvest services sector-processing, packaging, distribution, marketing, export promotion (Costs: $ 13m);
- rehabilitate farms, orchards & other damaged infrastructure (Costs: $ 8m);
- natural resources conservation and reclamation – land and water (Costs: $11m);
- capacity building for Ministry of Agriculture and Standards Institute (Costs: $10m).

Program: Industrial Capacity Development
Projects:

- build municipal industrial parks – Tulkarem & Hebron (Costs: $ 23m);
- build border industrial parks – Jenin & Tarqumiya (Costs: $ 40m);
- capacity building for SME industrial establishments-productive & managerial capacity, quality standards (Costs: $ 15m).

But it's necessary to notice that the investments in the economic sector are only a little part of the resources that are assigned for the PRDP, while we need to underline that the economic development projects are vital for creating an environment for investment and trade. And, in the final analysis, to finally make Palestine independent from foreign aid and from humanitarian assistance.

1.7.11. From "valley of peace" to "towards Palestinian state"

In May 2008 Tony Blair announced a new plan for peace and for Palestinian rights: *Towards a Palestinian State* in which there are some proposals about the industrial parks.

Jenin Industrial Park. Preparations for the establishment of the Jenin Industrial Estate have advanced significantly over the last few months and construction can now start with the support of the German government following agreement reached by the Government of Israel and the Palestinian Authority on arrangements for water and electricity services and access to the site. Construction of the industrial park will stimulate Palestinian economic activity by attracting (foreign) investments and creating sustainable employment and income generation in the region of Jenin. The park will improve services for the Palestinian industries and offer opportunities for regional and international business cooperation.

Tarqumiya Industrial Park. Following the decision of the Ankara Forum on Tuesday 13th of November 2007, the Government of Israel and the Palestinian Authority have agreed to establish Tarqumiya Industrial Estate, which will be located in Area C and B, and for which, the precise location still has to be decided. Construction of the industrial park will stimulate Palestinian economic activity by attracting (foreign) investments and creating sustainable employment and income generation in the region of Hebron.

Jericho agro-industrial project. The parties are cooperating and facilitating the efforts of the Japanese International Cooperation Agency in establishing an agro-industrial park in the Area of Jericho.

1.7.12. The Palestine investment conferences – 2008

Bethlehem – 21-23 May. The Palestinian Investment Conference - PIC that took place on 21st-23rd of May 2008 in Bethlehem was inspired by the success of the Paris Donors' Conference, at which the international community committed to a comprehensive three-year development and rehabilitation plan for Palestine. During the Paris conference, different donor countries combined to pledge $7.7 billion toward the social and economic development of Palestine. Inspired by this show of support, the Palestinian private and public sectors, with the support of local social institutions, came together to create this conference as a forum to showcase the Palestinian economy and highlight the investment opportunities in Palestine's different sectors, promoting investment in various promising sectors while building a strong network of local, regional, and international business leaders. The conference underscored the Palestinian Government's reform plans for the public sector, intended to increase efficiency in the private sector while strengthening public and private sector partnership.

The target audience for the conference included: Members of Arab Business Councils, Arab Business Associations, and General Unions of Arab Chambers of Commerce throughout the world; the business community of the Palestinian Diaspora; Government representatives; delegates from international aid agencies; Arab and Islamic financial committees and development funds representatives; public figures and notable representatives of international, regional, and local civil society institutions; local, regional, and international media representatives; and the broader Arab and international community.

The objective of the conference included: showcasing business opportunities and projects ready for launching; demonstrating high-level political commitment from the Palestinian Authority to the investment-led growth of the Palestinian economy; educating and informing potential investors regarding the local investment climate; challenging popular perceptions about doing business in Palestine; promoting promising investment opportunities in a variety of sectors; showcasing the business success stories of Palestine; creating linkages between Palestinian and international businesses; initiating an ongoing dialogue between the Palestinian government, the Palestinian business community, and international investors; and building momentum for the removal of barriers that hinder partnership between Palestinian businesses and the international business community.

To endorse the policy of doing business in Palestine, a total of 165 submissions were received ranging from developed investment opportunities from well-established market leader to young entrepreneurs with innovative and imaginative ideas. All submissions were evaluated by the PIC – Palestine Technical Unit and submitted to the program committee for approval against an agreed set of criteria. In total 105 projects and concepts were approved for a total value of about US $ 2 billion in these sectors: agriculture; finance; information and communication technology; infrastructure, real estate and construction; manufacturing; and tourism.

Nablus - The North Forum – 22-23 November. The Palestine Investment Conference – The North Forum, on 22nd-23rd of November 2008 held in Nablus. It followed upon the success of the first Palestine Investment Conference that was held in Bethlehem in May 2008. The primary objective of this conference was to provide participants with investment opportunities in the North of the West Bank. The forum brought together more than 200 Arab and foreign investors and more than 400 local businessmen from the West Bank, Gaza and from within the Green Line.

The aims of the Conference were: to shed light on investment opportunities in Palestine, with a focus on the northern regions of the West Bank and the sectors of interest; to provide investment opportunities to local and foreign investors, by showcasing suggestions for projects on hold, or funding new projects; to assist local businessmen in identifying, studying and promoting viable business opportunities that have the potential to attract local and foreign investors. $ 510 million of projects were announced at this Conference in Nablus.

On the sidelines of the conference, the Palestinian Investment Fund (PIF) and the municipality of Nablus signed a memorandum of understanding to establish an industrial zone on an area of 120 dunams in Nablus to cost $25 million in the first phase, then to be expanded to 350 dunams at a total cost of $85 million. In addition, a solid waste treatment project in the governorate of Nablus, to cost $2.1 million, was launched.

During the four sessions of the conference, which discussed infrastructure, industry, agriculture and domestic tourism, the Palestinians tried to convince their Arab counterparts and Palestinians living in the diaspora of the opportunities available in the Palestinian territories and especially in the northern parts of the West Bank.

1.7.13. The program of the thirteenth government – august 2009

Palestine: moving forward – Priority Interventions for 2010.
2009. In August 2009, the 13th Government of the Palestinian National Authority (PNA) announced and published its program to unify Palestinian society and friends in the international community behind the effort to end the occupation and establish the State of Palestine in two years. This document sets out the

PNA's high priority interventions to be initiated or continued in 2010 to implement this program. Regarding the *economy*, to initiate a sustainable recovery and to rebuild the national economy as a pillar of a modern Palestinian state, the Government has defined policy priorities in seven domains:

- creating an enabling investment environment through, inter alia, tax incentives to local and foreign investors, modern investment laws and regulations to promote investment and economic activity;
- promoting the role of private sector in social and economic development;
- support Palestinian products and expertise;
- developing national human and natural resources;
- developing infrastructure, including industrial zones, electricity networks, roads, crossing points, and other critical infrastructure to reduce production costs and enable Palestinian products to be more competitive in the domestic, regional and international markets;
- transmit knowledge and support Palestinian innovation;
- expand bilateral and multilateral cooperation.

Regarding *infrastructure*, the Government has defined policy priorities in six domains:

- develop infrastructure in rural and marginalized areas;
- develop and maintain existing infrastructure;
- develop large infrastructure projects;
- develop regional infrastructure;
- ensure local participation in developing infrastructure;
- improve local implementation capacity.

2010. The Ministry of Planning and Administrative Development and the Ministry of Finance have worked closely with all government ministries and relevant government agencies to define and initiate the interventions, which are defined in the Program of the thirteenth Government and in January 2010 they submitted the document: "Palestine: Moving Forwards- Priority Interventions for 2010".

The list of priority interventions highlights a total of 201 development projects which the Council of Ministers has decided to categorize as high priority initiatives for implementation through 2010 and beyond. Some of these projects are already funded and are being implemented on the ground. Others are funded, or partially funded, and are due for implementation. There are also many projects which are either unfunded or which have yet to move beyond the pledging stage.

We report the previous interventions which are linked to the Industrial areas.

Table 1. 6. Interventions linked to the industrial area

Project Name	Scope	Responsible Body	Cost Estimate (USD ' 000)	Status
Develop the electricity throughout industrial zones	Homeland	PEA	3,700	Ongoing
Bethlehem Industrial Zone	Northern Governorates	Palestinian Industrial Estates and Free Zones Authority (PIEFZA)	10,316	Funded
Jenin Industrial Zone	Northern Governorates	PIEFZA	14,737	Funded
Jericho Agricultural-Industrial Zone	Northern Governorates	PIEFZA	66,341	Funded
Beit Hanun Industrial Zone	Northern Governorates	PIEFZA	10,000	Not funded
Khaduri Industrial Zone	Northern Governorates	PIEFZA	10,526	Not funded
Tarqumiya Industrial Zone	Northern Governorates	PIEFZA	10,612	Not funded
Gaza Information Technology Zone	Northern Governorates	PIEFZA	5,875	Not funded
Rafah Local Industrial Zone	Northern Governorates	PIEFZA	9,559	Not funded
Gaza Industrial Zone (Waqf property)	Northern Governorates	PIEFZA	12,717	Not funded
Business incubators (Palestinian Business Administration and Information Centre)	Homeland	Ministry of National Economy (MoNE)	5,313	Not funded
Rehabilitate and upgrade industrial installations and small enterprizes	Homeland	MoNE	8,988	Not funded
Install a solar power station for the generation of electricity in the Jericho Industrial-Agricultural Zone	Northern Governorates	PEA	5,263	Funded

Source: Palestinian National Authority

For reaching these goals, the MoPAD and MoF established a process which plans to involve:

- Working with the responsible PNA bodies and international partners to secure funding for development projects which are currently unfunded or only partially funded.
- Tracking the conversion of pledges into hard commitments and disbursements.
- Monitoring and evaluating the outputs and outcomes of implementation of projects.

2. The West Bank and the Jenin industrial district: an economic analysis

In this chapter we analyze incomes and consumptions at general and local level of West Bank and Jenin. The data are a result of a complex operation of statistic matching of dishomogeneous sources obtained by STATA software, through the planning and the integration of particular lists of practical codes. With this data we have obtained two social accounting matrices relating to 1998 and 2008, available for Palestine, West Bank and Jenin areas.

The matrices give important information about the connection between the data of institutional accounting and the micro-data supplied by the Palestinian Central Bureau of Statistic (PCBS) and by other institutions as the World Bank and the FAO (*database FAOSTAT*).

This work permit us to evaluate the socio-economic impact of the new Industrial and Logistic Area on the local pre-existing economy. Thanks the analysis it is possible to simulate different scenarios of development and to find out possible problems or possible opportunities to exploit for the future.

2.1. The structure of incomes

2.1.1. Poverty and inequality in Palestinian Territory's Households

Poverty and economic inequality take different forms, connected to a variety of local , regional and international factors. For Middle East Arabic countries, and particularly for the Palestinian Territory, it is necessary to understand the regional economic structure, and how regional policy and international role may built the pre-requisites for economic growth and for social development.

We have estimate a local social accounting matrix for Jenin Governorate, for 2007 base year, and also the two matrices for West Bank and all the Palestinian Territory. It is a suitable tool to analyze actual equilibrium and the consequences of alternative policies.

2007 PCBS's Households Survey data, 2007 Census data and 2007 Labour Force Survey data have been merged to a consistent database that maps incomes by five basic aspect:

- income quintiles;
- main sources of income;
- household size;
- education level;
- type of locality.

Income quintiles. Income percentiles have been built after the definition of an equivalence scale, using parameters declared in *table 2.1*. The process reflects the common sense notion that a household of six, seven persons will need of a higher income than a single person living alone to enjoy a comparable standard of living. It takes into account both the greater income needs of larger households and also the scale economies achieved when people live together, in fact household goods, typically housing, can be shared. This method make possible to compare households by different size and composition.

The equivalence parameter scales give different weights to each household member, according to his role within the group. We distinguish children by age into three groups: 0-4, 5-13, 14-17 years old. We also distinguish husband and wife, within the group of adults, and additional adults aged 18-64. Finally, we

assign specific weight to members aged more than 64. Equivalised income is calculated by firstly assigning an equivalence value from the Perali Equivalence Scale to each household member. These individual values are then summed to give a total equivalence number for the household. The household gross income is then divided by this total equivalence number to produce the equivalised income. A household consist of one person which has an equivalised size of 0,81. Single person households generally need less money than couples, hence when their income is equivalised it increases in relation to a couple with the same income.

Equivalised household incomes were calculated for Jenin Governorate and then ranked in ascending order and divided into quintiles. Households have the lowest equivalised income in the first quintile. All individuals in the household were then allocated to the equivalised income quintile to which their household belonged. With reference to 2006, the income quintiles are shown in *table 2.1*.

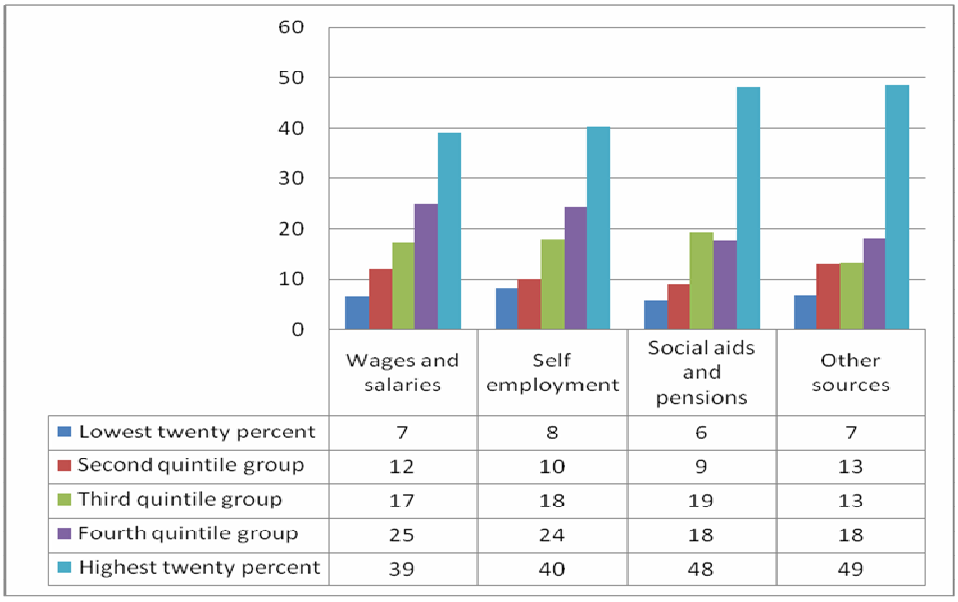
Table 2. 1. Income and sources of income by gross equivalent income quintile group, West Bank 2006

	Weighted number of households	Number of households in the sample	Monthly household income	Source of income per quintile			
				Wages and salaries	Self employ-ment	Social aids and pensions	Other sources
Gross Equivalised income quintile group	**Number**	**Number**	**US $**	**Percentage of gross monthly household income**			
Lowest twenty percent	82 508	186	266	52	27	4	17
Second quintile group	82 508	174	437	54	22	4	20
Third quintile group	82 508	166	644	53	27	6	14
Fourth quintile group	82 508	160	**877**	56	26	4	14
Highest twenty percent	82 508	149	**1 589**	51	22	6	20
Total households	412 540	835	724	53	24	6	17

Source: our elaborations using the PCBS Income Survey 2006

Household income range from an average of 266 $ a month in the lowest quintile to 1,589 $ a month in the highest. The most remarkable difference is between the fourth and the fifth quintile, where income moves from 877 $ to 1,589 $. To understand this form of inequality it is necessary to analyze the distribution of each source of income on the respective quintiles.

Graphic 2. 1. Distribution of incomes, West Bank 2006



Source: our elaborations using the PCBS Income Survey 2006

It is clear (*graphic 2.1.*) that the inequality becomes from social aids and pensions and from other sources. To better understand this inequality it is necessary to analyze in detail this sources of income.

Main Sources of income. Households received income from a variety of sources, the most important are wages and salaries, self employment, social aids and pensions, other (with interest on investments and remittance).

For the purpose of this analysis, wages and salaries were distinguished into three group:

- wage and salaries from private sector;
- wage and salaries from public sector;
- hired labour income from international organisation.

Also, income from self employment were distinguished by economic activity:

- self employment income from agricultural sector;
- self employment income from industries and services;
- income from sales to international organisation.

The macro group income from social aids and pensions were distinguished as shown:

- income from pensions;
- income from public social aids;
- income from international organisation aids.

Finally, the macro group other income were distinguished into three subgroups:

- remittances from households which lives in Palestinian territory;
- remittances from households which lives in other countries;
- capital income.

Tables 2.2. and *graphic 2.10-13.* in appendix A, show the distribution of gross income sources for each income quintile, by equivalised household income. The various sources of income are shown as a percentage of the total gross income of the quintile.

The inequality between the fourth and fifth quintile is generated by self employment in international organization, pensions, public social aids, remittances and capital incomes. A data unexpected regard the public social aids, where rich persons receive the 48% of the total amount.

Household size. Another important character from which depends the income distribution is the size of households. We have divided the households in five groups:

- 1 person;
- from 2 to 4 persons;
- from 5 to 8 persons;
- from 9 to 10 persons;
- more of 10 persons.

Next table shows the link between the size of households and the quintiles of gross total income.

Table 2. 2. The total income household per size and per quintile, West Bank 2006

	Size (number of persons)					Size (number of persons)				
Gross income quintile group	1	From 2 to 4	From 5 to 8	From 9 to 10	More than 10	1	From 2 to 4	From 5 to 8	From 9 to 10	More than 10
	Percentage of gross monthly total income per size					Percentage of gross monthly total income per quintile				
Lowest twenty percent	4	5	5	5	5	19	20	20	20	21
Second quintile group	9	10	10	10	10	21	20	20	20	19
Third quintile group	14	16	16	15	15	21	20	20	20	19
Fourth quintile group	21	24	24	24	22	20	20	20	20	20
Highest twenty percent	52	45	45	44	48	24	19	19	19	19

Source: our elaborations using the PCBS Income Survey 2006

We can affirm that the 52% of households composed by one person are in the highest quintile of income, and that the 24% of this quintile is composed by households of small size. The distribution of income for the other sizes is homogeneous and there is not difference from the second to the higher size. Then, the total monthly income per household seems independent from its composition; surly a single person has a major probability to join the highest quintile of income. We have also analyzed the distribution of income per size of household in monthly employment and self employment income (*tables 2.42-43* in appendix A). The result of this analysis is that, in a country as the West Bank, where the unemployment rate estimated for the 2008 is about 19%, to found an employment means to have the 66% (*graphic 2.14.* in appendix A) of probability to come out from poverty and to joint the major levels of richness.

A similar analysis was carried out for the West Bank and for Jenin area: we have divided the gross total monthly income for each single size of households and for quintile. From *tables 2.44-46.* in appendix A, we arrive to four important classifications:

- the households with only one person are, with a probability major than 70%, in the two highest quintiles of income;
- from 2 to 10 persons there is a strong variability in the distribution;
- from 10 and more persons the households are with the 67% of probability in the two lowest quintiles of income; they are poor households.

To have a large household is certainly an aspect of conditioning from the economic point of view and an important result of JILA project is to create in this area about 5,000 new direct employment opportunities, improving so the social-economic conditions of households.

Education level. Our objective was to verify the influence of the education on the distribution of income, and to do this we have created a scale of valuation divided in ten different levels of education:

- illiterate (1 point);
- can read and write (2 points);
- elementary (3 points);
- preparatory (4 points);
- secondary (5 points);
- associate diploma (6 points);
- bachelor (7 points);
- high diploma (8 points);

- master (9 points);
- Ph. D (10 points).

Table 2.47. in appendix A, shows that there is not direct correlation between the level of education and the distribution of incomes among the five quintiles, in fact the value is about 3.3-3.4 which corresponds to an elementary instruction. The data is not encouraging for young people and for the creation in the country of human capital. Surly, following studies are necessary to increase the incentives to the human capital formation in view of a future social-economic development.

We have also analyzed the level of education for area and for the proximity to the elementary schools, and *table 2.48.* in appendix A, shows that the distance from schools is another important factor. To live at more than 5 km from schools means to have a lower level of education.

Type of locality. The household location on the territory depends from the distribution of income in the urban, rural and foraging fields areas. *Table 2.49.* in appendix A, shows that the 52% of households live in urban areas, where incomes are higher; the 38% live in rural areas and only the 10% live in foraging fields. Clearly the cause of the migration from camps to urban areas is linked to the inequality distribution of incomes in the different areas.

2.1.2. Indicators of inequality

We have calculate for each sector of economic activity two indices of inequality of income or wealth (*table 2.50.* in appendix A):

- the **Gini coefficient** can range from 0% to 100%. A low Gini coefficient indicates a more equal distribution, with 0% corresponding to complete equality, while higher Gini coefficients indicate more unequal distribution, with 100 % corresponding to complete inequality;
- the **Theil index** is similar to Gini coefficient but it benefits from the decomposability property.

For the agricultural, manufacturing and commerce sectors in Jenin we have the highest percentages of Gini coefficient (20-25%) and also for Theil index (about 11%).

2.2. The labour market in West Bank and Jenin

The purpose of this paragraph is to provide information on the West Bank and Jenin labour market that can then be used to develop, manage, evaluate and report on labour market policies. The main statistical objectives of the Labour Force Survey is to divide the population of working age, into three mutually exclusive and exhaustive groups - *persons in employment, unemployed persons and inactive persons* - and to provide descriptive and explanatory data on each of these categories.

Table 2. 3. The force labour in West Bank and Jenin 2006

	LFS WB (%)	LFS Jenin (%)
Total population	**100**	100
Population 65+ years of age	6	5
Employed, 65+ years of age	11	12
Working age population (15-64 years of age)	**95**	94
Inactive	56	52
Active	**44**	47
Employed	78	80
Unemployed	22	19

Source:Our elaborations using PCBS Labor Force Survey 2006

Table 2.3. shows that in West Bank the 44% of working age population (15-64 years of age) are actives persons; the 47% for Jenin area. We can divide the active persons in employed and in unemployed. The rates of unemployment for West Bank and Jenin are respectively the 22 % and the 19 %. From *table 2.51.* in appendix A, we can see as the 19% of employed persons in West Bank are females (the 81% of females have a work) and the 81% are males (the 76% of males have a work). For Jenin the percentages are slightly different, with a 24% of employed females and a 76% males.

In Jenin the 67% of unemployed persons live in rural areas, and the 67% are between 25 and 54 years old. The data is different for the West Bank, where only the 44% of unemployed persons comes from rural areas, and where the 38% are young people (15-24 years old). Also the level of education could be a valuation criteria that exert an influence on the occupancy, but we can notice that about the 88% of persons without education have a work, in opposition at the only 80% of persons with an high level of education. Then, from *table 2.52.* in appendix A, on the distribution of unemployment we can verify that the unemployment rate is higher for the people with an high level of instruction (65% for the secondary education and 22% for academy education). It is clear that this is a worrying data on which to reflect for the future, especially on the choice of suitable social-economic policies.

Table 2. 4. Employment per sector of economic activity, West Bank and Jenin

	Share of total employment	Share of total employment
	LFS WB	**LFS Jenin**
Sector of economic activity	%	%
Agriculture	15	27
Manufacturing	13	10
Construction	11	11
Commerce-hotels	19	16
Transport-storage	6	5
Other	36	31
Total	100	100

Source:Our elaborations using PCBS Labor Force Survey 2006

Table 2.4. shows the percentage distribution of employment rate. In Jenin the 27% of employment is on the agricultural sector, the 16% on the commerce activity and the 11% on the construction sector. For the construction of Jenin Industrial and Logistic Area the commerce and the construction sector will increase of the 100% in terms of employment and income; not only, but the construction absorbs the work force of a part

of West Bank. Jenin is an agricultural country (27% of occupancy in the sector) and also this economic activity will increase in future thanks the logistic area foreseen from JILA project.

2.3. The structure of consumptions

The consumption analysis was carried out ranking households incomes in ascending order and divided into quintiles, with households with the lowest income in the first quintile, in order to examine expenditure patterns between different income groups. We have also analyzed the distribution of consumptions for income and for type of locality. Before to analyze this distributions we show the total shares of expenditure for sector (*table 2.5.*). In West Bank the highest expenditure is for food (38% of total income) and for transport (10% of total income).

Table 2. 5. Distribution of gross total income per sector

Sectors	**Estimate %**
Food	38
Beverage	2
Wearing	7
Housing	7
Furniture	4
Medical care	5
Transport	10
Communication	3
Education	3
Recreation	5
Personalcare	3
Tobacco	5
Others	5
Social security	0

Source:Our elaborations using PCBS Consumption Survey 2006

2.3.1. The distribution of consumption per income

Households in the lowest income group spend about the half of their total expenditure on food, and this consumption has heavy repercussions on their purchasing power. *Table 2.6.* shows that the percentage expenditure for food is indirectly proportioned to the income: it decreases when the level of income raises. The highest twenty percent of income group spends only one third of their income on food and this households can spend more for wearing (9% respect the 4% of the first class), transport (14% respect the 6% of “poor” people) education (the double of the first class) and recreation (6% respect the first class). The influence of beverages on income is the same for all the quintiles of income.

Table 2. 6. Expenditure share per quintile of income in each sector, West Bank 2006

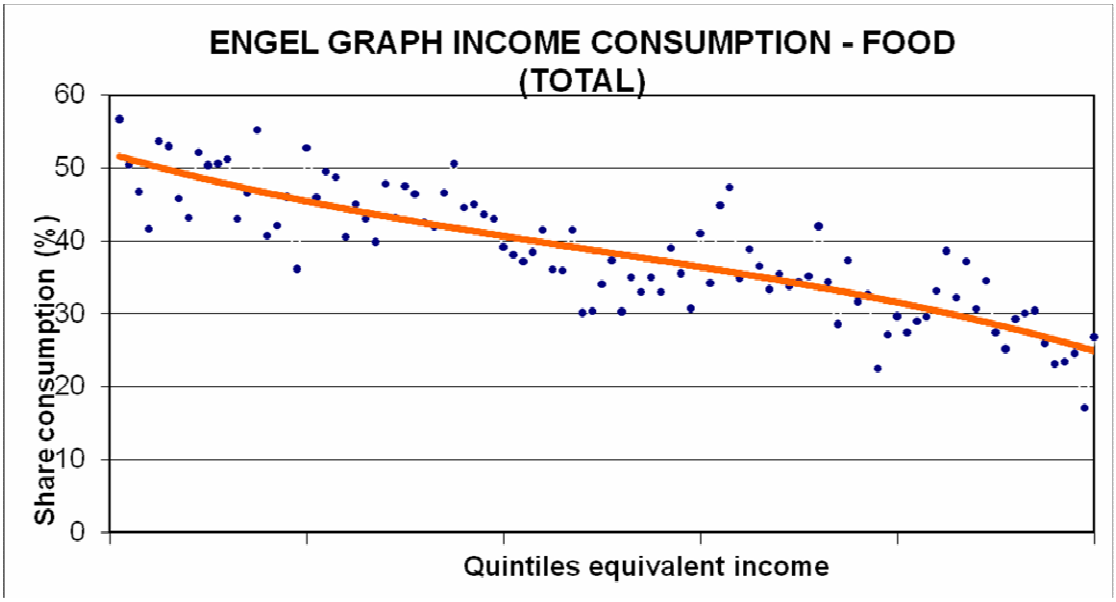
Gross Equivalised income quintile group	Lowest twenty percent	Second quintile group	Third quintile group	Fourth quintile group	Highest twenty percent
	%	%	%	%	%
Food	48	43	36	33	29
Beverage	2	2	2	2	2
Wearing	4	7	7	9	9
Housing	7	6	8	7	7
Furniture	3	4	5	4	5
Healthcare	5	5	4	5	5
Transport	6	8	11	10	14
Communication	1	3	4	4	4
Education	2	2	3	4	4
Recreation	4	4	4	6	6
Personalcare	3	4	3	3	2
Tobacco	7	5	5	5	5
Others	4	4	4	5	7
Social security	0	0.14	0.09	0.13	0.13

Source:Our elaborations using PCBS Consumption Survey 2006

A particular data concerns the consumption of tobacco, a not primary good, but equally a good of large consumption among the households at slow income. The reason seems to be linked to the habit property of tobacco, who generates dependency.

Some areas of expenditure are more important on the welfare of individuals, so the consumption of "goods" as the healthcare, the education, the recreation and the communication creates inequality in the society. From table 2.6. we can see as with a major income the expenditure in this sectors increases, then it is clear that this goods are still inaccessible for "poor" people. Only trough appropriate economic policies it is possible to change this situation and to supply this important goods to the majority of people. To create jobs in the area and to increase the local economy could be, surly, a first important step towards development.

Graphic 2. 2. Engel curve, consumption of food per quintiles of income, West Bank 2006



We have shown that the most important item of expenditure is the food (*graphic 2.2.*), and for this reason we have analyzed more in detail the composition of this sector. *Table 2.53.* in appendix A, shows that the consumption of bread and cereals, vegetables, sugar and confectionary products remains constant to the increase of income, but evidently it has not the same weight on different incomes, and it decreases to the raise of income. This goods are primary goods, they have a low cost, they are essential for the alimentation and for this reasons it is normal that their consumption is fixed for all the income categories. Contrary, the consumption of meat and poultry, fish and sea products, fruit, non alcoholic and alcoholic beverages increase to the raise of incomes. Surly a more high price of this goods reduce the choice freedom among the "poor" people, even if the nutritional importance of meat and fruit is certainly not negligible.

2.3.2. The distribution of consumption per area

The different households location seems not affect their expenditure and the only major difference concerns once the food consumption.

The next table shows that the percentage moves from the 37% of urban areas to the 40% of foraging fields, where household incomes are lower. The transports remain a significant sector of expenditure, equally distributed for the three studied areas; in chapter 3 we will better analyze this sector that appears still today underdeveloped. The roadways problems represent a strong handicap towards development and the economic growth will be possible only improving the efficiency and the effectiveness (times, costs, security, etc.) of this key sector.

Table 2. 7. Expenditure share per area in each sector, West Bank 2006

Gross Equivalised income quintile group	**Urban areas**	**Rural areas**	**Foraging fields areas**
	%	**%**	**%**
Food	37	39	40
Beverage	2	2	2
Wearing	7	7	7
Housing	7	7	8
Furniture	4	4	3
Medical care	5	4	5
Transport	10	9	10
Communication	3	3	3
Education	3	3	3
Recreation	6	4	5
Personalcare	3	3	3
Tobacco	5	5	5
Others	5	5	4
Social security	0.07	0.14	0.06

Source:Our elaborations using PCBS Consumption Survey 2006

The difference of food in different areas depends especially from the bread and cereals consumption (*table 2.54.* in appendix A), which reaches the 9% in foraging fields areas respect the 7% of urban and rural areas. Also the expenditure for alcoholic beverages is greater on foraging field areas.

2.4. The primary sector production in Palestinian Territory, West Bank and Jenin

The Palestinian agricultural sector is vital to the overall economy, as noted by growth in economic recovery since 2003 (World Bank, 2006). As a sector it employs 15.2% of the formal workforce, and up to 39% of informal workforce as of last year. Agriculture covers 30% of the total area of the Palestinian Territory.

For years, the agricultural community in West Bank and Gaza Strip (WBGS) has been affected by land confiscation, lack of access to arable areas, plus destruction of assets caused by conflict. In 2008, additional hardship for farmers brought about by weather conditions (drought and frost).

These combined factors along with facts and figures below impede the sector's ability to thrive and achieve its potential in a traditionally agro‐cultural area. As a vital economic sector, agriculture has a long success rate in generating economic growth. For most communities in the WBGS, agriculture remains an important source of income and provides means to affordable fresh foods. Investment in agriculture provides a reliable means of providing sustainable development at a relatively low cost compared to other sectors.

In general, agricultural production in the WBGS is aimed at domestic consumption, with only about 20% being produced for direct retail. Israel is the main importer of Palestinian produce and the main supplier of agricultural production, with 53.5% of exported agricultural commodities being directly absorbed by the Israeli market, and 76.6% of agricultural commodities imported by the Palestinian Territory coming directly from Israel.

Agricultural products account for 25% of export trade from the WBGS. Fruits, olives and olive oil, vegetables are the primary export products from the WBGS to Israel as well as abroad. Much of the fresh agricultural products consumed in Israel, along with olive oil and other produce, are imported from Palestinian areas, and these products are not officially defined as "imported goods".

Fruit trees production. Despite the slight increase in the area planted with fruit trees, there is no significant increase in production due to variations in the production of olive trees (one year with high yield and the next with low yield), which represent 80% of this area. Furthermore, new-planted groves of orchards need several years before they begin yielding. But the most important reason is the lack of convenient care such as ploughing, spraying against pests, weeding, pruning, etc due to the lack of machinery in hilly parts of the WB and in the sand dunes of GS.

The abrupt turn away from the use of human force and animals in the fields to full dependence on machines, especially agricultural tractors which lack in terms of numbers, distribution, suitability and maintenance led to the neglect of most fruit tree groves, turning them into forest areas rather than economical agricultural areas. Tractors and know-how of using them are essential to the development of this important branch of agriculture, which covers 66% of the total planted area in the PT.

It is important to note that the production of fruit trees is insufficient and does not fully cover local needs. This explains why some products are imported from Israel. It is possible to improve productivity, to render the horticulture sector more profitable and to decrease the gap between production and consumption by using methods, which sustain both fruit trees yards and machines.

Table 2. 8. Planted area for culture in Palestinian Territory

Classification	Planted Area in Dunums 2006/2007	Planted Area in Dunums 2005/2006	Planted Area in Dunums 2004/2005
Vegetables	**187 344**	**192 961**	**179 139**
Irrigated close	41 403	42 000	
Irrigated open	109 409	112 000	
Rainfed	36 532	40 000	
Crops	**482 494**	**496 006**	**506 686**
Wheat	202 165	211 000	
Barley	110 974	109 000	
Fruit & Citrus trees	**1 164 562**	**1 136 693**	**1 147 525**
Olives		926 000 11 trees per dunum	
Grapes		72 000 58 trees per dunum	
Other	69 913		
Banana		2 670	
Pomegranate		1 078	
Fig		14 060 14 trees per dunum	
Nuts	**50 104**	**48,000**	
Almonds irrigate		975 28 trees per dunum	
Citrus	**26 800**	**27 000**	
Total Planted Area	**1 834 851**	**1 826 096**	**1 833 350**

Source: PCBS

Vegetable production. The production of vegetables varies according to the season and depends on the availability of water or rainfall. The stagnation in the size of planted areas while productivity and production increase is due to the transformation of vegetable open fields into protected fields, i.e. green houses whose productivity is three times superior to that of open fields.

Despite the relatively high production of vegetables, it still does not meet the increasing demand due to the lack of appropriate machinery especially tractors used in ploughing and land preparing (rootivating, disking, mulch-covering, etc), crops serving (spraying, weeding, transportation…etc) and marketing. This leads to a delay in production and to irregular distribution.

Field-crops production. Despite the seasonal fluctuation in both the area and production of field crops, a slight decrease in both of them can be noted. However, productivity and production are still low and do not cover the increasing needs. About 85% of the demand on field crops is covered through imports due to the dependence on rain-fed farming, the wide range of seasonal rainfall and the lack of suitable machinery to replace the high-costing human and animal forces. There are not enough tractors or other suitable machines

for ploughing, seeding, serving, reaping and harvesting which explains why production dropped from one million dunums[1] in 1970 to less than half a million in 2001.

Table 2. 9. Private Costs & returns in Euro per dunum at farmer level

	Cucumbers	Tomatoes	Onions	Wheat (Anbar)	Barley (Delta)	Coriander
Total Revenue	**1 092.90**	**874.32**	**400.73**	**110.16**	**79.11**	**73.77**
Total Costs	**859.29**	**883.88**	**213.88**	**76.13**	**73.13**	**57.1**
Fixed Input	117.94	331.06	90.16	30.05	29.05	26.05
Direct Labour	420.77	291.44	34.56	22.04	15.03	24.04
Intermediate Input	320.58	261.38	89.16	24.04	29.05	7.01
Profit	**233.61**	**-9.56**	**186.85**	**34.03**	**5.98**	**16.67**

Source: PCBS

From table above labour constitute 48.97% of total costs for cucumbers, 32.97% for tomatoes, 16.16% for onions, 28.95% for wheat, 20.55% barley, 42.1% for coriander. While total cost account for 78.62% of revenue for cucumber, 53.37% for onions, 69.11% for wheat, 92.44% for barley and 77.4% for coriander respectively. The tomatoes production is not profitable due to the not optimum use of resources.

2.4.1. The primary sector production from Accounting Social Matrix (SAM) 2007

The objective of this paragraph is to analyze the primary sector production in terms of total intermediate consumption, value added, imports, total value of production and inputs. In the Social Accounting Matrix (SAM) this sector was analyzed for each source of production (tables, but for simplicity and for better understand the data, we have aggregate the primary sector in agricultural (crops, vegetables and fruit trees) and livestock (cattle, sheep and other livestock).

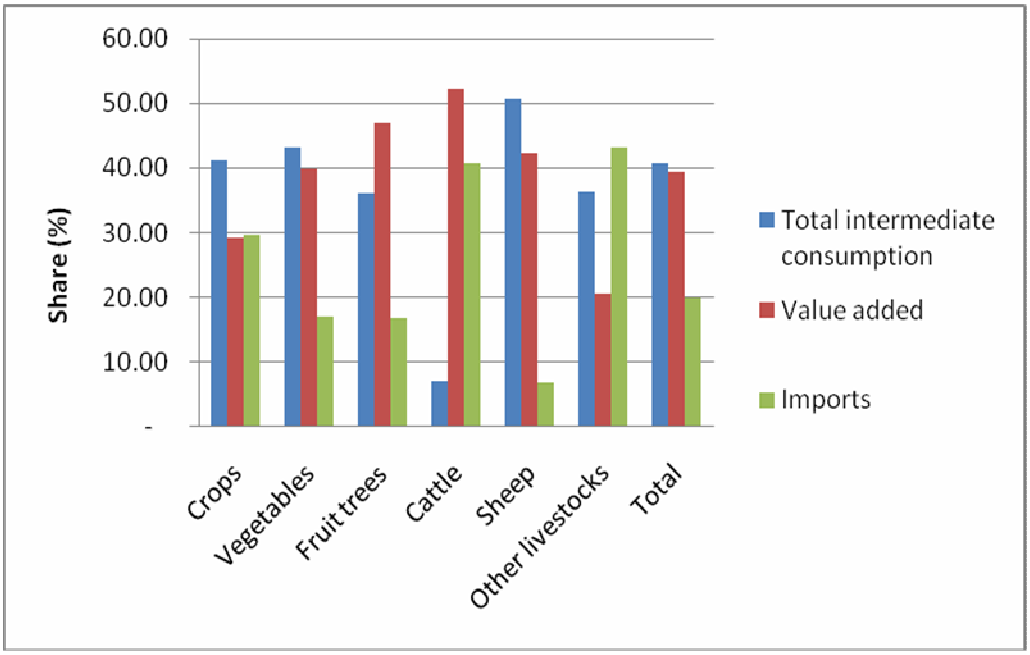
Table 2. 10. Primary sector production in Jenin, 2007 (data in thousands dollars)

	Crops	**Vegetables**	**Fruit trees**	**Cattle**	**Sheep**	**Other livestock**	**Total**
Total intermediate consumption	10 913	29 832	4 009	655	16 928	3 602	65 940
Added value	8 119	27 151	5 208	4 949	14 132	2 040	61 598
Imports	6 794	11 156	1 501	3 862	2 298	4 287	29 898
Total value of production (Jenin)	**25 826**	**68 139**	**10 718**	**9 466**	**33 358**	**9 929**	**157 436**
Total value of production (Palestinian Territory)	84 977	474 103	150 843	62 144	204 064	137 710	1 113 841

Source: Our elaboration using the data from Social Accounting Matrix (SAM)

[1] Dunum corresponds to 1,000 m^2 in Palestinian Territory, and to 2,500 m^2 in Iraq.

Graphic 2. 3. Primary sector production in Jenin, 2007



Source: Our elaboration using the data from Social Accounting Matrix (SAM)

Table 2.10. shows that in Jenin the total value of production (agriculture and livestock) is about 157 million dollars:

- about 66 millions dollar concerns the purchase of inputs from the local economy (seeds, feeds, etc.);
- about 62 millions dollar as added value from the production;
- about 30 millions dollars from foreign imports.

The 14% of total value of production of Palestinian Territory comes from the Jenin area, but the most important production concerns the crops, with a 30% of the total Palestinian production. A data that remarks the importance of the agricultural sector on the Jenin local economy.

Table 2. 11. Primary sector production in West Bank, 2007 (data in thousands dollars)

	Crops	Vegetables	Fruit trees	Cattle	Sheep	Other livestock	Total
Total intermediate consumption	21 901	117 321	40 242	3 610	96 816	31 555	311 446
Value added	15 489	108 324	52 325	27 258	80 823	17 868	302 087
Imports	15 760	46 173	18 758	21 273	13 143	37 553	152 660
Total value of production (West Bank)	**53 150**	**271 818**	**111 326**	**52 141**	**190 782**	**86 976**	**766 193**
Total value of production (Palestinian Territory)	84 977	474 103	150 843	62 144	204 064	137 710	1 113 841

Source: Our elaboration using the data from Social Accounting Matrix (SAM)

Table 2. 12. Share of Jenin primary sector production on the West Bank, 2007 (data in %)

	Crops	Vegetables	Fruit trees	Cattle	Sheep	Other livestocks	Total
Total intermediate consumption	50	25	10	18	17	11	21
Value added	52	25	10	18	17	11	20
Imports	43	24	8	18	17	11	20
Total value of production	**49**	**25**	**10**	**18**	**17**	**11**	**21**

Source: Our elaboration using the data from Social Accounting Matrix (SAM)

The total value of production in West Bank (*tables 2.11-12.*) is about 766 million dollars (the 21% is produced in Jenin), the 69% of Palestinian Territory. About the 50% of the West Bank crops production is produced in Jenin.

The next tables shows the link between the primary sector production and the sources of provisions in Jenin and West Bank.

Table 2. 13. Primary sector production and inputs in Jenin, 2007 (data in thousands dollars)

	Crops	Vegetables	Fruit trees	Cattle	Sheep	Other livestocks	Total
Agricolture	2 112	3 212	414	107	4 865	0	10 711
Livestock	61	552	159	0	0	1 939	2 710
Processing food	12	0	0	27	1 224	519	1 782
Manifacture	2 724	12 553	1 571	142	675	172	17 837
Water. electriciy, gas	1 096	2 655	61	6	164	22	4 004
Construction	0	50	50	10	260	34	404
Private services	4 828	10 498	1 320	3	848	53	17 550
Public servicies	0	0	0	360	8 893	863	10 116
Total	10 833	29 520	3 575	655	16 928	3 602	65 113

Source: Our elaboration using the data from Social Accounting Matrix (SAM)

Table 2. 14. Primary sector production and inputs in West Bank, 2007 (data in thousands dollars)

	Crops	Vegetables	Fruit trees	Cattle	Sheep	Other livestocks	Total
Agricolture	4 560	12 586	5 495	1 100	49 798	0	73 538
Livestock	107	2 194	1 181	0	0	6 019	9 501
Processing food	19	0	0	277	12 530	14 122	26 947
Manifacture	4 828	49 611	16 153	1 449	6 913	4 690	83 644
Water. electriciy, gas	2 183	10 403	1 016	63	1 678	590	15 933
Construction	0	197	345	99	2 662	937	4 240
Private services	10 119	41 136	13 161	32	8 679	1 445	74 572
Public servicies	0	0	0	590	14 556	3 753	18 899
Total	21 815	116 127	37 351	3 610	96 816	31 555	307 275

Source: Our elaboration using the data from Social Accounting Matrix (SAM)

In Jenin the vegetables production "takes" about 3 million dollars from the agricultural sector (seeds, plants, etc.), 552,000 $ from livestock (natural fertilizers, etc) and so on for each sector, for a total input amount of 29.52 millions $.

2.4.1. A space comparison: agricultural production in Palestinian Territory and Syria

We have analyzed the main differences in the agricultural production in two different areas, OPT (Occupied Palestinian Territory) and Syria, in terms of production, value of production, yield and import.

The value of production of the Palestinian Territory, shown in *table 2.15.*, moves from 1% to 5% of the Syria production, and although the proximity of countries there is a strong variation in the prices. The Palestinian prices are one third lower than Syrian prices.

Table 2. 15. OPT and Syria agricultural production, 2007

		Crops	Vegetables	Fruit trees
Area - ha- (thousands dollars)	**Syria**	3 633 775	667 930	190 176
	OPT	45 997	107 140	21 861
	Share (%) Opt/Syria	1	16	11
Production (thousands dollars)	**Syria**	7 533 557	2 756 221	2 219 097
	OPT	208 792	539 955	176 543
	Share (%) Opt/Syria	3	20	8
Prices (thousands dollars)	**Syria**	33 805	6 971	20 971
	OPT	11 291	1 802	5 843
	Share (%) Opt/Syria	33	26	28
Yield (%)	**Syria**	207	413	1 167
	OPT	454	504	808
Value of production (million dollars)	**Syria**	254 670 423	19 214 560	46 535 818
	OPT	2 357 509	973 183	1 031 549
	Share (%) OPT/Syria	1	5	2
Import (thousands dollars)	**Syria**	2 210 846	0	122 994
	OPT	221 100	0	59 000
	Share (%) OPT/Syria	10	-	48
Import on production (%)	**Syria**	29	0	6
	OPT	106	0	33

Source: Our elaboration using the database FAOSTAT

2.5. The SAM methodology to describe and analyze local economy

The study employs two Social Accounting Matrices, one for the entire West Bank and a local one for the Jenin Governorate which incorporates the trade flows between the two areas and the rest of the economy. An initial assessment is carried out by employing the multipliers obtained from the two SAMs while a more accurate analysis is conducted later using a spatial regional computable general equilibrium model (cge). The analysis of the SAM multipliers reveals useful information on the main characteristics and the structure of the local economy which are employed during the general equilibrium model programming for a more accurate representation of the economy. The multipliers are further employed to conduct some simulations to obtain a preliminary assessment of the overall impact of the industrial park on the local economy.

Finally the spatial general equilibrium model will incorporate intra and interregional trade flows using a mixed complementarity framework where transports costs and barriers to trade will be taken into consideration and will affect the overall assessment of the project. The presence of barriers to intra and inter-regional freight flows is an extremely important aspect for the West Bank local economy given the numerous Israeli road blocks, closed areas, restricted roads and growing settlements that undermine Palestinians' ability to trade and can reduce the potential benefits of the project. The spatial cge will also incorporate the results of a micro transportation assessment study devoted to the analysis of freight flows and costs within the Jenin and the West Bank territory.

2.5.1. A social accounting matrix for Jenin and the West Bank

A SAM is a tool of regional analysis providing useful guidelines for the development of a regional economy (Fannin, 2001). It is a system of social accounts which reproduces the economic flows in a particular area and captures the complexity of the socio-economic system. The SAM describes the relevant features of the socio-economic structure and the relationships between the structure of production and the distribution of

income and expenditure among households in a particular area. It is the natural extension of the input-output model. It includes inter-industry transactions, payments of productive factors, household expenditure, income transfers, government expenditure and transactions with the rest of the economy, defining the circular flows of income within the economic area of interest. The construction of a SAM requires the combination of heterogeneous information both from micro and macro data sources, allowing for a comprehensive and detailed representation of the economy. A SAM can be adapted to different territorial dimensions. In this study we developed three regional SAMs, one for the entire OPT, one for West Bank and one for the sub-region of Jenin.

There are two approaches to the development of a multi-regional SAM. The first requires the integration of two previously constructed regional SAMs, while the second approach involves the disaggregation of a nation-wide SAM into the sub-regions of interest (Pyatt and Round, 1985) and is employed in this study. However, because there are both conceptual and practical difficulties in the disaggregation of the SAM, in particular as regards interregional linkages, an acceptable solution is, departing from the national SAM, to distinguish several regions when classifying the most relevant variables (Keuning and De Reute, 1988). Departing from the West Bank SAM the local SAM for the Jenin sub-region is obtained by disaggregating the accounts according to the information obtained from the micro data. In Table 1 we report the structure of the local SAM for the Jenin Governatorate which content is described below.

Table 2. 16. The structure of a regional SAM

ACCOUNT (input) / (output)		ACTIVITIES AND COMMODITIES	FACTORS OF PRODUCTION	INSTITUTIONS			CAPITAL ACCOUNTS	REST OF THE WORLD	TOTAL
				HOUSEHOLD	ENTERPRICES	GOVERNMENT			
ACTIVITIES AND COMMODITIES		Intersectoral transaction		Private consumption		Government consumption	Fixed investments	Export	GROSS DOMESTIC PRODUCT
FACTORS OF PRODUCTION		Value added						Income of foreing workers	FACTOR INCOME
INSTITUTIONS	HOUSEHOLD		Income from household work	Transfers to household	Profits distributed	Transfers to government		Transfer to household from rest of world	HOUSEHOLD INCOME
	ENTERPRISES		Income			Transfers to enterprice		Income from foreing	INCOME ENTERPRICE
	GOVERNMENT	Indirect taxes		Direct household taxes	Direct enterprise taxes			Transfers to government from rest of world	TAX INCOME
CAPITAL ACCOUNTS				Household savings	Billetings	Surplus on current account		Credit and external debt	SAVINGS
REST OF THE WORLD		Intermediate imports of raw materials and assets	Income from foreign work	Imports of final products	Income distribuited foreing	Contribution to international organaization	Import capital good		TOTAL IMPORT
TOTAL		TOTAL DEMAND	FACTOR INCOME	HOUSEHOLD EXPENDITURE	ENTERPRICE EXPENDITURE	GOVERNMENT EXPENDITURE	INVESTMENTS	TOTAL EXPORTS	

To increase the welfare of the local population and to promote new opportunity of economic development are the main objectives of the public institutions. In order to catch up such objectives they are necessary adapt policies and a careful monitoring of the effects. The planning of the economic and social policies is a process that demands a careful analysis of the territory, in particular, through the appraisal of the sector structure and the productivity. The degree of integration of the fields and the social institutions describes dynamics of specialization of the production, the ability to adaptation of the local enterprises and the modalities of take and transmission of the policies. The matrices of social accounting (Sam) supply an instantaneous one of local the social-economic system and represent the flows in being between the

productive fields and the local institutions (enterprises, families, and Public Administration), the intersectoral dynamics of the accumulation and exchanges. A Sam concurs of having a general representation of the entrances and the distribution of such resources between the fields and institutions of the territory. This is a valid instrument for the support to the planning of the participations of economic politics.

The SAM is introduced formally like a square matrix, in which it is worth the tie of the equality between the totals of line and column, that production-yield-expense represents the circular flow, recording the transactions that carry to the formation, the distribution and redistribution, and at last to the employment of the resources available within the economic system, with reference to the main classes of agents (institutions) in it present. Production, distribution, redistribution, consumption and accumulation are characterized all the moments of the circularity of the system not necessarily with the same degree of disaggregation, with the accountant tie of the equality of the totals of corresponding line and column. The ordering of the accounts reflects the structure of the flows and the transfers of yield between the institutions, representing all the main transactions inside of an associate-economic system and supplying useful information on the economy for an immense range of political and structural analyses. To the levels and the divisions of disposable incomes to the institutions (in particular families), the public and private expense, the transfer of the yield from the institutions and the production of assets and services are analyzed.

Sectors. This account is disaggregated into 21 agricultural branches, 23 agricultural sectors and 19 service sectors. In the column the use of agricultural inputs is recorded by region. The demand for intermediate and final goods by firms and households and the local government is reported in the row. Exports are reported in the rest of the economy columns. The sectors employ factors and intermediate products in the column. Production taxes, subsidies and imports are also included and reported in the last three accounts.

Factors. This account is disaggregated into labor and capital. The first includes dependent and independent labor separated into skilled and unskilled. The formation of value added is reported in the row. In the column, factor remunerations enter household income net of factor taxes that are paid to the local government. The last account represent factor income outflows meaning factor payments to non resident workers.

Households. Households obtain their income from the remuneration of labor, from government transfers and from incomes generated outside the region (in the row). In the column household income is allocated to consumption within and outside the region, taxes and savings.

Local Government. Local government revenues are constituted by taxes on production on factors and income taxes reported in the row. In the column, government budget is allocated to public expenditure and pensions and other social transfers. When government budget exhibits a surplus, government savings are positive.

Capital account. Households and public savings are reported in the row while the investments formation is recorded in the column.

Rest of the Economy. This account includes the rest of the West Bank, the central government of the West Bank and the rest of the World. Imports and exports are reported in the row and in the column respectively.

2.5.2. The SAM multipliers

The SAM multipliers analysis has been widely used for impact analysis, policy planning and to study the effects of macroeconomics shocks and re-distribution interventions (Aldeman e Robinson 1988). In particular, it has been extensively applied to developing countries with a focus on the role of markets, public expenditure and international trade (Arndt *et al.* 2000). The analysis of the SAM multipliers is based on a set of assumptions: functional relations use fixed technical coefficients of Leontief technologies, no bounds are imposed on goods supply and prices are given which implies that conclusions must be drawn in terms of quantities.

Table 2. 17. The SAM framework

<table>
<tr><td rowspan="2"></td><td colspan="4">Endogenous accounts</td><td rowspan="2">Total</td><td>Exogenous Accounts</td><td rowspan="2">TOTAL</td></tr>
<tr><td>(1)</td><td>(2)</td><td>(3)</td><td>(4)</td><td>(5)</td></tr>
<tr><td>(1) Sectors</td><td>T_{ij}</td><td rowspan="2"></td><td>T_{ih}</td><td></td><td>N_1</td><td>X_1</td><td>Y_1</td></tr>
<tr><td>(2) Factors</td><td>T_{fj}</td><td></td><td></td><td>N_2</td><td>X_2</td><td>Y_2</td></tr>
<tr><td>(3) Households</td><td rowspan="2"></td><td rowspan="2">T_{fh}</td><td rowspan="2">T_{hh}</td><td></td><td>N_3</td><td>X_3</td><td>Y_3</td></tr>
<tr><td>(4) Firms</td><td></td><td>N_4</td><td>X_4</td><td>Y_4</td></tr>
<tr><td>(5) Exogenous</td><td colspan="4">E</td><td rowspan="2"></td><td>V</td><td>Y_X</td></tr>
<tr><td>TOTAL</td><td>Y_1</td><td>Y_2</td><td>Y_3</td><td>Y_4</td><td>Y_X</td><td></td></tr>
</table>

In developing a SAM multiplier model it is first necessary to distinguish between endogenous and exogenous accounts. The firsts reflect the purpose of the analysis while the exogenous ones include those accounts that can be employed as policy instruments (for instance the regional administration), those generating long term effects (e.g. capital account) and those which cannot be influenced by policy interventions.

As reported in *table 2.17*., the matrix of endogenous accounts can be decomposed into 4 sub-matrices: the matrix $\mathbf{T_{ij}}$ is the matrix of transactions which is presented also in the input - output model; The matrix $\mathbf{T_{fj}}$ represents the composition of the value-added which is distributed to the endogenous account through the matrix $\mathbf{T_{fh}}$; $\mathbf{T_{ih}}$ corresponds to the expenditures of households and public administration while $\mathbf{T_{ih}}$ includes the transfers between endogenous institutions. Finally, the matrix **V** reports the transaction between exogenous accounts and the vector **E** includes the outflows (leakages). Dividing each element of the matrix **T** with the respective column total it is possible to obtain a matrix of coefficient **A** necessary to derive the matrix of the global SAM multipliers, $(\mathrm{I}-\mathrm{A})^{-1}$, where **I** is the identity matrix. Given the vector of exogenous account **X** and the vector of the SAM totals **Y** it is possible to write the following relation, implicitly contained in the SAM:

$$\mathrm{Y} = \mathrm{AY} + \mathrm{X} = \mathrm{N} + \mathrm{X}. \qquad (1)$$

Departing from this equation, the effects of an exogenous shocks $\mathbf{\Delta X}$ can be summarized by the following impact equation:

$$\Delta\mathrm{Y} = (\mathrm{I}-\mathrm{A})^{-1}\Delta\mathrm{X}. \qquad (2)$$

The effects on supply $\Delta\mathbf{Y}$ are transmitted thorough the matrix of multipliers which element represents the full impact of a unitary injection in the system which is the results of 4 effects (Stone, 1977 and Pyatt and

Round, 1979): a direct effect, the transfer effect $\mathbf{A_1}$, the open loop effects $\mathbf{A_2}$ and the closed loop effects[2] $\mathbf{A_3}$. These distinguished effects can be studied through the decompositions of the SAM multipliers into 4 additive components as reported below:

$$M = I + A_1 + A_2 + A_3.$$

Where **I** is the direct effect which represents the effect of an exogenous shock on the account in which the injection has been operated. The transfer effect refers to the interrelations between the accounts belonging to a same bloc (or sub-matrix as reported in Figure 1), therefore it captures the transmissions of effects due to the transactions between sectors and institutions. The open loop effect reports the impact on the accounts non directly involved and belonging to a different bloc from the one in which the injection has been done. Finally the closed loop effect is due to the circular income and expenditure flows in the economy which stimulate the local and demand and additionally stimulates production. This latter effect contributes to give to the SAM multiplier more comprehensive with respect to a standard input-output model where the circular flows are not taken into account as well as the distributional impact of the policy interventions. (Zelli, 1998). The impact analysis could be further expanded employing the "*structural path*" method (Defourny e Thorbecke 1984) which allows following the path of diffusion of the effects through the system, identifying the specific sector through which the effects are transmitted.

