



# **The Besieged Palestinian Agricultural Sector**



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## Note

Preparation of the present study by UNCTAD was led by Mutasim Elagraa and Mahmoud Elkhafif, Assistance to the Palestinian People Unit, and made use of and built on work by consultant Walid Abed-Rabboh, Horizon for Sustainable Development, Ramallah, West Bank.

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## Executive Summary

The present study analyses the problems and prospects of the Palestinian agricultural sector. The study highlights the sector's role, importance and contribution to the overall economy, and its strengths and weaknesses, as well as opportunities in the sector and constraints on the sector. The study underscores the distortions imposed by occupation and their impact on the state and prospects of the Palestinian agricultural sector.

Over and above its traditional economic role, agriculture remains of great significance to the Palestinian people and their identity. Land and agriculture symbolize Palestinian resilience and perseverance in the face of ongoing land loss due to prolonged occupation and the expansion of Israeli settlements. The practical and symbolic importance of the agricultural sector is heightened even further by the fact that the key factors of agricultural production, land and water, are relatively scarce in the Occupied Palestinian Territory and the occupation has made the situation worse.

Agriculture contributes significantly to Palestinian income, exports, food security and job creation. However, the sector has been operating well below potential. Its relative contribution to the gross domestic product and exports has been declining, while the absolute size of agricultural output has been fluctuating, with a discernible downward trend.

Despite sharing a similar soil and climate, Palestinian agricultural output and productivity have lagged behind that of Israel and comparable countries in the region. For example, on average, in the Occupied Palestinian Territory the yield per dunum<sup>1</sup> is half that in Jordan and only 43 per cent of the yield in Israel, despite nearly identical natural environments. Much of the difference in productivity observed between the three economies sharing the same agroecological zones is due to the impact of occupation on Palestinian agriculture. In this regard, Israel's restrictions on the importation of fertilizers has had a detrimental impact on Palestinian agriculture, creating problems ranging from low productivity and soil degradation to high costs as a result of using inferior alternatives, which are often diluted, adulterated, smuggled or otherwise inappropriate. It is estimated that agricultural productivity in the Occupied Palestinian Territory has declined by between 20 and 33 per cent since enforcement of the restrictions on the importation of fertilizers.

In addition, Israel's restrictions on the movement of farmers, services and agricultural trade entail additional financial and time-related costs. It is estimated that the costs of exporting and importing borne by Palestinian producers are twice as much as those borne by their Israeli counterparts, while procedures for importation require four times the amount of time Israeli importers spend on similar activities.

The ongoing occupation of Area C deprives the Palestinian economy of 63 per cent of the agricultural resources of the West Bank, including the most fertile and best grazing land, while the construction of the separation barrier and the expansion of Israeli settlements have diminished the area available for agricultural activities.

The Government of Israel controls water allocation and exercises veto power over Palestinian drilling, rehabilitation and investment in water infrastructure. Both the Palestinian

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<sup>1</sup> One dunum equals 1,000 square metres.

National Authority and Palestinian farmers are denied the right to construct wells to meet the growing demand for water, even when that water originates almost entirely in the West Bank.

The resilient agricultural sector remains a strategic pillar of the Palestinian economy, however, with unparalleled potential for sustainable and quicker recovery. Much may be done, even under current conditions, to reverse or at least arrest the decline of the sector.

However, for sustained recovery, it is imperative that the Palestinian National Authority and donors increase investment to rebuild agricultural infrastructure, establish and strengthen farmers' cooperatives and normalize production and transportation costs. In addition, special targeted efforts are needed to support smallholder farmers in such areas as veterinary services, packaging, cold storage, transportation and marketing. Ideally, such interventions should be part of a comprehensive overhaul of policies and legislation governing and influencing agricultural production, processing and trading.

There is also an urgent need to establish a well-funded not-for-profit public agricultural development bank to share the risks inherent in the sector, provide credit and insurance to farmers, support marketing and post-harvest services and fund and guarantee investment in agricultural and water-related infrastructure.