Employing the SAM multipliers matrix it is possible to simulate the effects of a program of public expenditure aim to one or more sectors and/or institutions. It is in fact an exogenous injection that can be represented changing the elements of the vector of exogenous shocks $\mathbf{\Delta X}$ (equation 2). The effects, partly absorbed by the endogenous accounts, affect also the surrounded rest of the economy (*leakages*). This latter effect $\mathbf{\Delta L}$, is capture by the following equation :

$$\Delta L = B\Delta Y.$$

Where **B** is the matrix of coefficient obtained dividing each element of the vector of exogenous account E by the respective column total.

2.5.3. Analysis of the impact of a technical change

The SAM multipliers model is based on the assumption of fixed technical coefficients that define the fixed proportions in which inputs are employed in production. The technical coefficients a_{ij} are obtained dividing the content of each cell, x_{ij}, of the inter-sector transactions ($\mathbf{T_{ij}}$ *Table 2.17.***)** by the correspondent column total, Y_j:

$$a_{ij} = \frac{x_{ij}}{Y_j}. \qquad (3)$$

These coefficients represent the amount of inputs needed to produce one unit of output. Each column vector, on the basis of the above mentioned assumptions, summarizes the average technology of the sector as it is the aggregation of firm specific technology in the branch. In each period coefficients can be represented as a weighted average between the technology adopted in the previous period and a new more advanced technology (Carter 1970). The contribution of the latter is related to the intensity of private and public

[2] The terminology adopted here refers to PYATT G. - ROUND J. I. (1979) e DEFOURNY J. - THORBECKE E. (1984).

investments in process innovations, both at firm and sector level. To simulate a technological change it is possible to modify the coefficients in order to reproduce a more or less efficient use of inputs.

Comparing the coefficients obtained from the two input-output referred to two different period in time (*T* and *T-q*) it is possible to obtain an indication of their positive or negative trend. As anticipated above, coefficients at time T can be represented by the following equation, where the weight, s_j, attributed to the new technology, $\mathbf{a_{ij}^n}$, indicates the intensity of investments in process innovation and is given by the ratio between the sum of investment in new equipment and machineries, $\mathbf{e_j^t}$, in the reference period, and the fixed capital stock at the end of the period by sector, $\mathbf{g_j^t}$.

$$s_j = \frac{\sum_{t=T-q}^{T} e_j^t}{g_j^T}. \qquad (4)$$

2.5.4. The data

The 2004 SAM for the West Bank is based on the Input-output table prepared by Missaglia (1998) and further disaggregated to better capture the characteristics of the local agricultural sector. The initial sector disaggregation is extended to include 21 agricultural branches. This is done by borrowing the technological parameters from the Syrian SAM. Moreover further information on agricultural sector productivity performances have been obtained from the FAOSTAT database. The labor forces have been decomposed into dependent and independent labor both disaggregated into skilled and unskilled using data from the 2004 Labor force survey. Information on household consumption and income formation have been obtained from the 2007 household expenditure survey provided by the Palestinian Central Bureau of Statistics (PCBS). The preliminary SAM obtained has been updated to 2007 and balanced using the *Cross Entropy Method* (Robinson *et al.* 1998). This method exploits the information contained in the initial matrix and allows for submatrices and aggregates to be fixed to specific targets. The balanced 2007 SAM for the West Bank maximizes the contribution of initial disaggregated information ensuring the correspondence with macro aggregate statistics provided by the Palestinian Central Bureau of Statistics. The local SAM for the Jenin Governatorate is obtained employing the RAS method and using micro data on expenditure, employment and farming activities. Survey data are provided by the PCBS and permit the construction of matrices of coefficients representing the local contribution to production, income formation and local input requirements for each sector and the share of income and expenditure by category attributable to the local households. Given the heterogeneity of the information sources used, the initial local SAM for the Jenin Governatorate is not balanced and it has been harmonized using the *Cross Entropy Method.*

2.6. The Occupied Palestinian Territory economy

In paragraph 2.4. we speak about the importance of the primary sector in Palestine and especially in Jenin area, but also the industrial sector plays an important role in the economic development of Palestine, in which industry exists as the base of the economic pyramid through which many of the forward and backward linkages in services and other economic sectors stem. The industrial sector is a long-term investment; it is susceptible to external environmental factors and its openness to countries with lower-cost production.

The Palestinian National Authority has worked to revive the industrial sector, which has suffered many obstacles due to occupation, by working to remove the factors perpetuating a coinciding recession and create

a support system which can stimulate private sector investment in industry and facilitate linkages between the industrial sectors (especially among the agriculture and construction sectors).

Ultimately, these efforts aim to create an attractive investment environment as to achieve excellence for Palestinian products. Thanks to this, the level in the quality of industrial production in Palestine has improved and the industrial sector's contribution to the GDP has increased from 8% in the mid 1980s, to 17% in the mid 1990s, and to nearly 16% in recent years. During the first three quarters of 2007, the industrial sector employed an estimated 81,586 workers, 11.3% of total workforce. Moreover, the annual production rate in the Palestinian territories (excluding East Jerusalem) reached an average of USD 20,863 per worker, while the sector's annual rate of compensation per worker was that of USD 4328. The following table describes the annual production of four industrial sectors.

Table 2. 18. Value-added per worker in the industrial sector in the West Bank and Gaza Strip in 2006.

Industrial Sector	Value-added (USD)
Fabric	31,399.7
Food and beverage	17,461.8
Mining and quarrying	45,259.3
Furniture	13,836.4
Average	**20,863**

Source: Pic -Nf, 2008, The Agricultural Sector Review in the Northern Governorates

There are many potential opportunities and reasons to invest in the industrial sector in Palestine; the most prominent reasons are the abundance in human resources and the absorptive capacity of the market. There exist good fundamentals and capacities in regards to expanding the food industry, provided that there is secure access to foreign markets. Currently, food-processing plants meet a significant proportion of domestic demand. Such industries include olive presses, citrus packing, food processing, cigarette manufacturing, and dairy production. There is also room for expansion in the areas of chemical fertilizers, machinery and agricultural equipment, as well as, small and light tools for engineering industries. Move gradually, expansion towards more complex industries such as plastics, electrical, and electronics industries and other industries requiring high technical skills will likewise be possible.

The Palestinian National Authority, in close cooperation with the World Bank and other donor institutions, has developed new concepts pertaining to industrial cities and zones. Industrial cities in northern Gaza have recently been initiated. Discussion are also being held regarding the establishment of four new industrial zones in the West Bank; two of which are to be located on the border with Israel. One of the industrial zones will be located in the industrial area of Jenin in the northern West Bank (to be financed by Germany) and the other will be located in the industrial area of Tarqumiya near Hebron (to be financed by Turkey).

In October 2009, the first financial agreement to establishment an industrial zone Jenin was signed by the German government, through the German Development Bank, in the amount of USD 13 million. In regards to the two other industrial zones, one will be located in the district of Bethlehem and will receive a financial contribution from the French President for USD 15 million to establish the site. Similarly, the Japanese have announced its willingness to finance an industrial zone in the Jordan Valley.

Efforts are underway to establish craft zones within the boundaries of several municipalities, particularly in Jerusalem (Abu Dis), Jenin, and Nablus. The Palestinian Authority has also enacted industry related laws, such as the Investment Promotion Act, the Palestine Standard Institute Law, Capital Market Law and other helpful laws. In addition, the Palestinian Authority has signed various free trade agreements aimed at

promoting the export of products to targeted markets. The Palestinian Authority is also implementing standard application procedures through 'a window of investment' aimed at simplifying administrative procedures for investors.

2.6.1. Clothing and textile industry

The clothing and textile sector is among the most important industrial sectors in terms of operational capacity and absorbance of the local workforce, and in terms of its contribution to industrial output. Until the beginning of the second Palestinian Intifada, this sector operated an estimated 2,653 factories (with the exception of Arab Jerusalem), comprising 18% of the total industrial establishments operating in the Palestinian territories. 64.3% of these facilities operated in the West Bank, the third largest industrial sector in the West Bank. The remaining factories operated in the Gaza Strip, the largest industrial sector in Gaza. An estimated 17,562 workers, 25.2% of total manufacturing workforce were employed by this sector. It is noted that, this sector employed the largest amount of female works

In the year 2000, the sector produced a total of USD 126 million, representing 15% of the gross industrial product. Beginning in 2000, however, the sector witnessed deterioration in performance as a result of the second intifada and other factors beyond its control. Such factors included the deterioration of the industry in Israel (as part of the Palestinian textile industry had been associated with subcontracting with dealers and manufacturers in Israel) and the uncontrolled open global markets, particularly that of China. As a result, the number of workers in this sector plummeted to less than 10,000 workers by 2006. 40% of this industry operates in the northern West Bank.

Table 2. 19. The distribution of textile enterprises in terms of geography

Region	Ratio (%)
Tulkarem	17
Nablus	17
Jenin	6
Ramallah	30
Bethlehem	17
Hebron	13

Source: Pic -Nf, 2008, The Agricultural Sector Review in the Northern Governorates

According to recent studies, (mainly the final outcomes of the two investment conferences held in Palestine, Bethlehem and Nablus 2008), the clothing and textile sector contributes to nearly 15% of Palestine's manufacturing output and employs nearly 10% of its workforce. The Palestinian market is the largest outlet for the industry, where producers can sell almost 70% of their production locally, with the rest of the production being sold abroad, predominantly to Israel (as part of Israeli agent's facilitation of product's sale in overseas markets). As for direct export, a number of factories have been able to export their products directly to some Arab countries, such as Jordan and United Arab Emirates. There have been successful experiences in direct export to the United States and a number of European countries, i.e., UK, Spain, and Norway. Examples of products exported include heavy leather coats, and some embroidery. Abdeen Co. and Zghaiar Clothing Co. were the two leading Palestinian textile manufactures that succeeded to export to external markets.

The accumulated experience in this industry, its abundant labor force, its ability to deal with other producers, and its keen understanding of production and sale value chains contribute to the inherent advantages and

opportunities of this sector. This is in addition to the assistance programs which the Palestinian National Authority implement to service this and other industries. In spite of this sector's weaknesses (i.e. old technology) it has the potential to promote its quality products to foreign markets, through subcontracts with big producers from outside who seek that type of contracts and those who move their production points outside their countries; to India, Vietnam, and China, and also with introducing new technology to these factories to upgrade their capacities, and introducing training programs for those factories including fashion design, quality control, and other ISO improvements.

2.6.2. Stone, marble and construction industry

The stone and marble industry in Palestine has a long history and is among the traditional industries. It has been said, that stones are the oil of Palestine. They provide a large spectrum of services, from raw materials for industry in commercial quantities, to high quality end-products in multi-colors. Global demand for Palestinian stones and marble is steadily increasing at an estimated annual rate 10%, with the average annual consumption in the world reaching 600 million square meters. In fact, Palestine produces about 4% of the world's total stone and marble output (according to Pic-nf 2008 documents). This industry is characterized by its reliance on local raw materials. It is the largest contributor of domestic industrial products and posses the highest sales volume, as well as the largest amounts of exports abroad. 13% of stone and marble products are exported directly to over 35 countries across the world. 55% of production is sold to Israel, with a apportion of sales being re-exported abroad and the remainder consumed by the local market as follows

According to various studies and statistics available, the sector's productivity is relatively high, approximately USD 60,000 annually per employee (5 times the productivity in other industrial sectors). Estimates of researchers and figures of the Union of Stone and Marble Industries estimate the number of enterprises operating officially and unofficially in the West Bank at about 742. Table No. (3) features the geographical distribution of stone and marble enterprises in the West Bank, before the outbreak of the second Intifada (Al Aqsa Intifada).

In 2000, the sector employed nearly 13,500 workers and was invested in at a value of 215 million Jordanian Dinars. Production was valued at 276 million Jordanian Dinars, with the size of production reaching an estimated 22 million square meters. Despite sharp declines in the number of workers employed by the sector and decreases in the amounts of output during the first intifada, the volume of investment in the industry rose to 353 million Dinars in 2005 and the volume of domestic production had risen by 30 million square meters annually. The West Bank, spanning from north to south, is rich in raw materials in the form of stone quarries, with heavy industry mainly concentrated in the areas of Bethlehem and Hebron. Contributing to more than 5% of the GDP, the sector offers a variety of finished products for various uses, including:

- Outdoor uses;
- Indoor uses;
- Decorative uses (i.e. kitchens, bathrooms, mosaics, decorative, etc.).

Table 2. 20. Distribution of quarry facilities by region and type of industry

Region	Number of Quarries	Number of Stone Factories	Workshops
Hebron	132	178	43
Bethlehem	32	210	35
Ramallah	42	55	50
Nablus	23	60	30
Jenin	32	78	10
Tulkarem	3	10	12
Qalqilia	0	8	7
Salfit	0	7	5
Jericho	0	2	2
Gaza	0	10	50
Total	**264**	**618**	**244**

Source: Pic -Nf, 2008, The Agricultural Sector Review in the Northern Governorates

In addition to the sector's abundance and high quality of the raw materials required in production, the sector posses the most advanced technology in this area, a relatively good ability to penetrate world markets, and an accumulated worker experience and technical expertise, as they were producing according to ISOO requirements in term of the qualification of cutting and design. On the other hand, this sector suffers from severe lack of experience among its administrative personnel and lacks needed financial and marketing expertise. The sector also suffers from weakness, in terms of, the utilization of technology and information systems in performance. Furthermore, large losses have been faced by the industry due to the burdens of transport, as well as to multiple environmental problems, such as marketing constraints, low productivity and consequently high cost per unit produced which reflects negativity on the competitiveness of products. In addition, local market size is limited and very vulnerable to political and security situations. And according to producers in this sector they refer most of their problems to the difficulties in transporting their products due to Israeli security measures, and high cost of transportation as they use relatively small vehicles in this kind of distribution, including that they have to do all that parts of work with their own self, and they look for additional support from governmental and private sector institutions.

2.6.3. Food industry

The food-processing sector has witnessed rapid growth in the second half of the 1990s, with the share of the domestic market growing from 25% to 30%. Market studies indicate that the average Palestinian family spends 42% of their income on basic needs such as food and related commodities according to PCBS statistics (Consumer price index and consumption groups weight as in the consumer basket. In addition to being very important for today's economy, the sector was fundamental in ensuring Palestinian food security under the closure and siege of the early years of the Intifada.

The food industry contributed more than 23% of the value of domestic production, 23% of the total added value, 13% of total employment in manufacturing during the year 2003. This industry, as many others, has faced numerous difficulties over the past number of years as a result of Israeli policies and actions following the onset of second Intifada.

However, the industry still occupies great significance in regards to its ability to absorb a large portion of the Palestinian workforce by creating many direct and indirect jobs within the various clusters of integrated

industries; from agriculture, storage and transport agricultural and industrial products, and distribution to complementary industries such as packaging, research, services, etc. In addition, the sector fulfills a large part of consumer needs, contributing to Palestinian's food security, and, in turn, their capacity to resist.

The food industry is characterized by the diversity of its products, which creates a great opportunity and need for integration between its various industries, as well as, creates new investment opportunities. The most significant food production industries in Palestine include; meat and meat product production, processing and preservation, fruits and vegetables processing and preservation, fats and oils (plant and animal) manufacturing, dairy product, ice cream, , grain mills, automated manufacturing of animal feed, confectionery and bakery products, cocoa and chocolate, sugar, pasta and noodles, beverages, among other food industries.

Table 2. 21. Distribution of food-processing factories *(according to 2008 statistics)*

Industrial Production	Firms	Employees
Food & Beverage	1511	7310
Meat & Meat Products	11	217
Fruits & Vegetables	14	140
Oils & Fat (Vegetable & Animal)	5	110
Dairy Products & Ice Cream	45	882
Grains	144	380
Animal Feed	25	311
Bakery Goods	891	3407
Cocoa, Chocolate, & Candy	71	470
Pasta & Noodles	NA	NA
Other Food Industries	304	1054
Non-Alcoholic Drinks & Mineral Water	22	558
Alcoholic Beverages	NA	NA

Despite the problems currently being faced by Palestinian food industries, there exist possible opportunities for the development of a number of food products, in regard to improving their competitiveness in accessing external markets. In addition, consumer awareness may be raised regarding food security in the Palestinian markets, and the need to prefer national products as that will stimulate the demand for local product. Possibilities for improving the current levels of exporting may be reachable under some conditions as they have to : overcome the main problems faced by the industry, follow clear policies that motivate the private sector, coordinate and cooperate among concerned institutions (governmental and non-governmental), reduce production costs, and maintain high quality production through technology upgrading and employees training. Also, there is need to find ways to design and implement a program of technical assistance to these industries to restructure their factories, where some merging may take place under a positive encouragement campaign, a new marketing strategy can be introduced after reviewing the weaknesses in the way its done so far, and in this regard some regional workshops may be introduced to review, evaluate and introduce new ideas on production, quality, pricing, innovation techniques, and to share experiences from actors in this field of industry, etc..

2.6.4. Engineering and metal industry

According to manufacturing indicators published in 2003, the engineering and metal industries are included within the classifications of the ISIC (International Classification of Industries). The metal and engineering industries in Palestine employ an estimated 8,752 workers and generate a productivity of about USD 17,066

per worker. These industries operate throughout the West Bank, but are predominantly concentrated in the areas of Hebron, Ramallah, Nablus and Jenin. For years, many of these industries have succeeded in entering global markets, such industries include; welding rods, agricultural tools, furniture, metal scales, packaging machines, tools, metal bits, etc

Hebron is home to the first engineering and metal industries established for export purposes. It's existing industries include; industrial machinery, industrial cutting and grinding tools, wires and nails, welding rods, metal furniture and shelves, balances, metal casting, etc. Ramallah's metal and engineering industries predominantly produce; wires and nails, household equipment and municipal supplies, electrical panels and trailers. While Nablus is home to the production of; solar energy devices, aluminum in and engineering industries, etc. Jenin, on the other hand, mostly produces; agricultural tools, domestic gas canisters, iron for construction purposes and packaging machines. In Jericho, metal is mostly manufactured as iron for construction purposes, also its reported that 60% to 80% of metal and engineering products absorbed by the local market, in turn, promoting integration and linkages within the industrial and economic sectors.

2.6.5. The SAM application on Occupied Palestinian Territory economy

SAM model permits to evaluate the structure and the linkages between local economy's sectors. Next table shows the circular socioeconomic flow: production, income, expenditure, with savings and investments and rest of the world as exogenous accounts.

Table 2. 22. Social Accounting Matrix (2007) for Occupied Palestinian Territory (thousands of US $)

	(output) ACCOUNTS (input)	1 Activities	2 Commodities	3 Factors	4 Households	5 Companies	6 Government	7 Taxes	8 Capital & Investments	9 Rest of the World	TOTAL
1	Activities	656.242	618.558						66.407		1.341.207
2	Commodities				435.724	14.261	95.649			72.924	618.558
3	Factors	366.862								36.749	403.611
4	Households			145.535	21.552	83.867	18.885		10.239	204.241	484.319
5	Companies			151.769			34.261				186.031
6	Government							101.018	4.131	43.646	148.795
7	Taxes	79.559		51.090	12.334	55.329					198.312
8	Savings & depreciation			25.578	14.708	32.573				7.918	80.777
9	Rest of the World	238.545		29.639				97.294			365.478
	TOTAL	1.341.207	618.558	403.611	484.319	186.031	148.795	198.312	80.777	365.478	

Commodities, activities. The SAM distinguishes between *activities* (the accounts that carry out production) and *commodities* (representing markets for goods and non-factor services). SAM flows are

valued at producers prices in the activity accounts and at market prices (including value added, tax, other indirect tax and transactions costs) in the commodity accounts. Imports are valued at market prices, while indirect taxes on imports are shown in own account. Activity sectors generate intermediate consumption of inputs, and are linked with factors to generate value added. By rule, activities sell to commodities markets, which are linked to institutions to show consumption process. Activities are linked also with capital accounts, producing investments, especially buildings and machinery. Imports of final commodities are shown by column in activities account, while exports are shown by rule in commodities accounts. Palestinian economy typically use a large share of imported input factors, about 31% of total intermediate inputs. Commodities from endogenous economy are especially produced by agricultural sectors, with an important role played by vegetables plant production.

Factors. These accounts represent analytically the structure of local gross domestic product, divided into compensation of hired employees, mixed operation surplus, depreciation of capital goods, and indirect taxes on goods and factors. A large part of compensation of local hired employees, corresponding to 68.7%, comes from public sectors, public administrations, health, education. Manufacturing pays only 7.2% of total wages and salaries, an half of that comes from the rest of the world (Israeli and other settlement). Then Palestinian economy exports labor force, for 379 millions dollars, and it send out profits, for 403 millions dollars, on which the rest of the world pays to the government 268 millions dollars of taxes. The large part of mixed operations surplus which remains locally is constituted by self employed remuneration, concentrated in agricultural sectors, wholesale and retail sale sectors.

Institutions accounts. SAM structure map institutions into three accounts: private households, private companies (profit and non profit), government (central and local public administration). These account constitute SAM core. We can read it by rule, describing from the entry side, and by column, from expenditure side. Total household entries amount to 6.3 billions dollars, divided into net hired labor income (2 billions dollars), self employed labor income (1.3 billions dollars), government aids (0.5 billions dollars), foreign transfers (2 billions dollars), with a residual role of capital income. After primary income distribution, household transfers amount to 340 millions dollars, equally distributed into the five quintiles of equivalent income in which household are divided in SAM structure. From the side of expenditures, private households consumption amount to 5.2 billions dollars. Households also pay direct taxes on income for 355 millions dollars.

Companies revenues by production factors in Occupied Palestinian Territory amount to 2 billions dollars. Private companies receive 682 millions dollars of subsidies, of which 182 millions dollars from the rest of the world. From the side of expenditures, non profit private companies consumption amount to 238 millions dollars. Private companies pay 722.7 millions dollars of direct taxes, and transfer 1.3 billions dollars to private households. Savings and depreciation amount to 466 millions dollars.

Fiscal framework shows entries from taxes for 2.7 billions dollars, but large part of them remain into Israeli government. Consequently, Palestinian Authority need foreign aids for 1.4 billions dollars, of which 0.89 come from international grants, and the rest from loans. From the side of expenditures, government sector consumption amount to 1.8 billions dollars. Social security costs play an important role in this item. Government aids to households and to private companies are the other expenditure items.

Capital and investments. Palestinian economy produces investments for 1.16 billions dollars. They are not covered by internal savings, so the rest of the world has to cover for 328 millions dollars. Depreciation of capital goods represents only 25% of investments.

Rest of the world. With imports for 3.3 billions dollars and exports for 0.7 billions dollars, Palestinian economy has to cover a large foreign commercial imbalance. At factors level, revenues from wages and salaries of Palestinian persons, which work in Israeli and other settlements, are balanced by profits distributed to foreign companies. To finance both private and public institutions, Palestinian Economy depends critically from foreign flows.

2.7. The West Bank economy

2.7.1. Clothing and textile

The clothing and textile industries are quite prevalent in the northern West Bank, particularly in the areas adjacent to Israeli areas. Such is attributed to the important role subcontracting with Israeli businessmen plays in the industry's boom. Although more abundant in more northern governorates, much clothing and textile factories are present in Tulkarem and Nablus.

A number of clothing and textile factories of this region have been able to market their products to international markets, mostly to Israel directly or through subcontracts. Such factories include an apparel factory in Nablus, Fulayfel Company for Trade and Textile Industry which manufactures quilts ,blankets, and bedspreads in Tulkarem, as well as a group of Badran companies in Tulkarm.

This industry generates a diversity of finished products. Many of the enterprises specialize in sewing clothing (jeans, uniforms, etc.), while others specialize in knitting wool such as wool rugs. Other producers have profited from producing Palestinian traditional embroidery. The next table represents the number of enterprises operating in the area of clothing and textile industries in the northern governorates of the West-Bank.

Table 2. 23. Number of industrial facilities in the provinces of the north West Bank

Region	Nablus	Jenin	Tulkarem	Salfit	Qalqilia	Tubas
Industries	441	183	182	47	144	22

Source: Pic -Nf, 2008, The Agricultural Sector Review in the Northern Governorates, www.pcbs.gov.ps

2.7.2. Stone, marble and construction industries

Stone, marble, and construction industries are intertwined with movements in architecture and development. The first concrete production factory was established in Nablus, about twenty years ago. After the construction boom of the mid 1990s, the first factories were established specializing in concrete pavement and cement pipes (used in sewage disposal and rain drainage). Factories were also established in the region for the production of lime, gypsum, cement, refractory bricks, cement tiles, ready-mix concrete, asphalt, etc.

In regards to stone and marble industries, they are prevalent in the north, but more concentrated in the southern West Bank. The areas of Jama'een, Kabalan and 'Asira in Nablus and Qabatiya in Jenin contain quarries used in the extraction of raw stone for manufacturing.

Stone cutting factories are distributed in varying degrees throughout the northern governorate in varying sizes. Such industries in the region tend to be small in size, employee a small number of workers, and be vulnerable to the limited technology they utilize. Over the last two years, the discovery of new areas to

extract high quality stones in large commercial quantities has emerged. Experts expect the discovery of crude stone to be more distinctive in the north, resulting in an opportunity for massive investment in the stone and marble industry of the north.

The stone and marble industry produces a variety of finished products which include; various types of stones used on building's outer facades and various types of stones used in flooring, floor tiles, marble used in windows and stairs, bathroom and kitchen tiles, outdoor floor tiles, etc. Industrially produced stones have taken their place in the construction industry in the northern West Bank, being utilized mostly in external cladding and internal walls. The following table indicates the distribution of stone, marble, and construction industries in the northern West Bank.

Table 2. 24. Number of stone, marble, and construction industries operating in the North West Bank

Region	Nablus	Jenin	Tulkarem	Salfit	Qalqilia	Tubas
Industries	153	57	21	8	13	4

Source: Pic -Nf, 2008, The Agricultural Sector Review in the Northern Governorates, www.pcbs.gov.ps

2.7.3. Food industry

The northern West Bank is home to a diversified food production industry, which is among the areas main type of industry. In fact, food processing industries contribute a large proportion of market share of the northern West Bank. The meat processing industry, most notably the Islamic Association for Development in Tulkarm and Al-Manar Factory, are among the major producers of the industry and have marketed their products to foreign markets. The beverage industry is, likewise, a major producers of the north, producing carbonated drinks, mineral water, juices, as well as traditional drinks such as kharroub and Indian dates. Traditional industries such as sweets produced in the city of Nablus are still maintained.

The ice cream industry, directly linked to the dairy industry, is highly consumed at the national level and in some instances has exported products abroad, such as in the case of Safa Dairy Plant. Millions of dollars have been invested into the nut snacks industry, which comprises a sizable share of the food industry in the north. Azheiman, based in Jenin, is among the largest producers and dealers of nuts and seeds in the North. A number of factories have profited from manufacturing cocoa, chocolate powder, and chocolate syrups.

Zadna Factory operating in Tubas, is a model of bold investment in the agro-food industries. The plant has made great achievements in the field of product diversification and has created significant employment opportunities in the area from direct and indirect labor. The factory, likewise, served to continually increase its export rates. Pickled foods are likewise produced by many small workshops, such as those operated by women's centers, charities, and cottage (home-based) industries. Vegetable and animal-fat based oil production represent Nablus' original industry.

The first industrial plant operating in this sector, the Vegetable Oil Manufacturing Company in Nablus, was established in the 1950s and is still in operation today with stocks registered in the Palestinian Stock Exchange. Given the agricultural nature of north, particularly the abundant cultivation of olive trees, olive presses are spread throughout the north. *Anabtawi Group Investment and Development*, was established to better mobilize olive oil for export purposes. The factory is considered the largest plant of its kind in the region, with a storage capacity of 1300 tons. The following table is a breakdown of the number of enterprises operating in the field of food production in the northern governorates of the West Bank.

Table 2. 25. Number of food producing industries operating in the North West Bank

Region	Nablus	Jenin	Tulkarem	Salfit	Qalqilia	Tubas
Industries	459	277	188	63	86	2

Source: Pic -Nf, 2008, The Agricultural Sector Review in the Northern Governorates, www.pcbs.gov.ps

2.7.4. Engineering and metal industries

Engineering and Metal industries comprise most of the industries registered in the northern West Bank, particularly among the city of Nablus. Engineering and Metal industries range from small workshops to factories which are highly invested in. The industry produces a variety of product types; aluminum, manufacturing equipment, central heating, solar energy equipment, lifting and handling equipment, nonferrous metal , iron rods for construction, molders, hand tools, metal kitchen tools , tin cans, fishing nets, alloys, jewelry, wire, freight containers (used in municipal services and industry), metal furniture, mining and quarrying equipment, stone cutting equipment, etc. If electrical and lighting equipment are added, the list will go on to include; light bulbs, lighting equipment, switchboards, television and radio reception parts, etc.. The following table indicates the high number of engineering and metal industries in the northern West Bank and their distribution.

Table 2. 26. Number of engineering and metal industries operating in the North West Bank

Region	Nablus	Jenin	Tulkarem	Salfit	Qalqilia	Tubas
Industries	733	475	288	128	203	91

Source: Pic -Nf, 2008, The Agricultural Sector Review in the Northern Governorates, www.pcbs.gov.ps

2.7.5. Plastic and chemical industries

The plastic and chemical industries produce a diverse array of finished products in the North. In terms of chemical products, the industry products the following; detergents (in liquid, powder, and paste form), traditional Nabulsi soap, women's cosmetics, disinfectants, cleaning products, water and oil-based paints, etc. In terms of plastics production, the industry produces; pipes, nylon, nylon bags, printing materials, agricultural nurseries, bottles, sponges, rubber, plastic furniture, disposable cups, plates, and eating utensils, brooms, blankets, umbrellas, etc.

As evident on retail shelves, locally produced plastic and chemical products are relatively availability to and consumed by the domestic market. Many of these industries are marketing their products abroad, significant strides towards development by the industry.

The plastics industry and its products are closely connected to the agricultural nature of the northern region, as they supply local market with needed agricultural supplies. A portion of such products have been exported to Jordan and other foreign markets. Data obtained through informal means from factory owners mention that 75% of their manufacturing is distributed in the local markets and the rest for export. However this may not be an exact nor accurate and verifiable number. Manufacturers of plastic and chemicals are mostly located in the city of Nablus, followed by the city of Jenin. The geographical distribution of these manufacturers appears in the following table.

Table 2. 27. Number of plastic and chemical industries operating in the North West Bank

Region	Nablus	Jenin	Tulkarem	Salfit	Qalqilia	Tubas
Industries	60	47	13	1	14	2

Source: Pic -Nf, 2008, The Agricultural Sector Review in the Northern Governorates, www.pcbs.gov.ps

2.7.6. Wooden furniture industry

The wooden furniture industry is predominantly concentrated in the Nablus area, followed second by the Jenin area. The factories in the north are the main supplier of furniture to West Bank market . What distinguishes this industry is its domestic competitiveness in terms of price and availability of goods.

The closure of Gaza, as a result of the latest uprising, led to the concentration of this industry in the north. Despite the accumulated experience in the industry, it is still lacking in design and quality. Other complementary industries include; the mattress industry and painted and upholstery furniture. The furniture and wood industry produces a diverse range of products; i.e. doors, windows, decorative wood panels, wooden boxes (used in agriculture and industry), etc.

The following table indicates the distribution of furniture and wood industries in the northern West Bank.

Table 2. 28. Number of furniture and wood industries operating in the North West Bank

Region	Nablus	Jenin	Tulkarem	Salfit	Qalqilia	Tubas
Industries	34	193	19	0	5	7

Source: Pic -Nf, 2008, The Agricultural Sector Review in the Northern Governorates, www.pcbs.gov.ps

2.7.7. The SAM application on West Bank economy

A Macro Sam has been built also for West Bank region, with the same framework of Occupied Palestinian Territory matrix, to identify local socio-economic specializations.

Table 2. 29. Social Accounting Matrix (2007) for West Bank (thousands of US $)

		1	2	3	4	5	6	7	8	9	
	(output) **ACCOUNTS** (input)	**Activities**	**Commodities**	**Factors**	**Households**	**Companies**	**Government**	**Taxes**	**Capital & Investments**	**Rest of the World**	**TOTAL**
1	**Activities**	4.458.744	5.205.966						904.600		**10.569.310**
2	**Commodities**				3.539.901	119.700	852.365			694.000	**5.205.966**
3	**Factors**	2.956.892								451.600	**3.408.492**
4	**Households**			1.348.203	178.222	746.503	156.160		84.670	1.637.643	**4.151.401**
5	**Companies**			1.148.954			297.200			108.268	**1.554.423**
6	**Government**							905.959	38.851	360.916	**1.305.726**
7	**Taxes**	734.651		439.824	117.163	418.866					**1.710.505**
8	**Savings & depreciation**			247.130	316.115	269.354				195.521	**1.028.121**
9	**Rest of the World**	2.419.023		224.380				804.546			**3.447.948**
	TOTAL	**10.569.310**	**5.205.966**	**3.408.492**	**4.151.401**	**1.554.423**	**1.305.726**	**1.710.505**	**1.028.121**	**3.447.948**	

West Bank gross domestic product amount to 2.96 billions dollars, corresponding to 60% of total Palestinian production. Although, West Bank economy is major based on industrial sectors. Occupied persons in manufacturing amount to 8.7%, and depreciation of capital goods amount to 247 millions dollars, 84% of total Palestinian territory value. Government role is less important in West Bank, both from entries and from expenditures. Public consumption in West Bank amount to 852 millions dollars, par to 47% of total Palestinian value, while social security costs represent a share of 57% of total Palestinian value. Foreign dependence is reduced to 53%, of which only 40% from international grants.

Households budget shows private consumption with a share of 68% of total Palestinian value, while direct taxes amount to 117 millions dollars, only 33% of total Palestinian value.

West Bank economy shows performance higher than total Occuped Palestinian Territory also on exports, with a share of 93% of total Palestinian value, on value of wages and salaries from Israeli and other settlements, with a share of 82% and on value of foreign remittances to private households (share of 78%). That permits lower level of public foreign dependence. Flows with the rest of the world on capital and private companies is proportional to medium share on respective gross domestic product.

Next table shows shares of West Bank economy flows with respect to the total Occupied Palestinian Territory. We report in black the shares higher to the respective gross domestic product share level, in red the values lower.

Table 2. 30. 2007 Macro Social Accounting Matrix for West Bank: shares on total OPT

(output) ACCOUNTS (input)	Activities	Commodities	Factors	Households	Companies	Government	Taxes	Capital & Investments	Rest of the World
Activities	61%	65%						**78%**	
Commodities				68%	50%	**47%**			**93%**
Factors	60%								**82%**
Households			67%	52%	57%	**31%**		**93%**	**78%**
Companies			56%			59%			59%
Government							55%	**13%**	**40%**
Taxes	**79%**		63%	**33%**	58%				
Savings & depreciation			**84%**	68%	58%				59%
Rest of the World	**73%**		56%				**75%**		

2.8. The Jenin governorate local economy

On the governorates level, its worth mentioning the need to focus on Jenin governorate as its one of the crucial governorates in the northern parts of West bank.

The following table shows the Macro Social Accounting Matrix for Jenin for 2007, in current thousands of US dollars.

Table 2. 31. Social Accounting Matrix (2007) for Jenin Governorate (thousands of US $)

	(output) ACCOUNTS (input)	1 Activities	2 Commodities	3 Factors	4 Households	5 Companies	6 Government	7 Taxes	8 Capital & Investments	9 Rest of the World	TOTAL
1	Activities	656.242	618.558						66.407		1.341.207
2	Commodities				435.724	14.261	95.649			72.924	618.558
3	Factors	366.862								36.749	403.611
4	Households			145.535	21.552	83.867	18.885		10.239	204.241	484.319
5	Companies			151.769			34.261				186.031
6	Government							101.018	4.131	43.646	148.795
7	Taxes	79.559		51.090	12.334	55.329					198.312
8	Savings & depreciation			25.578	14.708	32.573				7.918	80.777
9	Rest of the World	238.545		29.639				97.294			365.478
	TOTAL	1.341.207	618.558	403.611	484.319	186.031	148.795	198.312	80.777	365.478	

Industrial intermediate inputs amount to 190.6 millions dollars, while total Jenin Governorate activities intermediate consumption amount to 656,2 millions dollars. Industrial share is higher than total Occupied Palestinian Territory (30% vs. 15%) and also than West Bank value (27%). Is not the same for industrial value added. Jenin Governorate share on total value added amount to 26%, lower both than West Bank (34%) and total Occupied Palestinian Territory (31%). The results of analysis on Industry Survey data suggest that it depends from establishment size. Micro enterprises are a peculiarity of Jenin Governorate, where is difficult to observer establishment more of 50 employee persons.

Table 2. 32. Gross domestic product (2007) structure by sector of activity (thousands of US $)

	OPT	WB	JENIN	Share of GDP (%)		
Agricolture	**433.793**	**302.087**	**61.598**	***7,4%***	***8,2%***	***13,8%***
Plant production	286.566	176.139	40.478	*4,9%*	*4,8%*	*9,1%*
Livestock	147.227	125.948	21.120	*2,5%*	*3,4%*	*4,7%*
Industry	**2.183.647**	**1.437.594**	**127.669**	***37,4%***	***38,9%***	***28,6%***
Mining & Quarrying	83.266	83.266	6.222	*1,4%*	*2,3%*	*1,4%*
Manufacturing	1.660.162	1.145.387	107.167	*28,4%*	*31,0%*	*24,0%*
Electricity and Water	72.892	22.862	2.457	*1,2%*	*0,6%*	*0,6%*
Construction	367.328	186.080	11.823	*6,3%*	*5,0%*	*2,6%*
Services	**3.226.260**	**1.951.862**	**257.154**	***55,2%***	***52,9%***	***57,6%***
Wholesale and retail trade, restaurants and hotels	586.889	336.984	74.723	*10,0%*	*9,1%*	*16,7%*
Transport, storage, communication	522.780	354.518	42.191	*8,9%*	*9,6%*	*9,5%*
Finance, insurance, real estate and business activities	472.476	282.572	18.350	*8,1%*	*7,7%*	*4,1%*
Government services	1.576.692	938.573	118.124	*27,0%*	*25,4%*	*26,5%*
Community and other services	67.423	39.215	3.765	*1,2%*	*1,1%*	*0,8%*
GDP at market prices	**5.843.701**	**3.691.543**	**446.420**	***100,0%***	***100,0%***	***100,0%***
Indirect taxes	932.052	734.651	79.559	*15,9%*	*19,9%*	*17,8%*
GDP at factor cost	**4.911.649**	**2.956.892**	**366.862**	***84,1%***	***80,1%***	***82,2%***

Source: author's elaboration on SAM

Jenin Governorate gross domestic product is shown in *table 2.32.*. We can see the absolute values of Jenin compared with the values of total Occupied Palestinian Territory and West Bank economies. Jenin economy shows a larger specialization in agricultural sectors, both plant production sectors (with a share of 9.1% vs. 4.9% for total Occupied Palestinian Territory and vs. 4.8% for West Bank) and livestock sectors (4.7% vs. 2.5% and 3.4% respectively). For the industrial sectors, data show analytically the Jenin economy gap on gross domestic product level for Mining and Quarrying, Manufactoring sectors, electricity and water, constructions. Major gap is shown by constructions sectors, with a share of 2.6% on total local gross domestic product, vs. a share of 6.3% for total Occupied Palestinian Territory and a share of 5% for West Bank. In services the major difference is shown by trade sectors, with a share of 16.7% on total gross domestic product, vs. a share of 10% for total Occupied Palestinian Territory and a share of 9.1% for West Bank. Indirect taxes level, with a share of 17.8% on total gross domestic product, is larger than the share referred to total Occupied Palestinian Territory (15.9%) but lower than West Bank share (19.9%).

Table 2. 33. Gross domestic product (2007) by demand (thousands of US $)

	OPT	WB	JENIN	Share of GDP (%)		
Consumption expenditure	**7.257.800**	**4.511.966**	**545.635**	***124,2%***	***122,2%***	***122,2%***
Households Quintile I	385.735	241.462	28.129	*6,6%*	*6,5%*	*6,3%*
Households Quintile II	644.114	446.132	53.649	*11,0%*	*12,1%*	*12,0%*
Households Quintile III	865.410	595.737	73.280	*14,8%*	*16,1%*	*16,4%*
Households Quintile IV	1.205.156	850.596	104.774	*20,6%*	*23,0%*	*23,5%*
Households Quintile V	2.092.520	1.405.974	175.891	*35,8%*	*38,1%*	*39,4%*
Non profit companies	238.100	119.700	14.261	*4,1%*	*3,2%*	*3,2%*
Government	1.826.765	852.365	95.649	*31,3%*	*23,1%*	*21,4%*
Gross capital formation	**1.159.100**	**904.600**	**66.407**	***19,8%***	***24,5%***	***14,9%***
Agricolture	48.015	47.954	7.668	*0,8%*	*1,3%*	*1,7%*
Metal products	662	750	73	*0,0%*	*0,0%*	*0,0%*
Others manifacturing	492.712	467.691	32.693	*8,4%*	*12,7%*	*7,3%*
Electricity, gas, water supply	11	5	0	*0,0%*	*0,0%*	*0,0%*
Constructions	617.700	388.200	25.971	*10,6%*	*10,5%*	*5,8%*
Foreign balance	**-2.573.200**	**-1.725.023**	**-165.621**	***-44,0%***	***-46,7%***	***-37,1%***
Export of goods	661.047	617.681	65.836	*11,3%*	*16,7%*	*14,7%*
Export of services	87.053	76.319	7.088	*1,5%*	*2,1%*	*1,6%*
Import of goods	3.039.598	2.292.897	225.760	*52,0%*	*62,1%*	*50,6%*
Import of services	281.702	126.126	12.785	*4,8%*	*3,4%*	*2,9%*
GDP at market prices	***5.843.701***	***3.691.543***	***446.420***	***100,0%***	***100,0%***	***100,0%***

Source: author's elaboration on SAM

Table 2.33. shows gross domestic product structure from demand side. Consumptions are classified into five household classes, by quintiles of equivalent income, and also with non profit companies and government consumption. The Jenin and the Occupied Palestinian economies show levels of consumption expenditure larger than gross domestic product level, with share respectively of 122.2% and 124.2%. Government consumption in Jenin Governorate is lower than total Occupied Palestinian Territory, with share respectively of 21.4% and 31.3%.

About the gross capital formation the major gap of Jenin Governorate is represented by construction sector. Buildings investments in Jenin Governonate amount to 25.9 millions dollars, with a share of 5.8% on gross domestic product. For a comparison, share level is the 10.6% on the total Occupied Palestinian Territory and the 10.5% on West Bank. Others manufacturing investments in Jenin Governorate amount to 32.7 millions dollars, with a share of 7.3% on gross domestic product.

Gross domestic product structure is completed by data on foreign balance. Import levels in Jenin Governorate is lower than the total West Bank region, with a share of 50.6% and 62.1% respectively. Jenin Governorate foreign inbalance is consequently lower, with a share of 37.1% on gross domestic products, about -10% respect to the total West Bank region.

Table 2. 34. Some accountability enterprise values for Occupied Palestinian Territory, West Bank and Jenin Governorate (2007, data in thousands of US $)

	TURNOVER			Materials and purchased merchandise			Services			VALUE ADDED		
	OPT	WB	JENIN	OPT	WB	JENIN	OPT	WB	JENIN	OPT	WB	JENIN
Mining, quarrying	8.901,8	8.891,4	315,5	4.660,3	4.658,6	97,7	994,2	992,6	45,4	3.247,3	3.240,2	172,4
Food & beverages	69.271,1	51.060,3	3.261,4	36.427,9	26.799,3	1.435,5	5.296,9	3.888,4	234,0	27.546,3	20.372,6	1.592,0
Textile & clothing	55.208,4	48.166,8	2.900,7	13.312,3	11.398,9	809,3	2.445,3	1.994,2	153,4	39.450,8	34.773,7	1.938,0
Leather products	8.353,1	7.803,8	22,5	1.532,5	1.454,8	2,8	420,9	395,7	0,8	6.399,7	5.953,3	18,8
Chemical & cosmetics	7.898,5	6.912,3	289,1	3.937,2	3.415,8	150,7	699,7	578,2	38,1	3.261,6	2.918,3	100,3
Plastic & rubber	9.725,8	6.185,6	141,9	4.592,0	2.825,2	74,7	873,4	564,3	21,8	4.260,5	2.796,1	45,4
Building materials	106.694,0	94.896,8	4.076,7	40.635,0	35.812,1	1.614,8	5.800,2	5.008,6	311,8	60.258,8	54.076,1	2.150,1
Metal products	13.354,5	10.335,3	1.002,8	7.472,0	5.787,1	551,2	1.393,2	1.081,3	106,7	4.489,4	3.466,8	344,9
Others manifacturing	37.621,9	28.260,9	1.039,3	17.488,3	13.090,8	450,6	2.751,9	2.020,1	100,0	17.381,7	13.150,0	488,7
Electricity, gas, water	67.760,0	21.455,9	424,0	14.164,9	5.556,1	287,5	4.608,0	1.417,6	36,2	48.987,2	14.482,3	100,3

Source: author's elaboration on SAM

Table 2.34. shows analytically industry accounts for Jenin Governorate, West Bank region and total Occupied Palestinian Territory. Project area is an industrial district, so it is important to know specific industrial population in Jenin Governorate, both by branch specialization and by enterprise size. Generally, major industrial branch in Jenin Governorate is represented by food and beverage industries, textiles and clothes, building materials and metal products industries. All sectors show a population of micro and small industries, with low levels of value added generated and also low levels on intermediate inputs demand. This is reflected on performance levels show in the table above. If for metal products industries there is a structural problem of Palestinian economy, for the other sectors it depends from a specific Jenin economy gap. Project implementation, and also project performance, depend critically from this considerations.

2.8.1. SAM multipliers analysis

This section analyzes how exogenous shocks are transmitted through local sectors and institutions in relation to their level of integration in the economy. The SAM multipliers based on the 2007 SAM for Jenin are reported in *table 2.35.* and *2.36.*. They reflect the magnitude of the effects produced by a unit change in the exogenous accounts (government, capital and the rest of the economy) targeted to specific sectors or institutions. Table 2.35. reports the multipliers for the agricultural, manufacturing and service sectors. Considering, for example, the first column, the coefficients reported describe the effect of a unit exogenous change in the agriculture sector on agriculture itself (1.107) and on the others sectors reported in the column. The largest effects are registered for the chemical (0.265) and wholesale and retail sectors (0.393). The elements on the diagonal are all greater than one since they incorporate the initial unit injection and, in addition, the feedback effects. Therefore, they represent the overall effect on the sector directly affected by

the shock. The highest effects are reported by the metal sector (1.321), within manufacturing sectors, and by the banking sector (1.625) that registers also the highest impact on the total economy (3.401) preceded by the leather sector (3.816). The difference between the two is reported in the last row and reflects the influence on the remaining sectors.

Other sectors with potentials to generate effects on the local economy are the metal, plastic and rubber and construction sectors. An expansion of this latter sector, in particular, will largely benefit the local textile and clothing, leather and building materials sectors. An exogenous intervention in the metal sector, instead, is likely to produce larger spillover effects on the textile and clothing and chemical sectors.

Table 2.36. reports the SAM multipliers regarding the formation and distribution of income. We distinguish between the two component of value added: labor and capital. Households are classified into 5 categories on the basis of the level of disposal income per adult equivalent. Households obtain their income from wages, independent labor remuneration, capital revenues and transfers from other households and from the government.

The highest income on the demand for labor is produced by the metal sector (0.198) followed by the construction sector (0.142) that has the highest impact on the remuneration of capital (0.648). In general households in the higher categories are more integrated in the economy and therefore are more likely to be affected by interventions in the agricultural, manufacturing and service sectors. However the effects vary notably across sectors.

Table 2. 35. SAM multipliers 2007 by sector (Jenin)

	A1	A2	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
A1	1.107	0.214	0.102	0.175	0.049	0.187	0.030	0.144	0.066	0.102	0.138	0.020	0.138	0.195	0.149	0.067	0.111	0.123	0.161	0.107	0.077	0.128	0.166
A2	0.036	1.050	0.055	0.080	0.028	0.109	0.017	0.083	0.036	0.056	0.091	0.010	0.078	0.114	0.075	0.034	0.061	0.062	0.080	0.055	0.040	0.064	0.083
M1	0.004	0.004	1.113	0.005	0.003	0.009	0.002	0.007	0.070	0.007	0.008	0.001	0.010	0.010	0.004	0.004	0.006	0.007	0.010	0.007	0.005	0.008	0.010
M2	0.053	0.242	0.080	1.187	0.038	0.140	0.025	0.108	0.051	0.080	0.102	0.016	0.106	0.146	0.217	0.054	0.086	0.101	0.132	0.090	0.064	0.109	0.134
M3	0.106	0.105	0.159	0.164	1.100	0.350	0.052	0.265	0.108	0.172	0.240	0.028	0.241	0.364	0.094	0.091	0.181	0.161	0.208	0.144	0.113	0.171	0.214
M4	0.007	0.007	0.011	0.010	0.005	1.025	0.003	0.015	0.007	0.010	0.013	0.002	0.014	0.020	0.007	0.007	0.011	0.013	0.017	0.011	0.008	0.013	0.018
M5	0.265	0.124	0.149	0.192	0.074	0.288	1.060	0.236	0.132	0.213	0.214	0.134	0.210	0.298	0.121	0.146	0.159	0.159	0.203	0.145	0.452	0.188	0.193
M6	0.020	0.008	0.006	0.015	0.003	0.009	0.005	1.060	0.005	0.010	0.012	0.001	0.009	0.009	0.008	0.010	0.007	0.007	0.009	0.006	0.006	0.011	0.009
M7	0.032	0.036	0.051	0.041	0.020	0.067	0.012	0.054	1.139	0.068	0.067	0.012	0.105	0.070	0.037	0.043	0.052	0.071	0.093	0.066	0.043	0.073	0.098
M8	0.019	0.019	0.029	0.026	0.014	0.051	0.008	0.039	0.018	**1.321**	0.044	0.006	0.059	0.053	0.023	0.020	0.032	0.035	0.044	0.032	0.026	0.041	0.045
M9	0.020	0.022	0.031	0.032	0.017	0.065	0.010	0.050	0.022	0.044	1.057	0.007	0.048	0.068	0.020	0.017	0.042	0.041	0.040	0.057	0.021	0.052	0.039
M10	0.047	0.023	0.016	0.032	0.006	0.018	0.006	0.023	0.022	0.043	0.019	1.011	0.016	0.018	0.027	0.009	0.015	0.023	0.021	0.026	0.017	0.033	0.019
M11	0.002	0.005	0.003	0.009	0.002	0.005	0.002	0.005	0.004	0.055	0.008	0.002	1.014	0.005	0.007	0.002	0.004	0.007	0.008	0.049	0.032	0.015	0.005
S1	0.393	0.381	0.586	0.623	0.337	1.358	0.196	1.025	0.405	0.622	0.910	0.097	0.916	1.416	0.332	0.316	0.675	0.547	0.699	0.496	0.393	0.574	0.724
S2	0.006	0.008	0.012	0.008	0.003	0.006	0.002	0.006	0.007	0.013	0.008	0.003	0.008	0.006	1.009	0.009	0.010	0.032	0.027	0.018	0.011	0.023	0.018
S3	0.040	0.040	0.049	0.047	0.014	0.034	0.011	0.032	0.043	0.071	0.040	0.013	0.041	0.032	0.045	1.081	0.047	0.108	0.109	0.077	0.050	0.105	0.111
S4	0.053	0.021	0.025	0.040	0.009	0.026	0.009	0.030	0.023	0.143	0.077	0.009	0.023	0.026	0.037	0.024	1.038	0.080	0.031	0.040	0.035	0.080	0.028
S5	0.009	0.020	0.020	0.076	0.008	0.016	0.005	0.014	0.017	0.022	0.021	0.003	0.015	0.016	0.072	0.013	0.035	**1.625**	0.063	0.017	0.012	0.037	0.024
S6	0.032	0.037	0.054	0.035	0.013	0.034	0.010	0.033	0.027	0.047	0.034	0.013	0.044	0.034	0.041	0.047	0.048	0.163	1.100	0.068	0.044	0.394	0.099
S7	0.005	0.039	0.008	0.007	0.003	0.008	0.002	0.006	0.007	0.015	0.011	0.002	0.008	0.008	0.007	0.007	0.009	0.012	0.014	1.011	0.007	0.013	0.012
S8	0.005	0.006	0.009	0.006	0.002	0.005	0.002	0.004	0.007	0.010	0.009	0.002	0.007	0.005	0.006	0.008	0.008	0.012	0.015	0.011	1.008	0.013	0.016
S9	0.004	0.005	0.011	0.008	0.003	0.005	0.001	0.016	0.008	0.025	0.009	0.001	0.006	0.005	0.005	0.005	0.006	0.010	0.022	0.009	0.007	1.015	0.012
S10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000
Total	2.268	2.415	2.577	2.820	1.749	**3.816**	1.467	3.254	2.224	3.151	3.131	1.394	3.116	2.917	2.344	2.015	2.643	**3.401**	3.105	2.540	2.472	3.161	3.077
Difference	1.160	2.201	2.476	2.645	1.700	**3.629**	1.437	3.110	2.158	3.049	2.993	1.374	2.977	2.723	2.195	1.948	2.533	**3.278**	2.944	2.433	2.395	3.032	2.911

A1	Agricolture	M4	Leather products	M9	Others manifacturing	S3	Transport, storage, communications	S8	Health and social work
A2	Farming animals	M5	Chemical & cosmetics	M10	Electricity, gas, water supply	S4	Real estate, renting, business activities	S9	Other social, personal services
M1	Mining, quarrying	M6	Plastic & rubber	M11	Constructions	S5	Monetary and financial intermediation	S10	Households employed persons
M2	Food & beverages	M7	Building materials	S1	Wholesale and retail trade	S6	PA, defence, social security		
M3	Textile & clothing	M8	Metal products	S2	Hotels and restaurants	S7	Education		

Table 2. 36. SAM multipliers 2007 by factor and institutions (Jenin)

	A1	A2	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Value added																							
LABOR	0.084	0.123	0.133	0.140	0.058	0.115	0.027	0.109	0.123	0.198	0.120	0.059	0.142	0.113	0.233	0.188	0.168	0.701	1.091	0.476	0.276	0.716	1.166
CAPITAL	0.549	0.591	0.897	0.388	0.156	0.397	0.149	0.356	0.323	0.508	0.415	0.194	0.648	0.406	0.437	0.725	0.704	0.522	0.349	0.732	0.495	0.498	0.338
Institutions																							
H1	0.019	0.022	0.030	0.018	0.007	0.017	0.005	0.015	0.015	0.024	0.017	0.008	0.024	0.017	0.024	0.029	0.027	0.054	0.072	0.046	0.028	0.054	0.076
H2	0.030	0.035	0.048	0.029	0.012	0.027	0.009	0.025	0.025	0.040	0.028	0.013	0.039	0.027	0.040	0.047	0.044	0.091	0.123	0.076	0.047	0.091	0.130
H3	0.040	0.048	0.064	0.040	0.016	0.037	0.011	0.034	0.035	0.055	0.039	0.018	0.053	0.037	0.057	0.064	0.060	0.132	0.182	0.108	0.066	0.133	0.193
H4	0.062	0.073	0.101	0.060	0.024	0.056	0.018	0.051	0.052	0.082	0.058	0.028	0.082	0.056	0.083	0.098	0.092	0.184	0.249	0.156	0.097	0.185	0.263
H5	0.095	0.114	0.154	0.096	0.039	0.088	0.027	0.081	0.082	0.130	0.092	0.044	0.127	0.088	0.134	0.153	0.143	0.308	0.424	0.255	0.156	0.310	0.449
Firms	0.367	0.396	0.600	0.260	0.105	0.266	0.099	0.239	0.216	0.340	0.278	0.130	0.434	0.272	0.293	0.485	0.471	0.349	0.234	0.490	0.331	0.333	0.226

A1	Agriculture	M4	Leather products	M9	Others manufacturing	S3	Transport, storage, communications	S8	Health and social work
A2	Farming animals	M5	Chemical & cosmetics	M10	Electricity, gas, water supply	S4	Real estate, renting, business activities	S9	Other social, personal services
M1	Mining, quarrying	M6	Plastic & rubber	M11	Constructions	S5	Monetary and financial intermediation	S10	Households employed persons
M2	Food & beverages	M7	Building materials	S1	Wholesale and retail trade	S6	PA, defence, social security		
M3	Textile & clothing	M8	Metal products	S2	Hotels and restaurants	S7	Education		

2.8.2. Simulations of the socio-economic impact

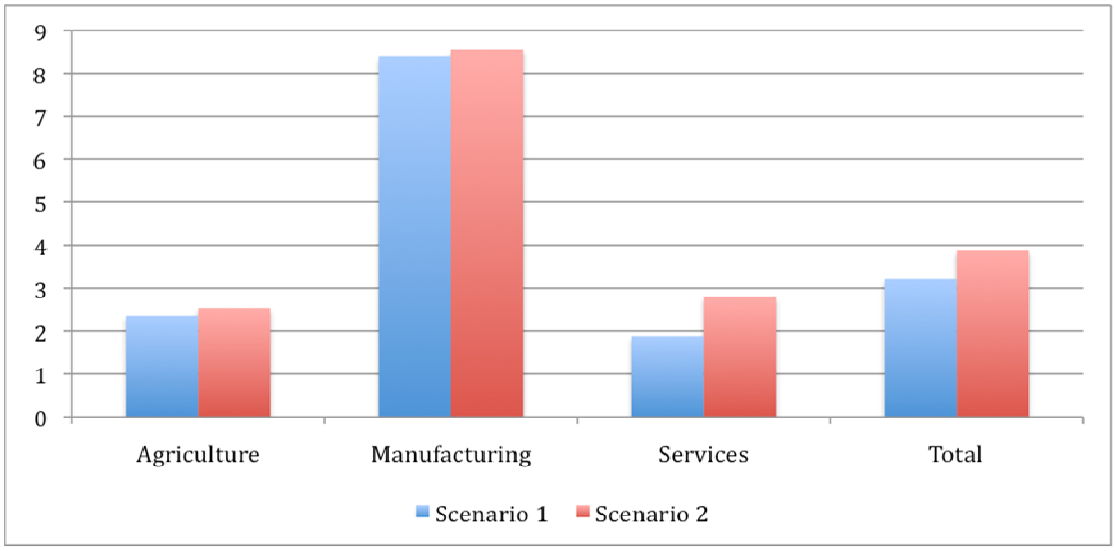
In this section we conduct a series of simulations to evaluate the socio-economic impact of the creation of a logistic and industrial park in Jenin on the local economy. In particular, the analysis focuses on the effects on regional GDP and household income. The industrial area covers the 70% of the area allocated to the logistic and industrial park. The manufacturing sectors that will be most likely involved in the project are the following: textile and clothing, food and beverages, metal products, chemical, plastic and rubber and finally the leather products sector. Also the construction sector will be largely affected by the project. A total of 157 new firms have been estimated to be operative in the industrial area and are distributed as reported in *table 2.37.*. These firms are in general larger than those currently operating in the Jenin territory. Jenin economy is characterized by small enterprises while the project involves medium size firms that are therefore structurally different from the existing ones. This latter issue will be taken into account later when scenario 4 and 5 will be discussed. The expected amount of job opportunities created is reported in column 6. On the basis of this information we estimate the exogenous injection in each sector that is reported as a percentage of current output (2007) in the last column.