Given its critical importance, efforts should be exerted by the Palestinian National Authority and the international community to ensure that Palestinians have unhampered access to the land currently designated as Area C. Without access to Area C, sustainable recovery in the Palestinian agricultural sector is not conceivable, nor is it possible to build a robust economy capable of underpinning a viable Palestinian State.

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## Chapter I

### The Palestinian agricultural sector: Resources and contributions

#### A. Introduction

The Palestinian people are pioneers in the field of agriculture. They have had important roles in developing, transferring and disseminating agricultural skills and technologies since ancient times and their affinity to land is particularly strong. Agriculture is a crucial part of the Palestinian narrative and has a privileged place in Palestinian classical and modern literature, traditional songs and poetry. Agriculture is an integral component of Palestinian communal, cultural, economic and social life. To date, agriculture has remained of great significance to Palestinians and their identity and culture, to which land and crops are central.

Over and above their traditional roles in the generation of income, employment and food, land and agriculture have come to symbolize Palestinian resilience and perseverance in the face of ongoing land loss due to prolonged occupation and the expansion of Israeli settlements.

The symbolic and practical importance of agriculture as a major economic activity is even more pronounced in rural communities, which rely on land for sustenance and self-preservation. The economic importance of agriculture is not confined to the sector, however, but has forward and backward linkages with other sectors of the economy that rely on it either as a source of inputs or as a market that absorbs their outputs. Among the economic sectors that have strong linkages with agriculture are transport, manufacturing, fertilizers, chemicals, machinery, wholesale and retail trade and restaurants and the food industry as a whole.

The official statistics on the contribution of agriculture to exports and the gross domestic product do not reflect the full importance of the sector, as they do not take into account the sector's impact on other sectors nor the widespread informal employment it provides to thousands of Palestinian workers. The practical and symbolic importance of the agricultural sector is heightened even further by the fact that the key factors of agricultural production, land and water, are relatively scarce in the Occupied Palestinian Territory, and the ongoing land confiscation, distortions and mobility restrictions imposed by occupation have made the situation worse.

As part of ongoing work by UNCTAD on assessing the impact of the Israeli occupation on the economy of the Occupied Palestinian Territory, the present study focuses on the prospects of and constraints on the Palestinian agricultural sector. The study aims to analyse the state of Palestinian agriculture in terms of its role, importance, strengths and contribution to the overall economy, as well as opportunities in the sector. The study also considers the resources devoted to the sector, as well as its weaknesses and constraints and threats to its performance. The study places special emphasis on the distortions caused by occupation and their impact on the sector, as well as their effects on farming communities and the economy at large. The study concludes by suggesting remedial policy interventions to revive and strengthen the sector so that it may have a role as a major pillar of Palestinian socioeconomic development



## B. Aspects of Palestinian agricultural output and productivity

Despite the constraints imposed by occupation, Palestinian farmers continue their efforts to improve agricultural output in terms of quantity and value by various means, including through the application of drip irrigation and plasticulture, the diversification of crops and intensive poultry and cattle raising. Table 1 shows the value of agricultural outputs, inputs and value added in the West Bank and Gaza Strip in selected years.

**Table 1. Value of agricultural outputs, inputs and value added, West Bank and Gaza Strip, selected years - Thousands of dollars**

	WEST BANK				GAZA			
	1996	2000	2004	2008	1996	2000	2004	2008
<b>Vegetables</b>	96,626	163,946	147,650	322,486	55,770	71,801	108,130	139,694
<b>Fruits</b>	246,709	269,701	183,204	213,493	27,187	50,183	30,450	50,505
<b>Field crops</b>	37,902	53,590	46,820	70,658	6,564	15,795	25,103	35,057
<b>Milk</b>	64,065	64,596	102,747	142,855	13,598	8,289	14,387	14,813
<b>Meat</b>	127,999	180,302	183,494	230,252	25,610	35,169	39,509	64,842
<b>Eggs</b>	19,343	27,988	24,305	43,926	7,594	13,513	12,535	15,414
<b>Honey</b>	4,126	845	3,890	2,287	1,063	435	805	587
<b>Fish</b>	-	-	-	-	9,425	10,394	9,553	10,054
<b>Others</b>			5,434	6,973			2,063	2,680
<b>Total value of outputs</b>	599,176	760,968	697,544	1,032,930	155,115	205,579	242,535	333,646
<b>Total value of inputs</b>	227,517	307,006	310,623	398,088	68,379	84,131	74,614	92,307
<b>Value added</b>	371,659	460,547	386,921	634,842	86,736	123,815	167,921	241,339

*Note:* There is no data on agricultural production values for each commodity issued by the Palestinian Central Bureau of Statistics since 2008. The only recent data available concern the total value of agricultural outputs and added value for agriculture.