Table 2. 37. Current and simulated scenarios

	Jenin economy – current scenario			Industrial park - estimates		Scenario 1
Sector	Total Output by sector	Number of firms	Number of employees (average)	Number of firms	Number of employees (average)	Injection (as % of output)
Metal	219001	314	693(2)	24	720(30)	104
Food and beverages	570043	296	940(3)	31	1240(40	132
Chemical	997569	40	121(3)	16	592(37)	489
Building materials	739924	184	1041(5)	15	435(29)	42
Leather	83087	1	13(13)	3	120(40)	923
Textile and clothing	1033320	182	1356(7)	20	800(40)	59
Plastic and rubber	66639	8	30(3)	4	100(25)	333
Others	680380	225	518(2)	44	880(20)	151
Construction	438778	36	243(6)	8	46(6)	19
Total				165	4833	

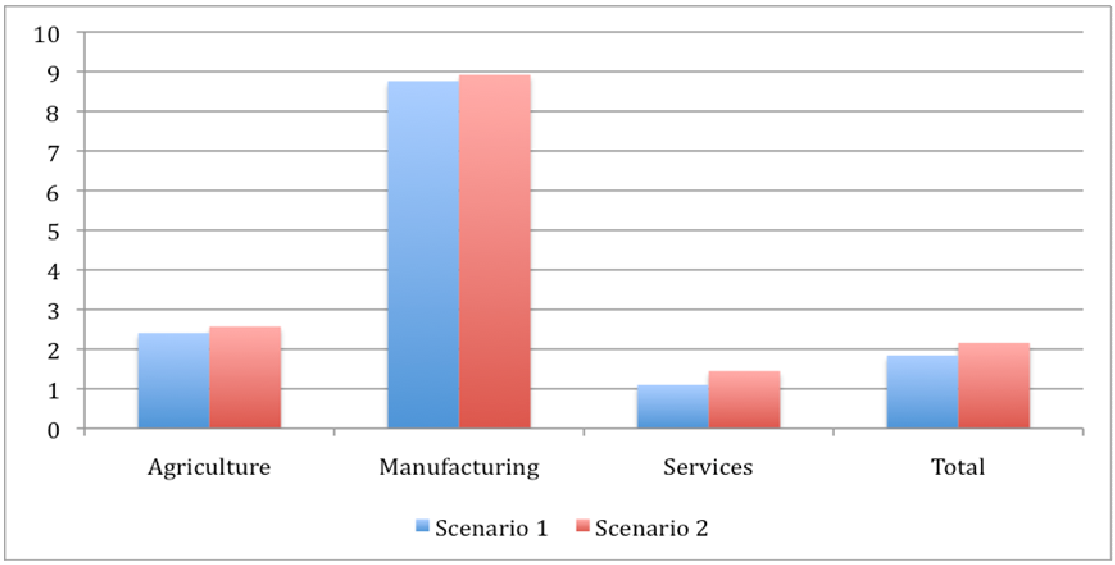
At this stage, the simulation ignores the effects on the local economy of the creation of the logistic section of the park. Moreover, the technology in each sector is considered fixed, this assumes that firms in the new industrial park are adopting current and not better technologies and, at the same time, potential productivity spillovers are also neglected. A second scenario considers the overall impact when also the logistic, administrative, eco-center, checkpoint and water management areas are taken into account. About 518 employees are required mainly in for logistic and administrative tasks. Given the average value of labor productivity in these two areas, we simulate the effects of an injection of 50% and 9% of current output in the transport and public administration and security sectors respectively.

Graphic 2. 4. Percentage expected increase in local GDP



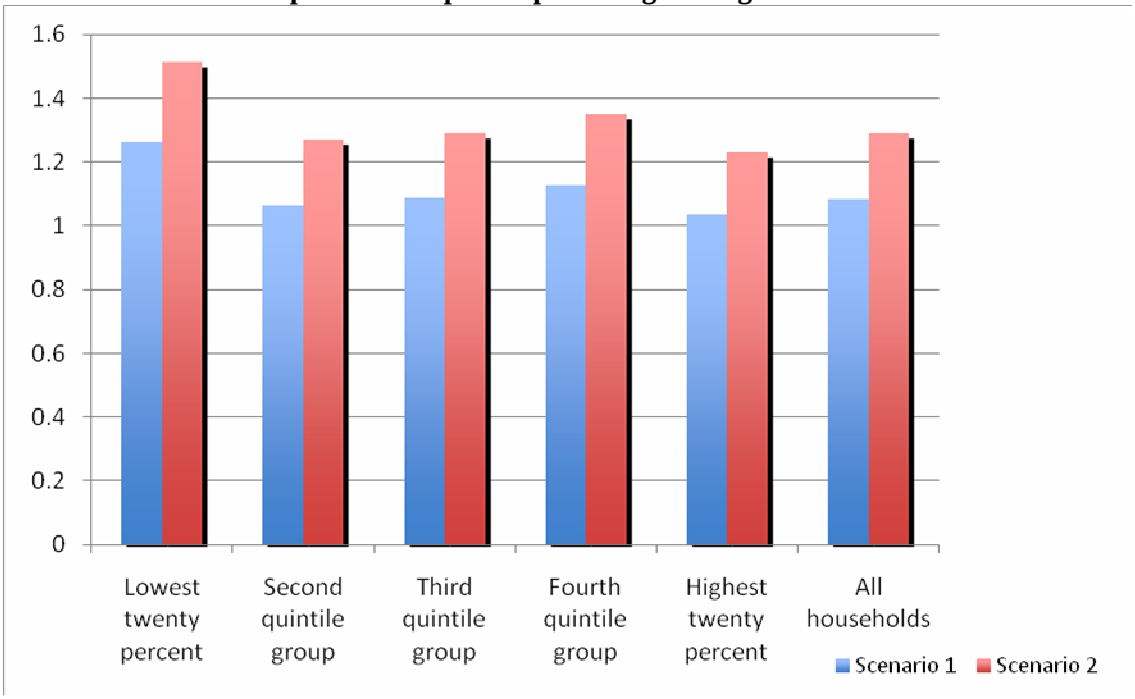
The results reported in *graphic 2.4.* shows that the project will generate an increase in local GDP of about 3.2 % (scenario 1) and of about 4% when the logistic and administrative areas are taken into account (scenario 2). This can be translated into an overall increase of real GDP in the Jenin governatorate of about 14 million US dollars. The benefits largerly affect the manufacturing and construction sectors that show an increase of about 8.5% of value added. There are, however, notable spillover effects on the agricultural and services sectors that register an increase of 2.5 and 2.8 percent. The impact simulated here is expected to be larger once the technology spillovers above mentioned are taken into account. At the moment, however, there is not sufficient information to simulate such effects on the local economy.

Graphic 2. 5. Expected increase in local demand for labor



Graphic 2.5 reports the impact on the demand for labor in the Jenin territory. These effects incorporate the initial indirect increase in the demand for labor due to the creation of new firms and the provision of services within the Industrial and logist area and the increase in the demand for labor in the surrouding economy induced by the indirect and circular effects on other local sectors and institutions. The effects follow the same pattern of previous results since most of the increase in the demand for labor is observed in the manufacturing sectors (about 9%).

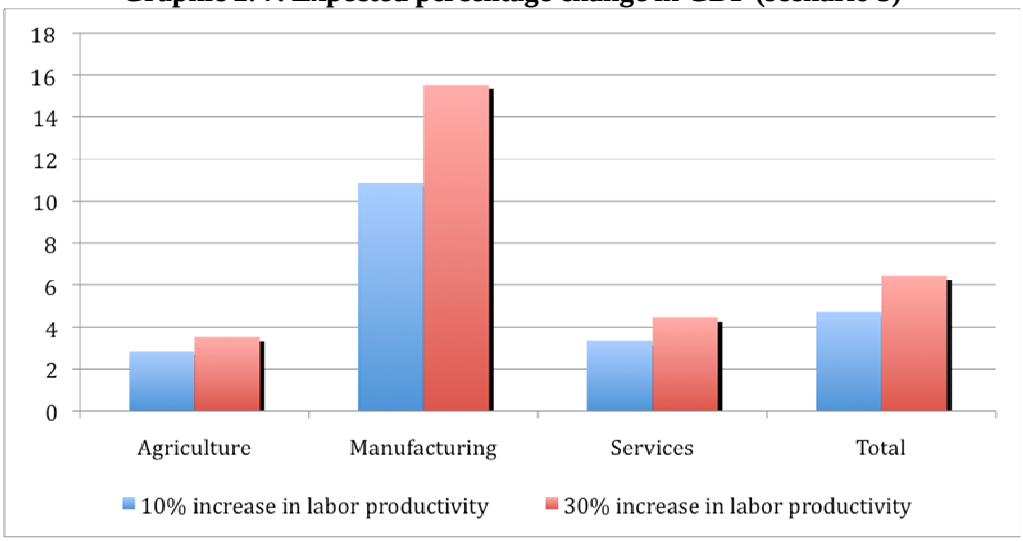
Graphic 2. 6. Expected percentage change in income



Graphic 2.6. reports the effects on the level of income of local households. The industrial and logist area is expected to increase overall income by 1.2 percent. *Graphic 2.6.* also reports the distribuition of the effects across categories. It is worth noting that the project seems to have a redistributive effect and could help reduce inequality since households in the lowest category of income receive gretaer benefits. The impact simulated so far is expected to be larger once the technology spillovers above mentioned are taken into account. In order to provide a baseline for the evaluation of the effects of a technological change induced by the introduction of more advanced production processes within the industrial area we propose a third scenario.

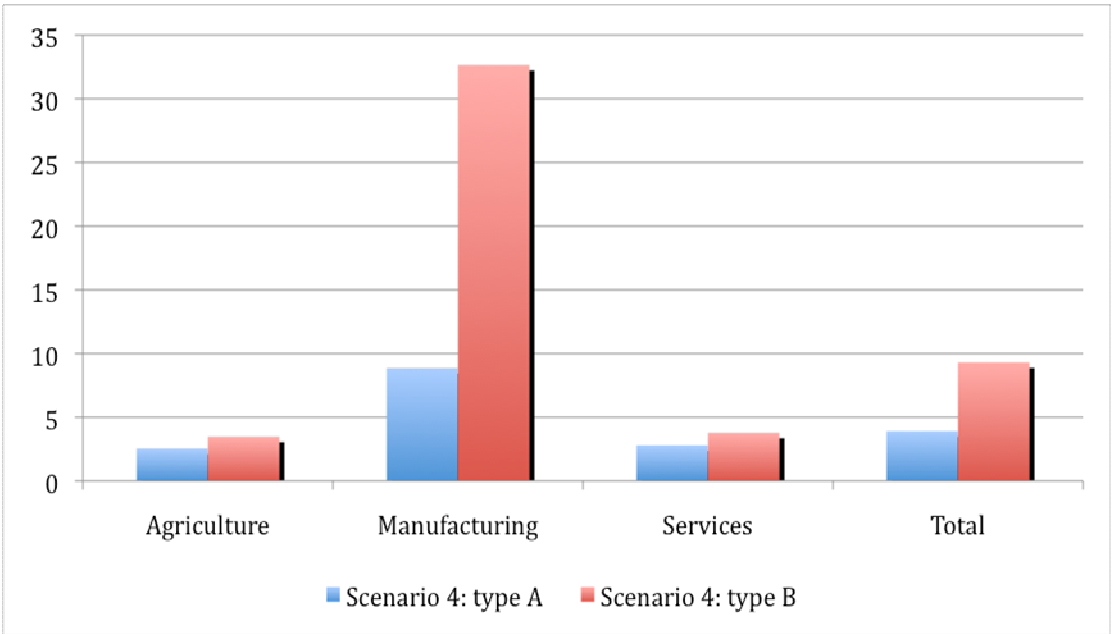
This scenario takes into account the technologies adopted within the industrial park but still neglets the productivity spillovers on the sectors not directly involved in the project. Because, at the moment, we do not have sufficient information to produce an estimate of such technological change we hipothesy an increase of the average labor productivity in the involved sectors between 10 and 20 percent.

Graphic 2. 7. Expected percentage change in GDP (scenario 3)

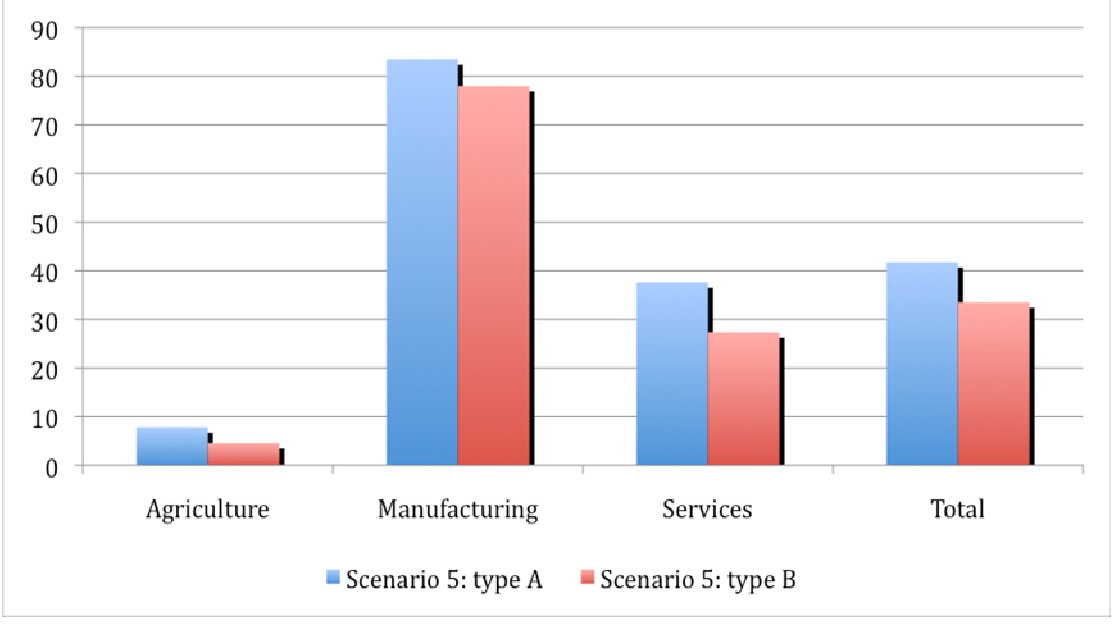


Graphic 2.7. shows the results of the third scenario. When the increase in labor productivity due to the use of more advance technologies is taken into account. Local GDP is expected to increase by 4.5 to 6.3 percent. This represents an increase in the value added generated in the Jenin territory of about 17 - 24 million of US dollars. Finally we analyze a further scenario that provides an estimate of the structural changes induced by the project. Considering that new firms will be operating at different and, in particular, larger scale we have estimated the input and factor requirements for two types of medium firms: 10-20 employees (type A) and 20-50 employees (Type B). Using this estimates we have obtained a new set of sector technical coefficients where the weights are the number of new employees over total employees of the sector. Scenario 4 considers changes in factor requirements for type A and B firms while scenario 5 considers the changes in both inputs and factors. The results are reported in graphic 2.8-9..

Graphic 2. 8. Expected percentage change in GDP (scenario 4)



Graphic 2. 9. Expected percentage change in GDP (scenario 5)



Graphic 2.8. shows that local GDP will increase by about 10% (34 million US dollars) when technical coefficients are adjusted for the presence of new firms with different structural characteristics. These results refer to factor requirements only. When changes in average inputs requirements are also considered the benefits to the local economy are much larger (*graphic 2.9.*). The increase in GDP reaches 41%, (153 million US dollars). Because type B firms are in general more efficient and therefore requires relatively lower amount of inputs, spillover effects to the other sectors not directly involved in the projects are reduced. However the overall benefits are still large and GDP is expected to grow by 33% (123 million US dollars). Because the project involves both type A and B firms the overall impact is expected to be an average of the effects reported above. The impact on household income (not reported) follows the same pattern of the results reported above but is of higher magnitude. Considering this latter scenario the project is expected to increase overall income by about 12%.

2.8.3. Conclusions and further research

The results obtained so far have shown that the Jenin sustainable industrial and logistic area will produce heterogeneous effects on the local sectors and institutions that depend on their level of integration and on the ability to absorb technological spillovers. A higher level of disaggregation, at territorial level and in terms of income formation will allow us to better capture such heterogeneities. We analyze 5 scenarios that consider different spillover effects on the local economy. The results show that significant effects are produced on the local economy benefitting also sectors not directly involved by the project. The project is expected to induce an increase in local GDP that reaches 30-40% ones the technological spillovers are taken into account.
The information gathered in this first analysis will be used for the development of a spatial regional general equilibrium model that will incorporate intra and interregional flows. The model will take into account the presence of barriers to intra and inter-regional flows due to numerous Israeli road blocks, closed areas, restricted roads by employing a mixed complementary framework.

3. Restriction to movements of goods and people: an estimate of the economic costs of closure

3.1. Introduction

For centuries, the Ancient Silk Road opened by the Venetian merchant Marco Polo, connected Europe with Asia through a complex network of trade routes. The explorer left Venice in 1271 and landed in Akko situated at the north of the actual Haifa city, in Israel. The natural re-opening of the Ancient Silk Road passes through the establishment of peace in the Middle East. It is generally believed that the solution to the Israeli-Palestinian conflict would be facilitated by the activation of stable economic and trade relationships between Israel and Palestine through the "Peace Corridor", linking Haifa to Sheickh-Hussein in Jordan crossing the West Bank, along the path signed by Marco Polo's footprints.

This ambitious political objective would open up the Palestinian "cul-de-sac" economy with benefits for both the Israeli and Palestinian party. A reduction of the occupation intensity would have the effect of increasing trade flows between the many enclave economies created within the West Bank by the network of military checkpoints. In peaceful periods, military control is exerted through a network of fixed checkpoints which limit free movements of people and goods by about half of the potential sustainable traffic in the existing road system as reported by The World Bank (2004). It is estimated that Palestinians mobility is restricted from 41 road sections in the West Bank by a system of permanent "fixed" blocks located on the main roads, as reported by the United Nations Office for the Coordination of Humanitarian Aid, UN-OCHA (2009). The restricted roads are major north-south and East-West transport routes reserved mainly to the movement of Israeli settlers. Palestinian drivers and commercial vehicles can apply for special permits to use these roads. In periods of political turmoil, the number of temporary "flying" checkpoints increases and can more than double in a very short period of time.

In situations of "bad" political times, cargo and people movements are reduced to a minimum because of the increased number of road blocks and longer checking times due to more scrupulous controls. The risk of losing perishable loads also increases. The scant movements tend to follow alternative, but more risky routes, of lower quality, in order to get the checkpoints around. This strategic system of traffic blocks gives rise to many local enclave economies, as if they were cities under siege, leading to the economic paralysis of the whole economy. The majority of Palestinian families precipitate with no type of insurance parachute in a disaster situation of hunger and abyssal poverty. This situation generates strong collective resentment and retaliation rage, which both perpetuates a strained relationship, and condemns the Palestinian population to stay on the path of underdevelopment.

3.1.1. Motivation

The past experience of war conflicts around the world demonstrates that, in order to open the way to prosperity and security for the future, it is necessary that economic progress go hand in hand with political progress. For more than ten years now it was proved, and it continues to circulate the idea according to which further malaise for Palestinians will only increase the humanitarian suffering, while for Israel, economic deterioration of Palestinian territories and mobility conditions can only increase security risks. For both sides, the current vicious circle of poverty and unemployment contributing to instability and conflict can possibly be broken with the contribution of the private sectors. The encouragement of industrial and trade activities between Israeli and Palestinians plays an important role in this project. However, the private sector development in Palestinian territories is currently drawn back by a number of barriers. Some of the

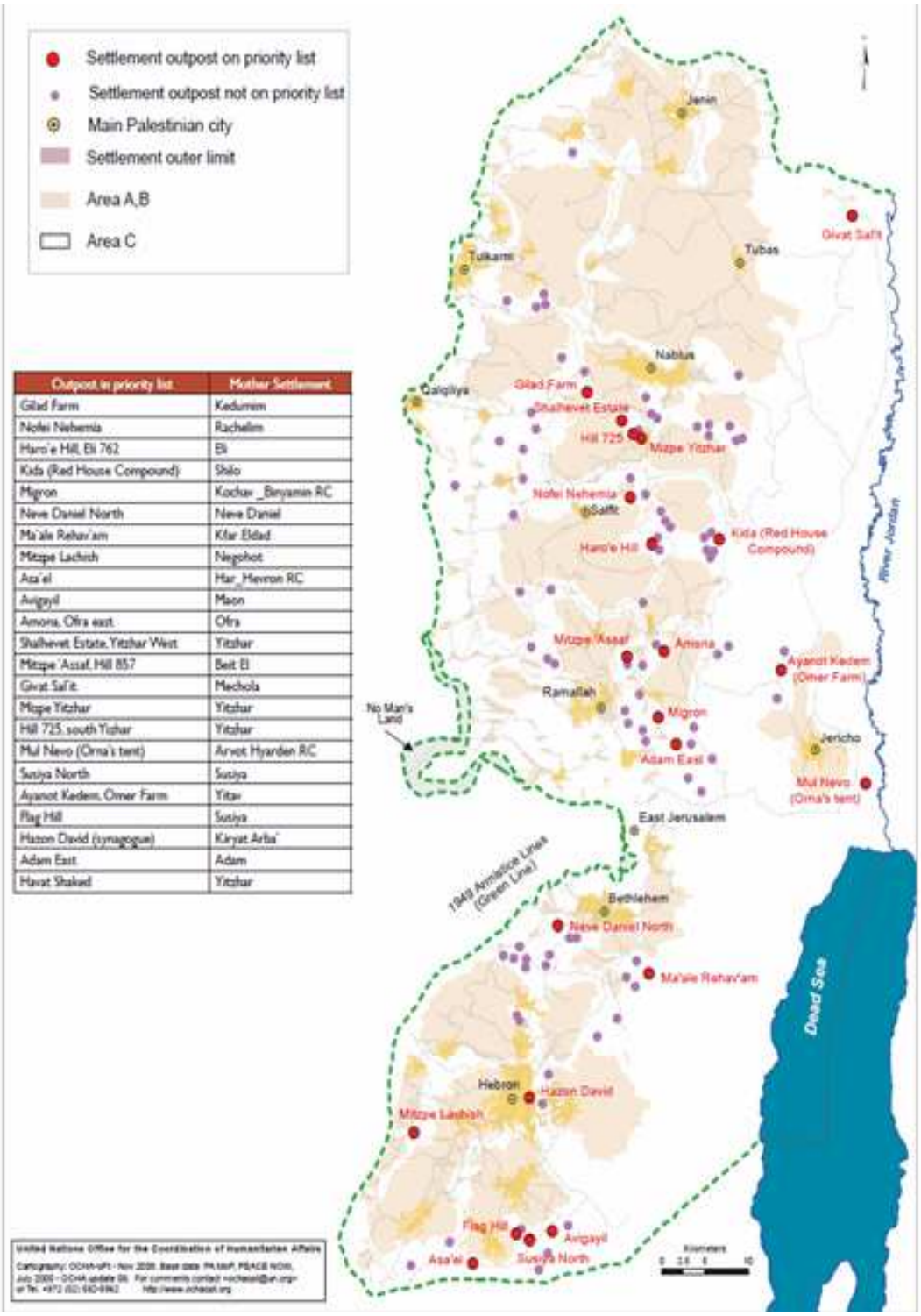
most critical hindrances on the way of economic development are related to dat-to-day mobility of goods and people. The barriers to movement and access between cities throughout the West Bank and on routes linking this area to the rest of the world, including its neighbor, Israel, along with the access to land represent the crux of the Israeli-Palestinian matter, with grievous multi-layered repercussions on the Palestinian economy and society. The obstruction of intra- and inter- regional, of the local production and consumption generated inadeguate procurement service, food (in)security and health and determined (un)employment, educational choice, social segregation, social hierarchy and family structure mutations. The incapacity to plan the achievement of future objectives due to the unstable political relationships, are some of the closure effects that generate future pessimism and fomenting hatefulness. These "eager droppings" into an already "bitter milk" represent steps towards more accentuated poverty of the poor, on a political scene dominated by the fuzzy rules of uncertainty.

But how did the movement restrictions become so widespread and rigid across the West Bank? What role is played by the commercial trade flows for the security issues related to Palestinian roads? What is the amount of checkpoints that might be traded-off to ensure secure transports? Let us summarize some of the events that determined, in our view, the current configuration of the Palestinian transport network. By the mid-1970s, Israel began to settle its own population on land beyond its prewar border. Palestinian land and water sources began to be appropriated, and policies were set in place to capture the Palestinian economy by ensuring its dependence on the Israeli labor market and trade. In 1987, the outbreak of the first Palestinian intifada, ushered in new Israeli security restrictions throughout the early 1990s. In 1991, the "open-door" policy was revoked and personal permits were introduced for Palestinians that wanted to circulate in Israel. In the same year the amount of "closure days" at checkpoints – defined as comprehensive clampdowns on movement in the territories – was registered for 62 days, curtailing Palestinians social and economic life and preventing them from accessing Israel or neighboring countries. In 1993, restrictions tightened further and the Israeli authorities imposed a general closure on the West Bank. For the first time, West Bank residents were required to apply for a permit to enter East Jerusalem, an area not only symbolic from a religious point of view, but also critical for specialized medical care, university education, work, trade, culture, social and family relationships. In 1994, the Oslo peace process granted Palestinians a greater degree of autonomy, and a national government, the Palestinian National Authority (PNA), was created. However, from the mid-1990s, despite an influx of investment and donor assistance, Palestinian economic growth was undermined by continued limits on its sovereignty, the expansion of the settlements, and ever-tightening restrictions on the movement of people and goods. During this period, as checkpoints and other obstacles, administrative and legal, became more numerous, Gaza and the West Bank became increasingly cut-off from each other.

In 1995, the Oslo agreement split the West Bank into three areas, A, B, and C, with different security and administrative arrangements and authorities. A map showing the geographical position of areas A, B and C in the West Bank is presented in figure 3.1. below. The area A which contains all major population centres, and the area B, formed of mostly rural zones, are enclaves under the Palestinian control. They are surrounded by Area C, which covers the entire remaining area, representing 66% of the West Bank. The area C remains under full Israeli control for both security and civilian affairs, including land administration and planning. It is sparsely populated and underutilized. In 2000, following the failure of the second Camp David negotiations, a second Palestinian intifada erupted, and conflict ensued with devastating results. In 2002, in a bid to reign in militant Palestinian groups, Israel launched Operation Defensive Shield, a comprehensive invasion of the West Bank that included incursions into the six of the largest cities with devastating consequences. Palestinians sustained loss of life, injury and massive destruction of their property, including homes, infrastructure, and institutions. Economic losses during this period were significant on both sides: ordinary people were prevented from reaching their jobs and levels of unemployment and poverty rose at unexpected levels. The World Bank estimated that currently, some 35% of the total Palestinian population in

West Bank and Gaza is under the poverty line of 2.1 USD per day. Land is of fundamental importance to economic activity and development.

Figure 3. 1. OCHA map showing areas A, B, C and the outposts of Israeli Settlements in the West Bank and East Jerusalem, Nov.2009



Outpost in priority list	Mother Settlement
Gilad Farm	Kedumim
Nofei Nehemia	Rachelim
Haro'e Hill, Eli 762	Eli
Kida (Red House Compound)	Shilo
Migron	Kochav _Binyamin RC
Neve Daniel North	Neve Daniel
Ma'ale Rehav'am	Kfar Eldad
Mitzpe Lachish	Negohot
Asa'el	Har_Hevron RC
Avigayil	Maon
Amona, Ofra east	Ofra
Shalhevet Estate,Yitzhar West	Yitzhar
Mitzpe 'Assaf, Hill 857	Beit El
Givat Sal'it	Mechola
Mizpe Yitzhar	Yitzhar
Hill 725, south Yizhar	Yitzhar
Mul Nevo (Orna's tent)	Arvot Hyarden RC
Susiya North	Susiya
Ayanot Kedem, Omer Farm	Yitav
Flag Hill	Susiya
Hazon David (synagogue)	Kiryat Arba'
Adam East	Adam
Havat Shaked	Yitzhar

The demarcations of Areas A, B, and C effectively allow Palestinians control over populated areas but not over the vast majority of their natural resources and agricultural lands, which remain under the Israeli control[3]. Consequently, as the population grows and resource and economic development needs increase in all areas, but particularly in areas A and B, Palestinians have nowhere to expand to. The population in areas A and B combined is estimated at 1.8 million, while the population in area C is just under 250,000. Area C dwellers are mainly rural farmers and herders whose social indicators and access to services and infrastructure are already limited. While Israeli administrative and legal arrangements limit their development to the confines of existing villages, which already have limited space for demographic growth, 38% of the area where they live is taken to serve settlements and their infrastructure as well as the security apparatus that constrains the movement of people and goods (World Bank, 2010). The populated land masses from areas A and B are fragmented into enclaves with a regime of restrictions between them. Three distinct areas have been created in the West Bank, in addition to East Jerusalem. Within these areas, further enclaves have been created as well, bordered by checkpoints and roadblocks that isolate one community from another. Today, the Jordan Valley is almost entirely cut off from the rest of the West Bank. Military zones and nature reserves in some cases overlap area C and constitute 28% of the West Bank.

Currently, most of these areas, banned to Palestinians, are found in the Jordan Valley and the eastern slopes of the Bethlehem and Hebron governorates. Few Palestinians have permits to enter Jerusalem. Permit holders are only allowed to enter the city through 4 of 16 existing checkpoints, and only by foot. This has increased time spent queuing for security checks and heightened levels of anxiety for those trying to access jobs, specialist medical care, and places of worship. When a general closure is declared during Jewish holidays or security alerts, all access is denied.

In 2002, following a campaign of Palestinian suicide bombings, Israel began to construct a barrier around the West Bank. The World Bank (2009) estimated that 87% of the barrier, a massive concrete and steel structure, runs inside the West Bank, cutting a swath through fertile lands and surrounding 80 Israeli settlements located between the barrier and the Green Line. In 2006, Hamas won the Palestinian parliamentary elections and Israel, which had removed all its settlements and soldiers from Gaza in the summer of 2005, began a new policy toward the West Bank and Gaza. This included tightening movement and access restrictions and other legal and administrative measures, discontinuing reliance on Palestinian labor, and withholding Palestinian tax revenues. In June 2007, after a near civil war between the Palestinian political movements, Hamas and Fatah, the former one seized full control over Gaza. In response, Israel, supported by the international community, began tightening a closure regime in operation since the mid-1990s into a full economic blockade. In the following section we present the objectives of this study, as a component of the Jenin Industrial Area feasibility plan.

3.1.2. Objectives of the Transportation Study

Since 1967, the Israeli control over the movement of Palestinian people, goods and resources within the boundaries of the Green Line has relaxed and tightened, following in part the ebb and flow of the conflict. Over time, however, the apparatus of control itself has gradually become more sophisticated and effective in its ability to interfere in and affect every aspect of Palestinian life, including job opportunities, work, and earnings. Extensive and complex, the apparatus of control over the road network in Palestinian territories includes a permit system, physical obstacles known as closures, restricted roads, prohibitions on entering large areas of land in the West Bank, and most notably the Separation Barrier. It has turned the West Bank

[3] Circa 87% of the Palestinian natural resources are under Israeli control, as stated by OCHA in 2010.

into a fragmented set of social and economic islands or enclaves, cut off from one another and it has surrounded Gaza with a perimeter fence with heavily controlled crossings.

It became common belief the idea that the solution to the Israeli-Palestinian conflict would be facilitated by the activation of stable economic and trade relationships between the two parties, Israelis and Palestinians, through the "Peace Corridor," linking the port of Haifa to the Sheickh-Hussein bridge to Jordan, and crossing the north of the West Bank through the Jenin area. This ambitious political objective would open up the Palestinian "enclave" economy with benefits for both parties, Israeli and Palestinians. Despite the huge amount of reports written on this argument during the last decade, many clue issues remain still ambiguous or necessitate further investigation in order to explain what the freight flows to and from Jenin area would need in order to become sustainable in the medium-long term. Some of these issues are the enumerated below.

1. What is the *importance of freight and private transportation* on the West Bank economy and in particular, on its northern region, including Jenin?
2. What are the actual and potential *trade corridors* to be used to reach potential markets, once that an industrial area is established at Jenin; what type of obstacles and what are the associated costs imposed by delivery delays? What impact on the economy would have the abatement of these obstacles and how these obstacles change during situations of political turmoil?
3. What *volumes of freight* can be supported by the actual road network and how do they potentially change under different political scenarios? What measures to adopt in order to make sure that the loads are safe and the roads are secured?
4. What *share of "ineffectiveness"* in the service of movement of goods is generated by the existing conflict between Palestinians and Israelis (causing the closure regime), what is the inefficiency share due to local management and obsolete infrastructure, and how does this market react to political climate changes?
5. What is the dimension of *transaction costs* on the final consumption price and how does it affect consumption and production patterns in the enclave economies of West Bank, when the political scenario gets worse? what would be the impact on trade of possible "good deals" in the political panorama?
6. How the *actual situation could be improved*, in terms of road safety and traffic fluidity, say by removing gradually the existing barriers, and finally?
7. What *"peace dividends"* may be derived from the removal of barriers and how could those gains be fairly distributed between Israeli and Palestinian people?

In this report we provide estimates of the costs of the movement and access focusing on the dimension of the impact that the political turmoil has had on both Israeli and Palestinian people. We explore how the movement restrictions on trade affected indirectly production, consumption and food security, and how new tensions in the political events arena have affected movement restrictions and transaction costs in the last ten years (2000-2010). The findings of this study provide answers to the questions 1 to 6 addressed in the previous paragraph, launching ideas on possible solutions to question 7. They are based on an analysis of macroeconomic monthly data covering the years 2000 to 2010 and on microeconomic survey data collected on-field during the months of June and November 2009 and March 2010, aiming to estimate the costs of closure, at the truck level and their impact at the macro level for the West Bank economy. Survey data represent a resource of information about traffic conditions concerning the movement of goods and people in West Bank, in particular, on the routes linking Jenin to Ramallah for the movement of goods, and the roads linking Ramallah to Jerusalem, Bethlehem, Jericho and Hebron, for the movement of people. This study examines the medium-term impacts of restrictions to movement and land access.

The estimation of economic costs of the Palestinian-Israeli conflict caused by the military control of movements of goods and people, both inside and outside the Palestinian boundaries, paves the way to the evaluation of peace dividends stemming from a lower intensity of occupation. Particular emphasis is put on the effect of "good" and "bad" times on drivers' behavior under a risky political situation. The study is organized as follows. In the following section we describe the relationship between political turmoil and movement restrictions in the West Bank describing the quantitative tools we used to differentiate the pattern of restrictions during "good" and "bad" political times. *Section 3* presents the features and the limits of the Palestinian road network. In *section 3.4.* we present the methodology which formally reproduces the features of the Palestinian transportation system both in "good" and "bad" political scenarios. Data are described in *section 3.5*. *Section 3.6.* presents the results of a numerical experiment based on a route choice model calibrated on the survey data collected through on-field interviews and discusses both the economic and social implications of the occupation. The final section presents the conclusions and discusses challenging issues for future research.

3.2. Political Turmoil and Movement Restrictions

After the "Six-Days" war in 1967, the Israeli authorities sought forms of integration with the Palestinian economy by expanding bilateral trade and investment opportunities. Good neighborhood relationships further improved thanks to the 1993 Oslo Accords that granted greater labor mobility and freedom of movements. Greater openness contributed to growing dependence of the Palestinian economy upon the Israeli's demand, and induced Palestinians to become more and more vulnerable to deterioration in the political peace process. The Second Intifada in year 2000 led to the escalation of terrorist attacks against Israel and exacerbated the fragility of the Palestinian economy. To prevent terrorist actions, in 2002 the State of Israel started to construct the 703 kilometres long West Bank barrier consisting of concrete fences up to 8 meters high, located mainly on Israeli-occupied territories in the West Bank and partly along the 1949 Armistice Line, also known as the "Green Line" between Israel and Jordan, defining the West Bank boundaries, to be completed in 2010. The West Bank Barrier, whose construction remains underway, has been having a profound impact on the contiguity of Palestinian communities and traditional market channels in the West. The West Bank Barrier is shown in the Figure 3.2. below. Movement and access for Palestinians is increasingly channelled through "*Fabric of Life*" routes using secondary roads, tunnels and underpasses constructed or paved by the Israeli authorities for Palestinian use. By mid-July 2009, 49 kilometres of such alternative roads had been constructed to restore transportation contiguity between Palestinian localities, disconnected by the West Bank Barrier, and other Israeli Infrastructure. By the same date, 58.3% of the planned West Bank Barrier route had been complete, while 10.2% was under construction. When completed, approximately 15% of the West Bank Barrier will be constructed on the 1949 Armistice "Green Line" between the West Bank and Israel, while the remaining 85% will be inside the West Bank, extending in some areas as far as 22 kilometres onwards. Almost 15% of West Bank agricultural land will be lost once the construction of the Barrier is complete, a situation to contribute further to the population impoverishment in West Bank.

Israeli authorities also introduced more restrictive controls on commodity shipments and the mobility of Palestinian residents, both within Palestinian territories and along the borders. The barriers under military surveillance act as a filtering channel of all travel flows through checkpoints. Figure 3.3. below shows a map with the distribution of fixed checkpoints across the West Bank in 2007. The typology of movement restrictions may take the form of impediments to traveling as "fixed" or "flying" military checkpoints or

other types of road barriers such as earth-mounds, concrete blocks, dirt piles, fences, iron gates, or trenches, in order to block access to main roads and direct Palestinian traffic towards staffed checkpoints. The fixed checkpoints are military control points where a non-removable infrastructure obstructs vehicular and pedestrian traffic and the presence of Israeli security personnel is permanent. Security personnel controls the official papers of individuals or trucks crossing the checkpoint and conduct searches on vehicles and belongings. The number of fixed checkpoints, remains roughly the same on a yearly basis. Flying checkpoints are either operated using non-removable infrastructure but the security personnel is not present on a continuous basis, or they may be operated by military cars. The Israeli Defense Force changes the position of the flying checkpoints and increases the presence, depending on the level of political turmoil and strategic convenience.

Figure 3. 2. ***OCHA map showing the Separation Barrier between Israel and the Occupied Palestinian Territories ("Green Line")***

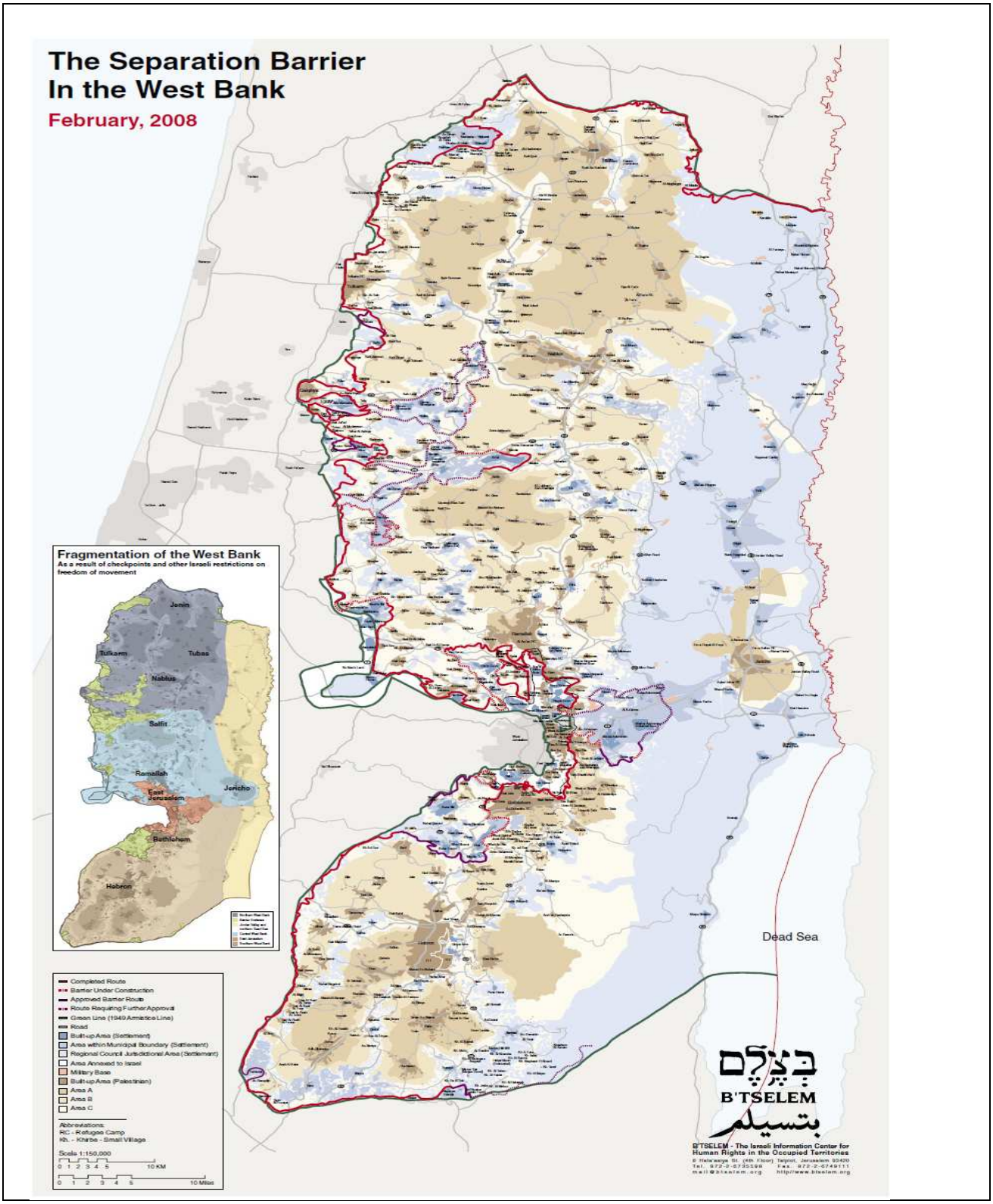
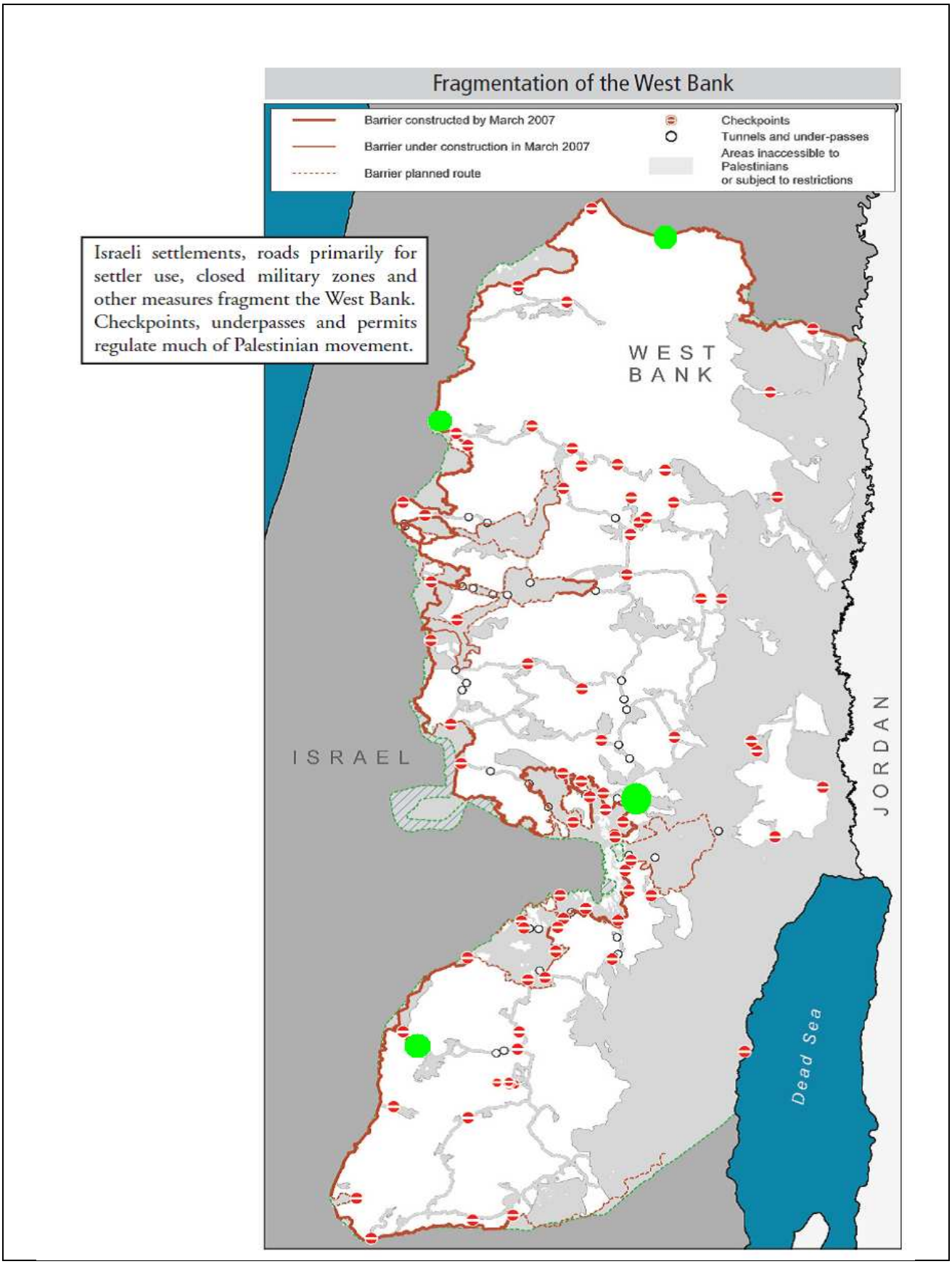


Figure 3. 3. ***OCHA map (2007) with the location of fixed barriers to movement in West Bank. Green circles indicate the location of the main fixed checkpoints for freight passage outside West Bank***



Massive delays and queues lasting hours are routinely reported, both at fixed and flying checkpoints as reported by the United Nations Office for the Coordination of Humanitarian Aid (UN-OCHA, 2008). We collect data on the sequence of political events from the systematic reports of the Palestinian Academic Society for the Study of International Affairs (PASSIA 2009) and the *Middeast* Web Association (*Middeast* 2009), and rank the political relevance of the facts according to the *scale of political relevance*.

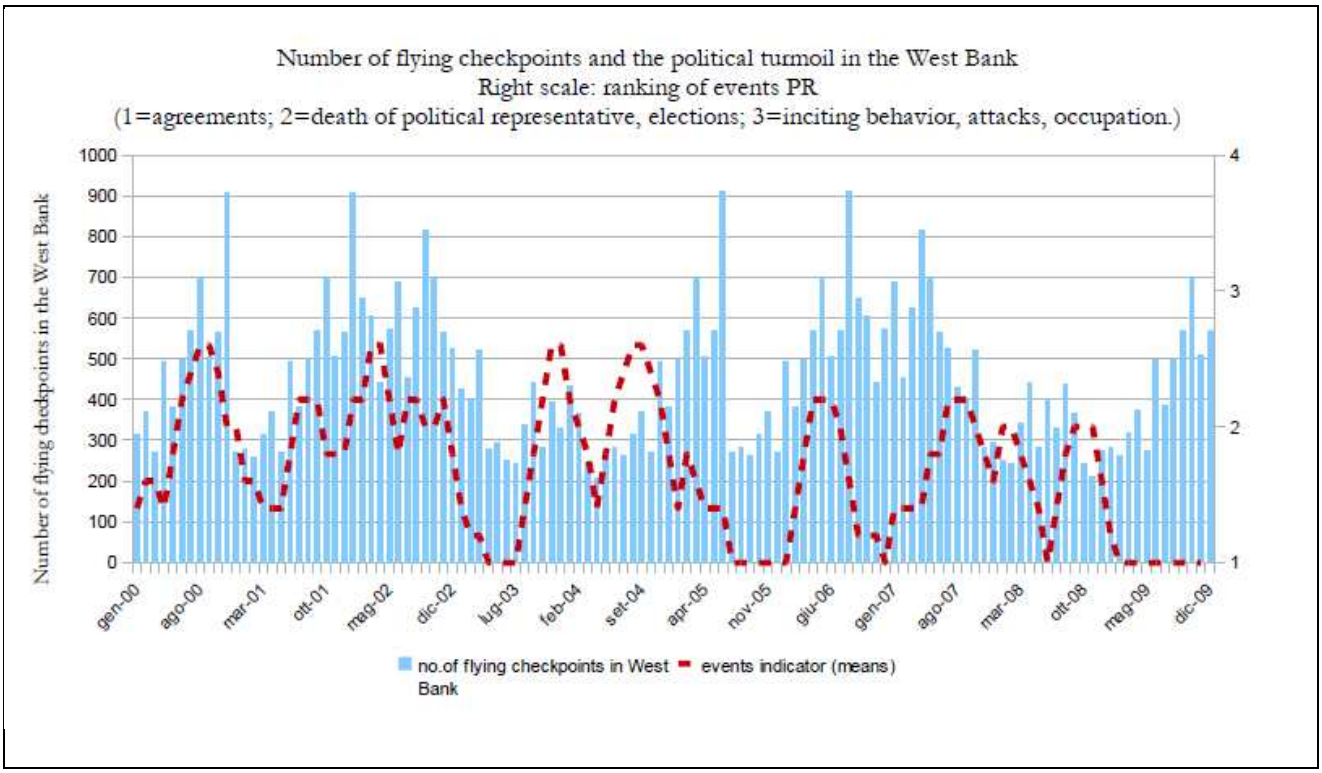
The scale of political relevance **PR** is a ranking from 1 to 3 of three types of events:

1- ”*signature of agreements or lack of success in political talks*”,
2- “*death of political representative or election times*”, and
3- “i*nciting behavior, terrorist attacks, military attacks, or actions of land occupation*”.

The ranking monotonically increases with the number of casualties, which are positively correlated with the degree of political upheaval. The events that do not belong to any of the categories above are judged as politically irrelevant. Then, we analyze the evolution of some continuous variables on the background of the **PR** scale. Some simple examples are presented in the following. Figure 3.4. below shows the evolution of the number of flying checkpoints in the West Bank in relation with the occurrence of political events. The key to this figure presents a series of illustrative events ranked 3 on the **PR** scale. Inspection of the figure reveals that before the start of the Second Intifada during June and July 2000, there was a sharp and sustained increase in the number of flying checkpoints on the Palestinian roads, with a peak of 914 units. The Second Intifada registered the loss of hundreds of human lives and is therefore ranked 3 on the scale. Similarly, before starting the “Defensive Shield” operation in the West Bank in March 2002 - an event also ranked 3 on the scale - the Israeli Defense Force increased the number of flying checkpoints by more than 100 units in a month. When Haifa was bombed in July 2006, the Israeli Defense Force increased the number of controls on the Palestinian roads from 600 to almost 900 in a single month. Interestingly, this practice was not implemented during the Gaza War operation “Cast Lead” in December 2008, when the number of flying checkpoints in the West Bank remained at the level of 300. This was partly due to the fact that the Palestinian Fatah party, popular in the West Bank, maintained good relationships with Israel, while dissociating from the extremist ideas of Hamas leaders in Gaza. On the other hand, the limited impact on the number of flying checkpoints was also dictated by military convenience.

In general, we observe that the occurrence of relevant political events has been positively correlated with the number of flying checkpoints in the West Bank during the last ten years, except for 2008 and 2009, when there is a negative correlation of -0.46 between the number of checkpoints and the **PR** scale.

Figure 3. 4. ***Relationship between the ranking of events PR and the number of flying checkpoints in West Bank (monthly data from 2000 to 2009)***

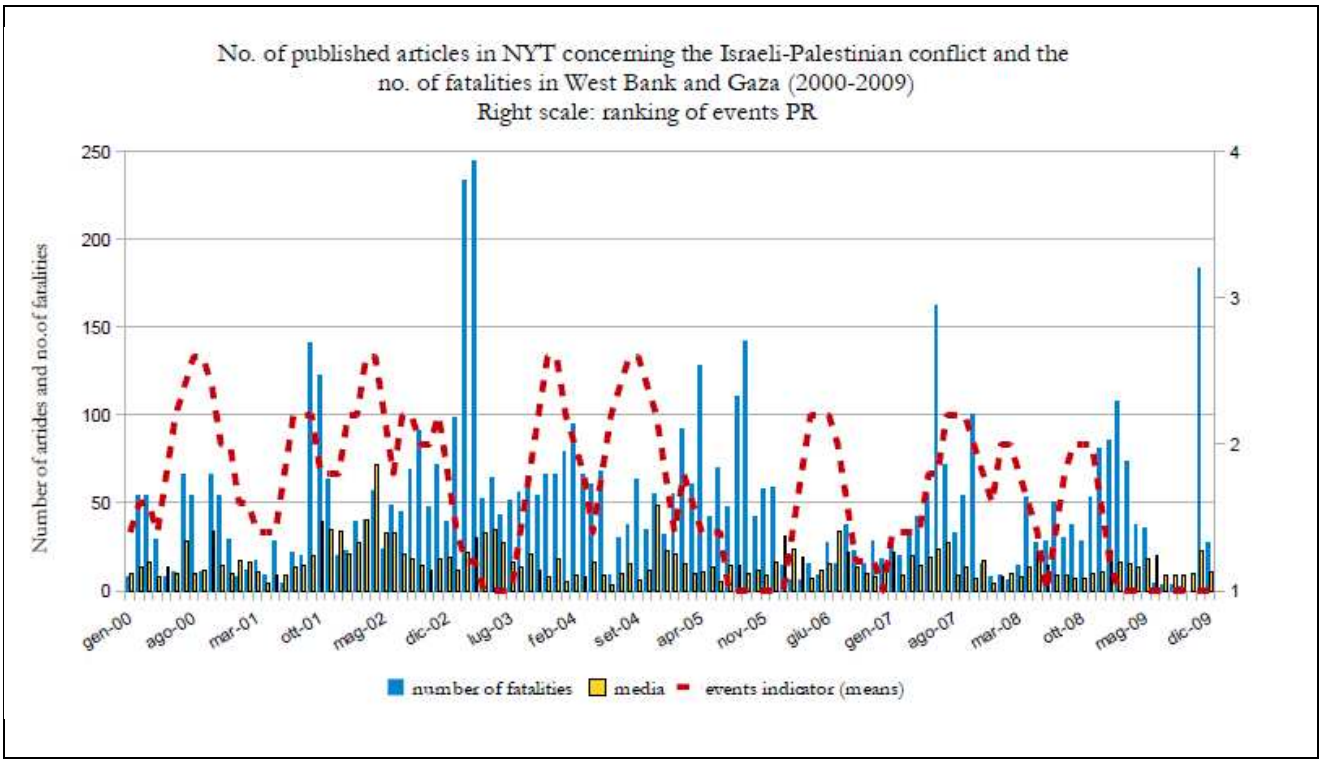


Key to Figure 3.4.:

Sept-2000	*Palestinians start riots after Ariel Sharon's visit to Temple Mount*
Oct-2000	*Second Intifada starts*
Sept-2001	*Terror attacks on U.S. World Trade Center (Al-Qaida);*
Mar-2002	*Israel starts "defensive shield operation" in West Bank*
Apr-2002	*Jenin battle*
May-2002	*Church of Nativity in Bethlehem sieged*
Nov-2004	*PA Presid.Yasser Arafat dies*
June-2005	*Violence flares in Gaza*
July-2006	*Hezbollah attacks on Israel (in Haifa)*
Feb-2008	*Suicide bombers and rockets from Gaza*
Dec-2008	*Gaza War, operation "Cast Lead" started*

Figure 3.5. below shows the relationship between the **PR** scale, the number of Palestinian injuries, and the media coverage.