*Source:* Palestinian Central Bureau of Statistics, agricultural statistics for 1995–1996, 1999–2000, 2003–2004 and 2007–2008.

**Table 2. Major agricultural commodities: Area, production and productivity, West Bank and Gaza Strip, 2010–2011**

	VEGETABLES			FRUITS			FIELD CROPS		
	Area dunum	Production Tons	Productivity kg/dunum	Area dunum	Production tons	Productivity kg/dunum	Area dunum	Production tons	Productivity kg/dunum
<b>West Bank</b>	95841	222892	2326	612649	93422	152	220882	36 521	165
<b>Gaza Strip</b>	33752	57650	1708	47245	30 320	642	24532	7 883	321
<b>Total</b>	<b>129593</b>	<b>280542</b>	<b>2165</b>	<b>659894</b>	<b>123 742</b>	<b>188</b>	<b>245414</b>	<b>44 404</b>	<b>181</b>

*Source:* Palestinian Central Bureau of Statistics, agricultural statistics for 2010–2011.

Land productivity in the Occupied Palestinian Territory varies depending on, among other factors, the availability of water, agroecological zone, technology applied and level of intensification. Table 2 shows the area, production and productivity of major agricultural commodities in the West Bank and Gaza Strip. It may be noted that raising ruminants (sheep and goats) is among the oldest of Palestinian agricultural practices and constitutes the main or only source of income for a sizeable share of the Palestinian population, especially in the southern and eastern parts of the Occupied Palestinian Territory.

### **C. Agricultural productivity in the Occupied Palestinian Territory compared to Israel**

The impact of occupation on Palestinian agricultural productivity may be estimated by comparing productivity levels in the Occupied Palestinian Territory to those in Israel and Israeli settlements.

Israel produces much of the food it consumes. At the core of its agricultural sector is an intensive production system, as well as extensive systems for the production of rain-fed olives and wheat and barley in the dry southern areas. Progress in water utilization has led to a drop in the average water use per hectare in recent years to 5,000 cubic metres per hectare, compared to 8,000 cubic metres per hectare fifty years previously. Progress and innovations also help explain the fact that, since 1948, agricultural output has increased twelvefold while water use has multiplied by only threefold.

Despite sharing a similar soil and climate, the Palestinian agricultural sector has lagged behind that of Israel and comparable countries in the region as a direct result of the restrictions imposed by occupation. For example, on average, in the Occupied Palestinian Territory the yield (metric ton per dunum) is half that in Jordan and only 43 per cent of the yield in Israel, despite nearly identical natural environments. The yield gap is greater in the West Bank than in Gaza. In the West Bank, the fruit yield is 53 per cent of the Israeli level, while the field crops yield is 33 per cent and the olive yield is 36 per cent. The gap is a direct result of inadequate access to land and water and the low rates of fertilization, restricted marketing conditions and limited integration with the rest of the economy.

There is an evident need to shift cultivation from low-value crops to high-value fruit trees and vegetables to overcome the inefficiency arising from the fact that 81 per cent of the land in the West Bank is devoted to low-value low-yield crops, especially olives, which account for 57 per cent of cultivated land; vegetables and fruits account for 19 per cent. Table 3 provides a comparison of productivity values for selected products in Israel and the Occupied Palestinian Territory, reflecting the gap between the two neighbouring economies, which operate in the same agroecological zones.

Much of the productivity difference observed between the two economies may be attributed to the impact of occupation on Palestinian agriculture, which suffers as a result of lack of access to fertilizers and water and the destruction and disrepair of agricultural and water-related infrastructure. Palestinian agriculture is also negatively impacted by small-scale inefficiency (lack of economies of scale) emanating from the fragmentation of the land and communities and by severe marketing difficulties. Occupation measures ensure that most of the advantages present in the Israeli agricultural sector are beyond the reach of Palestinian farmers.

Palestinian economic losses in agricultural production are related to the fact that large portions of agricultural areas are either not accessible or are characterized by low productivity due to, among other factors, lack of irrigation water and the inflated cost of inputs. Restrictions on the importation of seedlings and improved varieties of livestock and seeds add another layer of problems in the sector.

In certain instances, especially during olive harvesting seasons, production is partly or totally lost due to violence and threats by settlers. Due to the high level of risk and uncertainty, investment in agricultural production and related services, such as finance, insurance and marketing, is limited to non-existent. Additional losses and costs are incurred due to damage to infrastructure and structures, such as feeder roads, animal sheds, plastic housing, wells, irrigation systems and water cisterns.

**Table 3. Productivity of selected crops in Israel and the Occupied Palestinian Territory**

	Israel	OPT	Productivity OPT relative to Israel
<b>Irrigated</b>			
Chickpeas (tons/hectare/year)	3	1.5	0.49
Oranges tons/hectare/year)	42.5	30.7	0.71
Bananas (tons/hectare/year)	65	32.5	0.5
Dates (tons/hectare/year)	15	5	0.33
Table grapes (tons/hectare/year)	26	6.67	0.26
Tomatoes (tons/hectare/year)	400 (greenhouses)	127	0.32
<b>Rain-fed</b>			
Winter wheat (tons/hectare/year)	2.5–6.2	1.6	0.63–0.25
Barley (tons/hectare/year)	0.5–2.0	1.4	2.8–0.7
Olives (tons/hectare)	1.5–2.5	0.4–2.4*	0.27–0.96
<b>Livestock</b>			
Milk cows (average litres of milk/cow/year)	11 448	4 716	0.41

\*Average over 16 years.

Sources: Statistics Division of the Food and Agriculture Organization of the United Nations, 2011 and 2012; International Olive Oil Council, 2012 (olive yield for Israel); Israel Export and International Cooperation Institute, 2013, *Israel's Agriculture*, Ministry of Agriculture and Rural Development; and Palestinian Central Bureau of Statistics, agricultural statistics for 1997–2009 and 2010–2011.

It is also important to note that part of the difference in productivity is related to technical, organizational and managerial factors, which are, to some degree, under Palestinian control. These include problems and inadequacies in such areas as the application of available modern agricultural systems and techniques by farmers, research, the securing of enhanced seed and crop varieties and livestock breeds with high productivity, veterinary services, plant protection, marketing, financing and post-harvest services. Higher efficiency in certain areas under the control of Palestinians could therefore be effected in order to improve the productivity and profitability of agriculture even under current circumstances of occupation

and mobility restrictions. For instance, treated wastewater may be used to irrigate fruit tree groves in certain areas near functional wastewater plants. In addition, fruit yields may be improved through irrigation and fertigation rather than reliance solely on rainfall. Another means of improving yields of field and fodder crops is to scale up the ongoing pilot crop-breeding and selection programme conducted under the auspices of the International Centre for Agricultural Research in the Dry Areas.

The present study suggests, to the Palestinian National Authority and its development partners, other plausible interventions that may improve conditions in the agricultural sector even under the current constraints of occupation.

#### **D. Declining production of olives**

The olive tree, the famous emblem of peace, epitomizes the pride in and deep relationship of Palestinians to the land and their culture and heritage. The olive tree has an important role in Palestinian life due to its economic, social, historical and spiritual significance. Its fruit, oil, sediment, wood and leaves are used by Palestinian households as the basis for a range of food staples and for soap, fuel and decorative crafts, as well as in medicinal uses, exemplifying the rich Palestinian environmental, social and cultural landscape. Olive groves cover 940,000 dunums of land and contribute to the economy through linkages with the food industry and other industries such as traditional soap making and crafts. According to the latest census data, published in 2011, there are 7.8 million fruit-bearing olive trees and about 1.1 million non-bearing olive trees in the Occupied Palestinian Territory. The olive subsector contributes 15 per cent of total agricultural income and also mitigates the impact of unemployment and poverty by providing 3 to 4 million days of seasonal employment per year and by supporting 100,000 Palestinian families.