Figure 3. 5. Relationship between the ranking of events PR, the number of fatalities and media coverage measured as the number of articles published in "New York Times Journal" (monthly data from 2000 to 2009)



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Feb-2008	*Suicide bombers and rockets from Gaza*
Dec-2008	*Gaza War, operation "Cast Lead" started*

During the last ten years, the number of injuries and fatalities in the West Bank has been positively correlated with the ferment of the political situation, as confirmed through numerous reports of UN-OCHA (2000-2009), the Palestinian Trade Association (PALTRADE 2008-2009), and the B'tselem Association (2006-2009). It is worth noting the importance of "religious" events. In proximity of either Hebrew or Arabic religious feasts, the social balance is much more unstable than in other periods of the year and the political tension grows. To capture this effect, we introduce two dummy variables for the months in which there are Israeli and, respectively, Palestinian religious feasts. In "bad" political times, the number of flying checkpoints increases, whereas in "good" times it is more likely to decrease compared to the average, following the inertia of political events.

We summarize the features of this set of relations by supposing that in "good" times, which are traditionally not associated with the periods of political turmoil and religious feasts, the number of flying checkpoints is

relatively lower in each region of the West Bank. Using as co-variates the scale, the religious dummies, and the number of flying checkpoints in each governorate of the West Bank in a latent clustering analysis, we identify, from monthly data collected on the last ten years, those months that represent "bad" times and those representing "good" times, for both Israeli and Palestinians. Tests on the final result show that these two states of the nature exhibit significantly dissimilar characteristics. To identify the good and bad political times, we define an *Index of Political Alert* **PA** as the outcome of the latent cluster analysis conducted on proxy variables describing the political turmoil situation such as the PR scale of events, the number of flying checkpoints in each Palestinian governorate, and indicators of those months in which either Palestinians or Israeli people celebrate religious feasts. The months corresponding to **PA=1** indicate bad times, and months in which **PA=0** represent a more peaceful period as a good time.

As a consequence of the closure regime, with security restrictions on the movement and access of Palestinian goods and people, the economic growth process is significantly affected. Between 2000 and 2002, the economy contracted by 30-35% (de Boer and Missaglia 2006). In 2004 unemployment levels reached 23%, whereas the poverty level rose substantially, with 47% of Palestinians living below the official poverty line of 2.1 USD per day as estimated by The World Bank (2004). Over time, this closure has had several major impacts (Balls and Cunliffe 2007, and World Bank 2003):

- it denied Palestinian producers the access to potential international, Israeli and domestic markets. Restrictions either delayed or prevented the movement of goods, making it both expensive and unsafe to satisfy demand;
- it reduced the mobility of people both within and across Palestinian territories. This contracted the flexibility of the Palestinian labor market, thus increasing unemployment, reducing remittances, and discouraging international investors;
- it contributed to maintain a high level of political tension.

To gain access to world markets, Palestinian enterprises face the challenge of moving within the West Bank itself in spite of high transportation costs limiting the possibility to benefit from the advantages of scale economies. A pernicious effect of the closure regime is the uncertainty it creates. Because shippers cannot accurately predict how long it will take to move goods, it is difficult to commit to delivery times and to enter export markets professionally. Astrup and Dessus, 2001 estimate that, as a result of movement restrictions after the Second Intifada, Palestinian internal trade has declined by 40% and its external overall trade decreased by 60%. The United Nations Special Coordinator (UNSC 2000) estimate a daily loss of about USD 1.9 million in exports.

Transportation Statistics provided by the Palestinian Central Bureau of Statistics (PCBS 2010) show that movement and access blocks affect mostly industries that rely heavily on transportation, such as vegetables, fruits and bakery and other primary goods. It is worth noting that transportation and communication services account for 11% out of the total West Bank GDP. Poverty rates in the West Bank are high due to the de-development effect generated by the trade loss and low exchange volumes among local communities. At the present rate of population growth the Palestinian economy would need to generate over 500 thousand new jobs by 2015 in order to maintain unemployment at pre-Intifada levels and to avoid the risk of a fiscal crisis.

3.3. Road Network, geographical configuration and the control procedures

The occupied Palestinian territory of the West Bank lies on the western edge of the Asian continent and the eastern side of the Mediterranean Sea. It is a relatively small area, covering 5800 square kilometers, and is located between Israel to the West and Jordan to the East. It is divided into three main regions with eight sub-districts, namely the northern region of Jenin, Tulkarem, and Nablus; the central region of Jerusalem, Jericho, Ramallah and Bethlehem; and the southern region of Hebron. Palestinian enterprises' participation in international trade is therefore conducted via the neighboring territories of Egypt, Jordan and Israel. From data on trade flows as well as from on-field interviews with the local institutional and private business representatives, we identified the major trade corridors linking the West Bank with the rest of the world. The characteristics of these connections are presented in the table 3.1. below.

Table 3. 1. Main routes for transport flows linking West Bank to the Rest of the World

West Bank ↔ Shipm. Destination	***Via hub***	***Advantages***	***Disadvantages***	***Overall / solutions***
WB→Europe	Israeli ports: Haifa, Ashdod	less expensive; faster	high standards for security requirements;	convenient
WB→North America	Israel ports: Haifa, Ashdod	less expensive; faster	NA*	convenient
WB→Asia	Aqaba port	less expensive; faster	NA	convenient if it will attract more shipments
WB→All destinations, large air shipm.	Israeli Ben Gurion airport	Multiple destinations available	high costs of ground transportation; high security fees;	NA
WB→All destinations, large air shipm.	Jordanian Queen Alia airport	Lower security costs	Fewer destinations available; difficulty incurred by passing the Allenby Bridge on the way (back-to-back pallets transfer on a non-covered platform,, no containers may be used, no cold storage, crossing takes 4-8 hours, not opened during Israeli holidays);	NA
WB→Arab Gulf	Land borders to Jordan	NA	difficulty incurred by passing the Allenby Bridge on the way (back-to-back pallets transfer on a non-covered platform, no containers may be used, no cold storage crossing takes 4-8 hours, not opened during Israeli holidays);	NA
Arab Gulf→WB	Alenby Bridge	NA	Scanning of goods is mandatory; containers are not allowed, pallets small enough (not scanned pallets are transferred to Ashdod);	Palestinian Importers must use Israeli intermediaries

*Source: UNCTAD and World Bank studies * NA: Information is Not Available*

It worth noting here that the network connecting Palestinian territory with Egypt and Jordan lacks a unified marking system, with most of the roads only marked according to local systems. There are three border crossing points and four re-export points between the Palestinian territory and its immediate neighbors (Egypt and Jordan, other than Israel, which exhibits a particular situation, described below). They are all in

poor shape, lacking storage areas, public utilities and service stations for cargo vehicles, with limited loading capacity and inadequate support facilities.

- *Commercial crossings and re-export points with Egypt.* Rafah is the only Palestinian commercial crossing point with Egypt. It is mainly used for transporting Palestinian imports and exports between Gaza and Egypt. Most imports to the West Bank enter via the Egyptian-Israeli commercial crossing. Re-export points include Cairo airport, Port Said and the Nueba crossing point (sea and overland transport), however, to date Palestinian traders have not used these.

- *Commercial crossings and re-export points with Jordan.* There are two commercial crossings with Jordan, including Karamah bridge, (also referred to as King Hussein Bridge or Allenby) and Damya Bridge (also referred to as Prince Mohammed or Adam Bridge). Importers use the former, while the latter is used for exports from the West Bank and Gaza, especially citrus and fresh products. Palestinian goods destined for transit through Jordan to neighboring countries are usually re-exported through Al-Shouna in the Jordan Valley. Only 10% of total Palestinian merchandise trade flows through these commercial crossings. In 1999, nearly 5% of Palestinian trade went through Karamah crossing, 3.2% through Rafah and around 2% through Damya. The bulk of exports flow through Erez crossing, reflecting the trade sector's heavy concentration with Israel. Any of these crossings, despite their geographical position, do not have the role of "customs"for Palestinians, since taxes, both for incoming and outgoing loads, are collected by Israel and refunded later (usually after long lasting procedures and controls, and provided that no further blocks occur on behalf of the Israeli authorities, as it recently happen with the Value Added Tax refunds).

- *Commercial crossings to Israel.* There are several checkpoints that allow for freight passage between West Bank and Israel (Al Jalama, Bisan, Taybeh, Qalqilya, Beytunia, Tarkumya, as permanent crossing points). From recent interviews with the on-field experts (June 2009), it emerged that that the Qalqilya crossing-point is prohibited for Palestinian loads whereas Tarkumia may be used for incoming loads only.

Previous studies individuated attributes of some of these main re-exporting routes from West Bank. It results that the most effective ways, in operational terms, used for the transport of goods from the West Bank towards Europe pass through Israeli ports, whereas the transport of goods from West Bank towards Arab Countries is done through Jordanian land borders and ports. Their main advantages and disadvantages were pointed out previously, by numerous studies (see UNCTAD 2005, 2006, 2007 and World Bank 2007, 2008) as well as the possible advantages emerging from the removal of road barriers. The main criteria used to assess the advantages and disadvantages of these ports are:

- ground transport and accessory costs,
- number of security standards and security costs,
- number of desserved destinations,
- loss of time in the ports due to checks and queues.

Moreover, remark that Israeli airports and land-ports and Jordan seaports are mostly preferred by Palestinian trade. The former are the unique alternatives available to export and import goods in the West Bank, considering even the flows directed to other Arabic countries, since the only crossing border outside the Israeli territory, Alenby bridge, cannot be used directly by Palestinians, but by their Israeli intermediaries**.**

The road network in West Bank is fairly extended and of rather poor quality. There are no rail-roads, motorways (full control of access roads), or functional airports or seaports in the West Bank areas. There are only two roads in the West Bank that are classified as main roads (state or national roads), namely route 90 and route 60. However, many segments of these main roads ought to be classified as local roads, especially due to the fact that they pass in densely urbanized areas, some of them contain speed breakers and because there are numerous road blocks and checkpoints at the main roads. The West Bank mainland road network which connects the major locations and provides access to main borders has a length of approximately 2 200 km. A list of the most relevant trade corridors linking West Bank locations and Israel is provided in table 3.2. below. Following a zoning procedure at the governatorate level, we identified more than 15 main itineraries as being relevant for the inter-regional trade and transport flows of goods between the West Bank's main cities and its neighboring regions. For example, the main roads numbers 57, 60 and 66 link North to South and East to West the northern regions of West Bank, whereas several secondary roads provide links between smaller locations in the same region (roads number 446, 574, 578, 584, 585 and 588). In the *table 3.1.* we indicate the relevant trade corridors from the West Bank along with the possible routes that link each origin to each destination. As far as restrictions are imposed to Palestinians, truck drivers usually choose their itinerary based on stochastic factors, such as the number of flying checkpoints or based on their estimation about the queuing time at checkpoints in a particular day, rather than considering objective determinants.

The existing road network is in a poor state and provides inadequate services following long years of occupation, lack of maintenance and lack of appropriate investment policies. Unlike the Gaza road network situation, around 40% of the West Bank road network is below acceptable service levels, with the road capacity being unexploited at its limit levels. Large sections of the network pass through densely populated areas. Moreover, problems such as congestion, high accident rate, travel time losses and high vehicle maintenance costs are common to Palestinian traders. Efforts concerning infrastructure improvement are a priority for the local government, but they envisage mostly the rehabilitation of municipal roads and the improvement of accessibility to villages. Infrastructure projects with a wider development focus are limited in number and geographical coverage due to Israel’s control over large sections of the main road network. Public institutions, although present in a high number, are poorly coordinated and this leads to confusion in their responsibilities and lack of efficiency, since the development of the transport sector falls under the responsibility of a number of ministries and public agencies including the Ministries of Public Works, Transport, Planning and International Cooperation and Local Government.

Claiming the protection of Israeli citizens from attacks, Israel introduced restrictive controls on movement (checkpoints) on the Palestinian roads and beyond the boundaries of these territories. Although Israel had exercised movement restrictions on Palestinians and their goods following the Oslo Agreement, closure during the outbreak of the second Intifada was intensified systemically. The restrictions to movement are implemented by preventing commodity shipments and Palestinians resident in the West Bank and Gaza from traveling into or through Israeli controlled areas. In particular, the internal and external restrictions channel the passage of all travel flows through checkpoints. The typology of movement restrictions is diverse, ranging from impediments to traveling, such as fixed and flying (or random) checkpoints, road barriers and blocks, earth-mounds and trenches, to intimidating techniques, such as complete closure for several days of the existing crossing terminals, aiming to discourage traveling by making use of the “uncertainty cudgel”. For the most part, the restricted roads in the West Bank are major North-South and East-West itineraries, reserved only to the movement of the settlers or for few international representatives. Palestinian drivers and vehicles can apply for special permits to pass through the fixed checkpoints on these roads, but “flying” checkpoints are routinely in operation and applied to most Palestinian vehicles. The application and selection procedures to obtain these special permits are cumbersome, ambiguous and often discriminatory. For instance, a Palestinian driver is allowed to require a special permit only if he/she possesses an Israeli

identification card - ID (this, in turn, imposes conditions on the driver's civil status, age and residential location). On the other side, vehicles' special passage permits are materialized through the Israeli license plates (known as “yellow plates”, whereas the Palestinian license plates are known as “green plates”). The Israeli license plates may be obtained if and only if the truck owner (company, enterprise or other type of business) is registered with an Israeli ID. It is a common practice that, throughout the West Bank shipping companies, only those which are owned by Israeli ID-holders are staffed with Israeli license plates. Furthermore, only the simultaneous matching between the driver with Israeli ID and the Israeli license plate may assure the exercise of the right to pass through fixed checkpoints, whereas there is no “special permit” issued in order to bypass the flying checkpoints. This implicitly means that no driver withholding a Palestinian ID is allowed to drive trucks with Israeli license plates. In table 3.6. from appendix we include detailed information reported by the United Nations Office in the West Bank and Gaza (OCHA 2007) and the World Bank (2007) concerning the screening procedures in some of the most frequently used landports, airports and checkpoints.

Table 3. 2. Routes Linking Locations in the West Bank and Israel

Itineraries*	***Routes***	***Number of fixed** checkpoints and the type of road***	***Coeff.of importance for trade (total=100)***
1-2. Jenin-Nablus ↔ Nablus-Jenin	a. through Tubas b. through Huwara c. through secondary roads	a. 1 check-point, safe b. 1 check-point, safe; c. no check-points, risky route.	1
3-4. Jenin-Haifa ↔ Haifa-Jenin;	a. through Beytunia b. through Al Jamallah c. through secondary roads	a. 3 check-points b. 1 check-point (Al Jamallah) restricted for Palestinians, except for food c. no check-points, risky route.	5
5-6. Jenin-Ramallah ↔ Ramallah-Jenin;	a. through Tubas b. through Nablus c. through secondary roads	a. 2 check-points b. 2 check-points c. no check-points, risky.	15
7-8. Jenin-Jericho ↔ Jericho-Jenin	a. through Tubas b. through secondary roads	a. 1 check-point b. no check-points, risky.	2
9-10. Jenin-Allenby ↔ Allenby-Jenin	a. through Za'atara b. through Tubas c. through secondary roads	a. 1 check-point b. 1 check-point c. no check-points, risky.	0.5
11-12. Jenin-Affula ↔ Affula-Jenin	a. through Beytunia b. through Al Jamallah	a. 3 check-points b. 1 check-point c. no secondary roads available	0.5
15-16. Ramallah-Jericho ↔ Jericho-Ramallah	a. through Jericho cp b. through secondary-roads	a. 1 check-point b. no check-points, risky.	4
17-18. Ramallah-Haifa ↔ Haifa Ramallah	a. through Beytunia b. through Tulkarm c. through Al Jamallah	a. 1 check-point b.1 check-point c. 3 check-points, no secondary roads available	5
19-20. Ramallah-Ashdod ↔ Ashod-Ramallah	a. through Tulkarm b. through Beytunia	a. 1 check-point b. 1 check-point c. no secondary roads available	10
21-22. Ramallah-Tel Aviv ↔ Tel-Aviv-Ramallah	a. through Beytunia b. through Tulkarm	a. 1 check-point b. 1 check-point c. no secondary roads available	2

23-24. Ramallah-Haifa ↔ Haifa-Ramallah	a. through Beytunia b. through Tulkarm	a. 1 check-point b.1 check-point c. no secondary roads available	10
25-26. Ramallah-Alenby ↔ Alenby-Ramallah	a. through Jericho cp b. through secondary roads	a. 1 check-point b. no check-points, risky.	15
27-28. Ramallah-Jerusalem ↔ Jerusalem-Ramallah	a. through Beytunia	a. 1 check-point b. no secondary roads available	20
29-30. Ramallah-Aqaba ↔ Aqaba-Ramallah	a. through Beytunia b. through Jericho cp c. through secondary roads	a. 1 check-point b.1 check-point c. no check-points, risky.	10

*Notes: * Itineraries are assigned double numbering in order to allow the same O-D pairs to play different roles, depending on the transport flow direction.*

From the corridors identified in *table 2* above, we selected three main corridors, that comprehensively account for 30% of the total trade flows. These corridors are corridors numbers 3-4 5-6 and 19-20, that is:

- the corridor *Jenin – Ramallah*. The real distance between the two locations is 76 kilometers whereas the distance imposed by the presence of barriers to movement is equal to 110 kilometers. It means that, without the military road blocks on the roads, truck drivers would cover a distance equal to 76 kilometers, whereas, given the current restrictions to movement they must lengthen their journey by 34 kilometers.

- the corridor *Jenin – Haifa*. The real distance between the two locations is 45 kilometers, whereas the distance imposed by the existence of barriers to movement, passing through Ramallah and Beitunya crossing point, amounts to 280 kilometers.

- the corridor *Ramallah – Ashod.*

The first two corridors develop mostly along the main roads 57 and 60 respectively and provide support to more than 30% of the total intra-regional trade of the West Bank, being over-classed only by the West-East corridor going from Ramallah to Allenby through Jericho and by the Ramallah-Hebron corridor in direction South. Since November 2009 transporting goods from Jenin to Haifa was not allowed through the Al Jalama crossing gate on the Green Line at North of Jenin since this gate was used mostly for controlling people crossing on foot only. Al Jalama was opened to trucks in December 2009, on a temporary basis. During "bad" times of political turmoil or during religious feasts, in order to avoid long queues and everlasting waiting at checkpoints, the trucks transporting goods followed alternative secondary roads (off-roads) of a lower quality, such as roads n. 588, 508, 505 and 458 or other rocky ways crossing through the mountains.

The main roads linking Jenin to Ramallah are mainly two: *1)* Jenin → Huwara → Za'atara → Ramallah, and *2)* Jenin → Al Hamra → Ramallah. Road option *1)* runs North to South through two fixed checkpoints, and follows mainly the route 60 (refer to Figure 3.4). The second option is longer, running North to South through the Eastern checkpoint in Al Hamra, on road 57. Recently, this last option has been theoretically canceled (in march 2010), due to ongoing infrastructural interventions on this road. However, there are other options following secondary roads, usually of bad quality or passing over rocky grounds. These off-roads may be chosen by truck drivers, provided the goods transported are not fragile, whenever other options become infeasible. Complete closure of the fixed checkpoints during the Jewish Passover

"*Pessah*" or whenever the politicall turmoil increases are the common practice. For example, the rocket flares in Gaza at the end of 2008 determined stricter closure rules on the West Bank roads too, materialized in longer inspections at the fixed checkpoints and thus, longer queues, and higher number of flying checkpoints on the roads and off-roads linking Palestinian cities. The existing fixed checkpoints on these two main roads are permanently staffed and allow for the passage of both types of trucks, with Palestinian and Israeli license plates, although the first ones are required special permits. No restrictions are imposed on the type of goods transported. Queuing time at these checkpoints and the duration of controls are among the less time-consuming throughout the West Bank, due mainly to the fact that these roads cross mostly areas of type A and B and the number of checkpoints is restricted. Also, curious and contradictory "regional" effects may still be observed, during periods of "alert" such as: *i)* sudden decrease in the number of flying checkpoints in North whenever the conflict takes place mostly in Southern regions, meaning that Israeli military forces are mostly employed at South, and *ii)* no controls in checkpoints are reported by some truck drivers, because, in order to avoid long queues and controls, they start their journey very early in the morning (3-4am), when the checkpoints are not staffed. Delivery schedules are delayed by an uncertain amount of time, ranging from 35 to 120 minutes compared to the "ideal" journey (without any roadblocks), on a typical 100-kilometer distance, such as the distance between Jenin and Ramallah. Under these circumstances, there is no "learning-by-doing" from one journey to another, since traffic conditions change day by day and so, minimizing logistics costs by programming truck flows becomes an impossible mission. Delayed deliveries contribute to increase transaction costs up to inconceivable values (reaching margins of 35% from the final sales price), such that consumption prices of goods on the Palestinian market, absorbing the inefficiencies from the transport chain, are similar or even higher than the prices of similar goods on the Israeli markets.

3.4. Methodology

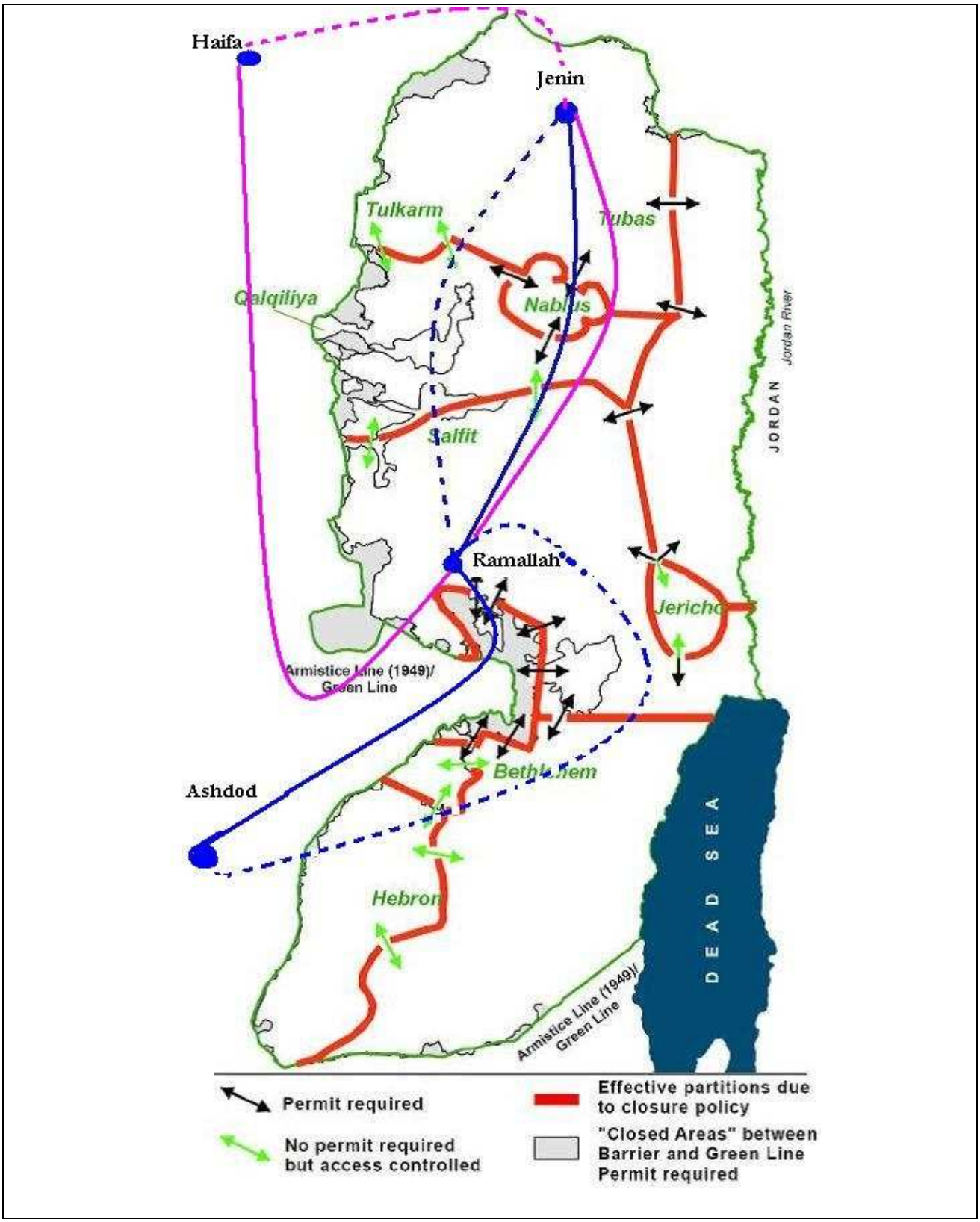
Once we identified the three main trade corridors, we proceed with a theoretical framework to reproduce as closely as possible the features of day-by-day deliveries along these roads. The choice of route depends on a rather subjective evaluation of the drivers over the traffic conditions before departure, and usually this information is only limited to some sections of road and it typically comes from unofficial sources. The problem we study in this section aims at reproducing the best as possible the main features of goods mobility across the governatorates of the occupied territories and borders. The travel costs currently represent 35% of the selling price of goods in the West Bank. This high percentage corresponds to more than three times the estimated average level of 10%, practiced in the other Middle East countries (de Boer and Missaglia, 2006). We calibrate a route-choice model with risk-averse users (the truck drivers) on the three trade corridors: i) Jenin-Ramallah, ii) Ramallah-Ashdod, and iii) Jenin-Haifa. Figure 3.6. below shows a map with the risky and safe routes linking each origin and destination of these itineraries. The safe routes are colored in blue while the risky routes are magenta. The two corridors i) and ii) stream along the main roads 57 and 60 respectively, to collect most of the cargo movement, together with the West-East corridor running from Ramallah to Allenby through Jericho, and with the Ramallah - Hebron corridor in direction South, which are not the object of this study. The total cost of travel are specific to each type of route and to its level of closure. We distinguish between "safe" and "risky" routes as follows. In general, a s*afe route* is a main road passing through fixed checkpoints. Travel time on this route is roughly predictable because the drivers know a priori the location of fixed checkpoints along the route. On the contrary, the *risky route* is a secondary road or an off-road where flying checkpoints can be encountered. Travel times on this route are unpredictable since they vary randomly, in relationship with the number of flying checkpoints and the duration of controls.

The control procedures are complex, starting even before the departure with the coordination procedure, following the queues before each checkpoint and the inspection procedure for trucks and drivers. Truck

drivers directed either to Israel or to other West Bank locations, are supposed to inform in advance, by telephone, the Israeli military authorities located at the fixed checkpoints along their planned itinerary in order to anticipate the passage within a certain time schedule. The approval or denial to pass conditions each departure. This procedure is implemented by the Israeli Defense Force on a sporadic basis and it usually takes between 5 and 30 minutes. Other special control procedures are applied to cargo transports when passing through “Green Line” fixed checkpoints. For instance, back-to-back cargo control is made through the transfer of loose goods from one truck to another, by positioning two trucks against each other. This procedure usually involves labor-intensive handling, time delays and damage to perishable cargo.

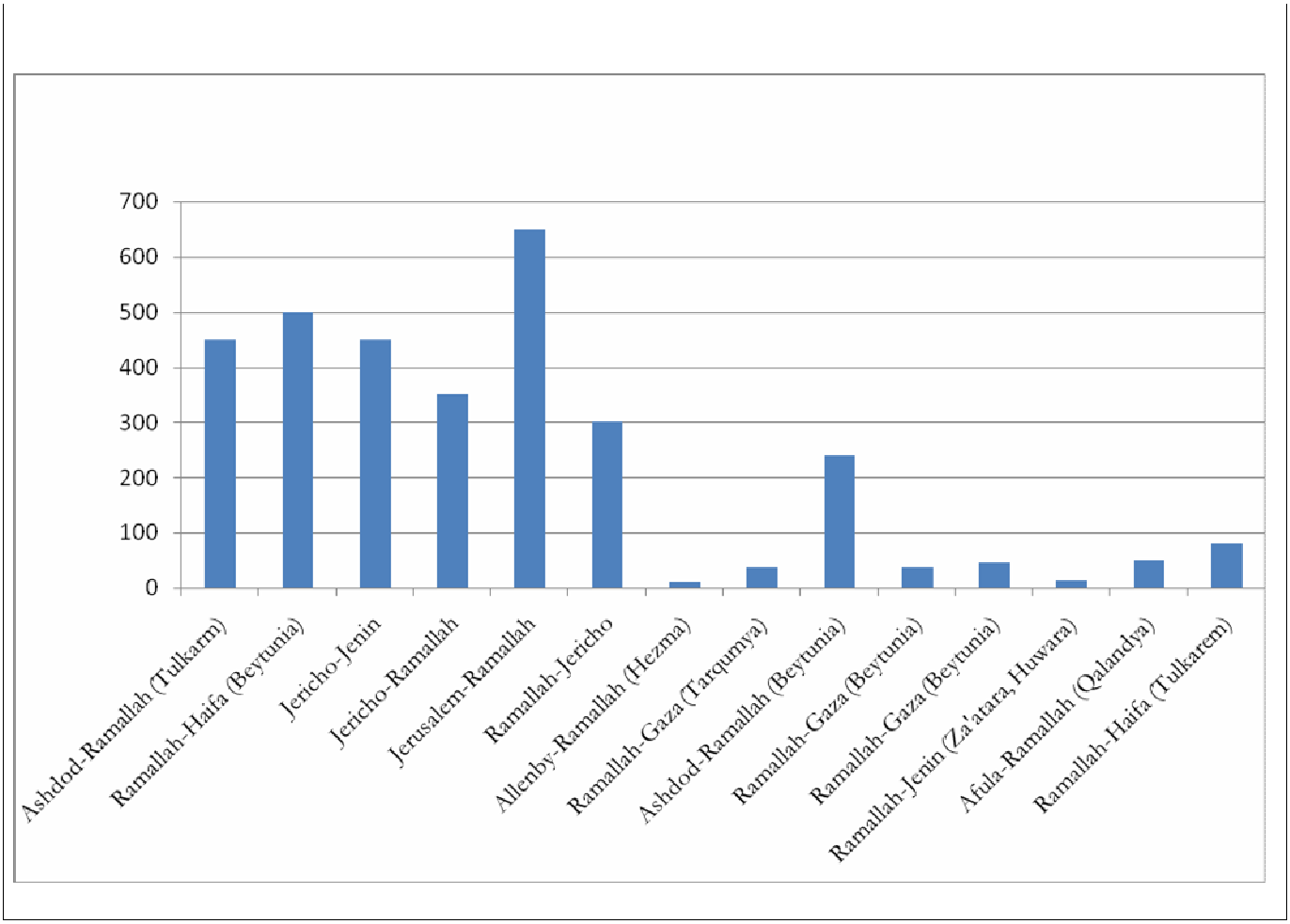
As a consequence, *the total cost of travel* is generalized to include both fixed and variable costs, incurred by a trip along the itinerary . The fixed cost corresponds to the amount paid for moving one unit of good on the distance. This cost is associated with the load type and does not depend on the itinerary. The variable cost is the cost component varying with travel time. Total travel time may be decomposed into sub-components: the duration of the coordination procedure before departure, the total queuing time before the fixed and flying checkpoints, and the total duration of controls within these checkpoints. Total travel time - and implicitly, the generalized travel cost - increases with the number of checkpoints. All the figures related to travel times are either measured in minutes or hours, whereas monetary values are considered as USD per hour.

Figure 3. 6. Three main corridors for cargo movements: Jenin-Ramallah (darkblue), Jenin-Haifa (magenta) and Ramallah-Ashdod (lightblue). Safe routes are represented by continuous lines; risky routes are represented by dashed lines.



The monetary costs of travel are established by transport companies. These costs vary both with the distance and with the type of route chosen (i.e. risky or safe). In figure 3.6. below we present some illustrative examples of taxation of the cargo movements on some of the major trade corridors in the West Bank, as reported by the World Bank and Paltrade (2007). It worth noting here that the roads on which transport firms charge the highest monetary prices are the roads linking the West bank with to abroad. In fact, deliveries made on roads that link the West Bank with other countries, including Israel (Ramallah-haifa, Ramallah-Ashdod, Ramallah-Jerusalem) are more expensive than the intra-West Bank trips (Ramallah-Jenin, Ramallah-Jericho). From the latter category, the road with the highest tax is the one linking Jenin to Ramallah. Interestingly, the high tax here, which is approximately 650 USD per ton, corresponds to a higher degree of risk associated with travel time unpredictability rather than the distance, which is of 28 kilometers.

Figure 3. 7. Monetary Costs of Travel in the West Bank, USD/ton. (Source: World Bank and Paltrade 2007)



3.5. Data

This study uses both a ”political” data-set composed of monthly data from 2000 to 2009 on the evolution of political and macro-economic indicators, and a “transportation” data-set based on survey data we collected in the period between November 2009 and March 2010. Description of each data-set and the collection procedures follow.

3.5.1. Political Data at the Macro Level

We collected information concerning the monthly evolution of political and economic indicators in Israel and West Bank and Gaza during the past ten years, from January 2000 to December 2009, for a total of 120 observations. The evolution of the events characterizing the Israeli-Palestinian political scene is described by a set of indicators consisting of the number of flying checkpoints across the West Bank, the number of declared curfew hours, the number of injuries and deaths from open conflicts, the number of Israeli settlers in the West Bank, the number of Palestinian ruined residences and the effective homeless people. The intensity of political ferment and its international relevance has been captured measuring the media coverage in terms of number of articles published by "The New York Times" Journal concerning the Israeli-Palestinian issue. In order to describe the impact of the political situation on the economy, we also collected indicators on the volume of the Israeli-Palestinian trade and with the United States, the Gross Domestic Product (GDP), the Consumer Price Index (CPI), the value of Foreign Direct Investments (FDI), food production and the value of agricultural output in both economies.

Summary statistics for the aggregate data-set are presented in tables 3.6., 3.7., and *3.8.* in the appendix. Table 3.6. shows that, as expected, during bad political times, the number of flying checkpoints in the West Bank increases from 313 to 584 on average per month. In the north and south of the West Bank, this figure more than doubles from 126 to 264 units and from 134 to 219 units respectively. Within governorates located at the center of West Bank, the number of flying checkpoints remains almost invariant at the level of 76 units. We compute the number of flying checkpoints for the itineraries of interest - Jenin-Ramallah (JR), Jenin-Haifa (JH) and Ramallah-Ashdod (RA). The number of checkpoints on each itinerary is calculated as the sum of checkpoints corresponding to each governorate crossed by each corridor, scaled down by a factor of network density equal to 30 for the itineraries JR and JH and to 60 for the itinerary RA (PALTRADE, 2007). Note that there is a substantial increase in the number of checkpoints for itineraries JR and JH in bad times compared to good times, and a mild increase in the case of RA. Because of the closure regime, in bad times the number of Israeli trucks directed to the West Bank decreases by 8%, whereas the number of outgoing trucks decreases by almost 57% compared to good times. Inspection of table 3.7. reveals that the number of Palestinian victims increases sharply, with the monthly average number of fatalities going from 44 to 54. In bad times, the number of injuries is two times higher than in good political times. During bad times the attention of worldwide media also increases. The "New York Times" Journal writes on average 68% more articles on the Israeli-Palestinian issue in a bad political month as compared to a good period.

In terms of economic effects, bad times impact significantly on both the output and the bilateral trade of each economy: the yearly GDP drops by 6% in Israel and by 18% in the West Bank and Gaza in bad times compared to good times (see table 3.9. in appendix). In bad times, trade between the West Bank and Israel decreases sharply, since the Israel's demand for Palestinian imports decreases by 53% in favor of alternative partners such as the United States and Europe. The Palestinian economy also redirects exports to partners as the United States and other Arab countries, even if at a much smaller scale. Palestinian exports towards the United States increase by 68% in bad times compared to good times.

3.5.2. Transportation Data at the Micro Level

Survey data at the micro level were collected from November 2009 to March 2010. We conducted face-to-face and telephone interviews with the truck-drivers working for 5 Israeli-Palestinian transportation

companies, 6 retail and distribution companies, 1 Israeli customs agency, and 2 international representatives of companies that distribute aid in the West Bank. The survey contains 25 questions about the three most recent shipments on at least one of the itineraries of interest JR, JH, and RA. The qualitative data collected are related to the type of goods transported, load characteristics such as weight and volume, type of license plate, monetary costs of transport, route choice, travel times, coordination duration, queuing and checking time for each trip.

Previous studies on goods movement in the West Bank considered that traffic flows, in terms of number of trips per day are concentrated for 34% on the Jenin-Ramallah itinerary, for 22% on the Ramallah-Ashdod and Jenin-Ramallah-Haifa itineraries together and for 43% on the Ramallah-Hebron itinerary (PALTRADE 2007). Therefore, we decided to maintain similar importance weights in our sampling procedure concerning the three itineraries of interest JR, JH and RA. After the quality control of the completed questionnaires the final sample size is of 277 shipments distributed among itineraries as follows: 51% of the observations concern the itinerary Ramallah-Jenin, 15% of the shipments are on the itinerary Jenin-Haifa and the remaining 34% are on the Ramallah-Ashdod itinerary.

In general, the knowledge about the travel time necessary to move a load from one city to another is not deterministic since the number of checkpoints that may be encountered on the way cannot be estimated. However, travel times play a crucial role for the delivery service of goods, especially when the transported goods are perishable. Therefore, data collection on the field is not only necessary but it represents a unique source of information concerning real travel times. The distributions of trips in function of total travel times corresponding to each of the three itineraries, Jenin-Ramallah, Ramallah-Ashdod and Jenin.Haifa, are presented in the figure 3.8. a), b), and c) below. The truck drivers traveling on these roads were asked to report, along with the choice of route – *risky* or *safe* defined as above - the duration of each control procedure they passed through along the trip, the queuing time before each checkpoint and the number and type of checkpoints encountered – fixed or flying - as well as the pure travel time, intended as the time spent in movement, waiting times excluded. The sum over all the temporary measures is defined as the *total travel time of a trip (TTT)* and it is represented in *figure 3.8.* for each itinerary (OD) and for each type of link - risky and safe.

Inspection of *figure 3.8. a)* reveals some interesting features concerning the distribution of Jenin-Ramallah trips on the risky and safe routes:

- travel time is shorter than 80 minutes with probability 0.70 on the safe route (via Huwara-Za'atara) and with probability 0.6 on the risky route (off-roads);
- the probability of a trip to take more than 200 minutes (more than 3 hours) is higher on the safe route compared to the risky route (with both probabilities taking values no greater than 0.15);
- there is a non-zero probability of a trip to be longer than 500 minutes on the risky route whereas this probability is zero on the safe route.

Inspection of *figure 3.8. b)* related to the trips between Ramallah and Ashdod, reveals the following:

- travel time is shorter than 100 minutes with probability 0.25 on the safe route (via Hebron) and with probability 0.2 on the risky route (off-roads);
- the probability of a trip to take more than 200 minutes (more than 3 hours) is higher on the safe route compared to the risky route where this probability is null;
- there is a positive probability of a trip to be longer than 300 minutes on the safe route whereas this probability is zero on the risky route.

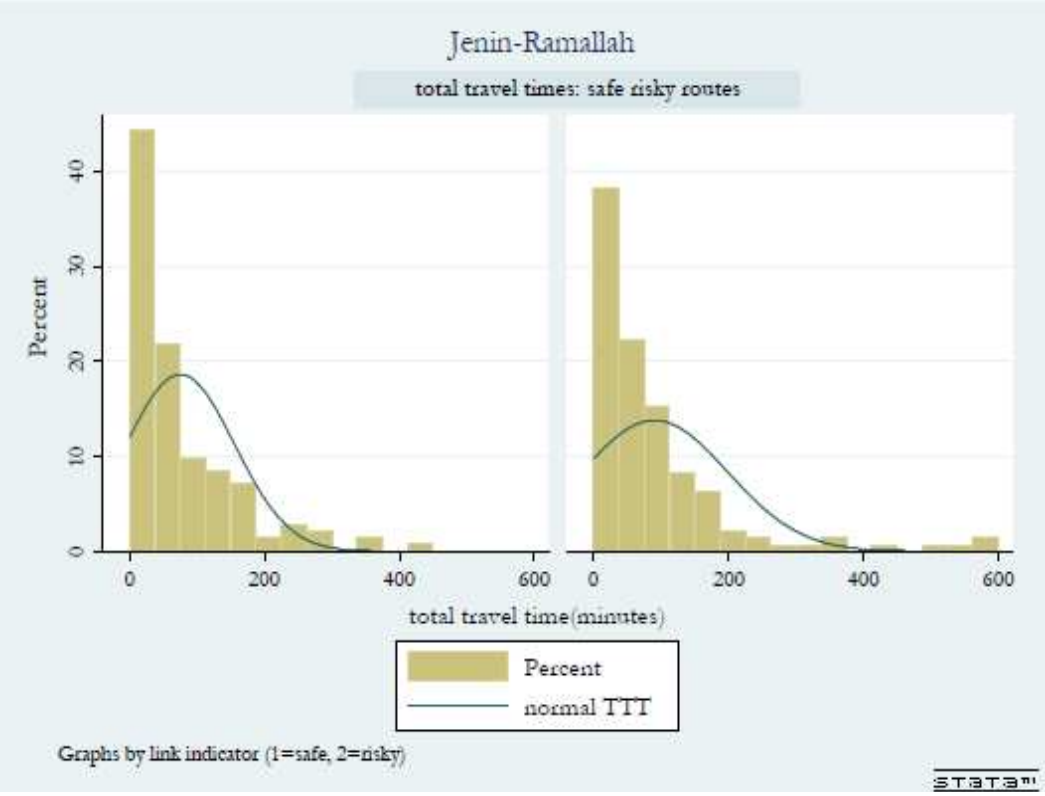
In *figure 3.8. c)* related to the trips between Jenin and Haifa, we can observe that there exists a positive probability for very long trips (500 minutes) on the risky route whereas this probability is zero on the safe route. This characteristic of the safe road increases its attractivity in good times.

Recall from the previous sections that the period in which we collected the survey - the end of 2009 – corresponded to "good" time according to the index of political allert (PA) defined above. With this premises at hand, it appears that traffic conditions just illustrated by the graphics a), b) and c) influence the choice of route in the following way:

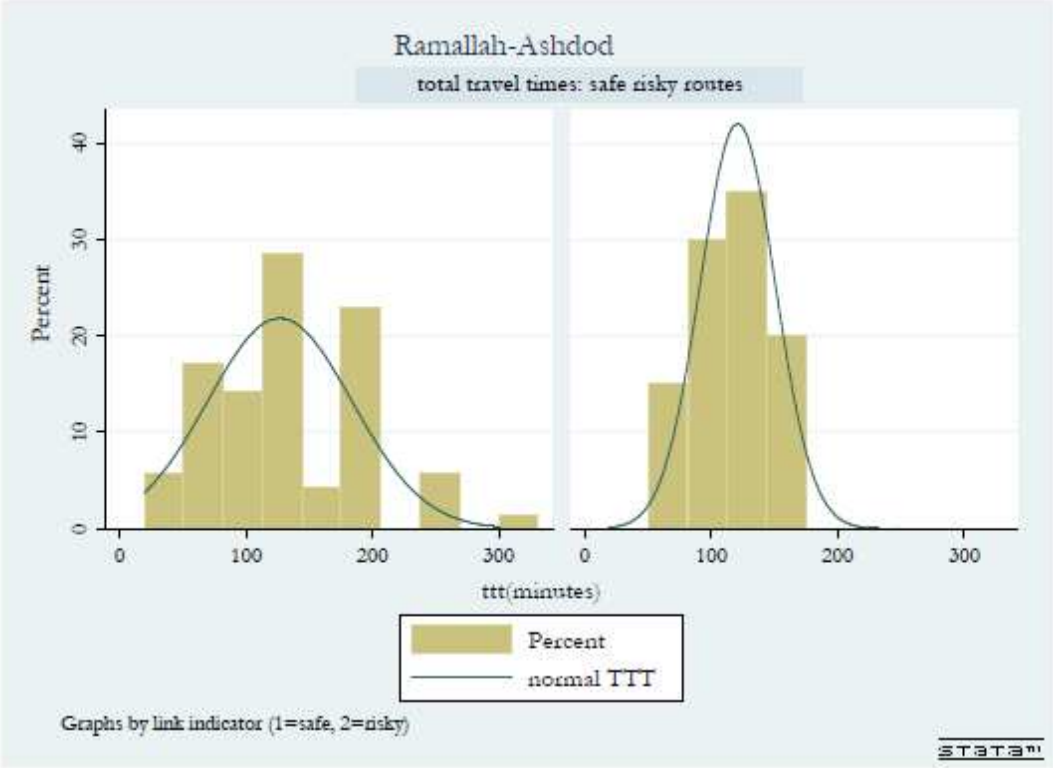
- Jenin-Ramallah: in good times, risk-averse users will choose the safe route whereas we expect that risk-lover and risk-neutral agents will choose the risky route;
- Ramallah-Ashdod: in good times, both risk-averse and risk-neutral or risk-loving agents choose the safe option;
- Jenin-Haifa: in good times, the safe route is preferred by the majority of truck drivers.

Figure 3. 8. Travel Time Distribution of Trucks: Survey Data by Origin-Destination and by Link (Safe and Risky)

a) Jenin-Ramallah



b) Ramallah-Ashdod



c) Jenin-Haifa

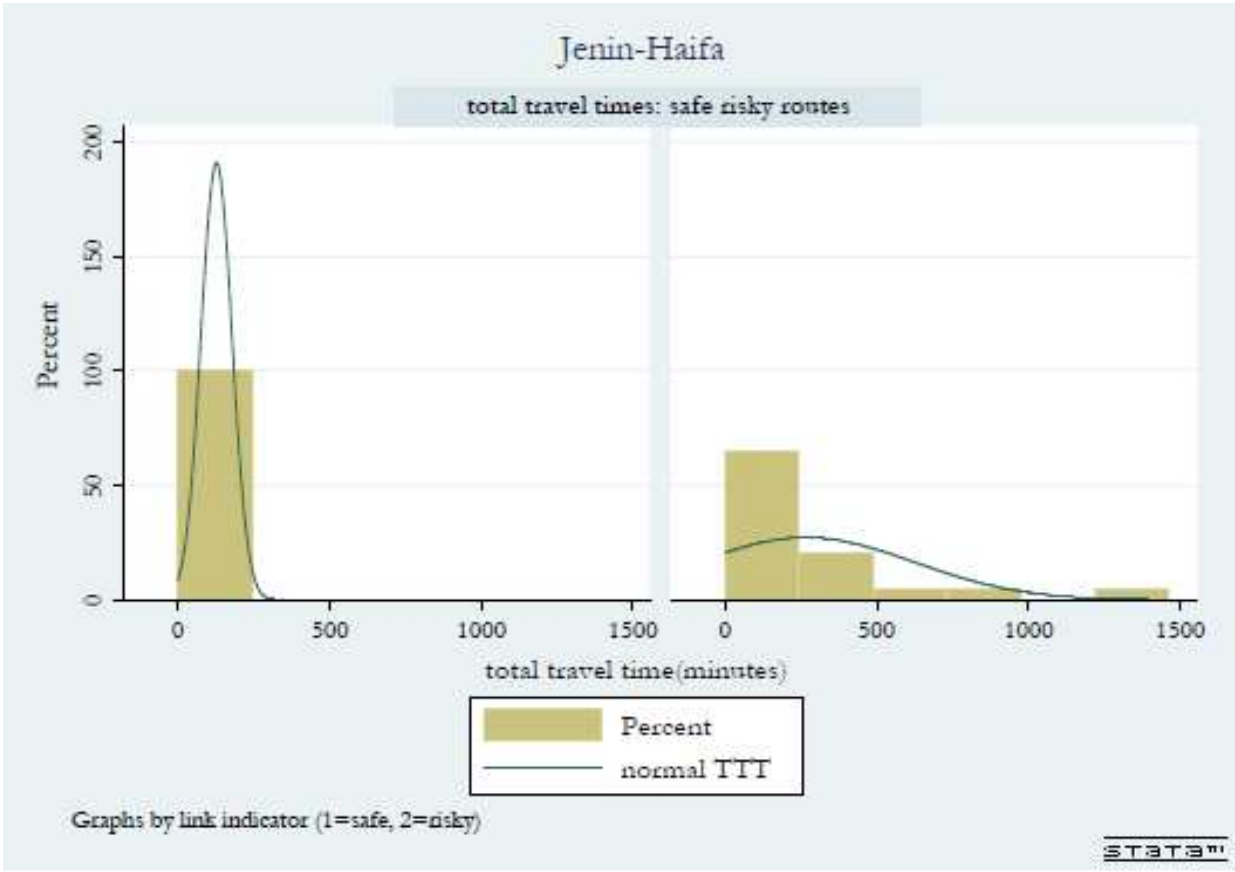


Table 3.3. below reports the detailed summary statistics of the survey data collected on each itinerary. Inspection of the table reveals the following:

- the longest checking times at the fixed checkpoints are registered on the route Jenin-Haifa (almost 39 minutes per checkpoint represents the average waiting encountered on risky and safe routes);
- the longest queues before fixed checkpoints (101 minutes is the average time between risky and safe routes) are encountered on the route Ramallah-Ashdod;
- the longest checking time at flying checkpoints is encountered on the route Jenin-Haifa (78.6 minutes per flying checkpoint). This average time is also characterized by a substantial standard deviation (more than 228 units), confirmation of the unpredictible character of the control procedures at the flying checkpoints;
- when compared to the average checking time per flying checkpoint on the route Jenin-Ramallah (equal to 7.2 minutes), the substantial duration of controls on JH confirms the riskiness of this route;
- the average load value that circulate between Jenin and Ramallah is approximately 31,000 dollars and the average truck weights less than 3 tones. This fact denotes on one side, that the deliveries are of small-medium size or, on another side, important inefficiencies derived from trucks not traveling at full capacity.

Table 3. 3. Truck Survey Data - Summary Statistics by Origin-Destination

Variable	**Definition** *(monthly data, except where specified)*	**Jenin-Ramallah** Mean (Std.Dev)	**Ramallah-Ashdod** Mean (Std.Dev)	**Jenin-Haifa** Mean (Std.Dev)
	Number of Observations:	142	91	44
Ck1fix	checking at the 1st FIXED ckp (minutes)	7.18 (6.50)	29.61 (41.34)	38.84 (45.21)
Ck2fix	checking at the 2nd FIXED ckp (minutes)	6.39 (5.99)	0 (0)	0 (0)
Ck3fix	checking at the 3rd FIXED ckp (minutes)	0.70 (3.34)	0 (0)	0 (0)
Ckfixtot	total checking at FIXED ckp (minutes): ck1fix+ck2fix+ck3fix	14.27 (13.67)	29.61 (41.34)	38.84 (45.21)
Qu1fix	queuing at the 1st FIXED ckp (minutes)	14.48 (15.23)	101.20 (299.72)	27.52 (30.74)
Qu2fix	queuing at the 2nd FIXED ckp (minutes)	10.95 (0.91)	0 (0)	0 (0)
Qu3fix	queuing at the 3rd FIXED ckp (minutes)	0.91 (3.50)	0 (0)	0 (0)
Qufixtot	Total queuing at FIXED ckp (minutes)	26.74 (24.55)	101.20 (299.72)	27.52 (30.74)
Ckfly	average checking per FLYING ckp (minutes)	7.20 (10.21)	12.76 (35.40)	78.63 (228.79)

Ckflytot	total checking at FLYING ckps (minutes)	15.56 (33.65)	13.15 (35.40)	80.99 (235.00)
Qufly	average queuing per FLYING ckp (minutes)	12.40 (16.73)	12.98 (36.66)	74.31 (238.79)
Quflytot	total queuing at FLYING ckps (minutes)	25.91 (45.41)	13.37 (37.76)	76.54 (245.96)
tt	pure travel time, without checks (minutes)	129.88 (33.32)	60.34 (44.79)	130.06 (59.67)
tau	monetary cost (USD/load)	539.5 (1.94)	386.26 (120.75)	601.59 (368.83)
TTT	Total travel time (minutes)	216.50 (120.27)	116.49 (120.25)	326.44 (511.20)
Fix	Number of fixed ckps.(reported)	2.18 (0.57)	2(0)	2 (0)
Fly	Number of flying ckps.	0.91 (1.13)	1.03 (0)	1.03 (0)
Km	Distance between Origin-Destination, declared (km)	71.01(0.97)	59.79 (21.23)	128.79 (73.26)
Licen	Licence plate (0=Palestinian, 1=Israeli)	1.06 (0.24)	-	-
Link	Route choice (1=safe, 2=risky)	1.06 (0.24)	1.21 (0.41)	1.47 (0.5)
Loty	Load type (1=perishable, 2=non-perishable)	1.49 (0.98)	-	-
value	Load value (USD)	31685 (254041)	-	-
weight	weight of the load (tones)	2.90 (2.99)	-	-

In the following, we use the survey data described above combined with the macroeconomic data describing the situation of political turmoil to calibrate a route choice model with risk-averse and risk-neutral agents, for "good" time and "bad" time of political turmoil. The output of this model is the share of trucks that will take the risky route (and similarly, the share of trucks that will choose the safe route) in good and in bad times of political turmoil. Once that the shares of trucks and the travel cost functions are known for each period of time, we estimate travel costs per truck caused by a change in the scenario, from good time to bad time respectively.

Table 3.10. in appendix summarizes the values of parameters used in the calibration of this model. We transform the time measures in monetary units by multiplying the total travel time (TTT) by its value. Usually, the value of time is estimated from exhaustive survey data. In fact, the estimated value of the Israel's value of time is of 7.5 EUR/hour at 2005 prices equivalent to 9.67 USD per hour (Euromed 2007). We calculate the value of time associated to Palestinian trips is calculated from the estimated Israeli value of time and the ratio between the hourly wages corresponding to each economy. We assume that the ratio between the Israeli and Palestinian values of time is equal to the ratio between the Israel's average wage of 45.88 NIS/hour (CBS 2008) and the Palestinian average wage of 10.62 NIS/hour (PCBS 2008). Thus, the value of time obtained for the West Bank and Gaza (WBG) is 2.23 USD/hour. It is possible to tranform all travel and waiting times in dollars by multiplying all the time components that enter the TTT function.

The cost components associated with both risky and safe routes used to calibrate the route choice model for good and bad times are shown in table 3.11. in appendix and they represent mean values over the 277 shipments. The pure travel time does not change in bad time compared to good time on the same route, because it is related to the distance in kilometers. In fact, this variable takes different values for the same itinerary depending on whether the route is risky or safe. Both queuing and checking times at checkpoints double in bad times compared to good times (PALTRADE 2007). The coordination time does not vary with the state of nature. Note also that there is no coordination time on the risky routes, containing only flying checkpoints, since this procedure is only required on routes with fixed checkpoints (i.e. safe routes). We now present the simulation results concerning route choice along with the estimates of generalized travel cost per truck and for the entire Palestinian truck fleet. The computation of economic costs of closure is then extended to the West Bank economy.

3.6. Results

On one hand, the theoretical framework used in this study and previously validated through numerous publications in the field of transportation economics, helped us to predict the choice of route on three itineraries, Jenin-Ramallah, Jenin-Haifa and Ramallah-Ashdod for two types of drivers - risk-neutral and risk-averse. The importance of the survey data collected on-field was crucial and the use of a theoretical model helped us validate the collected data and integrate information from macroeconomic statistics. Moreover, we analysed how these decisions change from good time to bad time, with the use of the index of political allert, PA built from macroeconomic data. Successively, we use the generalized travel cost functions used in the route choice model to estimate economic costs of closure at the truck level and for the entire West Bank economy. The results are briefly summarized in the following and they represent the first attempt to estimate economic costs of closure. However, these results will be updated in the near future, following more accurate predictions and tests.

3.6.1. Results Concerning the Route Choice

We conduct numerical simulations on a representative risk-neutral driver for each of the three itineraries and for each type of road, risky and safe. The results show that risk-neutral drivers prefer the risky route to the safe route whenever the probability of good time:

- is lower than 0.7 on the Jenin-Ramallah itinerary,
- is lower than 0.5 on the Jenin-Haifa itinerary, and
- is lower than 0.25 on the itinerary Ramallah-Ashdod.

In general, we observe that risky routes are preferred in the north of the West Bank. In the case of Jenin-Ramallah route, the result can be interpreted with a strong preference of drivers towards the lottery "*1 flying checkpoint with probability 0.7 and 3 flying checkpoints with probability 0.3*" with respect to a feable preference towards the certain prospect of "*meeting 2 fixed checkpoints*". On the itinerary Jenin-Haifa, short pure travel times play an important role, along with the relatively low number of flying checkpoints. On the contrary, the safe route will be preferred almost all the times on the route Ramallah-Ashdod, given that the requirement for this preference is that "*the probability of good times to be lower than 0.25*", which is rather low compared to the observed probability of good times (equal to 41% which is the monthly average over the last ten years).

On the other side, passing through the risky route is always preferred in the south, for high enough probabilities of bad time - with a probability threshold of 0.75. From a behavioral viewpoint, the itinerary Ramallah-Ashdod provides an illustration of the role played by the subjective evaluation of individuals (Tversky and Kahneman 1992) in a route choice context. In particular, the pessimism bias (de Palma and Picard 2008), making people to overestimate low probabilities of meeting many checkpoints on the risky route or overestimating the probabilities to encounter long lasting queues on the safe route, explains the preference for risky or safe routes respectively. The risk-averse agents always get higher expected utility from traveling on the safe route compared to the risky alternative on all itineraries. Interestingly, risk-averse drivers with traveling between Jenin and Ramallah become indifferent between risky and safe routes in bad times. The results on itineraries Jenin-Haifa and Ramallah-Ashdod reveal that, in bad times, a significantly lower level of aversion to risk is sufficient to make drivers become indifferent when choosing between risky and safe routes.

These predictions re-confirm the estimates we suggested from survey data collected in good time, revealing that on Jenin-Ramallah routes risk-averse users choose the safe route whereas risk-lover and risk-neutral agents choose the risky route, on Ramallah-Ashdod everyone chooses safe routes, and on Jenin-Haifa the safe route is preferred in good times.

3.6.2. Estimated Costs of Closure

On each itinerary and route we compute time, monetary and trade loss due to the worsening of existing closure regime. Considering that checking procedures are longer in bad times compared to good times and the number of flying checkpoints increases, the generalized cost of travel increases as well. Cost estimates at the truck level are presented in table 3.4. below. We estimate the value of the total monetary cost of travel from the functions of travel time multiplied by the value of time for good time (when the index PA=0) and for bad times of political turmoil (when the index PA=1). From the comparison of the two results, at the truck level, we obtain that time loss affects mostly the risky routes with an estimated peak of +124% on the itinerary Jenin-Haifa where the total travel time increases from 6 hours in good time to more than 15 hours in bad time for some representative trip. As a general rule, travel time deteriorates significantly during situations of political turmoil, mostly on risky routes. Travel times increase at more moderate pace on the safe routes, ranging from +39% for the itinerary Jenin-Ramallah, to +58% for the representative trip between Jenin and Haifa. Generalized costs estimates per truck-kilometer vary between 0.02 USD on the risky route of JR, and 0.35 USD on the risky route of JH. Note that cost differences in bad times are computed relatively to the “good” time reference, which corresponds to a “moderate” level of closure.

Table 3. 4. ***Per Truck Time Loss and Economic Cost, in Good and Bad Times***

#	Definition	Jenin > Ramallah		Jenin> Haifa		Ramallah> Ashdod	
		Safe	*Risky*	*Safe*	*Risky*	*Safe*	*Risky*
1'	Distance, in kilometers	89	105	198	53	95	110
1	Avg.Travel Time (TT), minutes[h] in Good time	186	151	648	406	316	371
2	Avg.Travel Time (TT), minutes[h] in Bad time	259	215	1026	910	482	783
3	Time difference in minutes: (2)-(1)	73	64	378	504	166	412
4	Time increase in percentage: (3)/(1)	+39	+42	+58	+124	+53	+111
5	Value of time (VOT) for the West Bank, measured in USD/hour	2.23	2.23	2.23	2.23	2.23	2.23
6	Avg.monetary cost, USD/truck	540	532	950	220	450	160
7	Generalized costs (TT*vot), USD/truck, computed as (5)+(4)*(1) in Good time	546.91	537.61	974	235	461.74	173.79
8	*Idem* for Bad time.	549.63	539.99	988	253.82	467.91	189
9	Total cost difference, measured in USD/truck: (7)-(6)	+2.71	+2.38	+14.05	+18.73	+6.17	+15.31
10	Cost difference, USD/truck/km, computed as [(7)-(6)]/(1').	+0.03	+0.02	+0.07	+0.35	+0.06	+0.14

h) *Simulation results, based on eq.(6)-(7).*

In the table 3.5. below we present in detail the steps to compute aggregate costs due to closure for the entire West Bank economy.

Table 3. 5. Monthly Totals for West Bank - Time Loss and Economic Cost, in Good and Bad Times

#	Description	Time	Value
1	Average number of trucks per month, incoming+outgoing[m)]	*Good*	8,467
1'	*Idem.*	*Bad*	6,364
3	Number of trucks choosing *Safe* routes[n)]	*Good*	6,773.60
3'	*Idem.*	*Bad*	5,091.20
4	Number of trucks choosing *Risky* routes[o)]	*Good*	1693.4
4'	*Idem.*	*Bad*	1,272.80
5	Average monetary cost/truck on *Risky+Safe* routes, USD/truck/km[p)]		4.51
5'	*Idem.*	*Bad*	5.53
6	Average monetary cost per truck on *Risky* route, USD/truck/km[p)]	*Good*	3.78
7	Kilometers by month per truck[q)]		13,000
8	Trade loss on *Safe* routes due to conflict, USD/month: [(3)-(3')]*(7)*(5)		116,100,904
9	Trade loss on *Risky* routes due to conflict, USD/month: [(4)-(4')]*(7)*(6)		20,295,869
10	Total cost on the *Safe* routes, USD/month: (3)*(5)*(7)	*Good*	467,440,019
10'	*Idem:* (3')*(5')*(7)+(8)	*Bad*	471,110,748
11	Total cost on the *Risky* routes, USD/month: (4)*(6)*(7)	*Good*	81,714,277
11'	*Idem:* (4')*(6')*(7)+(9)	*Bad*	84,556,364
12	Total costs of traffic due to conflict, USD/month: (11')-(11)+(10')-(10)		6,512,815
12'	**Total costs of traffic due to conflict, USD/year:**		**78,153,788**
13	Perc.of *transp. and communication* services (TCS) in the West Bank GDP[s)]		11 %
13'	Perc.of *transportation in* TCS industry in the West Bank GDP[s)]		50 %
14	**Total economic costs imposed by conflict, mil. USD/year:**		**1,420.97**
14'	West Bank and Gaza GDP at constant prices: estim.2009, mil.USD/year[s)]:		**5,147.20**
15	**Economic costs of closure (Bad-Good political times), measured as percentage reduction of the West Bank GDP 2009[s)] :**		**- 28%**

[m)] *Value from table 3;* [n)] *Value from survey data=80%;*

[o)] *Value from survey data=20%;*

[p)] *Value obtained as average on 3-routes (table 7);*

[q)] *Reference European value;* [s)] *Source:PCBS.*

Lines 3 and 4 were calculated from the estimated shares of trucks that decided to take either the safe or the risky route. We compute the value of "lost trade" from the difference between the average number of incoming and outgoing trucks from the West Bank in each state of nature, and by using the estimated average costs per truck. The total estimated impact of closure on the West Bank traffic amounts to 6.51 million USD per month, equivalent to 78.15 million USD per year. Transportation and communication services amount to 11% of the West Bank total GDP of 5,147 million USD in 2009 (PCBS 2010). Therefore, the extrapolation of the total impact of closure to the entire economy is straightforward and it is estimated as 28% of the total West Bank GDP in 2009. This value represents the cost increase between bad and good times and thus, estimated costs represent a "lower bound" for the actual costs of closure.

3.7. Conclusions

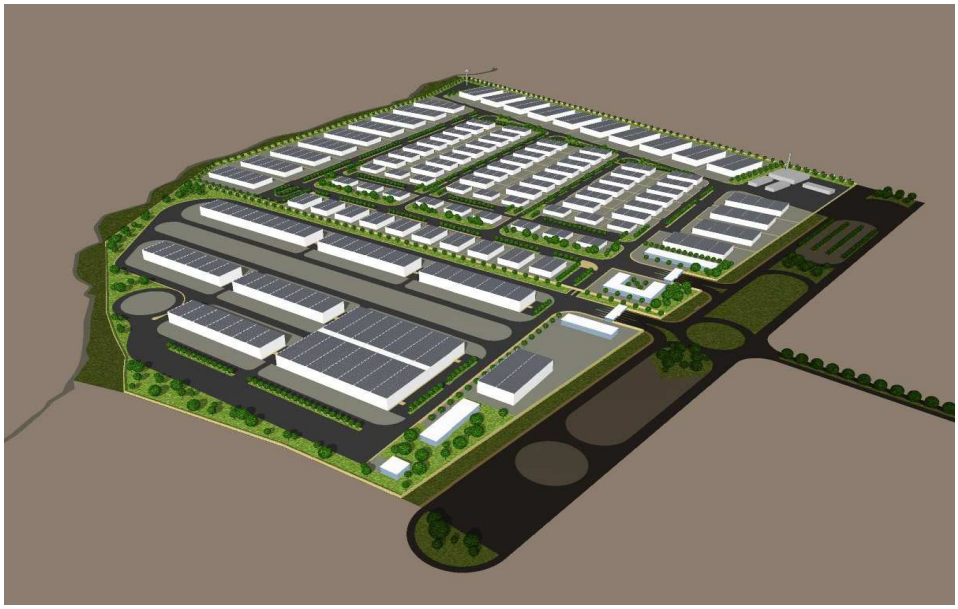
This study estimated time and economic losses generated by the closure regime imposed on the movement of goods within and beyond Palestinian boundaries because of the political instability of the area. The analysis describes the route choice on the itineraries Jenin-Ramallah, Jenin-Haifa and Ramallah-Ashdod, that are three of the most important trade corridors connecting major locations in the West Bank and Israel.

Given the military closure regime enacted in the West Bank, travel times are uncertain on some roads, conventionally defined as “risky”. The results show that in situations of political turmoil, truck drivers prefer to choose risky routes to the “safe” ones, characterized by predictable travel times, depending on their aversion to risk. In particular, risk-neutral agents prefer the risky alternative when the probability of good political time is: i) smaller than 0.7 on the Jenin-Ramallah itinerary, ii) smaller than 0.5 on the Jenin-Haifa itinerary and iii) smaller than 0.25 on the itinerary Ramallah-Ashdod. The model estimates that the politically unstable situation generates an average increase of 50% in travel times on the safe routes and an increase of 92% on the risky routes in bad times compared to good times, when the number of flying checkpoints is lower.

We estimate that the total impact of closure on the West Bank traffic amounts to 6.51 million USD per month, equivalent to 78.15 million USD per year. Since transportation and communication services amount to 11% of the West Bank total GDP of 5,147 million USD in 2009 (PCBS 2010), the extrapolation of the total impact of closure to the entire economy is estimated as 28% of the total West Bank GDP in 2009. This value represents the cost increase between bad and good times and thus, estimated costs represent a “lower bound” for the actual costs of closure.

4. Jenin Industrial and Logistic Area (JILA)

Preliminary feasibilty study engineering and planning report



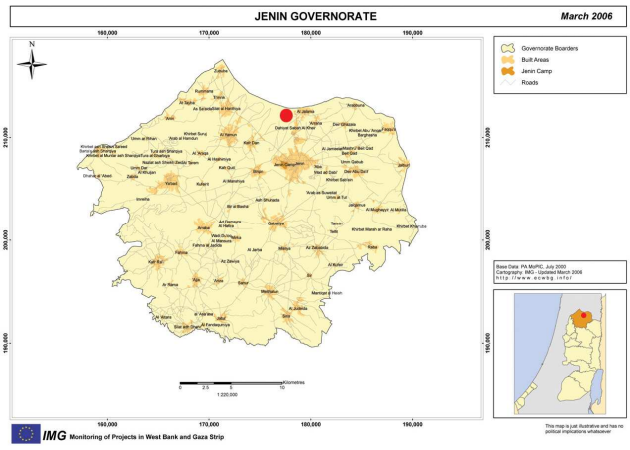
4.1. Introduction

4.1.1. Background

The present study represents a technical contribution to Euromid Network, the project for a logistic corridor and symbolic bridge between Europe and Middle East. It aims to encourage commercial relationships and international investments, promoting employment and local development and contributing to social and cultural integration among peoples in one of the most geo-politically complex and problematic areas in the world.

Figure 4. 1. Euromid Network project

Figure 4. 2. Jenin district and it's location in the West Bank



Situated between the Haifa port - on Israeli's Mediterranean coast - and the Sheik Hussein bridge at the Jordanian border, the project will lend an important strategic role to the **Jenin Industrial and Logistic Area**.

This area was designated by the Palestinian National Authority within the context of economic planning and investment promotion activities in the West Bank, activities which included, among other things, the issuing of " The Industrial Estate and Industrial Free Zones Law" (L.10/1998) and the establishment of an autonomous governing agency (PIEFZA)[4] by the Ministry of Industry. The Jenin district project started in 1995 with the establishment of a private holding company, the Northern International & Industrial Company (NIIC), which obtained formal approval from the Palestinian National Authority.

4.1.2. References and credits

The case-study of the Jenin Industrial and Logistic Area includes a wide array of surveys and documents, commissioned during the last ten years and summarized as follows:

- a preliminary Feasibility Study was commissioned from NIIC in 1996;
- the document entitled "Jenin Industrial Estate Supplementary Feasibility Study, Final Report- Voll. I-III" issued in 1998 by the Palestinian National Authority – Ministry of Industry, in collaboration with the German cooperation, funded by the Kreditanstalt für Wiederaufbau (KfW) and with the technical contribution of a team of engineering and consultant companies[5];
- the feasibility study was then updated in December 2007 by SIGMA Consulting Engineers, Amman, Jordan;
- a supplementary update of the feasibility study was produced by the GITEC, CEC, UG team. It was not done in coordination with the former documents and is probably not correctly dated (25/04/2009);
- finally PIEFZA requested the consultancy of an American company (Global Defence Solutions LLC – Vienna, Virginia) which in January 2009 produced a preliminary document – "Jenin Industrial Estate Initial Security Assessment" – surveying the design according to suitable security and operational parameters.

Together these documents establish a technical and informational background that cannot be disregarded. We referred to them in creating the present study and we thank to the authors and institutions for their availability.

4.1.3. Methodology, design parameters and performance levels

The project will be capable of meeting the efficiency and productivity requirements of the JILA during its full lifecycle. If these requirements are not incorporated in the early design stages, we run the risk of quickly reaching a critical level of inefficiency, especially problems of traffic congestion, extended inspection processes, insufficient storage facilities, with the consequence of compromising expected outcomes and worsening operational management.

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4 The *Palestinian Industrial Estate and Free Zone Authority* deals with direct industrial development, concession agreements with developers, issues of permits to individual firms, public facilities and off-site infrastructure (road, water, power, telecommunication networks...)

5 GITEC Consult GMBH (Düsseldorf, Germany); Consulting Engineering Centre (Amman, Jordan – Nablus, Palestine); Universal Group for Engineering and Consulting (Nablus, Palestine).

The present study takes into account many assessments expressed within the wide documentation quoted. The revision addresses:

- all aspects necessary to conform the original project to the specific goals of the Italian project as expressed in the following paragraph 4.1.4.;
- suitable responses to the main problems (see paragraph 4.1.5.1.) noted in the document "JIE Initial Security Assessment" provided in January 2009 by "Global Defence Solutions".

In the end, this revision presents an opportunity to verify qualitative and dimensional standards. Thanks to the advice of technical and professional operators in the logistic centre "Quadrante Europa" in Verona, and drawing from Italian and European experience, we made a number of technological and planning changes: road systems, service roads, safety and security, parking layout and green areas, sizing of facilities and industrial and logistic activities.

4.1.4. Tasks

The study aims to verify, from a technical, urban planning and environmental point of view, the feasibility of the new specifications introduced by the Italian project, in the context of the investment and industrialization program quoted in the foreword. The three most important aspects are:

- a strong strategic interest in the logistics, involving the location of a specific area (26.3ha) and the organization of related facilities (customs services, component assembly and product packaging, truck operators services, food and quality control laboratories...);
- the realization of a highly sustainable and self-sufficient system, through the introduction of innovative technologies and an integrated management of primary resources (production, consumption and re-cycling of power, water, waste);
- high quality of spatial and environmental standards, thanks to careful urban planning and architectural design, considering both the proper distribution and functional organization of industries and the quality of life in workplaces where thousands of people will spend a large part of their day.

Our report provides the elements needed to estimate gross cost for on-site infrastructure, setting guidelines he guidelines for further implementations at the architectural, engineering and technological level.

4.1.5. Potential issues

Our study accepts the authoritative assessments provided by the PIEFZA commissioned "Global Defence Solutions" report. In the paragraph 4.1.5.1. we address the most significant design problems, while in the paragraph 4.1.5.2. we underline the operational problems, observed during the study, whose effects on the quality of the final product shouldn't be undervalued.

4.1.5.1. Design issues

A. The traffic projections (number of vehicles and transfers) provided from PIEFZA and NIIC, show the absolute inadequacy of the road network's current design. We address this problem through:
   - a total re-design of the off-site infrastructure (see paragraph 4.3.3. and attached drawings), which will be proposed to PIEFZA as a means of improving accessibility to the industrial area

and, in particular, the traffic management within the logistic area, through a well-organized system of roundabouts and waiting-queue lanes;

- additional services like bus stops, external car parks (for cars and trucks), fuel stations and machine shops.

B. The problems we observed regarding power distribution are, mainly, of an operational nature, because there is an inconsistency between the off-site (PIEFZA) and the on-site (NIIC) infrastructure designs, both of which should be complementary. Regarding power sources, our project introduces a real revolution, through the use of both photovoltaic roofs and a highly innovative technology, which will recycle organic waste for fuel production. As a consequence, production sites for the power systems have been revised and the distribution network inside the industrial and logistic areas reorganized.

C. Regarding the administrative and logistic facilities, the potential problems need to be solved with a thorough review and updating process. The introduction of a substantial logistic area, which will occupy about 30% of the total available area, is required in the general reassessment of the settlement and the new dimensions of the industrial area.

Some additional considerations have been made regarding the administrative services. Remembering that an external area of about 4 ha, NIIC-owned is available[6], the aim is to balance the facilities inside the industrial area with the facilities better installed outside, to ensure greater efficiency and security.

4.1.5.2. Operational issues

The risks of inaccuracy within the present study result from difficulties in the relationship with the local institutions, especially NIIC, which doesn't have a technical office capable of being a reliable interlocutor. The difficulties we found in consulting previous architectural designs, particularly two sets of plans from 1998 and 2008[7], compromised the verification of the data elaborated in the various steps of the study. Further operational difficulties are linked to inconsistencies among the various documents. Regarding single industrial plots, for example, the available documentation provides a rather confused and contradictory picture of the average suitable dimensions inside the industrial area. The industrial surveys, telephone interviews and investor requests by NIIC regarding industrial activities in the West Bank provide us with contradictory numbers. For this reason, in planning the industrial and logistic area, we referred to the example of Verona in order to provide further contributions.

4.2. Site analysis

4.2.1. Project localization

Within the widely varied landscape of the West Bank, characterized by significant changes in altitude, the Jenin district is a large, fertile and flat area, located at the northern Palestinian border. The average altitude ranges from 400 to 500mt above sea level, descending a northerly direction and reaching its lowest elevation (about 90mt) near the Israeli border (*green line*).

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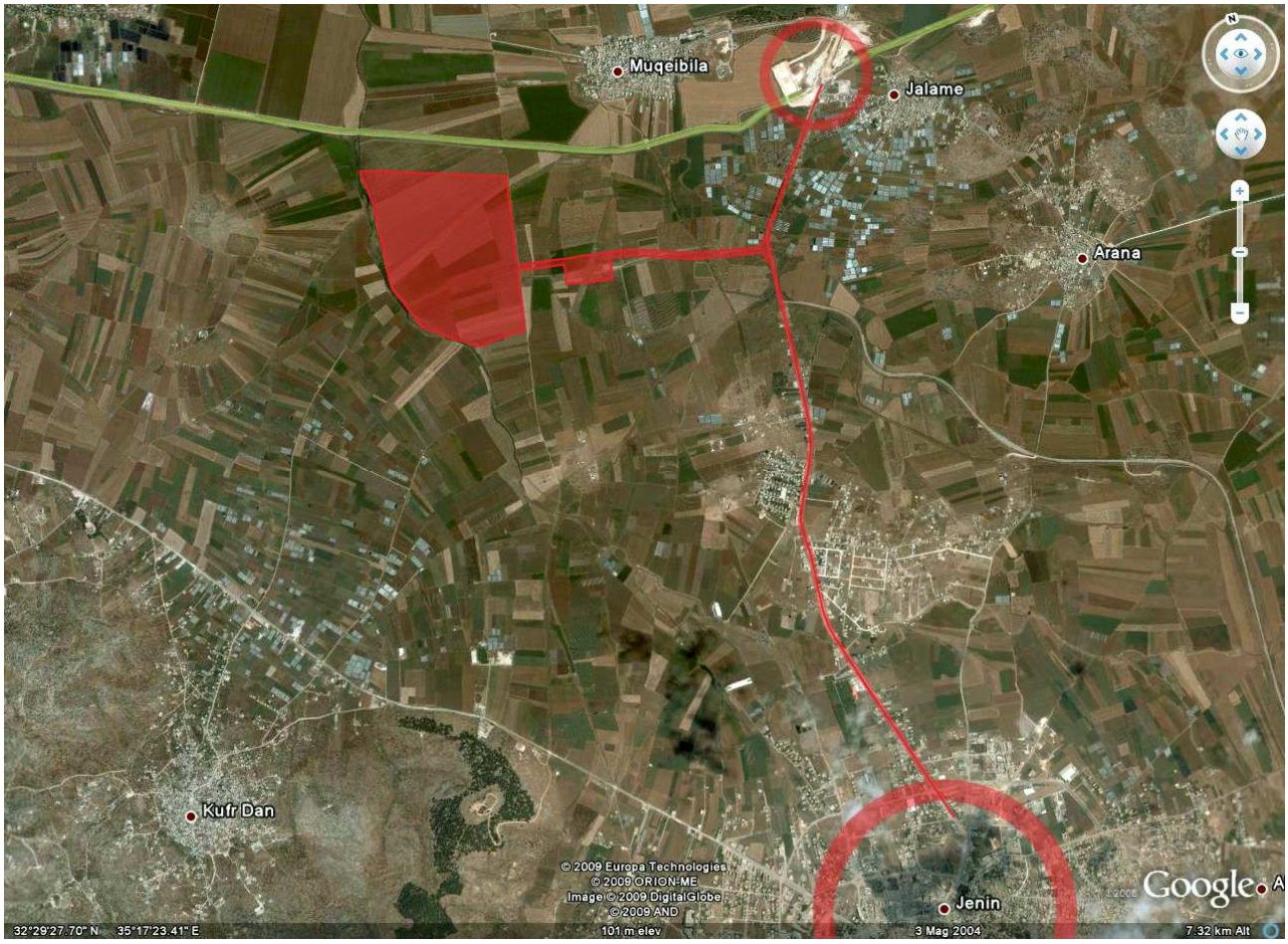
6 Not included in the present study.

7 See the quoted document *Initial Security Assessment* by *Global Defence Solutions LLC.*

The access road of the complex (total length of 1.7km) is linked to the *Route 60*, the major north-south road in the West Bank, linking Jenin to Nazareth through the Al Jalama check point.

Figure 4. 3. Location of the industrial area in the north-west of the Jenin district; (high) the green line and the Al Jalama check point.



4.2.2. Topographical & geographical features

At present, the site has an agricultural use. It is nearly flat and slopes down from the south-east to the north-west. The elevation is 89 mt at the southern boundary and 82mt at the northern boundary, the lowest point being at the north western corner, around 81mt. The average slope is around 5‰, with a distance of roughly 1.3-1.5km,. The future industrial area is bordered on the west by *El-Muqatta' Wadi*[8], on the north by a 240mt belt along the Israeli border (*Green Line*) and on the east by the old railway line (*Hijazi railway line*) linking Nablus with Alafola.

[8] Water-ways usually dry, collecting storm water.

Figure 4. 4. Project area superposed to agricultural territory in present situation

4.2.3. Climate

The climate[9] of the Jenin District is determined by its location at the eastern end of the Mediterranean sea, with moderate and rainy winters and hot and dry summers. The average maximum temperature recorded at *Beit Qad* weather station over the last 42 years is 27.1°C, while the average minimum temperature is 13.5°C. Between December and March, the daily average temperature is 13.4°C, the minimum being 7-8°C and the maximum 19°C. Temperatures rarely fall below freezing point. In summer the temperature is mild due to the effects of the Mediterranean winds, which reach the Jenin District due to the lack of highlands. The average maximum temperature from June to August is 33.6°C and the average minimum is 19.3°C. The principle winds blow from the south-west to the north-west and mostly from the north during the summer. The average daily wind speed is 9.2km/h from June to August. In winter, the rainfall brings the winds from the West and their speed, from December to February, is 7.7km/h. From April to June there may occur the *Khamaseen* winds, which blow from the Arabian Desert, carrying sand and dust and causing a rise in temperature and a drop in humidity. The average annual humidity in the Jenin district is 67.2%. During the winter it increases to an average of 84%. In summer it is 63.7%, while it drops to 39% during the *Khamaseen* period. The average annual rainfall in the Jenin district is 528mm.

The amount of rainfall decreases from 778mm at Um El Rihan station in the west, to 286mm at Raba station in the east. The western part of the Jenin district enjoys heavy rainfall, because of exposure to sea winds. The

[9] Information from *Environmental Impact Assessment* (1998), document included in the *Feasibility study*.

rainy season in the Jenin district starts in the middle of October and continues to the end of April. Nearly 80% of the rainfall occurs between November and February. Snowfall is very rare in the Jenin district.

Regarding solar radiation, the average number of solar hours between June and August is 10.8h/d, while it is only 5.8h/d between November and February. In summer the radiation is stronger, due to the absence of clouds. The average number of daily solar hours from June to August is 25.7 MJ/m^2/g. In winter it decreases to 11 MJ/m^2/g.

Figure 4. 5. The future access road to the Jenin Industrial Area. Panoramic view from the Route 60

4.3. The master plan

Figure 4. 6. North-west general view of the Jenin Industrial & Logistic Area

In accordance with the stated aims of the present study (par. 4.1.4.), the master plan defines two different and autonomous areas:

- INDUSTRIAL Area 606,434.4 m^2;
- LOGISTIC Area 262,608.2 m^2.

The total gross area is 869,042.6 m^2.

Furthermore, there are planned:

- an administrative area (4 ha) at a 500 m distance, along the planned road linked with the Route 60;
- an additional off-site area of 10.7 ha, 1.7 ha of which will be reserved for the railway line. This zone will be comprised of toad networkers, car parks, service areas. Above all, it will be essential to need to address the problems which the goods and traffic flow analyses have underlined.

In the course of several formulations, the project area was frequently revised, unfortunately not always with the support of clear cartographical descriptions. The data on the real property varied from 113.6 ha, as in the JIE Initial Security Assessment (2009) and in the CITEC Report (1998) (fig.7) to 89 ha as in the SIGMA Feasibility Study (2007) (fig.8)

Figure 4. 7. Project area in the 1998 feasibility study

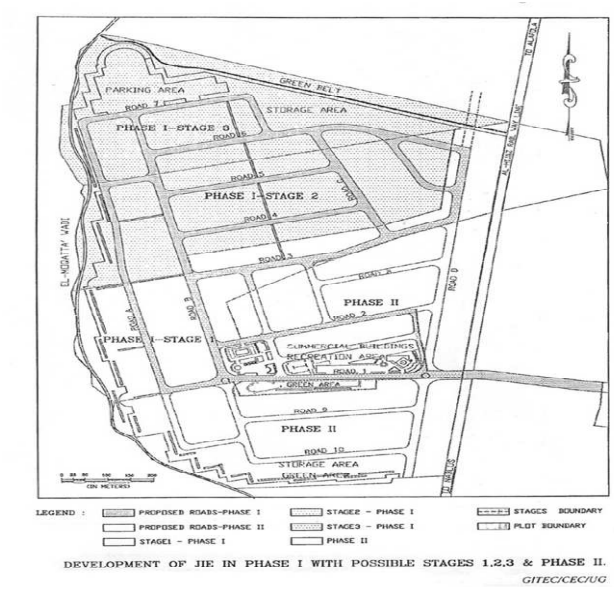
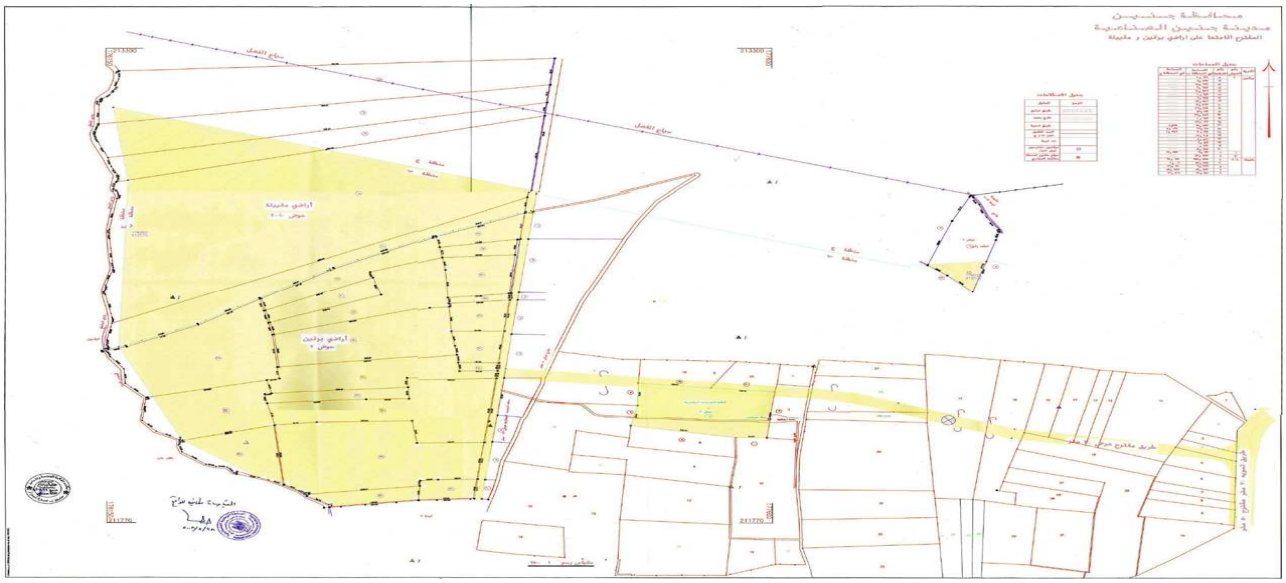


Figure 4. 8. Project area in the 2008 SIGMA feasibility study

The plans in the 1998 study were strongly influenced by divided holdings within the area, which bound the project to a sequence of successive phases, suitable for promoting investment, but obstructing the plan and its future development. These problems seem to have been overcome in the plans of the SIGMA Consulting Engineers, of which we have only a partial copy (*figure 4.8.*). In fact, the authors, in the updated chapter 4.3.1. of the feasibility study in 2007, emphasize that the development of the industrial area could be realised in only one phase. All this leads us to suppose that the NIIC has the full availability of the area, which would justify, proposing a general on-site infrastructure layout, without multiple phases. These assessments are confirmed by a cadastral plan, defining the project area, and showing, furthermore, the new access road layout and the nearby 4ha area for the subsidiary administrative services. The project area is about 89ha, including the restricted railway area on the eastern boundary. Without this area, we are left with 86.9ha as the project surface.

Figure 4. 9. Cadastral plan



4.3.1. The industrial area

Figure 4. 10. Location of the industrial area

4.3.1.1. Accessibility, road system and car parks

Regarding the industrial area, the master plan presents a layout, organized on a ring road for the primary vehicle traffic, about 2 km in length and arranging the plots according to the criteria specified in 4.3.1.3..
The main network road will be 12mt wide, with two lanes (6+6mt wide); the roadway will have pavements of 1.5 m on either side. Inside the ring, the orthogonal framework of secondary roads develops. The road width will decrease to 9mt (two 4.5mt lanes), with either pavements of 1.5 m on both sides or, on one side, trees and flower-beds (3.5 m. wide). These plantings will separate the main roadway from the service roads, where the car parks, the loading/unloading zones and the access points to the single plots will be located. The curve radius will never be less than 20m.

Figure 4. 11. View of the facilities area, with the entrance gates to the industrial and the logistic areas

The ring-road will be equipped, at the four corners, with technical and functional elements: at the north-eastern and the north-western corners the road lengthens to reach the two main technical sites (point 4.3.1.2.); at the south-western corner there is the car park and the loading/unloading zone. The main entrance to the industrial area will be located at the south-eastern corner through an entrance gate, where the service buildings and areas are concentrated. The entrance gate is organized on a 3 lane entrance and 3 lane exit system . Each lane will be 3.5m wide, separated from each other by 2m wide traffic islands, which house the checkpoint booths.

Regarding the car park layout, a linear system was developed, rather than one in which car parks are concentrated in limited areas. This will allow operators or visitors to park close to their destination points.

The use of service roads will facilitate that goal, assuring a reduction of the conflict points between the circulation network and the loading/unloading zones and allowing for temporary parking and the essential

operations of both cars and trucks. All the car parks in the plans will be public. It will be necessary for each firm to reserve an additional space of about 10% of the plot for private car parks. The design of the service roads will allow for the insertion of parking areas for visitors within the private plots and will prohibit unauthorized vehicles from entering the industrial area.

4.3.1.2. Technical support infrastructure

The technical support systems will be installed beneath the roadway, as follows:

- power distribution network, including Medium-tension substations;
- water supply network;
- telephone and data transmission network;
- security and control electronic control systems (video cameras, sensors);
- civil and industrial sewage systems;
- rainwater collection network;
- public electric lighting for roads, green areas, car parks.

The primary road system will extend to the north-eastern and north-western corners of the industrial area, connecting the two main technical areas, which will house respectively:

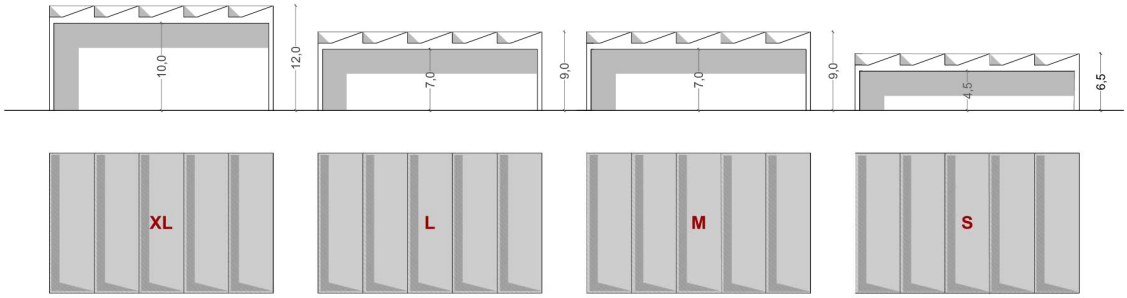
- the underground rainwater reservoir, the sewage disposal and purifier, the pumping station and the water tower; the location of the area, being in the lower part of the site, will exploit the natural slope of the terrain from south-east to north-west (see paragraph 4.2.2.), facilitating rainwater drainage;
- the separate waste collection area or eco centre and the power production plant; the location will allow, if necessary or useful for the working of the plant, the collection of Jenin's urban waste as well, thanks to an external direct entrance point.

The power distribution system will be integrated with the energy production of the solar panels, which will be installed on the proofs of the industrial buildings (shed system (fig. 4.12.), south-oriented). The north-oriented windows create the best conditions for the exploitation of indirect natural light and contributing to energy savings and comfort in the workplaces.

4.3.1.3. Layout of the plots

The ring road for primary vehicle traffic will define the placement of the plots: the largest will be on the external banks, while the mid-sized and small plots will be on the secondary inner road network. Given that the plots can be easily brought together on the long side, we would like to emphasize the great rationality of this layout. In fact the plan presents the mostly rectangular plots with their short side facing the road, optimizing the particular relationship between the road surface and the number of plots and assuring the best accessibility. In sizing the plots we referred to Italian and European dimensional standards, because the Jenin industrial area will reflect both the regional market and the strong presence of international operators. The current scenario requires a reduction in the number of plots compared to previous studies: the present *master plan* forecasts a total number of 111 plots which will house industrial, craft or trade activities: 23 large sized (8-10.000m2), 52 med sized (3.000m2) and 36 small sized (1.000m2).
The industrial buildings will be sized corresponding to the different surface areas of the plots, classified SMALL, MEDIUM, LARGE and EXTRALARGE, as reported in fig.12. The smaller sized buildings will be concentrated in a barycentric zone, served by a secondary road, which runs parallel to the main entrance road and is equipped with ample car parks. They will house the craft and the trade factories.

Figure 4. 12. Typological and dimensional features of standard industrial buildings



4.3.1.4. Green areas and facilities

For the car park system and for the green areas in the industrial zone, we have developed a linear system of green strips with rows of trees and favouring the qualitative rather than the quantitative. The green area will be an ornamental element and an opportunity to beautify the road space. The green are will indicate the main entrance and the main road along its axis, like a visual barycentre, beginning from the service area. It will be both an official marker and a relaxing place for breaks during the working hours, for a walk or a conversation. The natural elements along the boundaries will also serve as a visual barrier and as an environmental mitigation especially near the technical sites where noise, smell and view pollution are possible.

Finally, we underline the important contribution that the grassy areas and the tree planted zones give to the improvement of the local microclimate, which will be taxed by the general problems arising from industrial development. The extensive presence of asphalt or waterproofed surfaces can have severe consequences. The same attention will be paid to the car parks and open spaces, which will be provided with tree plantings.

The presence of a 4ha area along the linking road about 500 m. before the industrial area, represents a careful assessment regarding the services best located within this administrative area (see paragraph 3.3.2) and the ones best kept inside the industrial area close to the production activities, which are:

- ancillary services such as the Post office and the Bank;
- canteens, restaurants and bar;
- health centre;
- Data Processing Centre;
- Police station and Fire station;
- the Offices of Development and Management companies.

Surrounding the buildings, which house the main facilities for the companies and for the people working in the area, there will also be the primary open spaces, such as squares and public gardens.

Figure 4. 13. View from the west: the long entrance boulevard of the industrial area; on the right side, the fenced boundary of the logistic area

4.3.2. The logistic area

Figure 4. 14. Location of the logistic area

4.3.2.1. Accessibility, road system and car parks

Regarding the logistic area, the master plan presents a layout, organized on a ring road for the primary vehicle traffic, which will surround the buildings in the logistic area along an east-west axis. The road of the

main network will be 12mt wide, with two lanes (6+6 m wide); the pavements will be 1.5 m wide only on the external side. The turning radius will never be less than 20 m. The wide loading/unloading zones will be located close to the warehouses and will be paved in concrete, to support heavy loads. The secondary roads will be reserved for car traffic and will be north-south oriented. The roads will be 7m wide (two 3.5 m lanes). They will cross the car parks and access the warehouses on their shorter side, where the offices and the staff entrances are located, reducing conflict with truck circulation. The entrance zone will be located at the north-eastern corner of the ring road, with entrance points arranged on a 3 lane entrance and 3 lane exit system. An inner gate will also be located near the main gate enabling a direct communication between the industrial and the logistic areas. This gate will be utilized primarily by authorized staff, for example security officers or garbage collectors. Green and service areas will be located outside the ring road, as specified in paragraph 4.3.2.4..

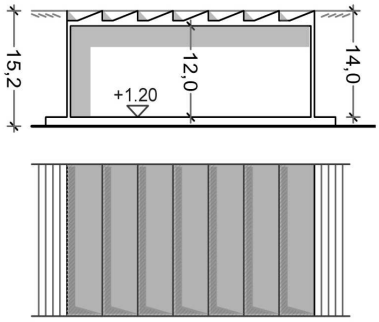
4.3.2.2. Technical support infrastructure

The technical support systems will be installed beneath the roadway, as follows:

- power distribution network, including Medium-tension substations;
- water supply network;
- telephone and data transmission network;
- security and control electronic systems (video cameras, sensors);
- civil and industrial sewage system;
- rainwater collection network;
- public electric lighting for roads, green areas, car parks.

Figure 4. 15. Typological and dimensional features of logistic buildings

Also in this case, the distribution system will be integrated with the energy production of the solar panels, which will be installed on the roofs of the buildings (shed system (fig.4.15), south-oriented). The north-oriented windows will create the best conditions for the exploitation of indirect natural light, contributing to energy savings and comfort in the workplaces. The logistic area will be furnished with an ECO CENTRE, for the collection and separation of waste.



4.3.2.3. Organization of the logistic area

The road network will define the general layout on an east-west axis, with buildings oriented longitudinally, of about 5.000m2 and characterized by two long facades (northern and southern), which will house the loading docks. Among these will be located a building of about 7.000m^2 containing a cooling-system for cold storage. The only exception within the basic layout will be a building of about 18.000m^2, included in the 2nd phase.

The squared-off spaces in front of the buildings will be 20+3m, allowing 12m of road space for the manoeuvring of trucks. A free area will be designated for stocking open air containers and will be equipped

for providing power to the cooling system. This open area will be around 550m in length, enough to accommodate a merchandise train of that length , in this way assuring intermodality for the logistic centre. Regarding the size of the plots we referred to Italian and European dimensional standards, in particular to the knowledge gained through the experience of the Quadrante Europa, the logistic and intermodal centre in Verona.

Figure 4. 16. View of the logistic area

4.3.2.4. Green areas and facilities

The green system in the logistic zone will play primarily the role of external barrier and environmental mitigator since, inside the operational zones, mobility requirements render each physical obstacle problematic. These barriers will be 15 to 30 m wide and along the southern and western boundaries will be dotted with trees. The ancillary services in the logistic area will be:

- a customs area with a plaza and warehouse, also for extended inspections;
- analysis laboratories (health and food inspection services);
- rest areas for truck drivers;
- inner car park for trucks operators;
- eco centre for the collection and separation of waste.

4.3.3. Off-site facilities and infrastructure

4.3.3.1. Circulation, road system and car parks

For this project, great attention was paid to traffic circulation, in order to prevent the so called “Single Points of Failure”, the particularly problematic points within the traffic system, providing alternatives in the event of breakdowns or accidents. First of all, it was essential to consider the circulation from the main road and the single gate to the rest of the industrial and logistic area. The project develops a complex road system with ancillary services, able to support the considerable expected vehicle traffic. We propose some solutions to these problems:

- doubling of the entrance gates, providing separate access to both areas, which house the industrial and logistic activities;
- the separation of traffic streams at the entrance and exit points (southern for the logistic area - northern for the industrial one);
- the organization of a waiting-queue lanes system, capable of absorbing, without congesting the central roundabouts, possible delays caused by the inspection and control operations at the entrance or exit;
- increase in the number of entrance gates to both areas, with 12 lanes organized in the manner of highway gates and equipped with electronic control systems (telepass);
- the location of two large external car parks: in the north a car park for 288 cars and in the south another for 40 trucks;
- the location of a bus-stop[10] centrally placed and close to the gates, equipped also for pedestrian access.

Figure 4. 17. Location of the off-site facilities and the infrastructures

4.3.3.2. Administrative service area

A general service area will be located in the external 4ha area. This location is more suitable for security requirements and functional autonomy. The services are:

- government agency offices (PIEFZA, ….);
- private company offices;
- workers and staff facilities such as nurseries and playschools, mosque;
- hospitality facilities such as residence and hotels;
- exhibition rooms;

[10] In the short term, only a bus-stop will be necessary, because public transportation to the city of Jenin is considered in the traffic studies as a preliminary question. But in the medium-long run, it could be possible to re-establish the old railway line Nablus-Alafola, with an underground station at JILA placed within the context of a Regional or Metropolitan Railway Network.

- conference rooms and connected services.

4.3.3.3. Additional services for truck operators

The organisation of the off-site road system will provide for additional service areas for truck operators at the southern end, such as the filling station and the machine shop.

Figure 4. 18. View of the eastern boundary of the industrial area with the off-site complex and, lower right, the power plant

4.3.3.4. Dimension of buildings and service areas

The master plan is the outcome of progressive planning and careful comparison with verifiable standards in the European industrial and logistic areas and with other feasibility studies within the West Bank (Jenin, Betlehem, Jerico). In *table 4.1.*, the assessments are calculated in terms of buildable area[11], total area[12] and volume of commercial, craft, production, logistic and service activities.

Of course, these are projections, since it's impossible to predict business requirements in terms of indoor and outdoor spaces. We therefore assigned to the industrial area a medium buildable ratio[13] of 50%, within a range of 40% to 60%.

11 The projection on the surface area of each building.

12 Space requirements for all structures, including walls and technical rooms.

13 The ratio between the buildable area and the plot surface.

The logistic area differs in that the overall dimensions will be independent of indirect variables.
The table shows also the number of expected buildings and some details about the ancillary services, including those located off-site.

Table 4.2. is subdivided by projected use with relative percentages: the areas for production buildings and warehouses; spaces for the road network, car parks, green areas and technical, administrative and ancillary services. Also shown is the number of internal and external car and truck parks, both for the industrial and the logistic area.
Infrastructure is included in the design of the project: roads, technological networks, standards, facilities. The flexibility of the area development will be ensured by the individuation of complementary phases, thanks to the following design elements:

- a full and functional autonomy between the logistic and the industrial areas[14];
- the realization, both in the industrial and in the logistic area of a first phase (80% of the gross area) including the road system and the primary technical support system and a second phase (20%) with the secondary roads and the secondary technical support system (*figure 4.19.).*

Figure 4. 19. Location of the first and the second phases in both industrial and logistic areas

[14] It will be best, in terms of general system efficiency, to effect a contextual development.

1st ph. industrial = 483.064sm (80%) 1st ph. logistics = 206.622,9sm (79%)
2nd ph. industrial = 123.370,4sm (20%) 2nd ph. logistics = 55.985,3sm (21%)(21%)
total industrial = 606.434,4sm total logistics = 262.608,2sm

4.4. Technologies & integrated process management

4.4.1. Power supply

How to deal with power supply is one of the most interesting of the Italian project's contributions, in terms of sustainability and technological innovation. For this phase of the study, we had a number of technical briefings with consultants and companies directly interested in investing in the JILA. These companies showed interest in the opportunities linked to the current energy research. Three processes will be organized within the power production technical area:

- the collection, separation and pre-treatment of waste from the industrial and logistic areas (ECO CENTRE);
- the subsequent introduction of organic and plastic waste into the fuel production system utilizing molecular restructuring;
- the use of liquid fuel in feeding the electric generators and co-generation systems.

This process will be integrated with a SOLAR PHOTOVOLTAIC POWER system, installed on the warehouse roofs, south oriented and cabled to the inverters, allowing for conversion from the direct to the alternating current. The generated power, which is not used inside the JILA, will be transformed, distributed and sold through a medium tension network, linked to the local power distribution network. The installation will be expensive. However the use of renewable energy sources will balance the investment, with economic incentives and financial contributions for environmental protection.

4.4.2. Water

4.4.2.1. Rain water drainage and collection system

During some periods of the year, the rainfall in the Jenin area ensures great water accumulation. This suggests the need to organize an efficient rain water drainage and collection system. In the Palestinian Territories, open air drains are normally used, as confirmed by the road sections in the feasibility studies (paragraph 4.1.2.). However, we think it would be useful to organize a closed drainage system (with drains, wells and sealed pipes), ensuring a reduction of leakage and/or evaporation. Rain water will be collected in an underground reservoir, located in the north-western technical site of the industrial area, where there is a natural slope. The correct dimensions of this facility will require a specific engineering study.

4.4.2.2. Sewage collection & wastewater treatment plant

This project is inspired by sustainability and self-sufficiency goals. We therefore envisage the recycling of waste water both from the industrial processing and from the logistic and administrative services. According to the required pollution levels, specific waste water pre-treatments will be conceived for each industry. The water will then be collected and sent to the technical site in the north western corner of the industrial area, where the central depuration plant and the pumping station will be located**.** Finally the water will be re-circulated in the internal water network. In this case too, the project will call for specific engineering skills.

4.4.3. Solid waste management

The industrial solid waste will be directly piped into the ECO CENTRE for separate collection at the technical site of the power plant. The waste from the logistic area will be kept in a temporary internal collection site and daily transferred to the ECO CENTRE.

The use of waste for fuel production suggests the possibility of integration with the waste collection system of the Jenin urban area. This objective determined the location of the technical site, which will be close to the north-eastern boundary and easily accessible from the off-site roads to the industrial area. There will also be the possibility of expansion in the future. As regards the JILA requirements, in case of overproduction, fuel can be easily stockpiled and transported for sale.

4.4.4. Telecommunications network

Regarding the phone network and the data transmission system, agreements will be made with the phone companies. The choice was made to utilize an underground cable network rather than a *wireless* systems, due to better security guarantees.

4.4.5. Check point and security

The entrance gates (par. 4.3.1.1. and 4.3.2.1.) will function like a motorway toll gate, with the permanent presence of attendants, who will check a identifications, entrance/exit authorizations, cars and merchandise. Efficiency and speed will be considerably improved thanks to the use of electronic systems such as TELEPASS[15]. The number of lanes (3 at the entrance and 3 at the exit, for both areas) will ensure the operability of at least two lanes, in case of breakdown. The lanes will be separated by the gatekeeper's lodges.

The entire area will be fenced and the movement of goods and people between the two areas, industrial and logistic, will be checked and regulated with differing security levels:

- inside the industrial area, the security level will be lower, due to the great number of workers, visitors, suppliers and purchasers.
- the logistic area should have a high level of security because of the sensitivity of the customs operations, the hygienic, sanitary and quality control, the cold storage system and also, if authorized by the Israeli border authorities, the sealing of the truck, for crossing into Israel through the Al Jalama check-point.

A centralized surveillance camera system will control all public spaces: the roads, the car parks, the green areas and the boundaries. Private properties will be equipped with anti-intrusion alarms.

[15] Except for occasional anomalies, the capacity at the check points for vehicles with telepass could reach 450 vehicles/hour (about 8 seconds/vehicle) while, in the case of ticket buyers, the capacity decreases to 120 vehicles/hour (about 30 seconds/vehicle).

4.5. Environmental impact

When the design reaches the execution phase, it will be necessary to proceed to the Environmental Impact Assessment (EIA) due to the size of the industrial and logistic area and the expected consequences on the local environment and community in the Jenin district. The EIA will be based on the following considerations:

- the project description, in particular:
  - the physical characteristics and functional requirements of the project areas, during both the construction and the operational phases;
  - the main characteristics of production processes (nature and quantity of used materials);
  - the kind and quantity of waste and expected emissions (water, air and ground pollution, noise, vibrations, light, heat, radiation...);
  - the technologies and techniques which reduce emissions and decrease the use of natural resources, the best available equipment at acceptable costs;
- the assessment of the main alternatives, including the zero option; the comparative study and the environmental guidelines;
- the environmental factors involved in this project: people, fauna and flora, ground, water, air, climate, material goods (agricultural and food, architectural and archaeological heritage), landscape and the interaction among all these factors;
- the assessment of the expected environmental impacts of the project: direct and indirect; cumulative; at short, medium and long term; permanent and temporary; positive and negative. These impacts will include the consumption of resources , emission and production of noxious substances and the need for waste disposal;
- a description of the necessary actions for avoiding, reducing and compensating for the project's negative impact on the environment;
- a description of the necessary steps for environmental monitoring.

We can say in advance that the overall design choices pursue environmental sustainability goals, particularly in the case of the integrated management of the resource production cycle (water, power and waste) presenting an acceptable balance between environmental standards and economic and social progress.

Figure 4. 20. Photomontage of the tridimensional model on the background of the Jenin plan

4.6. Conclusions

It is our aim to create a master plan of high qualitative standards, utilizing an urban, architectural and environmental design which will ensure:

- a functional organization in terms of accessibility, traffic and car parks;
- a correct allocation and functional layout of the logistic and industrial processes;
- use of green areas, public spaces and facilities which will provide “quality of life” in the workplaces;
- a system flexible enough to absorb temporal processes and transformations which are not always predictable;
- an integrated management of the resource production and consumption cycle (water, power, waste), ensuring a high level of sustainability.

Table 4. 1. Index of volumes and surface area

INDUSTRIAL AREA															
INDUSTRIAL BUILDINGS	lot surface (m2)*	covering index		building surface (m2)	n°	total covering surface (m2)	h	volume (m3)	of which S.U.L.	% surf. Covered	n° floor	offices total S.U.L. (m2)	h	offices total volume (m3)
small size (S)	1 000	min	40%	400	36	14 400	4.5	64 800	50	12.5%	1	1 800	3.0	5 400
		max	60%	600		21 600		97 200	75			2 700		8 100
		med	50%	500		**18 000**		**81 000**	63			**2 250**		**6 750**
medium size (M)	3 000	min	40%	1 200	42	50 400	7.0	352 800	300	12.5%	2	12 600	3.0	37 800
		max	60%	1 800		75 600		529 200	450			18 900		56 700
		med	50%	1 500		**63 000**		**441 000**	375			**15 750**		**47 250**
	3 015	min	40%	1 206	10	12 060	7.0	84 420	302	12.5%	2	3 015	3.0	9 045
		max	60%	1 809		18 090		126 630	452			4 523		13 568
		med	50%	1 508		**15 075**		**105 525**	377			**3 769**		**11 306**
big size (Lw) west side	9 745	min	40%	3 898	9	35 083	7.0	245 580	975	12.5%	2	8 771	3.0	26 312
		max	60%	5 847		52 624		368 370	1462			13 156		39 468
		med	50%	4 873		**43 854**		**306 975**	1218			**10 963**		**32 890**
big size (Le) east side	8 127	min	40%	3 251	4	13 003	7.0	91 019	813	12.5%	2	3 251	3.0	9 752
		max	60%	4 876		19 504		136 529	1219			4 876		14 628
		med	50%	4 063		**16 253**		**113 774**	1016			**4 063**		**12 190**
big size (XLn) north side	9 800	min	40%	3 920	10	39 200	10.0	392 000	980	12.5%	2	9 800	3.0	29 400
		max	60%	5 880		58 800		588 000	1470			14 700		44 100
		med	50%	4 900		**49 000**		**490 000**	1225			**12 250**		**36 750**
total	**410 363**			total (average covering index)	**111**	**205 182**		**1 538 275**	total			**49 046**		**147 137**
												S.U.L. (m2)		**volume (m3)**
internal CENTER of SERVICES	6 043			1 800	1	1 800	7.0	12 600			2	3 600	3.5	12 600
police station and fireman	4 436			1 620	1	1 620	7.0	11 340			2	3 240	3.5	11 340
total	**10 480**					**3 420**		**23 940**	total			**6 840**		**23 940**

* net or average, in the case of irregular lot

LOGISTIC AREA														
LOGISTIC BUILDINGS	lot surface (m2)			building surface (m2)	n°	total covering surface (m2)	h	volume (m3)	of which S.U.L. offices (m2)	% surf. Covered	n° floor	offices total S.U.L. (m2)	h	offices total volume (m3)
	62 480			4 900	5	24 500	12.0	294 000	735	7.5%	2	3 675	3	11 025
	19 097			7 000	1	7 000		84 000	1 050			1 050		3 150
	25 471			17 920	1	17 920		215 040	2 688			2 688		8 064
total	**107 048**			total		**49 420**		**593 040**	total			**7 413**		**22 239**
												S.U.L. (m2)		**volume (m3)**
customs and control services	3 223			1 080	1	1 080	7.0	7 560			2	2 160	3.5	7 560
customs deposit	14 164			3 000	1	3 000	7.0	21 000			1	3 000	7.0	21 000
laboratory	2010			1 260	1	1 260	7.0	8 820			2	2 520	3.5	8 820
services (bath rooms, showers, relief services)	621			324	1	324	7.0	2 268			2	648	3.5	2 268
total	**20 017**			total		**5 664**		**39 648**				**8 328**		**39 648**

EXTERNAL								
Private services	lot surface (m2)			building surface (m2)	n°	total covering surface (m2)	h	volume (m3)
machine-shop				1 500	1	**1 500**	7.0	**10 500**
External administrative and service area	40 403							

Table 4. 2. Index of surface area – type of structure

	INDUSTRIAL AREA			LOGISTIC AREA		TOTAL		external surfaces	
KIND OF DESTINATION	surface (m2)	note	%	surface (m2)	note	surface (m2)	%	surface (m2)	note
lots	**410 363**		**67.7%**	**107 048**		**517 411**	**59.5%**		
of which:									
floors	205 182			49 420		254 602			
				of which:					
				7 000	COLD STORE				
uncovered pertinences	205 181			57 628		262 809			
				of which:					
				41 476	paved in cls				
services area	**10 480**		**1.7%**	**20 017**		**30 497**	**3.5%**		
of which:									
services buildings	3 420			1 080	customs services	9 084		1 500	machine-shop
				2 143	pertinences				
				3 000	custom deposit				
				11 164	custom service area				
				1 260	laboratory				
				750	pertinences				
				324	services			2 827	petrol station
				297	pertinences				
uncovered pertinences	7 060			14 353		21 413			
car parking	**25 293**		**4.2%**	**4 681**		**29 974**	**3.4%**	8 587	
n° car places	995			258		1 253		288	
lorry parking				**10 312**		**10 312**	**1.2%**	8 780	
n° lorry places				40		40		40	
store-yard	0			22 217		22 217	2.6%		
road surface	**72 655**		**12.0%**	**50 629**		**123 283**	**14.2%**		
pavement	**11 731**		**1.9%**	**4 660**		**16 390**	**1.9%**		
green area	**56 441**		**9.3%**	**40 217**		**96 658**	**11.1%**	**75 436**	
								36 434	east side
								39 003	west side
									(until the cross with the road)
POWER SYSTEM	14 054		2.3%			**14 054**	1.6%		
WATER SYSTEM	5 418		0.9%			**5 418**	0.6%		
ECOCENTER				2827		**2 827**	0.3%		
TOTAL	**606 434**	70%	100%	**262 608**	30%	**869 043**	100%		

Figure 4. 21. The General Masterplan

5. The Jenin Sustainable Industrial and Logistic Area (JILA): economic and financial analysis

Executive Summary

The Industrial and Logistic Area in Jenin is a self sustainable project involving an integrated cluster of firms and a logistic port based in Jenin, Palestine. This project represents the first pillar of the larger project Euromid Network which aims at developing a symbolic bridge linking the Europe and the Middle East to foster trade and local development and to provide an opportunity for greater social and cultural integration.