Olive oil production is in decline, however. Production dropped from an average of 23,000 tons per year during the period 2000–2004 to 14,000 tons per year during the period 2007–2010. As a result, 50 per cent of domestic demand in 2009 was met by imported olive oil (Palestinian Ministry of Agriculture, 2010). Table 4 shows the production and productivity of olives from 1993 to 2011.

**Table 4. Olive production and productivity, 1993–2011**

	<b>Production</b> (tons)	<b>Productivity</b> (kg/dunum)
<b>1993–1996</b>	77 328	95
<b>1997–2000</b>	82 110	90
<b>2001–2004</b>	113 943	123
<b>2005–2008</b>	89 949	96
<b>2010–2011</b>	75 530	152

*Source:* Palestinian Central Bureau of Statistics, agricultural statistics for 1997–2009 and 2010–2011.

There is interest in and recognition of the potential of the Palestinian olive subsector. For instance, among other studies and reports, the UNCTAD report in 2011 on the Palestinian tradable goods sector highlighted olive oil as a strong candidate for exports promotion (UNCTAD, 2011). In addition, since the establishment of the Palestinian National Authority, special efforts have been accorded to increasing cultivated areas and the production of olive trees, mainly through land reclamation and water harvesting projects.

Nevertheless, there remains a high variability in olive productivity throughout the West Bank, ranging from a high of 167 kg/dunum to a low of 40 kg/dunum. This variability may be attributed, in part, to natural factors, such as the level of rainfall, percentage of non-bearing trees and variety of trees, as well as to the technical packages applied. However, Palestinian farmers also face multiple challenges related to occupation that negatively impact the quantity and quality of olive produce. For instance, farmers have considerably reduced the use of fertilizers as a result of Israel's restrictions on imported agricultural inputs. In addition, farmers have limited access to their groves, especially during harvesting seasons, as gates in the separation barrier are open for limited hours even during the harvesting season. In addition, Palestinian olive groves around settlements in the West Bank are subject to fire, uprooting and vandalism by settlers. It is estimated that, since 1967, more than 800,000 productive olive trees have been uprooted (Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011). This destruction continues to date, as documented by the Office of the United Nations Special Coordinator for the Middle East Peace Process and the United Nations Office for the Coordination of Humanitarian Affairs.

The Occupied Palestinian Territory exports on average 4,000 tons of olive oil per year. The main destination of these exports has long been Israel, with imports from the Palestinian market accounting for about two thirds of Israel's olive oil imports. The significance of the Israeli market was lessened at the turn of the century with the start of the second intifada in 2000. However, in 2007 and 2008, Israel remained the largest market for Palestinian olive oil. Palestinian exports to Israel show marked instability, owing to political conditions and recurring crises. Although Israel imported an average of 890 tons in 2007 and 2008, in 2009 and 2010 it imported only 23 tons of olive oil from the Occupied Palestinian Territory, a small fraction of its total imports.

The high level of risk and instability of the Israeli market as an outlet for Palestinian olive oil exports point to an evident need for an effective oil exports strategy to diversify markets, among other measures such as better farming and processing to improve productivity and profitability. One step in the right direction is the plan of the Palestinian National Authority to draft an olive strategy to overcome the problems of the sector, enhance efficiency and address issues related to value chains, agricultural equipment, related services and the capacity to develop alternative products such as soap and cosmetics.