The project is an important opportunity to:

- establish a relationship between the Palestinian and Israeli economies;
- open the Palestine enclave economy and to improve security through efficient scanning techniques to allow movement;
- encourage Palestinian diversification through new trade agreements, new infrastructure and adoption of productivity enhancing technologies;
- generate employment in the short run of both unskilled and skilled resources;
- favor industrial development projects independent for both energy and water supply with low environmental impact.

As illustrated in the attached master plan, the project, which covers an area of about 90 ha located in the Jenin territory destined to industrial use, consists of the following subprojects:

- industrial park (66,34% area);
- land port (27.59% area);
- security check point (2.30% area);
- power plant from alternative sources of energy (1.94% area);
- water management facility (0.62% area);
- administrative area (1.21% area).

The project plan has the following main features:

- modern infrastructures, and factory construction;
- cold stores;
- water and electricity supply;
- capable sewage systems;
- paved roads that can absorb the movement of wagons and semi-trailers;
- parking areas, container park, open 24 hours a day, with continual human and electronic guard duty;
- vehicle assistance centre for immediate mechanical needs for cars, for fuel distribution and for vehicle wash;
- a dumping site for wastes;
- daily public transport system during working hours connecting the industrial and logistic area with the city of Jenin;

- communication infrastructure;
- offices of the operators, postal, banking, customs, currency exchange, catering and data transmission services;
- veterinary service and laboratory analysis for quality control;
- export office, which work to export the products to Europe and other Countries;
- marketing office, promoting products and exploring new markets opportunities;
- free movement of people and products through low restrictive checkpoints, and thanks to the advanced planning technology;
- possibility to recruit skilled and unskilled workers and professionals in the area.

The industrial portfolio. The analysis shows that the most important sectors in terms of impact on economic growth and employment are:

1. building materials;
2. textile and clothing;
3. food and beverages;
4. metal products;
5. chemical and cosmetics;
6. plastic and rubber;
7. leather products
8. others;

Economic Returns. The economic analysis is better than the financial return on investment mainly thanks to the presence of socio-economic valuation of the benefits. In fact the economic analysis gave these performance indicators:

- Economic internal rate of return (ERR): 89%.
- Benefit cost ratio (BCR): 2.12%.

Financial Returns. The total estimated cost of the project is 84.67 millions euro. This will be financed by a EU grant (30%), by national public contribution, USA, Canada, North Countries, etc. (20%), by the Italian government (12%), and by loans (38%). From the financial analysis we have obtained the following results:

- Financial rate of return on investment - FRR(C)= 10%.
- Financial net present value of the investment - FNPV(C)= 47 millions €.

This means that the project seems able to remunerate all its costs, with a rate that is higher than 5% benchmark.

Employment Returns. The investment is expected to generate 157 industries and about 4,887 new direct employment opportunities at full development of the JILA and an indirect employment effect in the area as large as 1.5 times the direct effect, in line with the assumption used in the appraisal of the Gaza Industrial Estate project. The logistic area and the administrative services employ about 518 people. The total number of employment opportunities is 5,405. For the first five years, the construction of the JILA will absorb 289 people for year.

Environmental Impact. The energy plant uses both solar energy and molecular restructuring of industrial and urban waste to ensure self sufficiency. The water management facility captures rain water from roofs and floors and recycles industrial water to guarantee a 100% level of autonomy. It was realized that this challenging project has positive impacts to socio-economic environment such as income generation, creation of employment opportunity, reuse and recycle of resources, improvement in terms of technology, production and human resources. Thanks to the eco center the anticipated negative impacts to physical environment are estimated to be minimal.

5.1. Valuation on JILA feasibility

We have analyzed the local economy with the purpose to verify the real possibility to create the industrial and logistic area in Jenin. We have used three important indexes:

- **share of planned industries on existing industries.** It measures the existence of an industrial framework, per sector, on local economy. On individuates a threshold at 20%. The cross of this critical value suggests to adopt economic policies with the focus to attract foreign firms. Ranking (0% - 20% = 3; 21% - 40% = 2; 41% - 100% = 1; 101% - 300% = 0);
- **actual vs. target industries with more than 5 employees.** It measures, thanks the presence of medium-big firms, the capacity of local industrial framework, per sector, to cover the foresees target of firms. More high is the percentage and more the local industries are developed. Ranking (0% - 50% = 0; 51% - 100% = 1; 101% - 300% = 2; 301% – 500% = 3);
- **target output increase per industry.** It measures how much the local firms have to increase (output, employment, …) to respect the focuses of the industrial plan. Ranking (0% - 50% = 3; 51% - 100% = 2; 101% - 200% = 1; 201% - 400% = 0).

Table 5. 1. Valuation on the feasibility of JILA

Economic Activity	Share of planned industries on existing industries (%)	Actual vs. target industries with more of 5 empl. (%)	Targeted output increase per industry (%)	Ranking (total score)
building materials	9	500	132	**7**
textile and clothing	11	280	109	**6**
others	16	28	35	**6**
food and beverages	11	213	327	**5**
metal products	8	5	112	4
chemical and cosmetics	40	25	151	3
plastic and rubber	100	38	213	1
leather products	300	33	167	1

Source: input – output table

FEASIBILITY FOR INDUSTRY

Buildings materials. The sector is bound to the construction industry and for this reason it presents a lot of developed firms.

Textile and clothing. It is the most developed local manufactory. The clothing trade is characterized by big firms, while the textile industry presents a large framework of micro establishments.

Others. It includes also the important wood and furniture manufactories. Not as developed the mechanical and electronics.

Food and beverages. It is the sector with the most high potential of development, in fact it has a solid base of local firms, sufficiently structured.

Metal products. At local level the sector presents a good presence of firms, even if they are small respect to the target plan.

Chemical and cosmetics. The attainment of the plan objectives depends on the capacity to attract firms from other economies, thanks to the diffused presence of micro business in the sector.

Plastic and rubber. The sector is not very developed in the local economy.

Leather products. The sector is under-developed. It is lacking in firms.

5.2. Demand in area: personnel, water and power requirements

In order to realize both economical and financial analysis, we need to estimate the demand levels in the JIA.

5.2.1. Subprojects and surfaces

To estimate the demand levels, it is interesting to divide them for each subproject. For this reason we calculated the surfaces that each of them will require.

Table 5. 2. Subprojects and surfaces (in m^2)

AREA (in m^2)	Check point	Water system	Logistic	Industrial	Administrative	TOTAL AREA
Power system			2 827	14 054		
Customs services	20 017					
Open plots			57 628	205 181	3 060	
Building plots			49 420	205 181	3 420	
Water system		5 418				
Car parks			14 993	25 293	4 000	
Storage squares			22 217			
Road surface/pavements			55 289	84 386		
Green areas			40 217	56 441		
Total	20 017	5 418	242 591	590 536	10 480	
TOTAL AREA						**869 042**

Source: project information, technical study

5.2.2. Industrial area

5.2.2.1. Sectors: number of industries

The first step of the demand projections assessment process entails identifying the most promising industry sectors that are likely to locate in the industrial area. The industry sectors identification is based on industries that benefit from the availability of labor force, backward linkage and existing industrial base, availability of natural resources. The targeted industries are those that will mainly create employment opportunities and enhance Palestinian exports.

Table 5. 3. Number of industries and area required

Category	Number of industries	Average area required per industry	Total	Effective total area	Share (%) industries per sector on total industries
	N°	Ha	Ha	Ha	
metal products	24	0.53	12.78	4.44	15.29
food and beverages	31	0.41	12.75	4.43	19.75
chemical and cosmetics	16	0.35	5.57	1.93	10.19
building materials	15	0.76	11.47	3.99	9.55
leather products	3	0.98	2.95	1.02	1.91
textile and clothing	20	0.16	3.10	1.08	12.74
plastic and rubber	4	0.33	1.32	0.46	2.55
Others	44	0.21	9.11	3.17	28.03
Total / Average	**157**	**0.38**	**59.05**	**20.52**	

Source: project information

We estimate to lease the industrial area to about 160 companies.

5.2.2.2. Sector employment

The following step is to analyze the labour demand: we will refer to prudential data of others industrial projects for the same area (West Bank).

Table 5.4. shows the data about employment.

Table 5. 4. Employment for industries

Category	Average per industry employees	Average per area empl./ha	Total employees
metal products	30	56	720
food and beverages	40	97	1 240
chemical and cosmetics	37	106	592
building materials	29	38	435
leather products	40	109	320
textile and clothing	40	193	600
plastic and rubber	25	152	200
Others	20	86	780
Total			**4 887**

Source: project information

Food and beverages industry absorbs the largest number of direct employment in industries. Also textile and clothing industry create a great number of employees and they contribute to absorbing relatively bigger indirect employment outside the industrial park.

Construction. For the first five years we have an important indirect effect on the local employment of the construction industry.

Table 5. 5. Employment for the construction industry

Size of construction industry (employees)	Number of employees		
	WB	WB+GS	JENIN
100+	300	300	0
50-99	525	600	75
20-49	525	875	0
10-19	825	1305	60
5-9	656	1128	32
1-4	448	726	54
Total employees estimated	**3279**	**4934**	**221**
Total employees (Palestinian Central Bureau of Statistics)	**2894**	**4354**	**195**
Share employees on total	66.46%	100.00%	4.48%
Share employees of JILA project (during 5 years)	9.35%	6.22%	138.77%
Employees each year (for the first 5 years)	**289**		

Source: input – output table and Palestinian Central Bureau of Statistics (PCBS).

On the first five years the construction of JILA absorbs each year 289 ((221+195)/2*138.77%) employees in construction industry. It absorbs all the work force of Jenin and a part of West Bank. It is necessary migration from others governatorates.

5.2.2.3. Water and power demand

The two main outputs of our project are water and power: we will be able to provide through the water supply distribution network, the photovoltaic plant and the molecular restructuring system, respectively. Since the demand for these outputs mainly comes from local industries, it is necessary to estimate demand for water and electricity.

Table 5. 6. Water requirement

Category	Per industry	Total
	m^3/year	m^3/year
metal products	1 301.23	31 229.40
food and beverages	9 889.31	306 568.61
chemical and cosmetics	4 605.21	73 683.28
building materials	3 800.02	57 000.23
leather products	2 744.80	21 958.40
textile and clothing	2 414.48	36 217.13
plastic and rubber	1 551.25	12 410.00
Others	3 269.31	127 502.90
Total		**666 569.94**

Source: input - output table

Daily consumption of water: 1,849 m^3.

Power demand per industry is shown in *table 5.7.*.

Table 5. 7. Power requirement

Category	Per industry	Total
	Kwh/year	Kwh/year
metal products	95 545	2 293 082
food and beverages	597 344	18 517 657
chemical and cosmetics	26 480	423 686
building materials	95 032	1 425 487
leather products	38 446	115 338
textile and clothing	93 516	1 870 311
plastic and rubber	390 159	1 560 637
Others	65 986	2 903 384
Total		**29 109 580**

Source: input – output table

Daily consumption of power: 79,752 Kwh.

5.2.3. Logistic, administrative, ecocentre, checkpoint and water management area

We repeat these procedures for the other areas of our project**:** logistic, administrative, ecocentre, check point and water management.

Table 5. 8. Demand in area and employments

Category	Offices	Area required		Employees		
		avg per office	total	avg per office	avg per area	total
	number	ha	ha	empl.	empl/ha	empl.
Administrative	25	0.014	0.34	6	439	150
Logistic			4.94			300
Power system			1.69			40
Check point	2	1.00	2.00	9	9	18
Water management	1	0.542	0.54	10	18	10
Total			**9.52**			**518**

Source: project information

To obtain estimate power demand, we assume that the average consumption for employee per year is 5,956.53 Kwh.

Table 5. 9. Power demand

Category	Offices	Employees	Power requirement	
		total	per employees	total
	number	number	kwh/empl/year	kwh/year
Administrative	25	150	5 956.53	893 480.05
Logistic		300		1 019 855
Power system		40	5 956.53	238 261.35
Check point	2	18	5 956.53	107 217.61
Water management	1	10	5 956.53	59 565.34
Total				**2 318 379.56**

Source: project information

For water requirement, we repeat the same procedure, using the industrial area average of 138.13 m^3/year for employee.

Table 5. 10. Water demand

Category	Offices	Employees	Water requirement	
		total	per employees	total
	number	number	m^3/year	m^3/year
Administrative	25	150	138.13	20 720.07
Logistic		300	138.13	41 440.14
Power system		40	138.13	5 525.35
Check point	2	18	138.13	2 486.41
Water management	1	10	138.13	1 381.34
Total		**9.52**		**71 553.30**

Source: project information

Total water and power demand in the JILA

Table 5. 11. Water and power requirement in administrative, logistic, ecocentre, check point, water management and industrial area

Category	water	power
	m^3/year	Kw/year
Administrative	20 720.07	893 480.05
Logistic	41 440.14	1 019 855.22
ecocentre	5 525.35	238 261.35
Check point	2 486.41	107 217.61
Water management	1 381.34	59 565.34
Industrial	675 059.84	29 109 580.02
Total	**746 613.14**	**31 427 959.58**

Source: project information

5.2.4. Waste

The data regarding waste come from a market survey of the chamber of commerce of Milan (Italy).

Table 5. 12. Waste production

Category	waste per industry	total waste	% on total
	t	t	
Administr./logistic		85	1.02%
metal products	53.30	1 279.25	15.31%
food and beverages	90.38	2 801.66	33.53%
chemical and cosmetics	58.79	940.59	11.26%
building materials	18.78	281.70	3.37%
leather products	26.40	211.22	2.53%
textile and clothing	45.06	675.85	8.09%
plastic and rubber	33.05	264.37	3.16%
Others	46.54	1 814.90	21.72%
Total		**8 354.54**	

Source: chamber of commerce of Milan (Italy)

- **Metal products:** chemical, metal pieces.
- **Food and beverages:** plastic, waste water, empty packages of food waste, expire product.
- **Chemical and cosmetics:** chemicals, waste water, cartons, empty packages.
- **Building materials:** stones, soil and other solid waste.
- **Leather products:** plastic material, waste water, leather, cartons, empty packages.
- **Textile and clothing:** garments pieces, waste water, stones , soil and dust, cartons, empty packages, other solid waste.
- **Plastic and rubber:** plastic, cartons, empty packages, other solid waste.
- **Others:** wood, cartons, empty packages, waste water, solid waste.

5.3. Financial Analysis

5.3.1. Basic Assumptions of the Financial Analysis

This chapter studies the financial feasibility of the project. We use the project's cash flow forecasts in order to calculate suitable return rates, specifically the financial internal rate of return (FRR) on investment (FRR/C) and own capital (FRR/K) and the corresponding financial net present value (FNPV).
This analysis will be summarized by three tables:

1) for investment returns (capacity of operating net revenues to sustain the investment costs) regardless of the way in which they are financed;
2) for the financial sustainability;
3) for the calculation of the returns on equity capital where the outflows (the own equity of private partners, the national contributions, the financial loans reimbursement, operating costs and interests, without considering the EU grant) are compared with the inflows (revenues).

Table 5. 13. Financial analysis assumptions

Unit of calculation	euro
Implementation period	5 years
Project life	25 years
Operating costs and revenues	30% second year, 40% third year, 60% fourth year, 80% fifth year, 100% from sixth year
Source of financing	30% EU grant, 12% Italian government, 20% national public contribution, 38% loans
Loan	8 years, interest rate of 5%
Discount rate	5%

Source: project information and CBA guide

The assumed life times adopted for the calculation of re-investment and residual values of particular infrastructure components are shown in *table 5.14.*.

Table 5. 14. Years of useful life

Item	Life (years)
Buildings	25
Equipment	8
Power system	25
Cold store	8
Security	8
Water system	25
Car parks	25
Roads	25
Squares	25
Green areas	25
Unplanned and start-up expenses	25

Source: project information

5.3.1.1. Time Horizon

Time horizon can be defined as the maximum number of years for which forecasts are provided.
We should choose a period appropriate to project's economically useful life and assume a point where both assets and liabilities will be liquidated. This point is important to evaluate the profitability of the investment. For the majority of infrastructures the time horizon is at least 25 years. Nevertheless, the time horizon should not be so long as to exceed the economically useful life of the project. We assumed a 25 years time horizon, corresponding to the useful life of industrial area infrastructures.

5.3.1.2. Prices of Productive Factors and Project Outputs

LAND. The land is available to the JILA Management Company thanks the Palestinian government, as endowment fund. The compulsory acquisition of land has a cost of 6.9 €/m2 included arrangement cost.

POWER. This is the main output of the eco center, where a photovoltaic plant will catch solar energy to generate electricity, that will be provided to the surrounding zone through the power supply distribution system. We also obtain electricity from a creation of a molecular restructuring industry, that transform waste in energy.

WATER. Our project foresees a system of storm water drainage channel, recycle industrial water and a water supply distribution network. In this study we assume that water and power production has to satisfy all the demand coming from the local industries. The major production could be introduced in the local network. We assume a unitary electricity price of 0.50 NIS/kWh (corresponding to 0.091 €/kWh) and a unitary water price of 4 NIS/m^3 (corresponding to 0.73 €/m^3)[16]. We can consider them as benchmark prices, in absence of distortion.

WASTE. A source of revenues is represented by the waste treatment, since the local companies will pay a tariff for the recycling of the waste of their production activities.
It is possible to consider this tariff as a particular kind of input's price. We assume it equal to the average tariff of 2.7 €/m^2.

5.3.1.3. Real Financial Discount Rate

The financial discount rate reflects the opportunity cost of capital, defined as 'the expected return forgone by bypassing other potential investment activities for a given capital. There are three possible ways to calculate this rate:

- the first one estimates the actual (weighted average) cost of capital. The benchmark for a public project may be the real return on Government bonds (the marginal direct cost of public funds), or the long-term real interest rate on commercial loans (if the project needs private finance), or a weighted average of the two rates;
- the second approach establishes a maximum limit value for the discount rate as it considers the return cost from the best investment alternative;
- the third approach is to determine a cut-off rate as a planning parameter. This implies using a simple rule-of-thumb approach, i.e. a specific interest rate or a rate of return from a well-established issuer of securities in a widely traded currency, and then to apply a multiplier to this minimum benchmark.

[16] Based on the Palestine statistical data of 2006.

For the programming period 2007-2013, the European Commission recommends to consider a 5% real rate as the benchmark parameter for the opportunity cost of capital in the long-term.

5.3.2. Fixed Investments

The investment costs are classified by:

- fixed investments,
- start-up costs, and
- the changes in working capital over the entire time horizon.

Fixed investments usually are the largest component of total investment costs.
The information relating to fixed investments will be taken from the feasibility study data on localization and technology. The items to consider are:

- buildings
- equipment
- power plant
- cold stores
- security
- water management system
- solid and liquid waste collection system
- parking
- roads
- storage squares
- green areas
- wireless covering
- other expenses
- extraordinary maintenance
- residual value

BUILDINGS. Our market research quote the following costs: 170 $/m^2 (127.08 €/m^2) for plots equipped with standard factory buildings (JSFBs) and 200 $/m^2 (149.51 €/m^2) to prepare administration and building services. Our area also contains logistic warehouses and offices, whose construction cost is estimated at 127.08 € because offices are into the logistic warehouses. Buildings concern three areas: industrial (for 205181 m^2), logistic (53158 m^2), divided between warehouses and offices) and administrative (6840 m^2) ones. We multiplied these areas for the unitary cost above mentioned, obtaining the following costs.

Table 5. 15. Building costs

	Quantity in m2	euros/m2	Costs (euros)
Industrial area buildings	205 181.00	127.08	26 074 401
Logistic area warehouses	45 745.00	127.08	5 813 275
Logistic area offices	7 413.00	127.08	942 044
Administrative and Services Buildings	6 840.00	149.51	1 022 648
Total Building Costs			**33 852 369**
Underground service systems			2 708 189
TOTAL			**36 560 558**

Source: project information

The cost of the underground service systems is 8% of the building costs.

EQUIPMENT. For industrial area equipment we chose to include in our analysis the previews of the German study and the data from the industrial area in Verona. It contained six items: vehicles, heavy duty equipments, maintenances tools, office equipment, furniture and fixtures and warehouses equipment. In

we can see a brief description of these items with the forecasted costs.

Table 5. 16. Equipment costs

Item	Cost ($)	Cost (€)	Notes
Vehicles	80 000	59 804.14	Pick-up and cars
Heavy-duty equipments	200 000	149 510.35	Refuse collection vehicles
Maintenance tools	15 000	11 213.28	Tools for maintaining administrative buildings, factories and infrastructure
Office equipment	25 000	18 688.79	Computers, phone system
Furniture and fixtures	25 000	18 688.79	Furniture and fixture for the administrative buildings
Warehouses	1 070 160	800 000.00	Two jib cranes
Total equipment cost	**1 415 160.24**	**1 057 905.35**	

Source: project information

POWER PLANT. This name indicates the infrastructures localized in the eco centre area; the photovoltaic plant and the power supply distribution network. The future power demand of the park amounts to 31 MVA. The power supply will be ensured trough:

- **Photovoltaic plant.** The solar surface can be used to produce power to be sold by the management company, or it can be leased. We assume that the options are equally profitable:
  - the 2/3 of the logistic area will be covered by photovoltaic (35,000 m^2, 10 millions of euro of cost, 2 millions of Kwh produced);
  - thanks a contract the solar surface is let out for a return of 100,000 € at year.

On the study we will follow the first hypothesis.

- **Molecular restructuring** system: it transform industrial and urban waste. The cost is about 10 millions euro, and it produces 37,900,000 Kwh. Each year we have estimate a prudential cost of 2 millions euro for maintenance and unplanned costs.

The total cost for the power system is about 20 millions euro.

COLD STORES. These ones are included in logistic warehouses and allow the preservation of some products of agro-industrial sectors. Since the arrangement of the warehouses for the preservation of goods costs 250 €/m^2, we multiplied this number by the surface with cold stores (7,000 m^2). This expenditure will be incurred again in 2018 and in 2027, because the estimated useful life of cold stores is 8 year.

SECURITY. The security checkpoint adopts top level technology. We referred to some standard costs for complex industrial areas[17]:

- motor vehicles access passage: 25,000 € for each lane;
- plate numbers recognition system: 20,000 € for each lane;
- video surveillance system: 2,000 € for camera;
- dome camera (360° view): 3,500 € for each one;
- fixed camera: 1,800 € for each one;
- infrared night-lighting system: 600 € for each one;

[17] Source: project information.

- infrared barriers anti-intrusion system: 70 € for each meter to control.

For the project we have made these assumptions: 20 lanes (in and out), 100 dome cameras, 125 fixed cameras, 6 infrared night-lighting system (one for every area), a perimeter of 3,729 m to control. Given this set of characteristics of the security system, we estimate the following costs for the security subproject.

Table 5. 17. Security costs

Item	Cost (€)
Motor vehicles access passage	500 000
Number-plates recognition system	400 000
Video surveillance system	200 000
Dome camera	350 000
Fixed camera	225 000
Infrared night-lighting system	3 600
Infrared barriers anti-intrusion system	261 023
Total	**1 939 623**

Source: project information

WATER MANAGEMENT SYSTEM. The cost is about 13.27 millions €. This system guarantees the water self – autonomy through:

- industrial water collection and purifier;
- meteoric water collection and purifier;
- integrated water treatment system.

CAR PARKINGS. Parking places will be constructed in both industrial and logistic areas. The surface will extend for 44,286 m^2. The unitary costs 10 €/m^2, with a total cost of 442,860 €.

ROADS AND PAVEMENTS. Our project foresees 139,675 m^2 of roads and pavements for the way of people and vehicles and the transit of goods in industrial and logistic areas. The construction average costs is 25 €/m^2 (in presence of sewers and in absence of sewers). The cost is 3,491,875 €.

STORAGE SQUARES. It is part of the logistic area where there are the stocking containers. Even in this case the unitary costs is 25 €/m^2, with a total cost of 555,425€.

GREEN AREAS. It is divided between logistic and industrial area, with a total surface of 96,658 m^2. The unitary cost here is more contained (1 €/m^2), with a total cost of 96,658 €.

5.3.3. Total Investment

The total capital investment is estimated at about 85 millions euro.

Table 5. 18. Total investment composition

	Euros	% on investment
Buildings	36 560 558	43.18%
Equipment	1 057 905	1.25%
Power system	20 000 000	23.62%
Cold store	1 750 000	2.07%
Security	1 939 623	2.29%
Water system	13 275 000	15.68%
Car parks	442 860	0.52%
Roads	3 491 875	4.12%
Squares	555 425	0.66%
Green areas	96 658	0.11%
Insurance costs	4 000 000	4.72%
Unplanned and start-up expenses	1 500 000	1.77%
TOTAL INVESTMENT COSTS	**84 669 904**	**100.00%**

Source: project information

Table 5. 19. Allocation of investment costs among the first years (in %)

year			2011	2012	2013	2014	2015
	years for construction	years of useful life	share				
Buildings	5	25	0.3	0.1	0.2	0.2	0.2
Equipment	5	8	0.5	0.2	0.1	0.1	0.1
power system	1	25	1				
Cold store	2	8	0.5	0.5			
Security	1	8	1				
Water system	1	25	1				
Car parks	5	25	0.3	0.1	0.2	0.2	0.2
Roads	2	25	0.5	0.5			
Squares	2	25	0.5	0.5			
Green areas	2	25	0.5	0.5			
Insurance costs	5	25	0.2	0.2	0.2	0.2	0.2
Unplanned and start-up expenses	2	25	0.70	0.3			

Table 5. 20. Allocation of investment costs among the first years (in €)

year			2011	2012	2013	2014	2015
	years for construction	years of useful life	share				
Buildings	5	25	10 968 167	3 656 056	7 312 112	7 312 112	7 312 112
Equipment	5	10	528 953	211 581	105 791	105 791	105 791
Power system	1	25	20 000 000				
Cold store	2	12	875 000	875 000			
Security	1	10	1 939 623				
Water system	1	25	13 275 000				
Car parks	5	25	132 858	44 286	88 572	88 572	88 572
Roads	2	25	1 745 937	1 745 938			
Squares	2	25	277 712	277 712			
Green areas	2	25	48 329	48 329			
Insurance costs	5	25	800 000	800 000	800 000	800 000	800 000
Unplanned and start-up expenses	2	25	1 050 000	450 000			

5.3.4. Operating Revenues and Costs

The following step in financial analysis is the calculation of the total operating costs and revenues.

OPERATING COSTS. The operating costs comprise all the data on the disbursements foreseen for the purchase of goods and services, which are not of an investment nature since they are consumed within each accounting period. A standard classification distinguishes these categories:

- the direct production costs (consumption of materials and services, personnel, maintenance, general production costs);
- administrative and general expenditures;
- sales and distribution expenditures.

Operating costs are mainly formed by maintenance and administrative costs and management wages.

MAINTENANCE COSTS AND EXTRAORDINARY EXPENSES. We assume that total maintenance costs equal 1% of the total investment cost.

ADMINISTRATION AND MANAGEMENT COSTS. We recall that the management staff is if 105 employees with an average wage of 400 € for month. We have assumed that there are 3 managing director with a salary of 1,000 €. This amount refers to the full capacity year but it is subject to expected annual increase due to regular annual increases in the prevailing prices.

Table 5. 21. Wages for employees and manager

	number of employees	cost (€) / year
Administrative (Development company)	20	
Administrative (Management company)	20	
Power system	40	
Check point	18	
Water management	10	
TOTAL	**108**	**540 000**

Source: project information

REVENUES. Projects may generate their own revenues from the sale of goods and services. This revenue will be determined by the forecasts of the quantities of services provided and by their prices. The following items are usually not included in the calculation of future revenues:

- transfers or subsidies;
- VAT or other indirect taxes charged by the firm to the consumer

The expected principal revenues will come from the following sources:

- lease;
- power supply;
- water supply;
- waste treatment.

It is further assumed that development and occupancy of the JILA would take place over a period of about five years, i.e., from year 2011 to the end of year 2015 in mind the fact that from engineering point view, there will be overlap between steps of implementation. Consequently, all revenues are expected to begin in year 2011 and to increase progressively as infrastructure works and the construction of industries is

completed. The full amount of estimated revenues (that we are going to calculate below) will accrue as from the year 2014 onwards.

LEASE INCOME. The JILA Development Company can decide either to let or to sell the industrialized area. However we suggest don't to sell, because these site, in these zone and in these logistic position, is highly valuable. These revenues derive from the companies that will rent logistic, industrial and administrative areas.There are four kind of lease income:

- open plots/parking leased at US $ 5.35/m^2 ;
- building plots leased at US $ 45/m^2;
- cold store leased at US $ 60/m^2;
- administrative offices leased at US $ 70/m^2.

We have to multiply these rents by the respective surfaces.

Table 5. 22. Revenues from the lease of the industrial site

	$/m^2	€/m^2	m^2	Revenues ($)	Revenues (€)
Open plots/car parks (industrial area)	5.35	4.00	230 474	1 232 481.28	921 896.00
Building plots (industrial area)	45	33.66	205 181	9 233 145.00	6 906 392.46
Building plots (logistic area - warehouses)	45	33.66	42 420	1 908 900.00	1 427 857.20
Building plots (logistic area - cold store)	60	44.88	7 000	420 000.00	314 160.00
Open plots/car parks (logistic area)	5.35	4.00	72 621	388 347.59	290 484.00
Open plots/car parks (administration area)	5.35	4.00	7 060	37 754.01	28 240.00
Building plots (administration area)	70	52.36	3 420	239 400.00	179 071.20
TOTAL lease revenues				**13 460 027.89**	**10 068 100.86**

Source: project information

POWER AND WATER INCOME. We have already estimated their prices, now we need multiply them for their requirements.

Table 5. 23. Power supply revenues

NIS/Kw	€/Kw	quantity Kw	Revenues €
0.50	0.091	39 900 000.00	3 627 272.73

Source: project information

Table 5. 24. Water supply revenues

Nis/m^3	€/m^3	quantity m^3	Revenues €
4.00	0.73	727 948.38	529 417.01

Source: project information

WASTE TREATMENT INCOME. For the same reasons, we determinated the waste production of industrial, logistic and administrative areas and we applied the tariff of 2.7 €/m^2. It is one of most economic Italian tariffs.

Table 5. 25. Waste treatment revenues

tot. m^2	€/m^2	Annual revenues
258 021	2.7	696 6.70

Source: project information

5.3.5. Financing

5.3.5.1. Sources of Financing

Another step in financial analysis is the identification of the different sources of financing in order to calculate the total financial resources of the project. Within the framework of EU co-financed projects, the main sources of financing are:

- community assistance (the EU grant);
- national public contribution (grants or capital subsidies at central, regional and local government level);
- national private capital (private equity under a PPP);
- other resources (EIB loans, loans from other lenders).

The Jenin project belongs to Public-Private Partnerships (PPP) category, since it can be financed by both public and private actors. Private investors will obviously decide to take part to this investment only if they have enough incentives. Their participation can bring some disadvantages because they have different aims and a higher risk-aversion than public actors.

About publicly financed part, the sources will be the European community, the Italian government and the northern states. The EU contribution is generally determined by multiplying the project's eligible expenditure by the co-financing rate of the relevant operational priority axis of the program. In this case we assumed that EU will finance the 30% of the total investment. Private contribution includes equity and loans. Equity is the own capital provided by participating companies. The other item regards the capital borrowed mainly from European Investment Bank. *Table 5.27.* resumes the sources of financing.

5.3.5.2. The management company (Italian and Palestinian role)

For this project we assume two different models of management:

- a PPP development company, owner and manager of the site;
- a management company (security, maintenance, waste management, etc.) controlled by the management company.

PPP Development Company. This is a territory-based institutional agency with tasks of urban planning and promotion of global territorial and economic growth. Its task is to create and integrate an industrial zone and freight village. This infrastructure system will be an important hub in the area of Jenin for merchandise processing, collection and distribution in the Middle East.

The Development Company , for attaining its purposes shall:

- cooperate with the relevant public authorities to determinate the legal instruments for territorial planning;
- study, schedule and carry out a plan of works necessary to a proper and complete implementation of the industrial and logistical area and related services;
- manage facilities and services;
- proceed to the expropriation of property or, even outside the agricultural-industrial areas already assigned, to their acquisition in accordance with the Palestinian law;
- allocate, for the development of the industrial and logistical area, properties in lease or in ownership - both in the industrial and in the logistical area - to public and private entities;

- carry out and promote all activities connected with the aims of development, also creating international collaborations.

Management Company. Company with public (Development Company) and private capital. This has the aim of providing the administration for the industrial and logistical structures , as well as the supply of a series of services to both public and private entities. This company will supply all the services linked to the onsite operators in the area, it being the operational entity capable of fulfilling all their needs and requirements so that they can carry out their respective activities. The staff will be able to relieve all the companies operating in the area of their administrative duties, duties which would slow down development, or would be too expensive if faced individually. The Company's primary duties:

- Managing the complex which houses the headquarters of the Development Company and the Management Company; the offices of the operators, the postal, banking, currency exchange, catering and data transmission services; veterinary service and laboratory analysis; customs services and guarded car park; public telephone services; a public transport system that connects the industrial and logistical area with the city of Jenin. The complex will house conference rooms and reception offices and it can also host specialized courses on the subjects of industry and logistics.
- Managing the "Central Office for Businesses", in order to help the companies settle into the industrial and logistical areas , helping them to meet the requirements of Palestinian or international law.
- Creating and managing a vehicle assistance centre for immediate mechanical needs for cars, for fuel distribution and for vehicle wash.
- Managing the goods collection and sorting; warehousing and integrated management; movement and transfer; management and movement of wagons and semi-trailers; container park; refrigerated warehouses.
- Managing the parking area for the transport trucks ,open 24 hours a day, with continual human and electronic guard duty, provided with an access control system and anti-intrusion barriers.
- Doing the ordinary and extraordinary maintenance of industrial and logistical facilities and overseeing maintenance services in the public areas (cleaning, green areas, etc.).
- Administrating the area facilities, offering services at an optimal quality/price ratio, thus fully satisfying the user/client.
- Managing the telecommunication networks with cabled facilities, warehouses and offices.
- Controlling, through a network wide system, the fire protection, the access control, the weighing , the lift alarm , the plumbing and electrical , etc.

It is important to underline the role of Palestinian Government, who put the land to the availability of the management company. The market value of land is 74,489,314 € (120 $ for m^2). Without the engagement of the Palestinian Government the project would have a cost of 159,159,218 €. The Italian Government finance the project for 10 millions euro as shown in tables 5.26-27..

Table 5. 26. Italian and Palestinian engagement

Land, market cost (Palestinian Government)	74 489 314 €
Land rights (Italian Government)	6 000 000 €
Other expenditures for feasibility study, legal costs, and other unexpected events (Italian Government)	4 000 000 €

Source: project information

5.3.5.3. Financing Plan

Figure 5. 1. Sources of financing

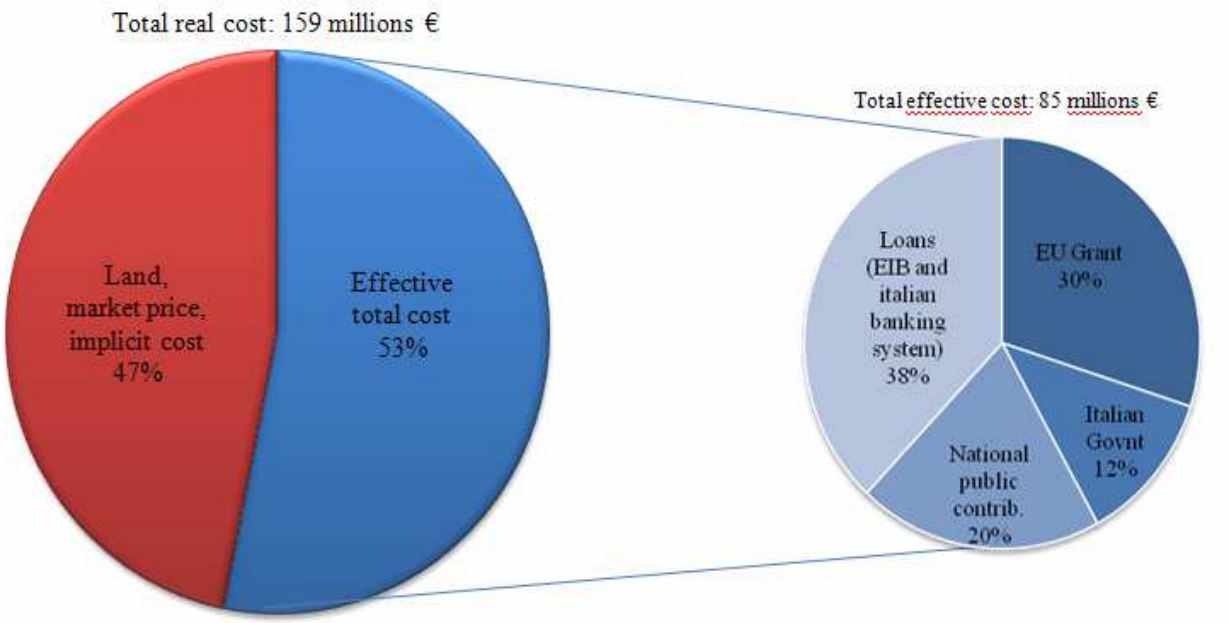


Table 5. 27. Sources of financing

	Financed amount (€)	Share on total investment
PUBLIC		
EU Grant	25 400 971	30%
Italian government	10 000 000	12%
National public contribution (other donors)	16 933 981	20%
PPP (Management company financing site construction using soft money available by EIB and credit lines from Italian lending system)		
Loans, soft money o bank system (BEI, WB, …)	32 334 952	38%
TOTAL EFFECTIVE AMOUNT FOR JILA FINANCING	**84 669 904**	**100%**

Source: project information

We have estimated a total investment cost of 84,669,904 €.

We also assumed to borrow from EIB at the following conditions: an interest rate of 5% per year and a maturity of 8 years, including a three years grace period, and repayment of principal annual instalments.

Having determined the investment costs, the operating revenues and costs and the sources of finance, it is now possible and helpful to determine the project's financial sustainability. A project is financially sustainable when it does not incur the risk of running out of cash in the future. The crucial issue here is the timing of cash proceeds and payments. Project promoters should show how over the project time horizon, sources of financing (including revenues and any kind of cash transfers) will consistently match disbursements year-by-year. Sustainability occurs if the net flow of cumulated generated cash flow is

positive for all the years considered. The difference between incoming and outgoing flows will show the deficit or surplus that will be accumulated each year.

The incoming flows include:

- any possible revenues for the sale of goods and services;
- the net cash from the management of financial resources;
- loan is here an inflow and it is treated as a financial resource coming from third parties.

The dynamics of the incoming flows are measured against the outgoing flows. These are related to:

- investment costs;
- operating costs;
- reimbursement of loans and interest paid.

About taxation, the law n. 10/1998 regarding investment inside industrial estates and free zones gives two additional years of tax holiday to what is given by law n. 1/1998 regarding encouragement of investment in Palestine. In this case the project enjoy the tax exemption in the first seven years. From the eighth year we apply an income tax of 10% on net profits

It is important to ensure that the project, even if assisted by EU co-financing, does not risk lacking of cash. The financial sustainability of JILA is represented in *table 5.28*..

Table 28: financial sustainability

Years	1	2	3	4	5	6	7	8	9	10	11	12	13
	2 011	2 012	2 013	2 014	2 015	2 016	2 017	2 018	2 019	2 020	2 021	2 022	2 023
EU Grant	25 400 971												
Italian government	10 000 000												
National public contribution (other donors)	16 933 981												
National Public Contribution	52 334 952	0	0	0	0	0	0	0	0	0	0	0	0
EIB loans	32 334 952												
Other loans													
Other resources	32 334 952	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL FINANCIAL RESOURCES	84 669 904	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL OPERATING REVENUES	0	4 478 457	5 971 276	8 956 914	11 942 552	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190
TOTAL INFLOWS	84 669 904	4 478 457	5 971 276	8 956 914	11 942 552	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190
Total operating costs	0	-2 416 010	-2 554 680	-2 832 019	-3 109 359	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699
Total investment costs	-51 641 580	-8 108 902	-8 306 474	-8 306 474	-8 306 474	0	0	0	-4 747 528	0	0	0	0
Interest	-1 616 748	-1 616 748	-1 616 748	-1 616 748	-1 293 398	-970 049	-646 699	-323 350					
Loans Reimbursement	0	0	0	-6 466 990	-6 466 990	-6 466 990	-6 466 990	-6 466 990					
Taxes								-110 633	-789 667	-789 667	-789 667	-789 667	-789 667
TOTAL OUTFLOWS	-53 258 327	-12 141 659	-12 477 901	-19 222 232	-19 176 222	-10 823 738	-10 500 388	-10 287 672	-8 923 894	-4 176 366	-4 176 366	-4 176 366	-4 176 366
TOTAL CASH FLOW	31 411 577	-7 663 202	-6 506 625	-10 265 317	-7 233 670	4 104 452	4 427 802	4 640 518	6 004 296	10 751 824	10 751 824	10 751 824	10 751 824
CUMULATED CASH FLOW	31 411 577	23 748 375	17 241 749	6 976 432	-257 238	3 847 215	8 275 016	12 915 535	18 919 830	29 671 654	40 423 478	51 175 302	61 927 126

Years	14	15	16	17	18	19	20	21	22	23	24	25
	2 024	2 025	2 026	2 027	2 028	2 029	2 030	2 031	2 032	2 033	2 034	2 035
EU Grant												
Italian government												
National public contribution (other donors)												
National Public Contribution	0	0	0	0	0	0	0	0	0	0	0	0
EIB loans												
Other loans												
Other resources	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL FINANCIAL RESOURCES	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL OPERATING REVENUES	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190
TOTAL INFLOWS	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190
Total operating costs	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699
Total investment costs	0	0	0	0	-4 747 528	0	0	0	0	0	0	0
Interest												
Loans Reimbursement												
Taxes	-789 667	-789 667	-789 667	-789 667	-789 667	-789 667	-789 667	-789 667	-789 667	-789 667	-789 667	-789 667
TOTAL OUTFLOWS	-4 176 366	-4 176 366	-4 176 366	-4 176 366	-8 923 894	-4 176 366	-4 176 366	-4 176 366	-4 176 366	-4 176 366	-4 176 366	-4 176 366
TOTAL CASH FLOW	10 751 824	10 751 824	10 751 824	10 751 824	6 004 296	10 751 824	10 751 824	10 751 824	10 751 824	10 751 824	10 751 824	10 751 824
CUMULATED CASH FLOW	72 678 950	83 430 774	94 182 598	104 934 422	110 938 718	121 690 542	132 442 366	143 194 190	153 946 014	164 697 838	175 449 662	186 201 486

5.3.5.4. Stakeholders

About stakeholders, we have to distinguish between industrial and financial ones.
Financial stakeholders are all subjects that will contribute to the realization of the project. As we underlined above, they are on the one hand the European Community and the northern states (for public financing), on the other hand the banks and the companies above mentioned.
Industrial stakeholders are represented by the industrialists who are interested in the realization of the Jenin industrial and logistic area, for example: local Palestinian industrialists already established in the West Bank and Gaza, expatriate Palestinian investors based in neighbouring Arab or other countries, (Europe, USA, Gulf Area, etc.) Israeli investors and international investors from other countries.
It is proper to remember that at the Palestine Investment Conference (Bethlehem, may 2008) there was the presence of local, regional and international business leaders.
Potential demand for JIE facilities from Israeli investors is expected. The likelihood of demand for investments at JIE from other international investors (from Europe, the USA or Asian countries) is difficult to assess because of the uncertainty about the political scenario in the region. If we consider a long term perspective, we cannot avoid this opportunity.
Moreover, there are other important subjects, that will be involved by the project:

- City of Jenin;
- Governorate of Jenin;
- The site and neighborhood land owners;
- The surrounding municipalities;
- Public institutions in the area;
- The Palestinian Ministries;
- Universities;
- Chambers of Commerce;
- Industrial Associations;
- Banks;
- Non-Governmental Organizations in the region.

5.3.6. Determining the Net Cash Flow

5.3.6.1. Net Flow to Calculate the Total Return on the Investment (investments in the project)

Having collected the data on investment costs, operating costs and revenues, the next logical step in the financial analysis is the evaluation of the financial return on investment. We need to calculate the net cash flow as the difference between inflows and outflows, where the inflows are the operating revenues and the outflows are the investment and the operating costs. These values are represented in *table 5.29*. Investment costs are concentrated in the first five years, while operating revenues and costs start by the second year and are assumed to change marginally until the sixth year.

Another important observation concerns the net cash flows. They are negative until the fourth year of implementation. In the following periods, net cash flows are positive. This means that annual revenues are enough to cover operating costs.

We need to determine the performance indicators.

Table 29: financial return on investment

Years	1	2	3	4	5	6	7	8	9	10	11	12	13	
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	20
Lease		3 020 430	4 027 240	6 040 861	8 054 481	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 1
Power system		1 088 182	1 450 909	2 176 364	2 901 818	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273	3 627 2
Water system		160 848	214 464	321 696	428 928	536 160	536 160	536 160	536 160	536 160	536 160	536 160	536 160	536 1
Waste treatment		208 997	278 663	417 994	557 325	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 6
Total Operating Revenues	**0**	**4 478 457**	**5 971 276**	**8 956 914**	**11 942 552**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 1**
TOTAL INFLOWS	**0**	**4 478 457**	**5 971 276**	**8 956 914**	**11 942 552**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 1**
Maintenance costs and other operating costs		-2 254 010	-2 338 680	-2 508 019	-2 677 359	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 6
Administrative costs		-162 000	-216 000	-324 000	-432 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 0
TOTAL OPERATING COSTS	**0**	**-2 416 010**	**-2 554 680**	**-2 832 019**	**-3 109 359**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 6**
Buildings	-10 968 167	-3 656 056	-7 312 112	-7 312 112	-7 312 112									
Equipment	-528 953	-211 581	-105 791	-105 791	-105 791				-1 057 905					
Power system	-20 000 000	0	0	0	0									
Cold stores	-875 000	-875 000	0	0	0				-1 750 000					
Security	-1 939 623	0	0	0	0				-1 939 623					
Water system	-13 275 000	0	0	0	0									
Car parks	-132 858	-44 286	-88 572	-88 572	-88 572									
Roads	-1 745 938	-1 745 938	0	0	0									
Squares	-277 713	-277 713	0	0	0									
Green Areas	-48 329	-48 329	0	0	0									
Insurance costs	-800 000	-800 000	-800 000	-800 000	-800 000									
Unplanned and start-up expenses	-1 050 000	-450 000	0	0	0									
TOTAL INVESTMENTS COSTS	**-51 641 580**	**-8 108 902**	**-8 306 474**	**-8 306 474**	**-8 306 474**	**0**	**0**	**0**	**-4 747 528**	**0**	**0**	**0**	**0**	
TOTAL OUTFLOWS	**-51 641 580**	**-10 524 912**	**-10 861 154**	**-11 138 494**	**-11 415 833**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-8 134 227**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 6**
NET CASH FLOW	**-51 641 580**	**-6 046 454**	**-4 889 878**	**-2 181 579**	**526 719**	**11 541 491**	**11 541 491**	**11 541 491**	**6 793 963**	**11 541 491**	**11 541 491**	**11 541 491**	**11 541 491**	**11 541 4**
Discount Rate	**5.00%**													
Financial rate of return on investment - FRR(C) -	**10.23%**													
Financial net present value of the investment - FNPV(C)	**47 390 603.73**													

Table 5. 29. Financial Return on investment

Years	14	15	16	17	18	19	20	21	22	23	24	25
	2 024	2 025	2 026	2 027	2 028	2 029	2 030	2 031	2 032	2 033	2 034	2 035
Lease	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101
Power system	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273	3 627 273
Water system	536 160	536 160	536 160	536 160	536 160	536 160	536 160	536 160	536 160	536 160	536 160	536 160
Waste treatment	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657
Total Operating Revenues	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**
TOTAL INFLOWS	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**	**14 928 190**
Maintenance costs and other operating costs	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699	-2 846 699
Administrative costs	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000
TOTAL OPERATING COSTS	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**
Buildings												
Equipment					-1 057 905							
Power system												
Cold stores					-1 750 000							
Security					-1 939 623							
Water system												
Car parks												
Roads												
Squares												
Green Areas												
Insurance costs												
Unplanned and start-up expenses												
TOTAL INVESTMENTS COSTS	**0**	**0**	**0**	**0**	**-4 747 528**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TOTAL OUTFLOWS	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-8 134 227**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**	**-3 386 699**
NET CASH FLOW	**11 541 491**	**11 541 491**	**11 541 491**	**11 541 491**	**6 793 963**	**11 541 491**	**11 541 491**	**11 541 491**	**11 541 491**	**11 541 491**	**11 541 491**	**11 541 491**

Discount Rate	**5.00%**
Financial rate of return on investment - FRR(C) -	**10.23%**
Financial net present value of the investment - FNPV(C)	**47 390 603.73**

5.3.6.2. Net Flow to Calculate the Return on Shareholders' Equity or Funded Capital (public/private)

The final step is the appraisal of the financial return on capital. The objective of this calculation is to look into the project performance from the perspective of the assisted public and possibly private entities in the Member States. These entities will for sure enjoy an increase in their potential project net returns, just because the European Union grants them funds. In other words, for a given investment cost, the beneficiary (the 'owner' of the project) will need to sink less capital in it, because the EU taxpayer covers a share of the project costs. The rationale of the EU grant itself in the framework of Cohesion Policy is to increase investment opportunities by a shift in capital needs. In order to consider this effect, the best approach is simply to focus on the funds provided by the beneficiary ('after the EU grant'), including those funds that should be made available as national public contributions, private equity, if any, and the need to pay back loans and interest to third party financiers.

The suggestion is to build an account where the outflows are: the operating costs, the national capital contributions to the project, the financial resources of third parties at the time in which they are reimbursed and the related interest on loans. The inflows are the operating revenues and the residual value (including all assets and liabilities at the end year). About this project, cash flows regarding capital are contained in *table 5.30.*.

Table 5. 30. Financial Return on Capital

Table 30: financial return on capital

Years	1	2	3	4	5	6	7	8	9	10	11	12	13
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total operating revenues	0	4 478 457	5 971 276	8 956 914	11 942 552	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190
TOTAL INFLOWS	0	4 478 457	5 971 276	8 956 914	11 942 552	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190
Total operating costs	0	-2 416 010	-2 554 680	-2 832 019	-3 109 359	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699
Interests	-1 616 748	-1 616 748	-1 616 748	-1 616 748	-1 293 398	-970 049	-646 699	-323 350	0	0	0	0	0
Loans reimbursement	0	0	0	-6 466 990	-6 466 990	-6 466 990	-6 466 990	-6 466 990	0	0	0	0	0
National public contribution	-52 334 952												
TOTAL OUTFLOWS	-53 951 700	-4 032 757	-4 171 427	-10 915 757	-10 869 748	-10 823 738	-10 500 388	-10 177 039	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699
NET CASH FLOW	-53 951 700	445 700	1 799 849	-1 958 843	1 072 805	4 104 452	4 427 802	4 751 151	11 541 491	11 541 491	11 541 491	11 541 491	11 541 491

Years	14	15	16	17	18	19	20	21	22	23	24	25
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Total operating revenues	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190
TOTAL INFLOWS	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190	14 928 190
Total operating costs	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699
Interests	0	0	0	0	0	0	0	0	0	0	0	0
Loans reimbursement	0	0	0	0	0	0	0	0	0	0	0	0
National public contribution												
TOTAL OUTFLOWS	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699	-3 386 699
NET CASH FLOW	11 541 491	11 541 491	11 541 491	11 541 491	11 541 491	11 541 491	11 541 491	11 541 491	11 541 491	11 541 491	11 541 491	11 541 491

Discount Rate	5%
Financial rate of return on national capital - FRR(K)	10.35%
Financial net present value of capital - FNPV(K)	47 300 847

Net cash flows of capital, unlike those of investment, are negative only in the first year. In this period, in fact, revenues are not enough to neutralize the costs to reimburse the loan. In the following years, net cash flows begin to be positive and they especially grow by the ninth year because of the total extinction of the loan.

5.3.6.3. Net Present Value / Internal Rate of Return

The indicators needed for testing the project's financial performance are:

- the financial net present value of the project (FNPV);
- the financial internal rate of return (FRR).

The financial net present value is defined as the sum that results when the expected investment and operating costs of the project (suitably discounted) are deducted from the discounted value of the expected revenues:

$$FNPV = \sum_{t=0}^{n} a_t S_t = \frac{S_0}{(1+i)^0} + \frac{S_1}{(1+i)^1} + \ldots + \frac{S_n}{(1+i)^n}$$

Where S_t is the balance of cash flow at time *t* (net cash flow) and a_t is the financial discount factor chosen for discounting at time *t*. The financial internal rate of return is defined as the discount rate that produces a zero FNPV:

$$FNPV = \sum_{t=0}^{n} \left[\frac{S_t}{(1+FRR)^t} \right] = 0$$

We can calculate these values for both investment and capital.

EVALUATION OF THE RETURN ON INVESTMENT - FNPV(C)

The calculation of the financial return on investment measures the capacity of the net revenues to remunerate the investment cost.

The financial net present value, FNPV(C), and the financial rate of return, FRR(C), on the total investment cost, measure the performance of the investment independently of the sources or methods of financing. The FNPV is expressed in money terms (Euro), and depends on the scale of the project. The second indicator is a pure number, and is scale-invariant. The preferred indicator should usually be the net present value because the rate of return may be somewhat misleading and contains no useful information about the 'value' of a project. Mainly, the examiner uses the FRR(C) in order to judge the future performance of the investment in comparison to other projects, or to a benchmark required rate of return. This calculation also contributes to deciding if the project requires EU financial support: when the FRR(C) is lower than the applied discount rate (or the FNPV(C) is negative), then the revenues generated will not cover the costs and the project needs EU assistance. This is often the case for public infrastructures, partly because of the tariff structure of these sectors.

Applying the above-mentioned formulas to net cash flows in Table 29, we obtained the following results:

- **Financial rate of return on investment - FRR(C)= 10.23%**
- **Financial net present value of the investment - FNPV(C)= 47,390,604 €**

This means that the project seems able to remunerate all its costs, with a rate that is higher than our 5% benchmark.

EVALUATION OF THE RETURN ON CAPITAL - FRR(K)

The financial net present value of the capital, FNPV(K), is the sum of the net discounted cash flows that accrue to the project promoter due to the implementation of the investment project. The financial rate of return on capital, FRR(K), determines the return for the national beneficiaries. When computing FNPV(K) and FRR(K), all sources of financing are taken into account, except for the EU contribution. These resources are taken as outflows (they are inflows in the financial sustainability account), instead of investment costs (as it is done in the calculation of the financial return on investment). Even if the FRR(C) is expected to be very low, or even negative for public investment (especially for particular sectors, such as water), the FRR(K) will often be positive. As mentioned above, the EC standard financial discount rate is 5% real, and the return for the beneficiary should, in principle, be aligned with this benchmark. In fact, when the project expects a substantial positive FRR(K), this fact shows that the grant from the EU would bring supra-normal profits to the national beneficiaries. Under a PPP, private beneficiaries will be involved in the project. From their point of view, any grant received, either from the EU or the national public sector should be ignored in the calculation of the return on their own capital.

Taking the net cash flows in Table 30, the values of these indicators are:

- **Financial rate of return on national capital - FRR(K)= 10.35%**
- **Financial net present value of capital - FNPV(K)= 47,300,847 €**

These figures are similar to the corresponding ones concerning the investment. This proves that the project is profitable for all its beneficiaries.

5.4. Socio - economic Cost-Benefit Analysis

5.4.1. Accounting and Discount Unit for the Cost-Benefit Analysis

The starting point for the economic analysis is the financial analysis. Use specific conversion factors is necessary to convert market prices into prices adjusted for market imperfections. The conversion factors allow for the calculation of the social costs due to the investments, the running costs, the social benefits due to the residual value of the investment, and the revenues. The economic analysis also needs to consider the externalities (positive and negative) that are not accounted for in the converted financial inputs and outputs.

5.4.1.1. Output Price Distortions

Usually the prices do not provide a good measure of the social opportunity cost of inputs and outputs especially when real prices of inputs and outputs are distorted because of inefficient markets or Government sets non cost-reflective tariffs of public services. Shadow prices are important to solve this problem. When there is no full convertibility of the currency, one parameter for economic analysis is the shadow exchange rate (SER). Another way is to use a standard conversion factor (SCF); the value of the SCF is estimated on the basis of the values of exports and imports.

For every traded item, border prices are easily available: they are international prices, CIF for imports and FOB for exports, expressed in the same currency. For non-traded items, the standard conversion factor is used for minor non-traded items or the items without a specific conversion factor, while for major non-traded items sector-specific conversion factors are used, based on long run marginal cost or willingness-to-pay

Same problem with salary that should reflect the social value of working time and effort, but wage distortions occur frequently, because labour markets are imperfect, or there are macroeconomic imbalances.
The shadow wage is region-specific, because labour is less mobile than capital. It may often be determined as a weighted average of:

- the shadow wage for skilled workers and unskilled workers previously employed in similar activities: equal or close to the market wage;
- the shadow wage for unskilled workers drawn to the project from unemployment: equal to or not less than the value of unemployment benefits;
- the shadow wage for unskilled workers drawn to the project from informal activities: equal to the value of the output forgone in these activities.

<table>
<tr><td></td><td>Tradable</td><td colspan="4">Non Tradable</td></tr>
<tr><td rowspan="4">Market Prices</td><td rowspan="4">Turn directly into border pieces</td><td colspan="4">Major Item</td><td>Minor Item</td></tr>
<tr><td colspan="2">Output</td><td colspan="2">Input</td><td rowspan="3">Use standard conversion factors</td></tr>
<tr><td>Tradable</td><td>Non Tradable</td><td>Labour Force</td><td>Input Produced</td></tr>
<tr><td>Use sector conversion factors</td><td>Use long term marginal costs or willingness to pay</td><td>Use conversion factor for labour force based on shadow wage</td><td>Disaggregate the item or use specific sectorial conversion factors</td></tr>
<tr><td></td><td colspan="5">REAL RESOURCES ECONOMIC FLOWS</td></tr>
</table>

Very important is to bear in mind that the calculation of the conversion factors derives from assumptions and are not to be considered relevant to reality. In our study case a standard conversion factor of 0.95 was used to account for generic price distorsion in the country. The other CF can be see in the next table, they are calculated as a weighted average of the conversion factors of the single components. As regards energy and water we have decided to add an 8% of overprice to take advantage of the our private energy and water supply network that make the zone indipendent by Israel providing. The reference social discount rate is 5%.

Table 5. 31. Conversion factor

Conversion factor		
SCF	0.95	
Buildings	0.95	*SCF*
Equipment	0.95	*SCF*
Power system	1.00	*Market price*
Cold stores	0.95	*Market price*
Security	0.95	*SCF*
Water system	1.00	*Market price*
Car parks	0.95	*SCF*
Roads	0.95	*SCF*
Squares	0,95	*SCF*
Green areas	0,95	*SCF*
Unplanned and start-up expenses	0,95	*SCF*
Maintenance costs and other operating costs	0,95	*SCF*
Administrative costs	1.00	*Market price*
Lease revenues	1.00	*Market price*
Energy revenues	1.03	*SCF + 8% overprice*
Water revenues	1.03	*SCF + 8% overprice*
Waste treatment revenues	1.00	*Market price*

Source: project information

5.4.1.2. Fiscal Aspects

Some items of financial analysis can be seen as pure transfers from one agent to another within society, with no economic impact. Some general rules can be laid down to correct such distortions:

- all prices of inputs and outputs to be considered for CBA should be net of VAT and of other indirect taxes;
- prices of inputs, including labour, considered in the CBA should be gross of direct taxes;
- subsidies granted by a public entity to the project promoter are pure transfer payments and, should be omitted from revenues under economic analysis (i.e. CF=0).

Despite the general rule, in some cases indirect taxes/subsidies are intended as a correction for externalities. It may be justified to include these taxes (subsidies) in project costs (benefits), but the appraisal should avoid double counting. Public funds transferred to economic entities in exchange for services supplied or goods produced by them are not to be considered as pure transfer payments and they should be included as revenues in economic analysis.

The energy costs are considered net of taxation. The labour cost is considered net of insurance contributions and income taxes because the reservation wage is to be taken as the shadow wage. Sales is to be accounted net of VAT.

5.4.1.3. External Cost/Benefit

The measurement of the externalities is essential in order to set up a consistent cost-benefit analysis (CBA). The existence of high and diffused externalities such as those connected to environmental impacts is an obstacle for market prices in reaching a fair equilibrium between offer and demand. Public policies should target external costs reductions through environmental cost effective regulation and a fair charging policy based on the "polluter pays" principle.

External costs valuation is a powerful instrument of knowledge: the measure of the external costs is an indicator that encloses selected and processed information at the highest qualitative value.

- It allows to convert a broad range of different impacts to a single unit of measure, for example the costs of health effects, those of losses of time due to congestion and damages to natural resources.
- It helps to spread rational arguments in environmental conflicts and to better manage the decision making process: impacts that cannot be reduced should be compensated to those impaired.
- It is the basis for a proper valuation of the costs and benefits of public investments. National and Regional Authorities cannot go on ignoring cost benefit analysis: proper valuation and priority making instruments are available.

Example of external cost:

- the costs linked to atmospheric pollution;
- the expected damages of climate changes;
- the economic losses to commercial activities and to real estates due to the landscape impacts of infrastructure;
- the costs of non-expected time losses for goods and passengers due to traffic congestion;
- the damages to economic activities, to private properties, to natural resources and health due to accidental and non accidental discharges of oil or other toxic substances into the seas and rivers;
- the costs linked to health and amenity effects due to persistent sources of noise;
- the costs of taxes violations, because they fall back as higher taxes on traditional payers.

This case study considers as external cost the quantity of CO_2 produced. It is not easy to estimate the economic value of the overall environmental damage because of the variety of pollutant emissions and because of the lack of reliable data about the volume of emissions for industry sectors. We have used the CO_2 emission estimating an average of 9.7 ton/year per person and 0.000476786 ton/Kwh with an economic value of €8 for 1 ton of CO_2.

About positive externalities we have considered as external benefit the quantity of energy produced and saved thanks to the use of photovoltaic panel and molecular restructuring system, that permit us to supply the industries in a clean way and without impact in the zone. A possible approximation of the value of this positive externality can be obtained by multiplicand the market price of power for the total power sold to the external area.

Another important positive voice is the creation of additional direct and indirect employment resulting from the establishment of the JILA. It's considered as the principal economic benefit of the project, measured by the amount of wages earned. Like before this approach represents a simplification because the economic benefits of an industrial investment should be measured by the net value added of production (or output) of the project.

Table 5. 32. Direct and indirect effect of JILA on employment (positive externality)

Economic Activity	Average wage (€)	Labour in JILA - direct effect (€)	Labour externality - direct+indirect effect (€)
metal products	114	82 131	123 196
food and beverages	285	352 966	529 448
chemical and cosmetics	484	286 490	429 735
building materials	292	127 203	190 805
leather products	183	22 011	33 016
textile and clothing	185	148 177	222 266
plastic and rubber	321	64 250	96 375
Other	179	139 380	209 070
Total / average	**255**	**1 222 608**	**1 833 912**

Source: PCBS and project information

We have estimated the number of people expected to be employed by the industries about 4,887 people at full development. For indirect employment resulting from the establishment of the project, it has been assumed that for each job created 1.5 indirect job would be generated for activities related to the estate, so the total of indirect employed is 7,331. The data about the total number of industries and the average wage is referred to West Bank area, and it comes from the Palestinian Central Bureau of Statistics. We have also to considerate the employees of construction industry, 289 employees each year for the first five years; for the calculation of indirect effect we multiply the average wage for the employees: the indirect effect is about 884,856 € at year.

The total indirect effect on labour is about 2,718,768 € (1,833,912 + 884,856).

5.4.2. Economic Rate of Return or Net Present Value of the Project in Monetary Terms

An appreciation about the project's economic performance can be made through the following indicators:

- economic net present value (ENPV): the difference between the discounted total social benefits and costs;

$$NPV = \sum_{t=0}^{n} a_t S_t = \frac{S_0}{(1+i)^0} + \frac{S_1}{(1+i)^1} + \ldots + \frac{S_n}{(1+i)^n}$$

- economic internal rate of return (ERR): the rate that produces a zero value for the ENPV;

$$NPV\,(S) = \sum [S_t / (1 + IRR_S)] = 0$$

- B/C ratio, i.e. the ratio between discounted economic benefits and costs.

$$BCR = PV\,(I)/PV\,(O)$$

Every project with an ERR lower than the social discount rate or a negative ENPV should be rejected. As regards our project, the economic analysis is better than the financial return on investment mainly thanks to the presence of socio-economic valuation of the benefits. In fact the economic analysis gave these performance indicators:

- Economic Net Present value (ENPV): 109,293,891 €
- Economic Internal Rate of Return (ERR): 88.87%
- Benefit Cost Ratio (BCR): 2.12%

Table 33: economic analysis

	CF	2 011	2 012	2 013	2 014	2 015	2 016	2 017	2 018	2 019	2 020	2 021	2 022	2 023	2 024
Lease	1.00	0	3 020 430	4 027 240	6 040 861	8 054 481	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101
Power system	1.03	0	1 120 827	1 494 436	2 241 655	2 988 873	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091
Water system	1.03	0	165 673	220 898	331 347	441 796	552 245	552 245	552 245	552 245	552 245	552 245	552 245	552 245	552 245
Waste treatment	1.00	0	208 997	278 663	417 994	557 325	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657
REVENUES		**0**	**4 515 928**	**6 021 237**	**9 031 856**	**12 042 475**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**
POSITIVE EXTERNALITIES		**884 856**	**1 666 085**	**1 926 495**	**2 447 314**	**2 968 134**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**
TOTAL ECONOMIC BENEFIT		**884 856**	**6 182 013**	**7 947 732**	**11 479 170**	**15 010 608**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**
Maintenance costs and other operating costs	0.95	0	-2 141 309	-2 221 746	-2 382 618	-2 543 491	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364
Administrative costs	1.00	0	-162 000	-216 000	-324 000	-432 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000
TOTAL OPERATING COSTS		**0**	**-2 303 309**	**-2 437 746**	**-2 706 618**	**-2 975 491**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**
Buildings	0.95	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301
Equipment	0.95	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601
Power system	1.00	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000
Cold stores	0.95	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500
Security	0.95	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117
Water system	1.00	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000
Car parks	0.95	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829
Roads	0.95	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691
Squares	0.95	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106
Green Areas	0.95	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673
Insurance costs	0.95	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000
Unplanned and start-up expenses	0.95	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000
TOTAL INVESTMENT COSTS		**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**
TOTAL EXPENDITURE		**-3 644 818**	**-5 948 128**	**-6 082 564**	**-6 351 437**	**-6 620 310**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**
NEGATIVE EXTERNALITIES			**-152 246**	**-202 995**	**-304 492**	**-405 990**	**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**
TOTAL ECONOMIC COST		**-3 644 818**	**-6 100 374**	**-6 285 559**	**-6 655 929**	**-7 026 300**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**
NET ECONOMIC FLOW		**-2 759 963**	**81 639**	**1 662 173**	**4 823 241**	**7 984 309**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**

Discount Rate	5%
ENPV	109 293 891
ERR	88.87%
B/C	2.12

Table 5. 33. Economic analysis

	CF	2 025	2 026	2 027	2 028	2 029	2 030	2 031	2 032	2 033	2 034	2 035
Lease	1.00	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101	10 068 101
Power system	1.03	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091	3 736 091
Water system	1.03	552 245	552 245	552 245	552 245	552 245	552 245	552 245	552 245	552 245	552 245	552 245
Waste treatment	1.00	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657	696 657
REVENUES		**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**	**15 053 093**
POSITIVE EXTERNALITIES		**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**	**2 604 097**
TOTAL ECONOMIC BENEFIT		**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**	**17 657 190**
Maintenance costs and other operating costs	0.95	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364	-2 704 364
Administrative costs	1.00	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000	-540 000
TOTAL OPERATING COSTS		**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**	**-3 244 364**
Buildings	0.95	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301	-1 389 301
Equipment	0.95	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601	-120 601
Power system	1.00	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000	-800 000
Cold stores	0.95	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500	-199 500
Security	0.95	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117	-221 117
Water system	1.00	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000	-531 000
Car parks	0.95	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829	-16 829
Roads	0.95	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691	-132 691
Squares	0.95	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106	-21 106
Green Areas	0.95	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673	-3 673
Insurance costs	0.95	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000	-152 000
Unplanned and start-up expenses	0.95	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000	-57 000
TOTAL INVESTMENT COSTS		**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**	**-3 644 818**
TOTAL EXPENDITURE		**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**	**-6 889 183**
NEGATIVE EXTERNALITIES		**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**	**-507 487**
TOTAL ECONOMIC COST		**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**	**-7 396 670**
NET ECONOMIC FLOW		**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**	**10 260 521**

Discount Rate	5%
ENPV	109 293 891
ERR	88.87%
B/C	2.12

5.5 Risk Analysis

5.5.1. Defining the Critical Variables with the help of the Sensitivity Analysis

In order to assess the project risk, a sensitivity analysis was carried out as a first step. For JILA project the four most critical variables are the investment costs, the building costs, the lease revenues and the inflation rate. Operating costs are also critical, but in this case they have been calculated as a function of investment, therefore they are directly correlated to them.

Investment costs. The possibility is to consider a worse situation for the dynamics of some investment cost items. An investigation into the impact of the single components of investment costs was conducted and has underlined a possible variation in FNPV due to the variation of some important factor, as the rate of inflation. The results of financial analysis is presented for 10,000 variations of investment costs between -5% and +5%. Total operative revenues and costs are fixed.

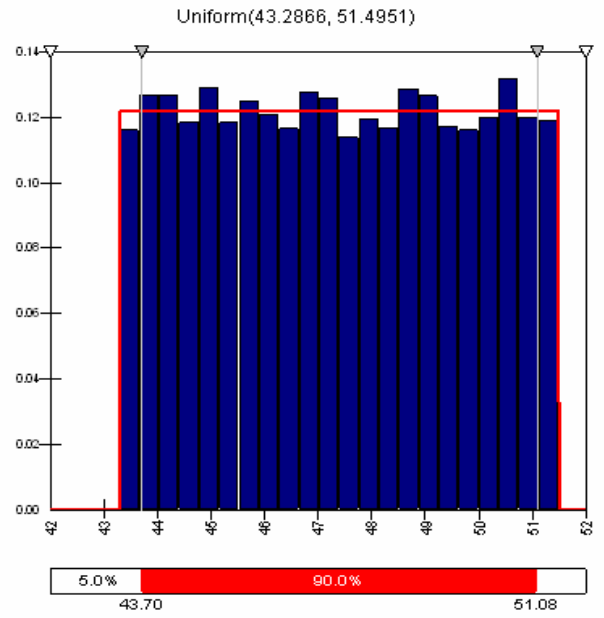
Table 5. 34. Simulated variations of investment costs

	Random values (%) -5% / +5%	FNPV (C) €	FRR (C) %
baseline case	**0**	**47,390,604**	**10.23**
1	-4.15	50,795,301	10.78
2	1.07	46,508,647	10.10
3	0.01	47,401,501	10.23
.	.	.	.
.	.	.	.
.	.	.	.
9999	-2.26	49,245,081	10.52
10000	3.32	44,661,310	9.82

Source: project simulation

In the worst case scenario simulation the FNPV (C) get to 43 millions €; in the best case 51 millions €. It's important to remark that FNPV is always positive.

Graphic 5. 1. Statistic values

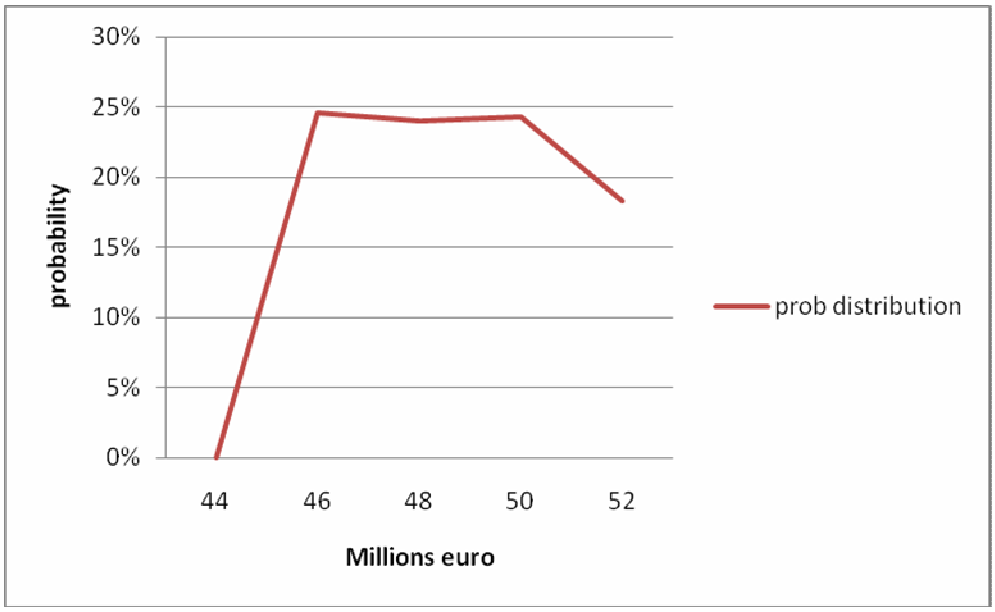


N/A	Fit	Input
Function	47.39085	N/A
Shift	N/A	N/A
min	43.2866353	N/A
max	51.4950733	N/A
Left X	43.7	43.7
Left P	5.00%	4.79%
Right X	51.08	51.08
Right P	95.00%	95.12%
Diff. X	7.3876	7.3876
Diff. P	90.00%	90.33%
Minimum	43.2866	43.2875
Maximum	51.4951	51.4943
Mean	47.3909	47.3831
Mode	N/A	43.5074 [est]
Median	47.3909	47.3514
Std. Deviation	2.3696	2.3718
Variance	5.6149	5.625
Skewness	0	0.0068
Kurtosis	1.8	1.7926

Source: project simulation

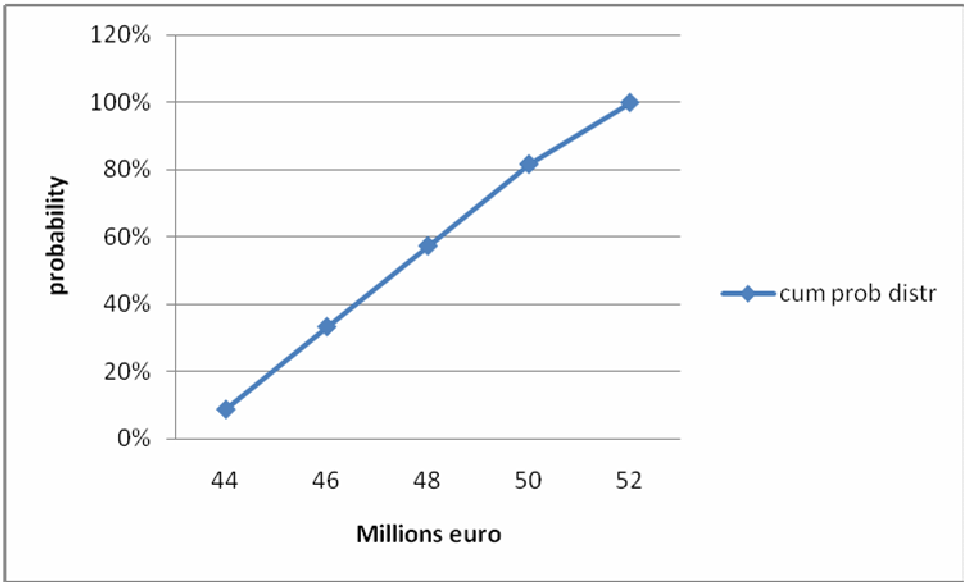
The most helpful way of presenting the result is to express it in terms of the probability distribution or cumulated probability of the FNPV in the resulting interval of values. The next figures provide graphical examples.

Graphic 5. 2. Probability distribution



Source: project simulation

Graphic 5. 3. Cumulative probability distribution



Source: project simulation

The cumulative probability curve permits an assessment of the project risk, for example by verifying whether the cumulative probability is higher or lower than a reference value that is considered to be critical. One can also assess the probability that the FNPV will be lower than a certain value, which is adopted as the benchmark.

Building costs. The building costs are an other important variable. In this case the results of financial analysis is presented for 10,000 variations of investment costs between -10% and +10%. The total operative revenues and the other operative and investment costs are fixed.

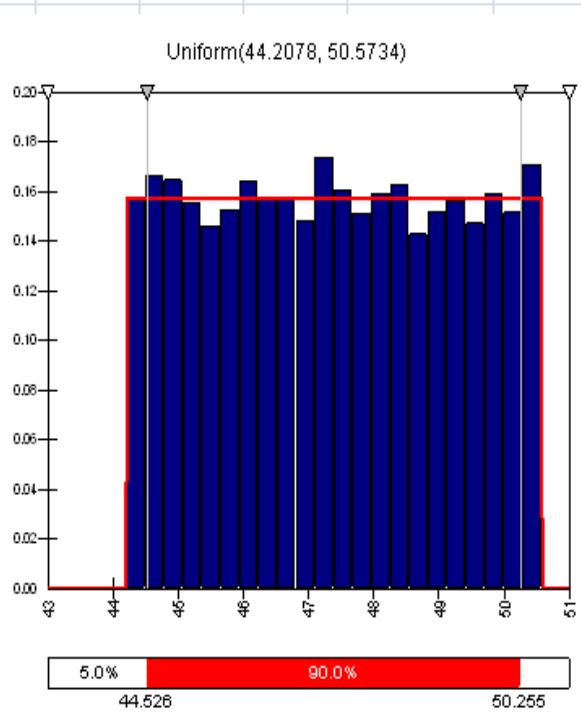
Table 5. 35. Simulated variations of building costs

	Random values (%) -10% / +10%	FNPV (C) €	FRR (C) %
baseline case	**0**	**47,390,604**	**10.23**
1	-2.47	48,175,433	10.35
2	-5.28	49,071,660	10.49
3	7.11	45,127,020	9.89
.	.	.	.
.	.	.	.
.	.	.	.
9999	-8.34	50,045,194	10.64
10000	7.13	45,120,804	9.89

Source: project simulation

In the worst case scenario simulation the FNPV (C) get to 44 millions €; in the best case 51 million €. The financial rate of return moved from 13% to 15%.

Graphic 5. 4. Statistic values

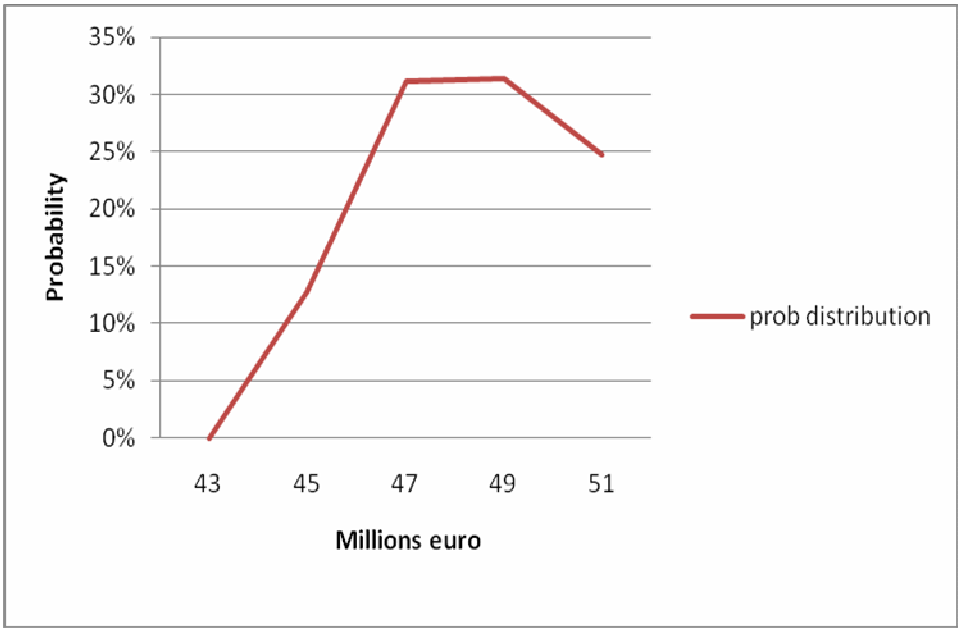


N/A	Fit	Input
Function	47.3906	N/A
Shift	N/A	N/A
min	44.207819	N/A
max	50.573388	N/A
Left X	44.526	44.526
Left P	5.00%	5.03%
Right X	50.255	50.255
Right P	95.00%	94.71%
Diff. X	5.729	5.729
Diff. P	90.00%	89.68%
Minimum	44.2078	44.2085
Maximum	50.5734	50.5728
Mean	47.3906	47.3805
Mode	N/A	44.6348 [est]
Median	47.3906	47.3704
Std. Deviation	1.8376	1.8434
Variance	3.3767	3.3977
Skewness	0	0.0126
Kurtosis	1.8	1.8028

Source: project simulation

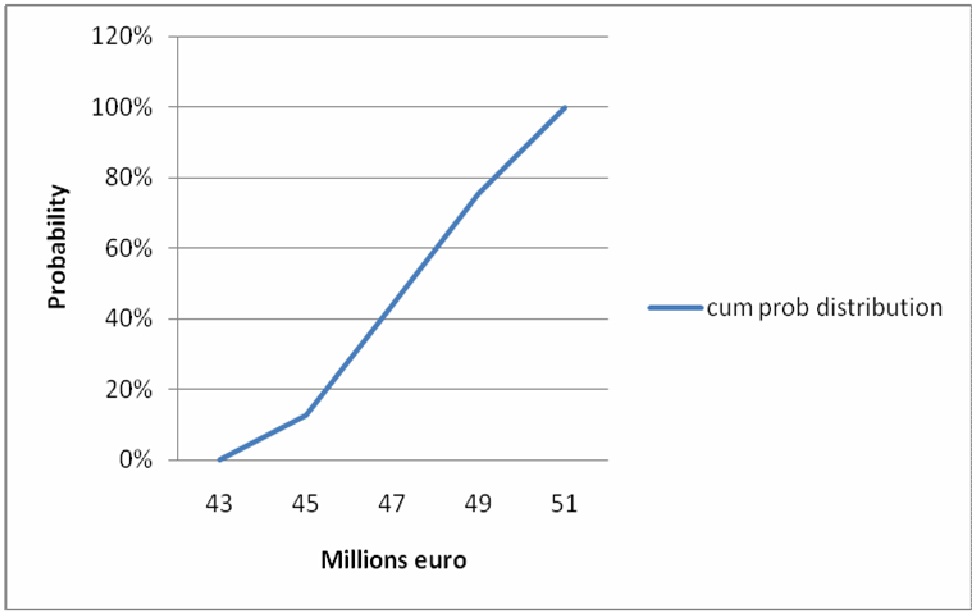
In the next graphs we show the FNPV probability distribution.

Graphic 5. 5. Probability distribution



Source: project simulation

Graphic 5. 6. Cumulative probability distribution



Source: project simulation

Lease revenues. The lease revenues are an important heading for our total revenues, and now we want to simulate a variation from -10% to 10% in the next lease income:

a) open plots/parking leased at US $ 5.35/m^2 ;
b) building plots leased at US $ 45/m^2;
c) cold store leased at US $ 60/m^2;
d) administrative offices leased at US $ 70/m^2.

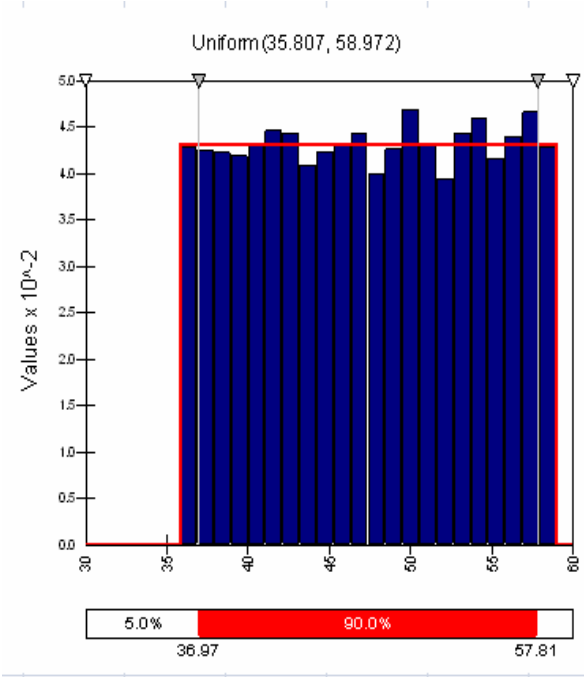
Table 5. 36. Simulated variations of lease revenues

	Random values (%) -10% / +10%	FNPV (C) €	FRR (C) %
baseline case	**0**	**47,390,604**	**10.23**
1	3.11	50,992,423	9.10
2	-9.63	36,232,420	10.33
3	0.89	48,419,443	10
.	.	.	.
.	.	.	.
.	.	.	.
9999	3.60	51,558,621	10.64
10000	8.14	56,817,680	11.16

Source: project simulation

In the worst case scenario simulation the FNPV (C) get to 36 millions €; in the best case 59 millions €. The financial rate of return moved from 9% to 11%.

Graphic 5. 7. Statistic values

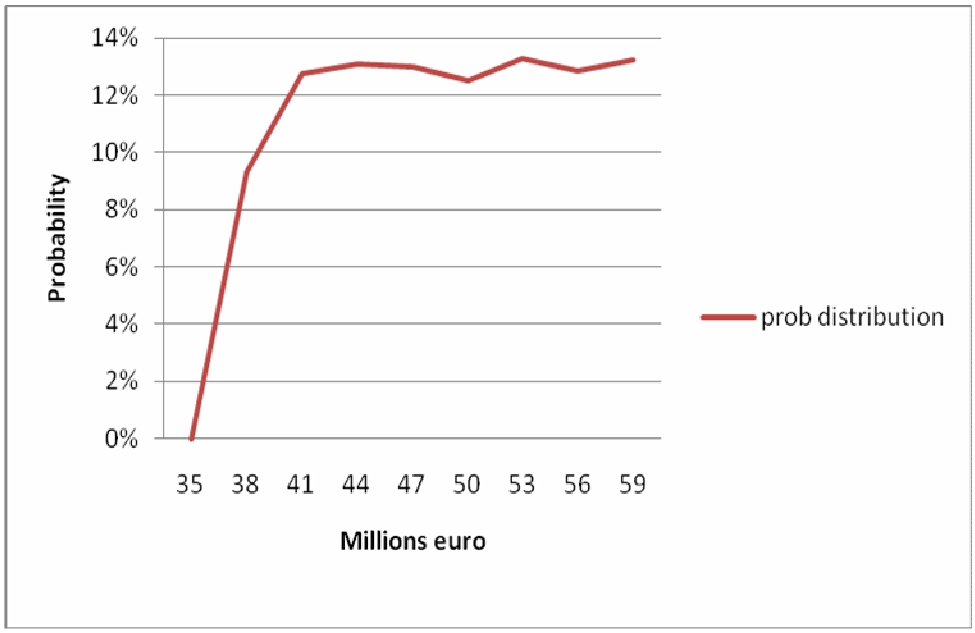


N/A	Fit	Input
Function	47.3895	N/A
Shift	N/A	N/A
min	35.807384	N/A
max	58.972416	N/A
Left X	36.97	36.97
Left P	5.00%	4.96%
Right X	57.81	57.81
Right P	95.00%	94.77%
Diff. X	20.8485	20.8485
Diff. P	90.00%	89.81%
Minimum	35.807	35.81
Maximum	58.972	58.97
Mean	47.39	47.46
Mode	N/A	37.817 [est]
Median	47.39	47.456
Std. Deviation	6.6872	6.6989
Variance	44.718	44.871
Skewness	0	-0.0086
Kurtosis	1.8	1.7961

Source: project simulation

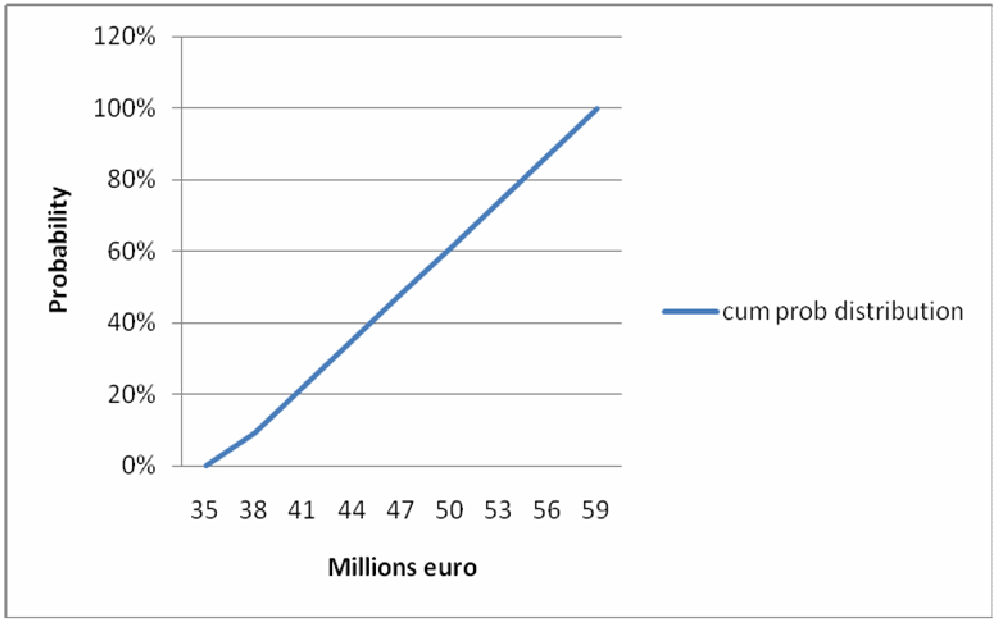
Probability distribution of FNPV.

Graphic 5. 8. Probability distribution



Source: project simulation

Graphic 5. 9. Cumulative probability distribution



Source: project simulation

For lease revenues we want also simulate an increase of 1% every year. The reason is that operating costs have been assumed to increase at an estimated rate of inflaction of 1% per year.
In this case, the FNPV get to 92 millions euro, with a FRR of 15%.

Inflation. The inflation rate is another critical variable. We assume for Jenin area an annual rate of inflation that moves from 3% to 8%, and we simulate the effects on the net present value on investment. The result obtained is important, because the NPV is always positive and it moves from 80 millions euro to 15 millions euro.

6. Financial, economic and social impact analysis

We have analyzed the JILA project from different point of view: financial, economic and social. The results of the analysis (chapter 5) are particularly positives and the advantages satisfy all the stakeholders.

Table 6. 1. Financial and economic indicators of JILA project

Project cost	85 mil. €
Financial Rate of Return on investment	10%
Financial Net Present Value on investment	47 mil. €
Economic Rate of Return	89%
Economic Net Present Value (B-C)	109 mil. €
Benefit Cost Ratio (B/C)	2.12

Source: project information

We have also analyzed the project indirect socio-economic impact using the Social Accounting Matrices for OPT, West Bank and Jenin economies, and we have simulated the impact of JILA project on the employment rate and on local gross domestic product.

Table 6. 2. Indirect and direct of JILA project

	DIRECT EFFECT		**INDIRECT EFFECT**	
	Increase %	**Increase n° of employees**	**Increase %**	**Increase n° of employees**
Agriculture			2.5	607
Manufacturing	53.2	4887	8.8	808
Services	2. 7	518	2.4	460
Total	5.9	5405	2.05	1 875

Source: project information

The indirect effect on Jenin force labour is the 2% of the active employed population which amounts to 91,564 persons. The direct and indirect effects on force labour are respectively 5,405 and 1,875 new employment opportunities only for the Jenin area. We have estimate a total increase in West Bank of about 12,500 new employment opportunities.

The Jenin gross domestic product (GDP) will increase of about 40% when JILA project will arrive to full speed. A 40% corresponds to an increase in GDP of 153 millions $ (114.5 millions). This amount represents the benefit from the realization of the project on local economy. Thanks this benefit, we can estimate the direct and indirect impact of the project. The results of the socio-economic analysis change as shown in the following table.

Table 6. 3. Economic direct and indirect impact of JILA project

Economic Rate of Return	318%
Economi Net Present Value (B-C)	2.85
Benefit Cost Ratio (B/C)	180 mil. €

Source: project information

The economic rate of return moves from 89% to 318%, and the total benefit from the project become almost three times the cost. The strong impact on economy shows that JILA project represents a real opportunity of development not only for the Jenin area, but also for the entire West Bank.

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Appendices

Appendix A – The Palestinian Economy and the Jenin Industrial District Tables

Table 2. 38. Wages and salaries per source of income and per quintile, West Bank 2006

	Wages and salaries per source of income			Wages and salaries per quintile		
	Private sector	Public sector	International organisation	Private sector	Public sector	International organisation
Gross Equivalised income quintile group	Percentage of gross monthly household income			Percentage of gross monthly household income		
Lowest twenty percent	6	5	10	50	15	35
Second quintile group	12	13	12	54	21	24
Third quintile group	16	13	23	54	15	31
Fourth quintile group	21	35	26	47	29	24
Highest twenty percent	45	34	29	65	18	17
Total households				56	21	23

Source: PCBS

Table 2. 39. Self employment per source of income and per quintile, West Bank 2006

	Self employment per source of income			Self employment per quintile		
	Agricultural sector	Industrial and services sector	International organisation	Agricultural sector	Industrial and services sector	International organisation
Gross Equivalised income quintile group	Percentage of gross monthly household income			Percentage of gross monthly household income		
Lowest twenty percent	8	8	12	25	57	18
Second quintile group	11	10	7	30	61	9
Third quintile group	21	18	14	30	60	10
Fourth quintile group	26	24	14	29	63	8
Highest twenty per cent	34	40	53	23	60	17
Total households				27	60	13

Source: PCBS

Table 2. 40. Social aids and pensions per source of income and per quintile, West Bank 2006

	Social aids and pensions per source of income			Social aids and pensions per quintile		
	Pension	Public social aids	International organisation aids	Pension	Public social aids	International organisation aids
Gross Equivalised income quintile group	Percentage of gross monthly household income			Percentage of gross monthly household income		
Lowest twenty percent	2	7	5	6	78	16
Second quintile group	12	8	8	26	57	17
Third quintile group	9	19	30	9	63	28
Fourth quintile group	10	18	24	11	65	24
Highest twenty percent	67	48	33	27	61	12
Total households				19	63	18

Source: PCBS

Table 2. 41. Other sources per source of income and per quintile, West Bank 2006

	Other sources per source of income			Other sources per quintile		
	Remittances Palest. household	Remittances other countries	Capital income and others	Remittances Palest. household	Remittances other countries	Capital income and others
Gross Equivalised income quintile group	**Percentage of gross monthly household income**			**Percentage of gross monthly household income**		
Lowest twenty percent	5	9	7	34	32	34
Second quintile group	16	6	15	52	11	37
Third quintile group	11	16	15	36	28	36
Fourth quintile group	22	15	16	52	19	29
Highest twenty percent	46	54	47	42	26	32
Total households				44	23	33

Source: PCBS

Table 2. 42. Monthly self employment income per size and per quintile

	Size (number of persons)				
Gross income quintile group	**1**	**From 2 to 4**	**From 5 to 8**	**From 9 to 10**	**More than 10**
	Percentage of gross monthly self employment income per size				
Lowest twenty percent	8	6	4	5	19
Second quintile group	19	12	9	7	16
Third quintile group	13	21	14	17	27
Fourth quintile group	12	40	22	18	10
Highest twenty percent	48	21	51	53	28

Source: PCBS

Table 2. 43. Monthly employment income per size and per quintile

	Size (number of persons)				
Gross income quintile group	**1**	**From 2 to 4**	**From 5 to 8**	**From 9 to 10**	**More than 10**
	Percentage of gross monthly employment income per size				
Lowest twenty percent	5	6	6	6	5
Second quintile group	10	11	11	14	7
Third quintile group	10	15	17	14	14
Fourth quintile group	33	16	25	27	28
Highest twenty percent	42	52	41	38	45

Source: PCBS

Table 2. 44. Distribution of households per size and per quintile of total income, West Bank 2006

Number of components	Quintiles (% values)					Total household
	1	2	3	4	5	
1	2	5	0	6	14	27
From 2 to 4	22	39	27	47	71	206
From 5 to 8	98	90	107	94	67	456
From 9 to 10	28	25	25	16	12	106
More than 10	18	9	8	4	2	41
Total household	167	168	167	167	166	835

Source: PCBS

Table 2. 45. Distribution of households per size and per quintile of total income, Jenin 2006

Number of components	Quintiles (% values)					Total household
	1	2	3	4	5	
1	0	0	0	0	1	2
From 2 to 4	1	3	2	3	5	14
From 5 to 8	6	6	7	6	4	30
From 9 to 10	2	2	2	1	1	7
More than 10	1	1	1	0	0	3
Total household	11	11	11	11	11	55

Source: PCBS

Table 2. 46. Distribution of households per component and per quintile of total income, West Bank and Jenin 2006

Number of components	Quintiles (% values)					Total household
	1	2	3	4	5	
1	7	18	0	23	52	27
From 2 to 4	11	19	13	23	34	206
From 5 to 8	21	20	23	21	15	456
From 9 to 10	26	24	23	15	12	106
More than 10	45	22	19	10	5	41
Total household	167	168	167	167	166	835

Source: PCBS

Table 2. 47. Education level per quintile of total income, West Bank 2006

	Education level
Gross Equivalised income quintile group	**estimate**
Lowest twenty percent	3.26
Second quintile group	3.48
Third quintile group	3.23
Fourth quintile group	3.47
Highest twenty percent	3.40
Per size of households (number of components)	
1	3.21
from 2 to 4	3.64
from 5 to 7	3.37
from 8 to 10	3.35
more than 10	3.19

Source: PCBS

Table 2. 48. Education level per area and per prosimity to the elementary school, West Bank 2006

Proximity to the elementary school	**Per area**			**Total**
	Urban	**Rural**	**Foraging camps**	**average**
1 km	3.46	3.27	3.39	3.37
1-5 km	3.42	3.36	3.43	3.40
more than 5 km	2.56	3.00	2.75	2.77
Total average	3.15	3.21	3.19	

Source: PCBS

Table 2. 49. Distribution of households per quintile of income and per type of locality

	Type of locality		
Gross Equivalised income quintile group	**Urban**	**Rural**	**Foraging fields**
	N.	**N.**	**N.**
Lowest twenty percent	98	70	18
Second quintile group	95	63	16
Third quintile group	73	74	19
Fourth quintile group	89	62	9
Highest twenty percent	91	48	10

Source: PCBS

Table 2. 50. Gini coefficient and Theil index per sector of economic activity, West Bank and Jenin 2006

	LFS WB	LFS Jenin
Gini coefficient	%	%
Agriculture	19	24
Manufacturing	25	24
Construction	21	21
Commerce-hotels	25	23
Transport-storage	24	22
Other	22	20
Total	24	23
Theil index		
Agriculture	8.2	11
Manufacturing	10.7	11
Construction	8.1	8
Commerce-hotels	11.3	11
Transport-storage	10.6	8
Other	8.2	8
Total	9	9

Source: PCBS

Table 2. 51. The distribution of labour force for gender, age, area and education, West Bank and Jenin 2006

	Employment Rate by Groups	Group Share Among Employed	Employment Rate by Groups	Group Share Among Employed
	LFS WB (%)	LFS WB (%)	LFS Jenin (%)	LFS Jenin (%)
Total	78.2	100.0	80.8	100.0
Gender				
Male	77.6	80.9	79.4	75.9
Female	80.6	19.1	85.6	24.1
Age				
15-24	64.7	19.2	67.0	15.4
25-54	81.9	75.6	83.1	77.9
55-64	87.0	5.2	94.6	6.8
Area of residence				
Urban	78.3	56.2	82.8	38.4
Rural	78.0	43.8	79.6	61.6
Education atteinment				
No education	88.4	1.9	87.8	2.0
Primary eduction	76.8	13.7	85.2	12.8
Secondary education	77.5	55.5	79.6	60.3
More than secondary	79.6	28.9	81.0	24.9

Source: PCBS

Table 2. 52. The distribution of unemployment for gender, age, area and education, West Bank and Jenin 2006

	Unemployment Rate by Groups	Group Share Among Unemployed	Unemployment Rate by Groups	Group Share Among Unemployed
	LFS WB	**LFS WB**	**LFSjenin**	**LFSjenin**
Total	21.8	100.0	19.2	100.0
Gender				
Male	22.4	83.6	20.6	82.9
Female	19.4	16.4	14.4	17.1
Age				
15-24	35.3	37.5	33.0	31.8
25-54	18.1	59.7	16.9	66.6
55-64	13.0	2.8	5.4	1.6
Area of residence				
Urban	21.7	55.8	17.2	33.5
Rural	22.0	44.2	20.4	66.5
Education atteinment				
No education	11.6	0.9	12.2	1.2
Primary eduction	23.2	14.9	14.8	9.3
Secondary education	22.5	57.8	20.4	65.0
More than secondary	20.4	26.5	19.0	24.5

Source: PCBS

Table 2. 53. Percentage of expenditure per quintile of income in each kind of food and beverages, West Bank 2006

Gross Equivalised income quintile group	Lowest twenty percent	Second quintile group	Third quintile group	Fourth quintile group	Highest twenty percent
	%	%	%	%	%
Bread	10	9	7	6	5
Meat	12	11	11	10	10
Fish	1	1	1	1	1
Dairy products	4	5	4	3	3
Oils and fats	2	2	1	1	1
Fruit	4	4	4	4	3
Vegetables	11	8	6	5	4
Sugar	4	3	3	2	2
Non alchoolic beverages	2	2	2	2	2
Alchoolic beverages	0.02	0	0	0.02	0.1

Source: PCBS

Table 2. 54. Percentage expenditure per area in each kind of food and beverages, West Bank 2006

Gross Equivalised income quintile group	Urban areas	Rural areas	Foraging fields areas
	%	%	%
Bread	7	7	9
Meat	10	11	10
Fish	1	1	1
Dairy products	4	4	4
Oils and fats	2	2	2
Fruit	4	4	4
Vegetables	6	7	7
Sugar	3	3	3
Non alcoholic beverages	2	2	2
Alcoholic beverages	0.03	0	0.2

Source: PCBS

Table 2. 55. Jenin crops production from Social Accounting Matrix 2007

	Wheat	Barley	Onion	Garlic	Anise	Potatoes	Tobacco	Pods	Sesame	Spices	Other crops	Crops
Wheat	416.7											416.7
Barley		124.3										124.3
Onion			817.1									817.1
Garlic				152.3								152.3
Anise					16.7							16.7
Potatoes						13.9						13.9
Tobacco							267.3					267.3
Pods								246.1				246.1
Sesame									18.3			18.3
Spices										4.1		4.1
Other crops											35.3	35.3
Crops	416.7	124.3	817.1	152.3	16.7	13.9	267.3	246.1	18.3	4.1	35.3	2 112.3
Processing food			11.6		0.3							11.9
Manifacture	291.8	37.3	1410.4	64.9	67.4	12.6	589.2	126.2	90.2	3.8	30.3	2 724.0
Water. electriciy, gas	309.6	0.0	154.7	45.6	0.6	10.2	201.7	3.5	323.6	0.2	46.3	1096.1
Construction	0.0									0.0		0.0
Private services	1183.5	243.5	357.2	213.4	54.5	14.3	341.0	400.5	269.5	13.5	1737.5	4 828.4
Public servicies												
Total intermediate consumption	2 201.6	405.2	2 751.0	476.1	139.5	51.1	1399.3	776.3	701.6	21.6	1849.5	10 772.7
Value added	947.4	75.0	2 490.7	486.0	167.2	60.0	1564.3	702.0	57.5	161.7	1406.9	8 118.7
Imports	1819.0	230.8	971.3	96.3	11.4	57.9	374.9	276.7	26.9	207.7	2 721.6	6 794.4
Total value of production	4 968	711	6 213	1079	318	170	3 457	1755	786	391	5 978	25 826.0

Table 2. 56. Jenin vegetables production from Social Accounting Matrix 2007

	Tomatoes	Cucumbers	Other vegetables	Vegetables
Tomatoes	1 662.8			1 662.8
Cucumbers		624.4		624.4
Other vegetables			924.6	924.6
Agricolture	1 662.8	624.4	924.6	3 211.8
Processing food				0.0
Manifacture	5 728.3	3 464.6	3 360.0	12 552.9
Water. electriciy, gas	1 374.4	516.2	764.3	2 654.9
Construction	26.0	9.8	14.5	50.3
Private services	5 434.7	2 041.0	3 022.1	10 497.7
Public servicies				
Total intermediate consumption	14 226.1	6 656.0	8 085.5	28 967.6
Value added	12 185.3	6 982.6	7 982.7	27 150.7
Imports	3 806.9	3 598.3	3 750.9	11 156.0
Total value of production	30 666	17 405	20 068	68 139.0

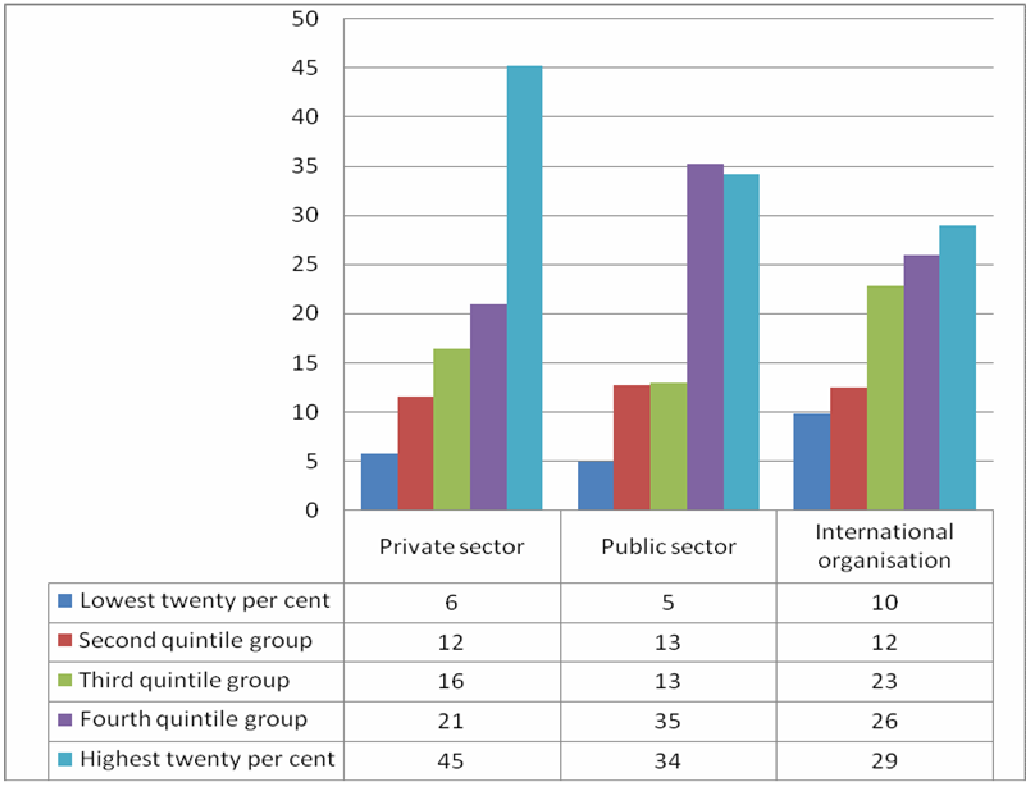
Table 2. 57. Jenin fruit trees production from Social Accounting Matrix 2007

	Other crops	Olive	Citrus	Cherry	Grape	Plum	Apple	Almond	Other fruit trees	Fruit trees
Other crops	35.3	153.2	0.1	42.4	165.9	4.1	6.7	2.9	39.2	414.5
Olive										
Citrus										
Cherry										
Grape										
Plum										
Apple										
Almond										
Other fruit trees										
Agricolture	35.3	153.2	0.1	42.4	165.9	4.1	6.7	2.9	39.2	414.5
Processing food										0.0
Manifacture	30.3	631.8	9.0	330.2	130.5	73.6	79.9	88.6	227.3	1 570.9
Water. electriciy, gas	46.3	3.4	0.4	6.1	26.7	2.1	1.9	0.0	20.3	61.0
Constructio		33.3	0.0	9.2	4.3	0.2	1.4	0.5	0.6	49.6
Private services	1 737.5	792.4	0.2	137.0	253.7	26.6	6.6	24.2	79.5	1 320.1
Public servicies										
Total intermediate consumptio	1 849.5	1 614.2	9.6	524.8	581.1	106.6	96.5	116.2	366.9	3 416.0
Value added	1 406.9	2 756.0	20.1	762.9	756.8	139.8	126.3	118.7	527.5	5 208.1
Imports	2 721.6	658.8	9.8	131.9	161.9	29.7	18.1	145.8	345.0	1 500.9
Total value of production	5 978	5 466	41	1 517	1 533	282	252	381	1 246	10 718.0

Appendix A – The Palestinian Economy and the Jenin Industrial District

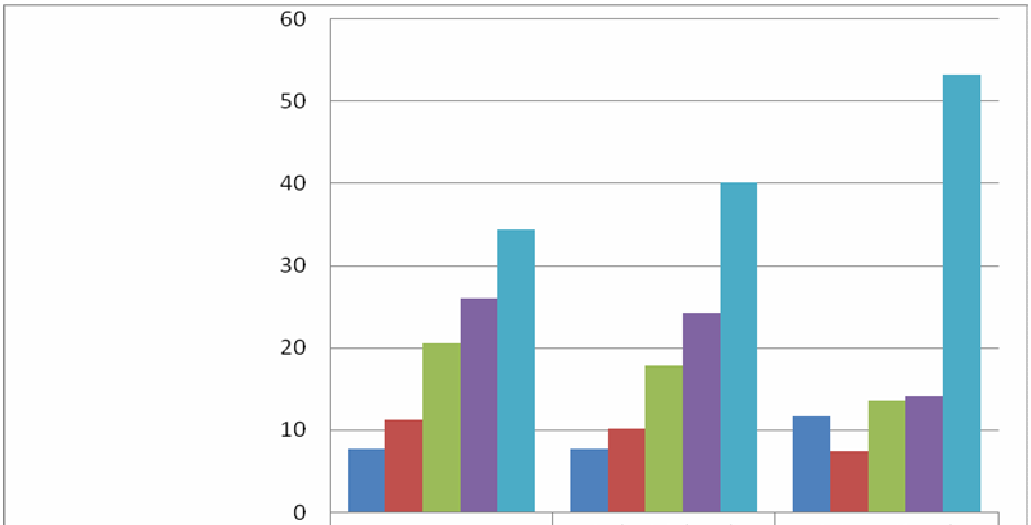
Graphic

Graphic 2. 10. Wages and salaries per source of income (%),West Bank 2006



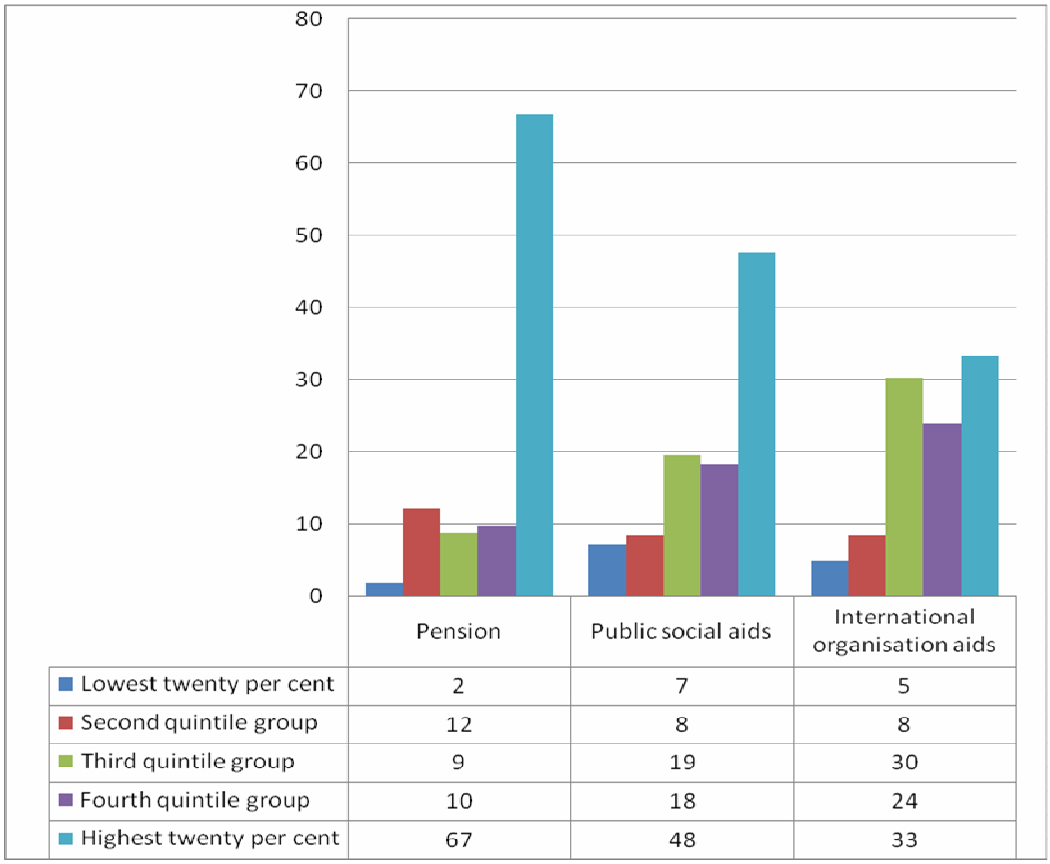
	Private sector	Public sector	International organisation
Lowest twenty per cent	6	5	10
Second quintile group	12	13	12
Third quintile group	16	13	23
Fourth quintile group	21	35	26
Highest twenty per cent	45	34	29