## **E. Land resources and land use**

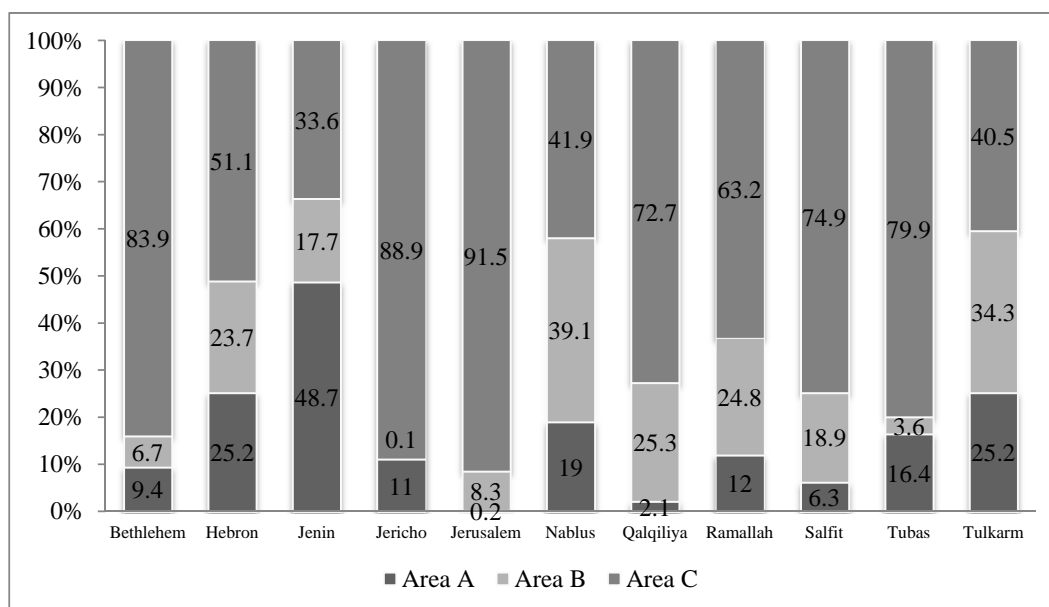
The Palestinian territory, which was occupied by Israel in 1967, encompasses about 6,200 km<sup>2</sup> or 22 per cent of historic Palestine under British mandate. It includes 360 km<sup>2</sup> in the Gaza Strip and about 5,840 km<sup>2</sup> in the West Bank, including East Jerusalem and the Dead Sea. According to the Israeli-Palestinian Interim Agreement on the West Bank and Gaza

Strip, signed by the Palestine Liberation Organization and Israel in September 1995,<sup>2</sup> the West Bank is divided into three parts: Areas A, B and C. Area C includes more than 61 per cent of the area of the West Bank and is under complete Israeli control, including security, planning and zoning. Area C includes the most fertile agricultural areas and the majority of Palestinian land reserves for development activities. Area A, which represents less than 18 per cent of the West Bank, is under the civil and security control of the Palestinian National Authority, while Area B, which covers 21 per cent of the West Bank, is supposed to be under Palestinian civil control and joint Israeli-Palestinian security control (UNCTAD, 2014). Although Area C accounts for 61 per cent of the area of the West Bank, only 11 per cent of the West Bank Palestinian population dwells there.

Despite the fact that Area C represents the largest part of West Bank land, “less than 1 per cent of Area C, which is already built up, is designated by the Israeli authorities for Palestinian use; the remainder is heavily restricted or off-limits to Palestinians, with 68 per cent reserved for Israeli settlements, circa 21 per cent for closed military zones and circa 9 per cent for nature reserves” (World Bank, 2013).

In addition to its large relative size, Area C accounts for almost two thirds of the West Bank’s agricultural land. Figure 1 depicts the distribution of agricultural land in areas A, B and C in the West Bank governorates, showing that most of the agricultural lands in the Bethlehem, Jericho, Jerusalem, Qalqilia, Salfit and Tubas governorates are located in Area C. Figure 1 also shows that some Palestinian cities, such as Bethlehem, Jericho and Jerusalem, are mostly located in Area C.

**Figure 1. Main agricultural areas in the West Bank**  
(Percentage in each area, by governorate)



Source: Applied Research Institute – Jerusalem, 2007.