Graphic 2. 11. Self employment per source of income (%),West Bank 2006



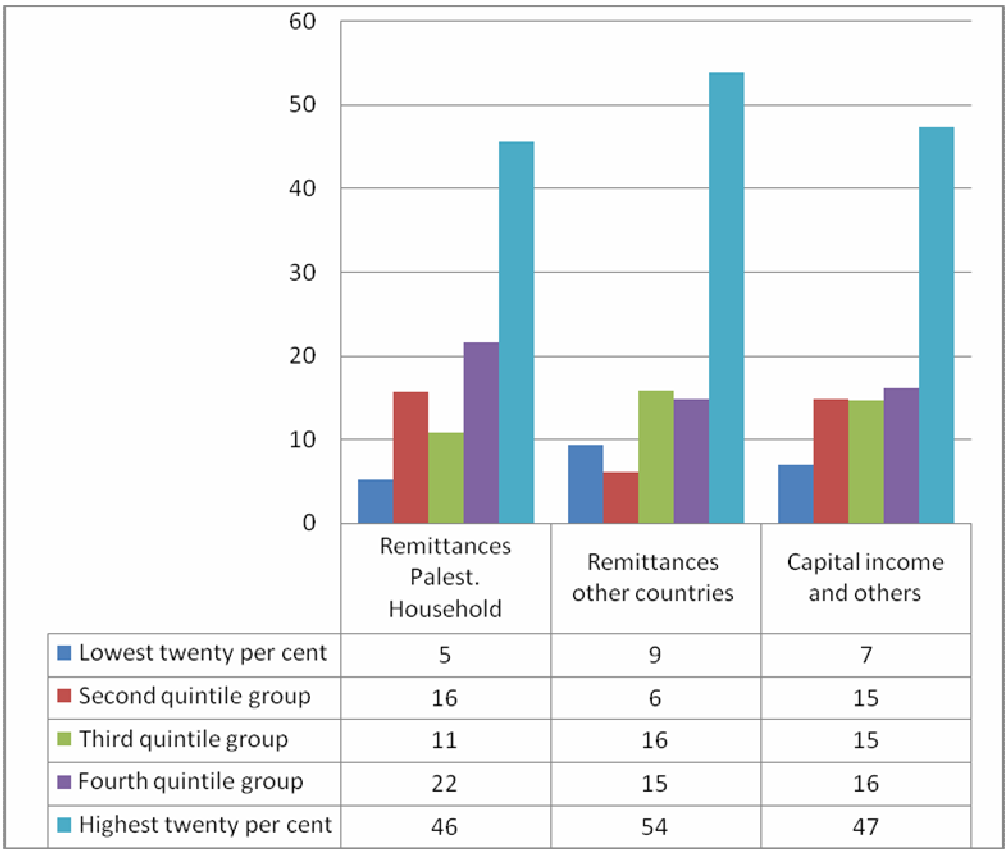
	Agricultural sector	Industrial and services sector	International organisation
Lowest twenty per cent	8	8	12
Second quintile group	11	10	7
Third quintile group	21	18	14
Fourth quintile group	26	24	14
Highest twenty per cent	34	40	53

Graphic 2. 12. Social aids and pensions per source of income (%),West Bank 2006



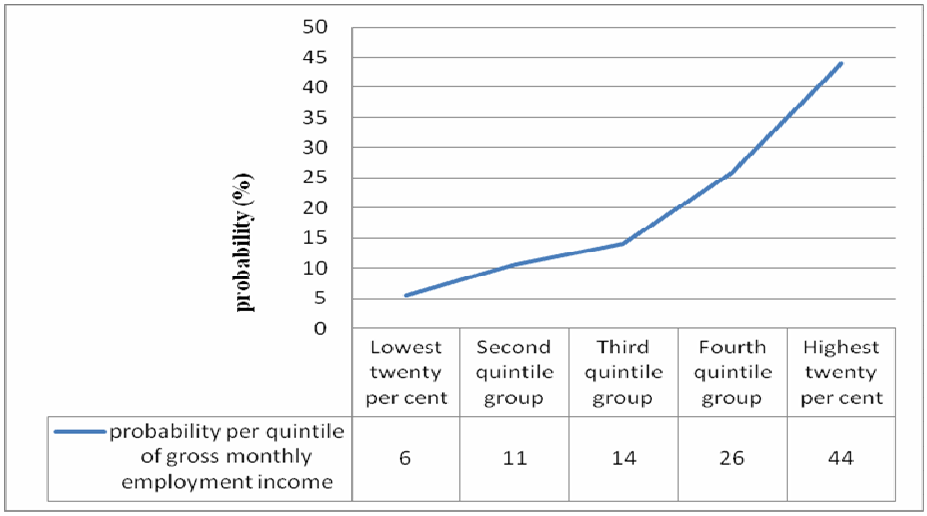
	Pension	Public social aids	International organisation aids
Lowest twenty per cent	2	7	5
Second quintile group	12	8	8
Third quintile group	9	19	30
Fourth quintile group	10	18	24
Highest twenty per cent	67	48	33

Graphic 2. 13. Other sources per source of income (%), West Bank 2006

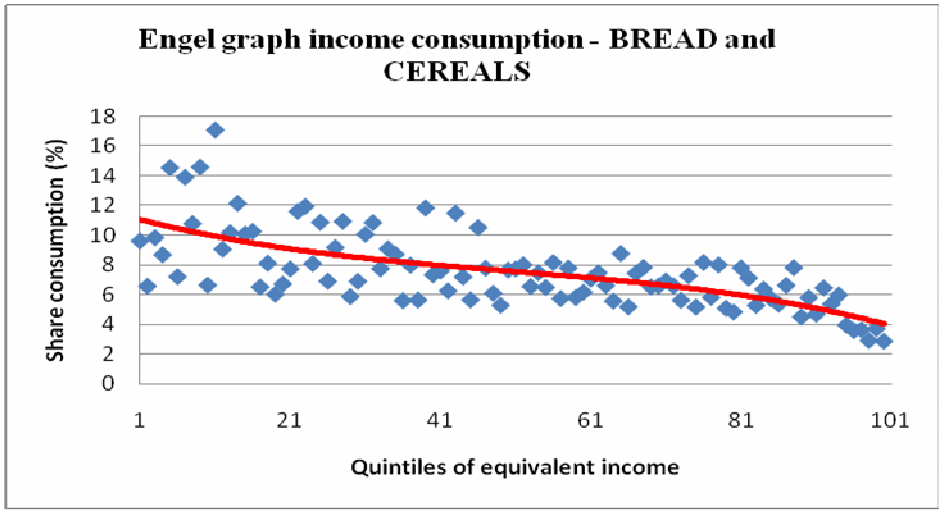


	Remittances Palest. Household	Remittances other countries	Capital income and others
Lowest twenty per cent	5	9	7
Second quintile group	16	6	15
Third quintile group	11	16	15
Fourth quintile group	22	15	16
Highest twenty per cent	46	54	47

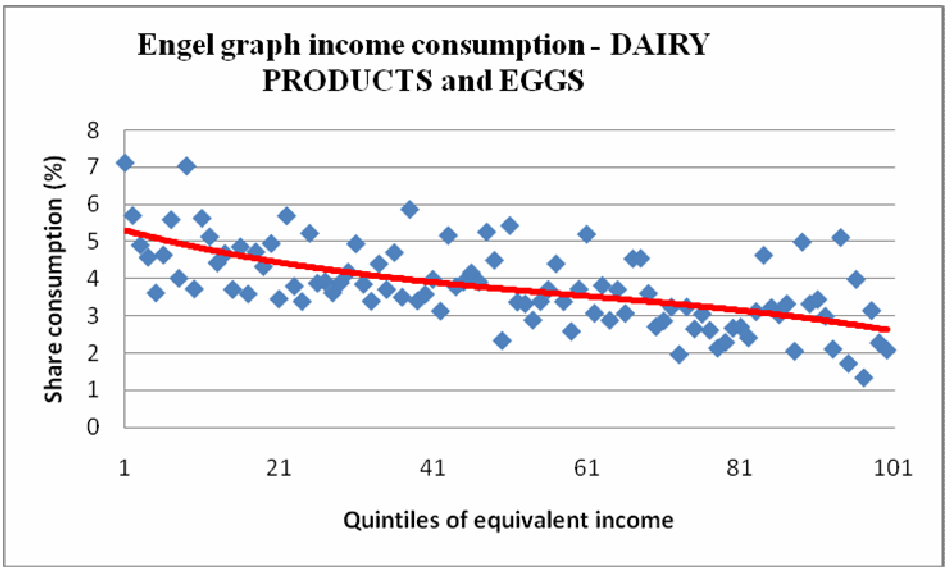
Graphic 2. 14. Probability per quintile of gross monthly employment income (%)



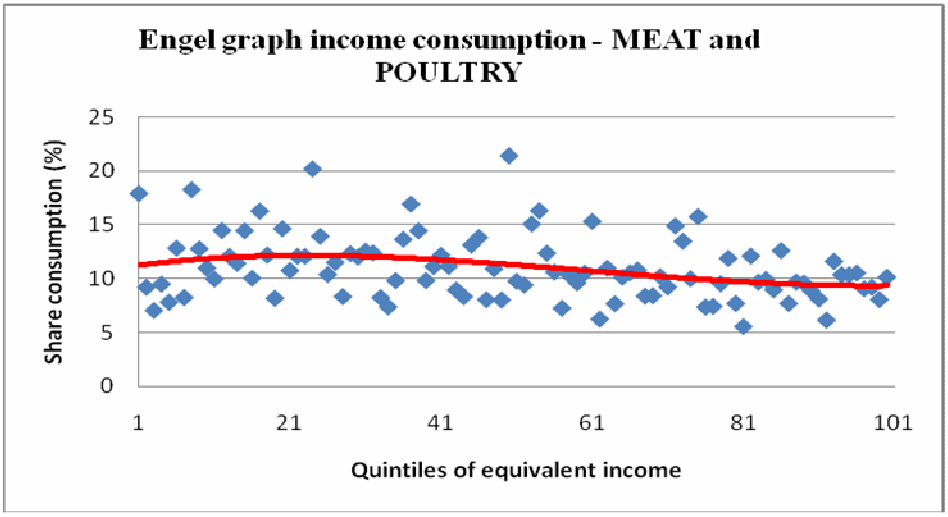
Graphic 2. 15. Engel curve, consumption of bread and cereals per quintiles of income, West Bank 2006



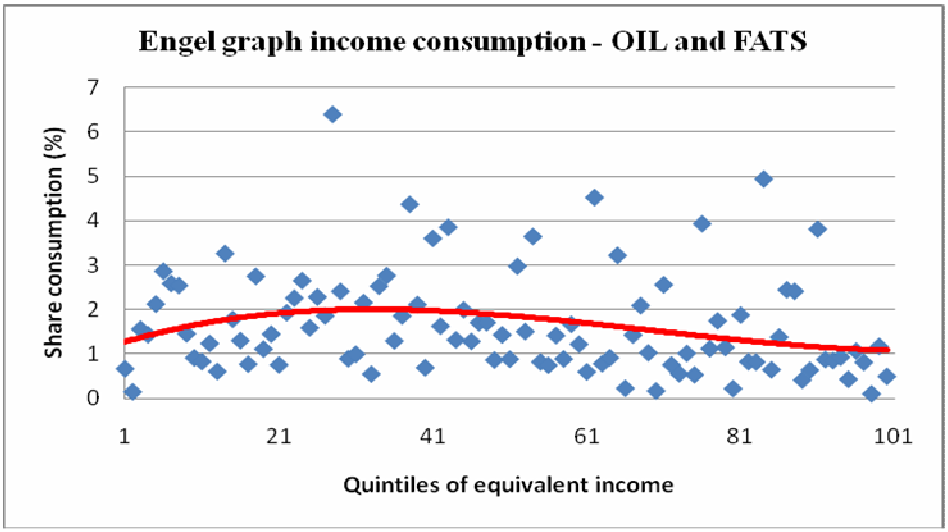
Graphic 2. 16. Engel curve, consumption of dairy products and eggs per quintiles of income, West Bank 2006



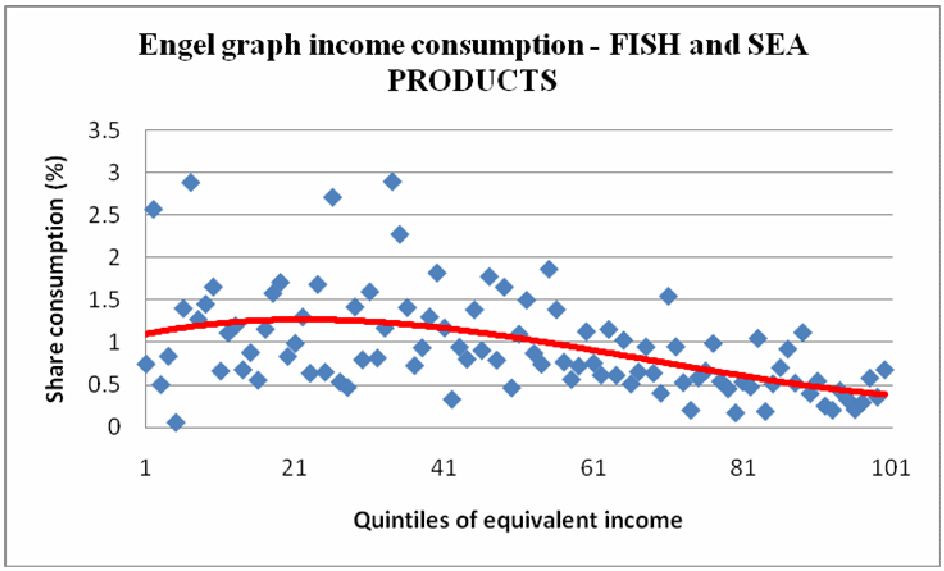
Graphic 2. 17. Engel curve, consumption of meat and poultry per quintiles of income, West Bank 2006



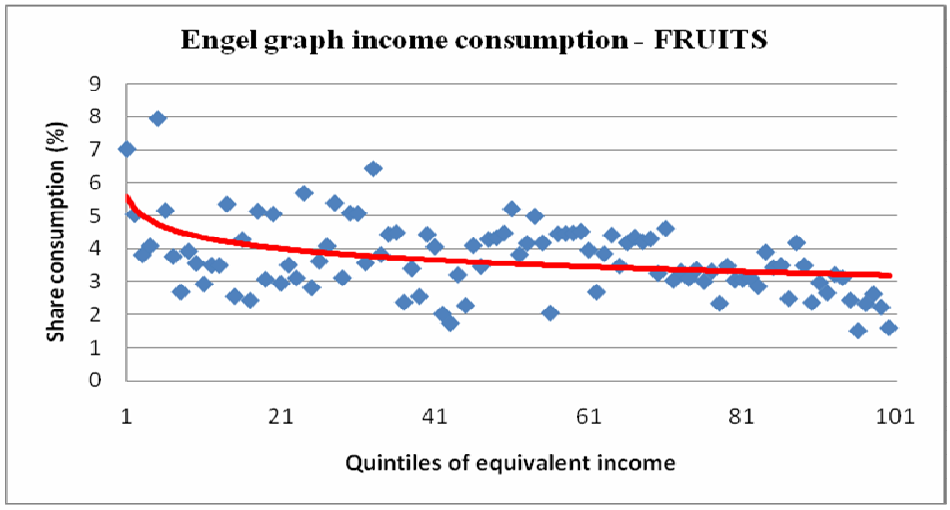
Graphic 2. 18. Engel curve, consumption of oil and fats per quintiles of income, West Bank 2006



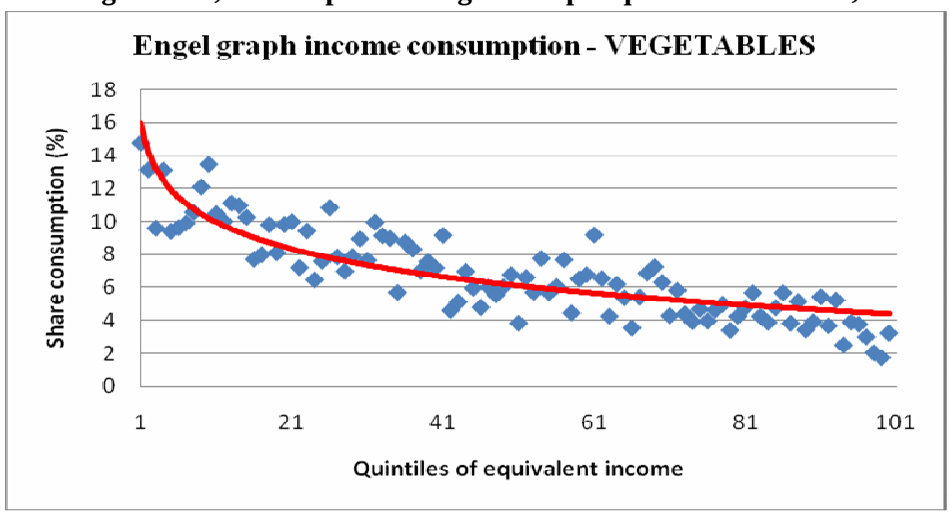
Graphic 2. 19. Engel curve, consumption of fish and sea products per quintiles of income, West Bank 2006



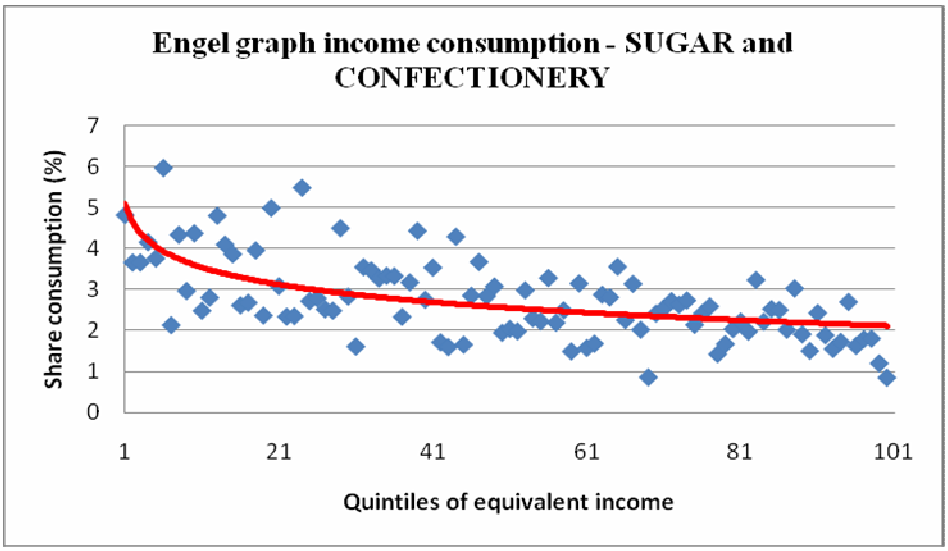
Graphic 2. 20. Engel curve, consumption of fruits per quintiles of income, West Bank 2006



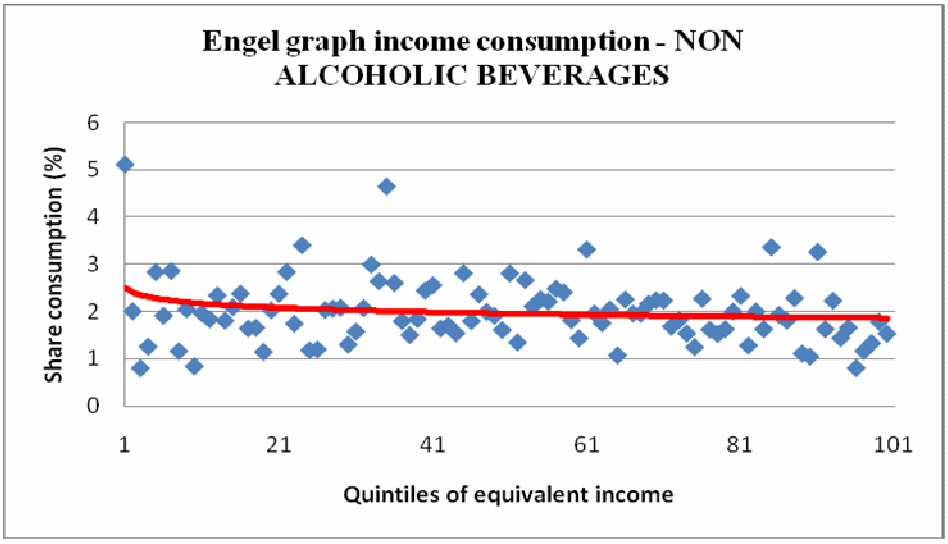
Graphic 2. 21. Engel curve, consumption of vegetables per quintiles of income, West Bank 2006



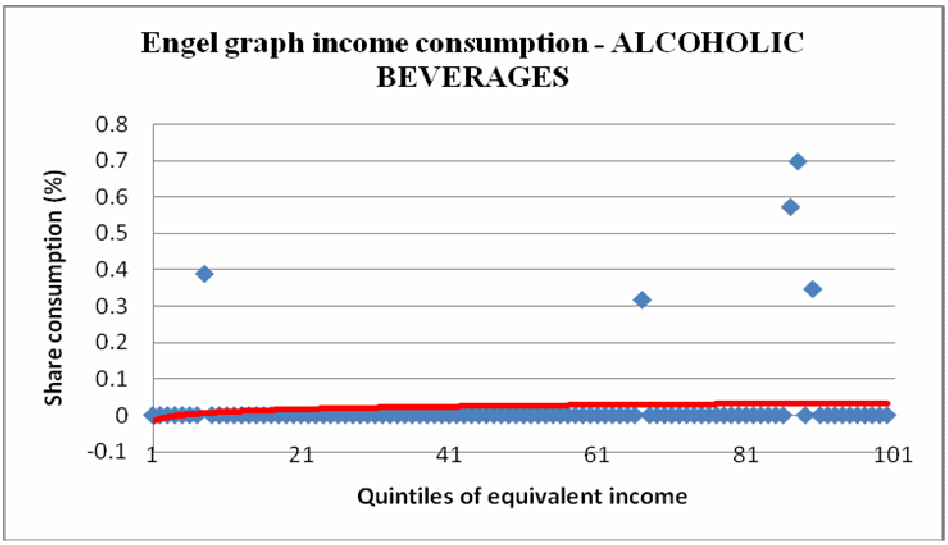
Graphic 2. 22. Engel curve, consumption of sugar and confectionery per quintiles of income, West Bank 2006



Graphic 2. 23. Engel curve, consumption of sugar and confectionery per quintiles of income, West Bank 2006



Graphic 2. 24. Engel curve, consumption of sugar and confectionery per quintiles of income, West Bank 2006


Engel graph income consumption - ALCOHOLIC BEVERAGES
Share consumption (%)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
1
21
41
61
81
101
Quintiles of equivalent income

Appendix B – Restriction to moovements of goods and people: an estimate of the economic costs of closure

Tables

Table 3. 6. Screening Procedures (sources: Paltrade, World Bank, UN-OCHA)

Port	*Description*
Ashdod	This port accepts imports and exports. The cargo screening is done through sophisticated Smiths-Hiemann Neutron based technology within a high security complex. The cargo processing is well organized and the procedure is computerized internally; it also interfaces with the Customs 'Malam' System. The Scanning process is backed-up through physical inspection bays for more in-depth investigation of suspect goods. There are three internal and external warehouse facilities; the internal bounded warehouse entities are Contram, Overseas and Ashdod Bonded. Palestinian cargo owners and freight forwarders must use Israeli customs brokers. For exports shipping line reservations must be made at least 4 days prior to departure and an export license must be obtained. Containers must go to the port one day before the closing date for security inspection. Documents and bills are prepared following the overseas client necessity.
Haifa Port Site	Haifa is one of the Israeli's largest and oldest port and handles approximately 19 million tones of cargo, including transshipment, out of which cca 50% is containerized. The port is administratively divided in 3 sections: the Western port which houses the military vessels; the main port includes the primary container terminal, a dry bulk facility, a dedicated passenger facility, general cargo, warehouse and other facilities; the Eastern port which incorporates a Ro-Ro general cargo terminal, fishing port and a chemical terminal. The port is in the continuous enlargement including a new container gate and queuing area, construction of an additional container quay and additional container yards.
Rafah Commercial Passage	This commercial passage is a one way terminal, only used for Palestinian imports. Goods mainly arrive from Egypt and other Arabian countries and include food, flour, cement, gravel, sugar and salt, etc. For goods on pallets the passage is divided into two main separated zones: the Commercial Terminal and the Joint Verification Terminal (JVT). Both of these areas are fenced within a bigger zone. Back to back loading is carried out for goods on pallets. After leaving the controlled Israeli terminal all Palestinian loaded trucks have to be cleared by customs and registered by Palestinian authorized employees.
Allenby Border Crossing West Bank – Jordan	This is a major crossing between the West Bank and Jordan for civilians and import/export goods. Cement (bagged) trucks and cargo have special clearance to proceed to a distribution center point in Jericho for unloading. No containerized goods, Israeli goods, or

	goods originating in Syria, Libya, Lebanon or Iran are allowed to use this crossing. Security controls are made by the Israeli Airport Authority with passenger screening technology being operated by the Passport Control. There is no scanning capability for full-truck, semi-trailer or ISO containers, although there is a scanner for pallets. Import cargo is usually cleared on the day of arrival. There is a designated remote area for bulk cement-transfer where bulk cement is transferred to each side by pump and pipes. This includes an inbuilt filter and security grill to exclude weapons or explosives. There is also a transit area for re-bar (steel reinforcing bar for construction) and a general post-scanning transfer area for fork-lift operation to load trucks for Palestine
Jenin Crossing Point	This is a new cargo checkpoint for goods originating in Israel and Gaza, controlled by the Military Police. It is a well structured facility with cargo transfer platforms for back to back operations. This includes loading/unloading areas plus several 'blast-containment' transfer compartments. These will house the 'Security Scanning Equipment' at a later stage. Trucks for inspection are checked for documents and permitted to pass through the sliding steel security gate into the transfer area. They are then directed either to the loading/unloading platforms or to the blast-proof compartments. Much effort has been made in designing a facility that will ease the transfer of goods but that will maintain a high level of security.
Tulkarem	Controlled by the IDF, the Tulkarem crossing point is open 7 days a week, 24 hours a day for motor vehicle and passenger traffic. For cargo movements the checkpoint is open Sunday – Thursday, 8am to 5pm. It is open for a half day on Friday and closed on Saturday. No Israeli trucks are permitted to move through this checkpoint into or out of the West Bank. All cargo is subject to back to back procedures by scanning or detailed examination. The checks which take place have a security focus and are not aimed at commercial compliance. A new facility is under construction at this checkpoint which will serve as one of the five designated crossing points between the West Bank and Israel after the completion of the Barrier.
Qalqiliya (Jaljoulia) Checkpoint	This is currently a general cargo checkpoint with opening hours 06:00 – 22:00 (planned to extend to 24 hours) at Jaljoulia for all types of vehicles including light trucks. The entry road into Qalqiliya does not now have a check point and the original check point and back to back operation is not used. Qalqiliya is situated in an enclave surrounded by the Barrier which demands somewhat unique solutions to permit access to Israel. There are plans to create access to the next WB area by a tunnel (already under construction) and a new crossing point at the Northern point above Qalqiliya. At some point in the future there will be a crossing point with back to back procedures.
Huwarrah (Awartah) Checkpoint	Huwarrah is the only commercial crossing point leading to the city of Nablus and Jenin. It is located to the south

	of the city. The checkpoint opens 5 days per week from 7:00 AM to 6:00 PM, on Fridays from 7:00 AM to 2:00 PM, and closes on Saturday. Truck waiting time is around 3 hours. Often trucks will remain overnight to be first in line to cross the checkpoint the following day. Back to back cargo handling and security inspection procedures are applied. Between January 1 – September 30, 2004 Howarrah checkpoint has been closed for 20 days.
Hamrrah Checkpoint	This checkpoint is located in the Jordan Valley area to the east of Nablus. Palestinian trucks coming from the middle and south of the West Bank and heading to Jenin, Tubas or Qabatiah governorates in the upper north of the West Bank will cross the Hammrah checkpoint. The checkpoint opens 7 days/week from 5:00 AM to 10:00 PM. Truck waiting time is around 3 hours. If a waiting truck is not inspected by the 10:00 pm closing time then it is required to wait over night or return to its origin. There is no back to back system in place. However the combination of high number of trucks waiting in line, plus strict security inspection applied makes Hamrrah one of the most restrictive checkpoints. Palestinian pedestrians and vehicles may cross if they have permits. Only residents of the Jordan Valley are allowed to cross without a permit.
Jalameh Checkpoint near Jenin	Permanently staffed checkpoint for people and occasionally open for goods. The crossing of Palestinians is forbidden except for those with a permit to enter Israel. Also used for movement of goods between the West Bank and Israel, specially to flows directed to Haifa.
Beitunyia Checkpoint	It is the only commercial crossing point associated with the city of Ramallah. Opening hours are from 6:00 AM to 5:00 PM, on Fridays from 6:00 am to 2:00 PM and it is closed on Saturday. The back to back system is applied to trucks/ cargo which are not permitted to travel into the West Bank. Yellow plated Israeli trucks are exempt from back to back processing. Average truck waiting time is 30 minutes. This checkpoint has been closed for a total period of 7 days since January 1, 2004. It also a major crossing point for general cargo from Ashdod and Haifa used by the shipments with humanitarian and medical supplies as well as bulk cargo such as cement and aggregates. No general passenger traffic is permitted (except for the UN officers). Israeli registered trucks with drivers who have the appropriate permit are allowed to pass. It is controlled by the IDF and is primarily a security checkpoint with any commercial compliance inspections incidental to the security objective. A very basic back to back cargo facility operates from a bare block of land with separation of trucks being achieved by the placement of 1.8m high square concrete blocks. There is no handling equipment or any warehouse facilities at the site. The parking area before the control zone is quite restricted, causing high queuing waiting times, under intense traffic conditions. Also, the road that brings to the control zone is in extremely bad conditions, not appropriate for the transportation of fragile goods, such as glass, etc. Future plans include the installation of electronic scanning equipment and storage bins to facilitate the back to back

	operation of these types of bulk cargo. A new checkpoint is being constructed approximately 1 km East from the existing checkpoint and closer to Ramallah.
Tulkarem (Taibeh) Checkpoint	This is the principal commercial checkpoint leading to the city of Tulkarem. It is open daily from 7:00 AM to 5:00 PM, and closes down on Saturday. Average waiting time/truck is 1 hour..

Table 3. 7. Military Flying Checkpoints- Summary Statistics for Good and Bad Time

Variable	Definition *(monthly data, except where differently specified)*	Mean *Good time prob=41%*	Mean *Bad time prob=59%*	Mean *Full dataset (120 obs)*	Std. Deviation *Full dataset (120 obs)*
flyWB	no. of flying checkpoints in WB	313.24	584.82	453.55	168.84
flyN	no. of flying checkpoints North WB	126.13	264.51	197.63	96.03
flyC	no. of flying checkpoints Center WB	75.05	77.33	76.23	34.41
flyS	no. of flying checkpoints South WB	134.77	219.03	178.30	77.31
flyJR	avg. no. of flying ckpts. calibrated on the route *Jenin-Ramallah*	1.09	3.14	2.15	4.57
flyJH	avg. no. of flying ckpts. calibrated on the route *Jenin-Haifa*	1.20	1.35	1.28	14.56
flyRA	avg. no. of flying ckpts.on route *Ramallah-Ashdod*	2.08	3.20	2.66	6.30
fly0	no. of flying checkpoints in Jerusalem	9.86	26.61	18.51	18.90
fly1	no. of flying checkpoints in Nablus	30.48	46.72	38.87	30.23
fly2	no. of flying checkpoints in Jenin	19.50	78.69	50.08	43.69
fly3	no. of flying checkpoints in Tubas	13.93	18.66	16.37	10.07
fly4	no. of flying checkpoints in Qalqilya	62.22	120.43	92.30	43.96

fly5	no. of flying checkpoints in Salfit	19.55	27.11	23.45	13.08
fly6	no. of flying checkpoints in Ramallah	13.41	15.54	14.51	16.74
fly7	no. of flying checkpoints in Hebron	83.51	106.38	95.33	38.59
fly8	no. of flying checkpoints in Jericho	3.00	4.06	3.55	5.98
fly9	no. of flying checkpoints Bethlehem	41.39	86.03	64.45	35.72
fly10	no. of flying checkpoints Tulkarm	42.08	34.67	38.25	24.45

Table 3. 8. Casualties - Summary Statistics for Good and Bad Time

Variable	Definition	Mean		Mean	Std. Deviation
	(monthly data, except where differently specified)	*Good time prob=41%*	*Bad time prob=59%*	*Full dataset (120 obs)*	*Full dataset (120 obs)*
curfew	no. of monthly declared curfew hours in the WB	138.65	89.91	113.47	112.93
pfatw	no. of Palestinian dead people in open conflict across the WB	44.67	54.27	49.63	42.74
ifatw	no. of Israeli. dead people from open conflict in WB	1.87	2.70	2.30	3.02
injurp	no. of injured Palest. in WBGS	170.12	422.75	298.57	655.12
settli	no. of Israeli settlers in WB	130.12	153.62	142.26	123222
ruins	no. of house demolitions per month in WB	10.17	17.64	14.04	14.23
homeless	no. of homeless Palestinians in WBGS	51.60	91.91	72.43	99.27
media	Media coverage calculated as no. of articles published worldwide on the Israeli-Palestinian conflict	13.32	19.58	16.55	10.06
truckin	no. of trucks entering the West Bank per month, calibrated from Israel - WGB trade value, with value by truck=12000USD	5579	5118	5341	7461

truckout	no. of trucks out from the West Bank per month, calibrated from Israel - WGB trade value, with value by truck=12000USD	2888	1246	2039	5749
arabpop	Arab population living in Israel, thousands	1388.30	1366.94	1377.40	86.31

Key: WBGS - West Bank and Gaza Strip, WB – West Bank , GDP – Gross Domestic Product

Table 3. 9. Economic Indicator - Summary Statistics for Good and Bad Time

Variable	Definition	Mean		Mean	Std.Dev.
	(monthly data, except where differently specified)	*Good time*	*Bad time*	*Full dataset*	*Full dataset*
		prob=41%	*prob=59%*	*(120 obs.)*	*(120 obs.)*
igdp	GDP of Israel, in bil. USD, index by year	152.24	142.34	147.14	34.41
pgdp	GDP of West Bank and Gaza, in bil. USD, yearly index	4.15	4.09	4.12	0.44
icpi	Consumer Price Index Israel, year base=2002	102.40	103.62	103.03	2.78
pcpi*	Consumer Price Index WBGS, year base=2002	145.70	142.12	143.85	5.79
palexp	Tot. exports from WBGS, in bil.USD by year	0.73	0.72	0.72	0.15
isrexptot	Tot. exports from Israel, in bil. USD by year	3054	2873	2961	781.17
palimp	Tot. imports of WBGS, in bil. USD by year	2.79	2.36	2.57	0.50
isrimptot	Tot. imports of Israel, in bil. USD by year	3092	2858	2972	837.67
isrexpWB	Tot. exports of Israel in WBGS, in bil USD by year	3.38	3.00	3.19	4.30
isrimpWB	Tot. imports of Israel from WBGS, in bil. USD by year	1.67	0.72	1.18	3.31
isrinvest	Tot. Israeli investments abroad, in bil. USD per year	4.62	5.39	5.02	4.35

palexpus	Total exports from WBGS to United States, mil.USD by month	0.19	0.32	0.26	0.72
isrexpus	Total exports from Israel to United States, mil.USD by month	829.48	771.66	799.61	228.65
palimpus	Total imports in WBGS from United States, mil.USD by month	0.11	0.16	0.14	0.2031
isrimpus	Tot. imports in Israel from United States, mil.USD by month	1357	1351	1354	341.20
palfood	Food production in WBGS in 1000 International USD by year	457.21	469.21	464.21	274.73

Key:WBGS - West Bank and Gaza Strip, WB – West Bank , GDP – Gross Domestic Product

Table 3. 10. Model Calibration, Parameters

In parentheses: Standard Deviation

Link *(km)*	***Parameter Definition***	***Good Time***	***Bad Time***
Jenin-Ramallah *safe route: 89 km* *risky route: 105 km*	Avg. no. of flying checkpoints (risky route)	1.09 *(0.67)*	3.14 *(1.38)*
	No. of fixed checkpoints (safe route)	2	2
	Average monetary cost on safe route (USD/truck)	540	540
	Average monetary cost on risky route (USD/truck)	532	532
Jenin-Haifa *safe route: 198 km* *risky route: 53 km*	Avg. no. of flying checkpoints (risky route)	1.20 *(0.97)*	1.35 *(0.54)*
	No. of fixed checkpoints (safe route)	3	3
	Average monetary cost on safe route (USD/truck)	950	950
	Average monetary cost on risky route (USD/truck)	220	220
Ramallah-Ashdod *safe route: 95 km* *risky route: 110 km*	Avg. no. of flying checkpoints (risky route)	2.08 *(0.80)*	3.20 *(1.15)*
	No. of fixed checkpoints (safe route)	1	1
	Average monetary cost on safe route (USD/truck)	450	450
	Average monetary cost on risky route (USD/truck)	160	160

Table 3. 11. Model Calibration, Variables

Total number of observations: 277

Link	***Parameter Definition***	***Good Time -Safe route-***	***Bad Time -Safe route-***	***Good Time -Risky route-***	***Bad Time -Risky route-***
Jenin-Ramallah *No. Obs.: 142*	Pure travel time without inspection	129	129	137	137
	Average queuing time before inspection	15	45	11	22
	Duration of the coordination procedure	15	15	0	0
	Average checking time per checkpoint	6.10	12.20	6.74	13.48
	Total travel time	186	259	151	215
Jenin-Haifa *No. Obs.: 44*	Pure travel time without inspection	240	240	60	60
	Average queuing time before inspection	52	114	192	384
	Duration of the coordination procedure	30	30	0	0
	Average checking time per checkpoint	74	148	203	406
	Total travel time	648	1026	406	910
Ramallah-Ashdod *No. Obs.: 91*	Pure travel time without inspection	90	90	160	160
	Average queuing time before inspection	129	258	59	118
	Duration of the coordination procedure	60	60	0	0
	Average checking time per checkpoint	37	74	58	116
	Total travel time	316	482	371	783

Appendix C - Handbook on the screening procedures in ports, airports, crossing bridges and checkpoints

Ashdod. This port accepts imports and exports. The cargo screening is done through sophisticated Smiths-Hiemann Neutron based technology within a high security complex. The cargo processing is well organized and the procedure is computerized internally; it also interfaces with the Customs 'Malam' System. The Scanning process is backed-up through physical inspection bays for more in-depth investigation of suspect goods. There are three internal and external warehouse facilities; the internal bounded warehouse entities are Contram, Overseas and Ashdod Bonded. Palestinian cargo owners and freight forwarders must use Israeli customs brokers. For exports shipping line reservations must be made at least 4 days prior to departure and an export license must be obtained. Containers must go to the port one day before the closing date for security inspection. Documents and bills are prepared following the overseas client necessity.

Haifa Port Site. Haifa is one of the Israeli's largest and oldest port and handles approximately 19 million tones of cargo, including transshipment, out of which cca 50% is containerized. The port is administratively divided in 3 sections: the Western port which houses the military vessels; the main port includes the primary container terminal, a dry bulk facility, a dedicated passenger facility, general cargo, warehouse and other facilities; the Eastern port which incorporates a Ro-Ro general cargo terminal, fishing port and a chemical terminal. The port is in the continuous enlargement including a new container gate and queuing area, construction of an additional container quay and additional container yards.

Ben Gurion International Airport. The airport operates 24 hours a day, 7 days a week. Inspections conducted at this location are performed under the supervision of the Israel Airport Authority. Although not confirmed with airport authorities, various Palestinian industry representatives interviewed for this report claim that cargo imported by Palestinian registered business receives a significantly higher level of checks than cargo for Israeli importers. Pallet size scanners are used to inspect both import and export cargo. It was reported that all cargo is cleared within 24 hours. Flowers and perishable cargo receive priority and can be cleared within 3 - 4 hours. All import and export entry processing data is entered in the MILAM processing system. Trade data from MILAM is accessible to the airport authority, customs officers and customs agents.

Rafah Commercial Passage. This commercial passage is a one way terminal, only used for Palestinian imports. Goods mainly arrive from Egypt and other Arabian countries and include food, flour, cement, gravel, sugar and salt, etc. For goods on pallets the passage is divided into two main separated zones: the Commercial Terminal and the Joint Verification Terminal (JVT). Both of these areas are fenced within a bigger zone. Back to back loading is carried out for goods on pallets. After leaving the controlled Israeli

terminal all Palestinian loaded trucks have to be cleared by customs and registered by Palestinian authorized employees.

Allenby Border Crossing West Bank – Jordan. This is a major crossing between the West Bank and Jordan for civilians and import/export goods. Cement (bagged) trucks and cargo have special clearance to proceed to a distribution center point in Jericho for unloading. No containerized goods, Israeli goods, or goods originating in Syria, Libya, Lebanon or Iran are allowed to use this crossing. Security controls are made by the Israeli Airport Authority with passenger screening technology being operated by the Passport Control. There is no scanning capability for full-truck, semi-trailer or ISO containers, although there is a scanner for pallets. Import cargo is usually cleared on the day of arrival. There is a designated remote area for bulk cement-transfer where bulk cement is transferred to each side by pump and pipes. This includes an inbuilt filter and security grill to exclude weapons or explosives. There is also a transit area for re-bar (steel reinforcing bar for construction) and a general post-scanning transfer area for fork-lift operation to load trucks for Palestine

Damiya Bridge (David Bridge). As far as we know (by June 2009), this bridge is no more open for Palestinian shipments. Nevertheless in the past, this crossing point facilitated the export of a limited number of Palestinian products to Jordan and Arab countries (typically stones and marble, citrus, meat, foodstuffs, and perishables) and the import of bottles for the local factories. The crossing border offered a unique operation with designated Jordanian Reistered 'Green-Plated' trucks that can move to and from Jordan but must come back to Damia before 16:00hrs. These trucks had to have a 'enlightened' form with most engine and other panels permanently removed for the ease of Security inspection. Loading is carried out by back to back process. All inspections are visual as there are no scanning devices available. As the whole area is designated as Military Zone, the standard security fence (fitted with vibration sensors) surrounds the process area. The entry gates and check point are permanently supervised by the military personnel.

Jenin Crossing Point. This is a new cargo checkpoint for goods originating in Israel and Gaza, controlled by the Military Police. It is a well structured facility with cargo transfer platforms for back to back operations. This includes loading/unloading areas plus several 'blast-containment' transfer compartments. These will house the 'Security Scanning Equipment' at a later stage. Trucks for inspection are checked for documents and permitted to pass through the sliding steel security gate into the transfer area. They are then directed either to the loading/unloading platforms or to the blast-proof compartments. Much effort has been made in designing a facility that will ease the transfer of goods but that will maintain a high level of security.

Tulkarem. Controlled by the IDF, the Tulkarem crossing point is open 7 days a week, 24 hours a day for motor vehicle and passenger traffic. For cargo movements the checkpoint is open Sunday – Thursday, 8am

to 5pm. It is open for a half day on Friday and closed on Saturday. No Israeli trucks are permitted to move through this checkpoint into or out of the West Bank. All cargo is subject to back to back procedures by scanning or detailed examination. The checks which take place have a security focus and are not aimed at commercial compliance. A new facility is under construction at this checkpoint which will serve as one of the five designated crossing points between the West Bank and Israel after the completion of the Barrier.

Qalqiliya (Jaljoulia) Checkpoint. This is currently a general cargo checkpoint with opening hours 06:00 – 22:00 (planned to extend to 24 hours) at Jaljoulia for all types of vehicles including light trucks. The entry road into Qalqiliya does not now have a check point and the original check point and back to back operation is not used. Qalqiliya is situated in an enclave surrounded by the Barrier which demands somewhat unique solutions to permit access to Israel. There are plans to create access to the next WB area by a tunnel (already under construction) and a new crossing point at the Northern point above Qalqiliya. At some point in the future there will be a crossing point with back to back procedures.

Wadi Al-Narr Checkpoint. This is a WB internal checkpoint, located to the North-East of Bethlehem on the main road to Abu Dis. Palestinian trucks coming out of Bethlehem and Hebron and heading towards the Jordanian crossings and/or the north of the West Bank and the opposite have to go through the container zone Wadi Al-Narr. The efficient operation of this checkpoint is important because it is located on the only road that directly links the north and south of the West Bank. Opening hours are from 6:00 am to 10:00 pm daily, 7 days a week. Approximately 200 trucks daily pass through the checkpoint. Out of this number approximately 50% transport stone and marble. The remainder carries general consumer goods. Trucks and cargo are subject to security inspection only. There is no back to back operation. Truck waiting time at the checkpoint averages 2 hours/day. Often trucks will remain overnight to be first in line to cross the checkpoint the following day. Since January 1, 2004 the crossing has been closed for approximately 90 days. Yellow plated Israeli trucks will usually avoid this checkpoint by using the Gilo checkpoint located on the northern border of Bethlehem with Jerusalem or by using a second alternative checkpoint to the south of Bethlehem.

Howarrah (Awartah) Checkpoint. Howarrah is the only commercial crossing point leading to the city of Nablus and Jenin. It is located to the south of the city. The checkpoint opens 5 days per week from 7:00 AM to 6:00 PM, on Fridays from 7:00 AM to 2:00 PM, and closes on Saturday. Truck waiting time is around 3 hours. Often trucks will remain overnight to be first in line to cross the checkpoint the following day. Back to back cargo handling and security inspection procedures are applied. Between January 1 – September 30, 2004 Howarrah checkpoint has been closed for 20 days.

Hamrrah Checkpoint. This checkpoint is located in the Jordan Valley area to the east of Nablus. Palestinian trucks coming from the middle and south of the West Bank and heading to Jenin, Tubas or

Qabatiah governorates in the upper north of the West Bank will cross the Hammrah checkpoint. The checkpoint opens 7 days/week from 5:00 AM to 10:00 PM. Truck waiting time is around 3 hours. If a waiting truck is not inspected by the 10:00 pm closing time then it is required to wait over night or return to its origin. There is no back to back system in place. However the combination of high number of trucks waiting in line, plus strict security inspection applied makes Hamrrah one of the most restrictive checkpoints. Palestinian pedestrians and vehicles may cross if they have permits. Only residents of the Jordan Valley are allowed to cross without a permit.

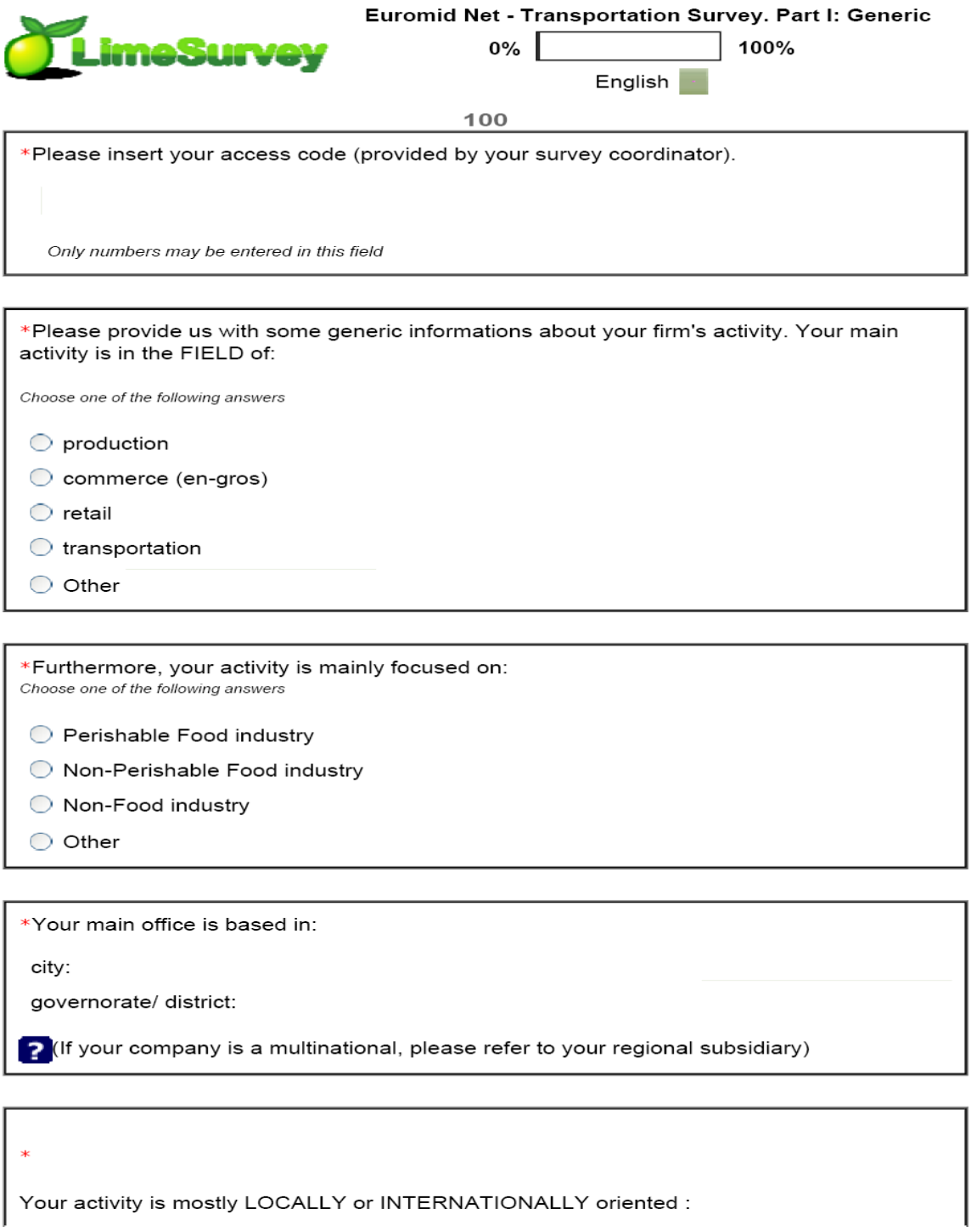
Atara-Atarot checkpoint. This checkpoint is situated in Ramallah. It has an observation tower that is constantly staffed. Until October 2006, the checkpoint was staffed on and off. Now there are stringent checks.

Jalameh Checkpoint near Jenin. Permanently staffed/ last checkpoint before Israel/ goods. The crossing of Palestinians is forbidden except for those with a permit to enter Israel. Also used for movement of goods between the West Bank and Israel.

Beitunyia Checkpoint. Beitunyia is the only commercial crossing point associated with the city of Ramallah. For this reason is important that the crossing operate efficiently. Opening hours are from 6:00 AM to 5:00 PM, on Fridays from 6:00 am to 2:00 PM and it is closed on Saturday. The back to back system is applied to trucks/ cargo which are not permitted to travel into the West Bank. Yellow plated Israeli trucks are exempt from back to back processing. Average truck waiting time is 30 minutes. This checkpoint has been closed for a total period of 7 days since January 1, 2004. It also the a major crossing point for general cargo from Ashdod and Haifa used by the shipments with humanitarian and medical supplies as well as bulk cargo such as cement and aggregates. No general passenger traffic is permitted (except for the UN officers). Israeli registered trucks with drivers who have the appropriate permit are allowed to pass. It is controlled by the IDF and is primarily a security checkpoint with any commercial compliance inspections incidental to the security objective. A very basic back to back cargo facility operates from a bare block of land with separation of trucks being achieved by the placement of 1.8m high square concrete blocks. There is no handling equipment or any warehouse facilities at the site. The parking area before the control zone is quite restricted, causing high queuing waiting times, under intense traffic conditions. Also, the road that brings to the control zone is in extremely bad conditions, not appropriate for the transportation of fragile goods, such as glass, etc. Future plans include the installation of electronic scanning equipment and storage bins to facilitate the back to back operation of these types of bulk cargo. A new checkpoint is being constructed approximately 1 km East from the existing checkpoint and closer to Ramallah.

Tulkarem (Taibeh) Checkpoint. This is the principle commercial checkpoint leading to the city of Tulkarem. It is open daily from 7:00 AM to 5:00 PM, and closes down on Saturday. Average waiting time/truck is 1 hour. Follows a geographic localization of these crossing points below.

Appendix D – The transportation survey



LimeSurvey

Euromid Net - Transportation Survey. Part I: Generic

0% 100%

English

100

*Please insert your access code (provided by your survey coordinator).

Only numbers may be entered in this field

*Please provide us with some generic informations about your firm's activity. Your main activity is in the FIELD of:

Choose one of the following answers

- production
- commerce (en-gros)
- retail
- transportation
- Other

*Furthermore, your activity is mainly focused on:

Choose one of the following answers

- Perishable Food industry
- Non-Perishable Food industry
- Non-Food industry
- Other

*Your main office is based in:

city:

governorate/ district:

(If your company is a multinational, please refer to your regional subsidiary)

*

Your activity is mostly LOCALLY or INTERNATIONALLY oriented :

EUROMID TRANSPORTATION SURVEY: THE ROAD TO PEACE

This survey is part of the Euromid Network project. It aims to compare transport costs and freight volumes on various itineraries linking locations in the near Middle East.

0% 100%

English

100

Please insert your access code (provided by your survey coordinator):

Only numbers may be entered in this field

* **The following questions refer to your three most recent deliveries: traffic conditions and alternative roads. Please choose your trip distance and itinerary, from the list below.**

Jenin -> Ramallah, visiting the following fixed checkpoint(s): ...

On the chosen itinerary, please provide the following data, regarding your shipment:

What are the names of fixed checkpoints you visited during this trip? (choose from the following: Al Jalama, Qalqilya, Taybeh, Tarqumia, Al Hamra, Huwara, Beytunia, etc.)

Shipment date (month/2009 or month/2010)?

Type of licence plate on the truck used for this trip (choose from the following: Israelian or Palestinian)?

How often you travel on this distance in a month? (number of this kind of trips by month)

Type of good transported (choose from the following: Perishable=P Fragile=F NonPerishable=NP NonFragile=NF) ?

Load weight (in tones)?

Load value (in $US dollars)?

Price of the transportation service (in $USD/ ton/ distance)?

Any special permits required for the passage through these checkpoints? (choose from the following: yes/no)

How many flying checkpoints did you met on the road?

How much time did you spent in queues near checkpoints? (in minutes)

Total duration of controls (inspection) at checkpoints for this trip (in minutes)

Total duration of "coordination" procedure by phone/fax before departure (in MINUTES)

How much time did you spent in traffic-jam on the road? (in minutes)

Any special road tariff or tax paid to obtain a passage permit at checkpoints? If yes, please specify the amount paid (in $USD).

During "turmoil" situations such as Intifada: a) did you transport goods on this road? or b)did you chose another road? or c) did you not travel at all (choose between: a,b or c)

If you answered b) at the above question, was the alternative road more "risky" than the current one? Choose from: yes or no. (by "risky" roads we define those roads of lower quality,being less controlled by military forces, with flying checkpoints).

Load value (in $US dollars)?

Price of the transportation service (in $USD/ ton/ distance)?

Any special permits required for the passage through these checkpoints? (choose from the following: yes/no)

How many flying checkpoints did you met on the road?

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[Exit and clear survey]

Resume later

This survey is not currently active. You will not be able to save your responses.

Any special road tariff or tax paid to obtain a passage permit at checkpoints? If yes, please specify the amount paid (in $USD).

During "turmoil" situations such as Intifada: a) did you transport goods on this road? or b)did you chose another road? or c) did you not travel at all (choose between: a,b or c)

If you answered b) at the above question, was the alternative road more "risky" than the current one? Choose from: yes or no. (by "risky" roads we define those roads of lower quality,being less controlled by military forces, with flying checkpoints).

* **Please choose your trip distance and itinerary, from the list below.**

Ramallah -> Ashdod, visiting the following fixed checkpoint(s): ...

On the chosen itinerary, please provide the following data, regarding your delivery:

What are the names of fixed checkpoints you visited during this trip? (choose from the following: Al Jalama, Qalqilya, Taybeh, Tarqumia, Al Hamra, Huwara, Beytunia, etc.)

Shipment date (month/2009 or month/2010)?

Type of licence plate on the truck used for this trip (choose from the following: Israelian or Palestinian)?

How often you travel on this distance in a month? (number of this kind of trips by month)

Type of good transported (choose from the following: Perishable=P Fragile=F NonPerishable=NP NonFragile=NF) ?

Load weight (in tones)?

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