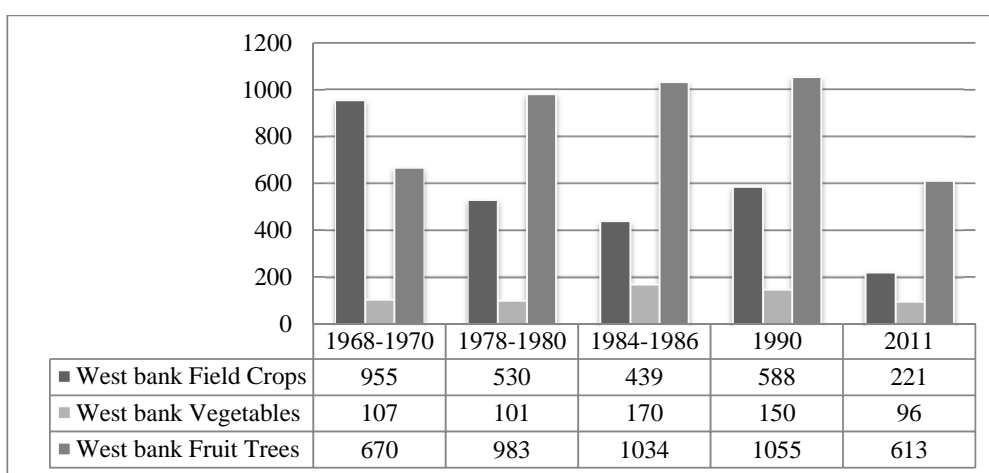
Results of the 2010–2011 agricultural census of the Palestinian Central Bureau of Statistics indicate a major decline in Palestinian agricultural area, which dropped from

<sup>2</sup>Also known as the Oslo II agreement. The full text is available at <http://www.refworld.org/cgi-bin/texis/vtx/rwmain?docid=3de5ebbc0> (accessed 15 June 2015).

240,000 hectares in 1980 to 183,000 hectares in 1996 and to around 103,000 hectares in 2010 (Palestinian Central Bureau of Statistics, 2010). The chief causes of the decline in land use include the expansion of Israeli settlements, restricted access to water, urban expansion at the expense of agricultural land and construction of the separation barrier. Figures 2 and 3 show historical agricultural data for the West Bank and Gaza Strip from 1968 to 2011.

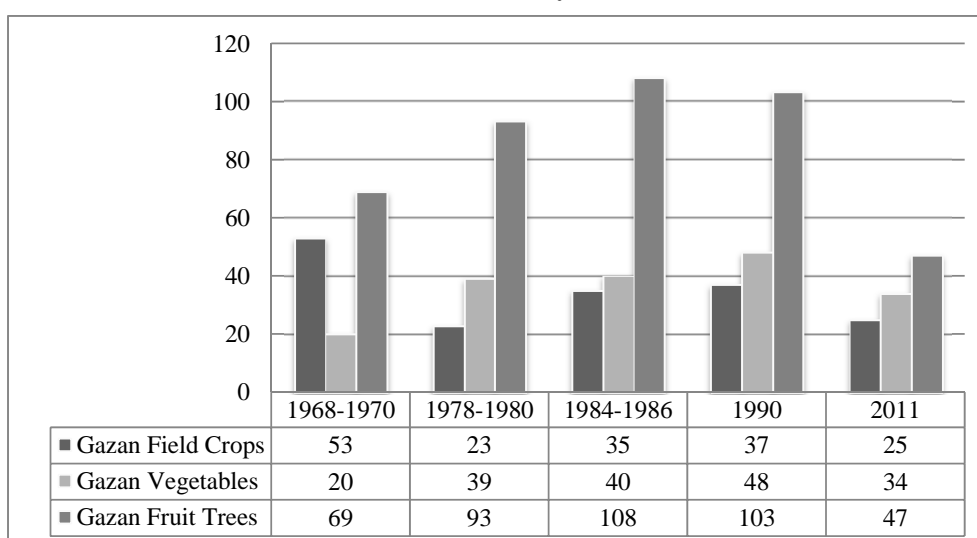
As shown in figure 2, over 44 years, there was a steady decline in the West Bank areas devoted to the production of field crops, vegetables and fruit trees, with field crops experiencing the steepest decline. Figure 3 shows that, as in the West Bank, areas for field crops in Gaza have declined since 1970. Fruit tree numbers have also steadily declined since 1990.

**Figure 2. West Bank: Historical agricultural data**  
(Area in thousands of dunums)



Sources: Palestinian Central Bureau of Statistics, 2011, and UNCTAD, 1993.

**Figure 3. Gaza Strip: Historical agricultural data**  
(Area in thousands of dunums)



Sources: Palestinian Central Bureau of Statistics, 2011, and UNCTAD 1993.

The 2010–2011 agricultural census of the Palestinian Central Bureau of Statistics indicates that governorate of Hebron accounts for 33 per cent of field crops grown in the Occupied Palestinian Territory while the governorates of Jericho and Al Aghwar account for 21 per cent of vegetable production and the governorate of Jenin accounts for 19 per cent of tree horticulture. The governorate of Hebron has the highest number of ruminants: 25.8 per cent of the 567,000 sheep in the Occupied Palestinian Territory, 22.5 per cent of the 219,364 goats and 25 per cent of the 33,925 cattle.

These trends show that the Palestinian agricultural sector has been the sector most affected by occupation. As a result, its contribution to the gross domestic product has been low and declining, despite its high potential to make a major contribution to the Palestinian economy, if more areas are cultivated with high-value crops and the constraints on productivity imposed by occupation are removed.

## **F. Contribution of the agricultural sector to income, employment and food security**

Despite the fact that the relative importance of Palestinian agriculture has declined since 1967, the sector continues to be a key component of the Palestinian economy. It contributes significantly to the gross domestic product, food security and employment. In 2011, the agricultural sector accounted for 5.5 per cent of the Palestinian gross domestic product and 15 per cent of total employment (Palestinian Central Bureau of Statistics, 2012b). However, of the 292,000 workers employed in agriculture, about 94 per cent are unpaid family members, while paid workers account for less than 6 per cent of the total of agricultural employees (Palestinian Monetary Authority et al., 2012). The sector's contribution to exports is around 20 per cent, with olives, olive oil, vegetables and cut flowers as the main exports.

However, the sector has been operating below potential due to the ongoing dispossession of Palestinian people of land and water resources, expansion of Israeli settlements, roads for exclusive use by Israeli citizens, loss of land due to construction of the separation barrier and inability to access domestic and external markets at normal costs. As a result, the relative contribution of the Palestinian agricultural sector to the gross domestic product and to exports has shown a gradual decline, while the absolute size of agricultural output has fluctuated, with a discernible downward trend. For example, the sector's contribution to output fell by one third in absolute size between 1987 and 2011. Prior to 1967, agriculture contributed more than half of the Palestinian gross domestic product, but this contribution shrank to about 30 per cent in the early 1980s and to a mere 6 per cent in 2012. Table 5 shows the trend of the contribution of agriculture to the gross domestic product, at current prices.

**Table 5. Contribution of the agricultural sector to the gross domestic product**  
(Period Average - Millions of dollars)

	1987	1994–1996	1997–2000	2001–2004	2005–2008	2009–2011
<b>Agriculture</b>	687.5	407.1	449.1	284.1	292.35	459.7
<b>Gross domestic product</b>	3 657	3 422	4 308	3 843	5 136	8 275
<b>Percentage of agriculture in GDP</b>	18.8	11.9	10.4	7.4	5.7	5.6

Sources: Palestinian Central Bureau of Statistics, national accounts for 2003, 2008, 2009 and 2012, and Palestinian Ministry of Agriculture, 2004, Agriculture sector strategy.



The total recorded value of agricultural exports from the Occupied Palestinian Territory in 2011 was in the range of \$121 million, or 17 per cent of total Palestinian exports, most of which were destined to Israel. However, despite its potential, the exports sector has not been able to become the hoped-for engine of growth in the small open economy of the Occupied Palestinian Territory, as it is limited by countless restrictions. Yet some products such as olive oil and other olive products have significant prospects, bolstered by the fact that the global market for virgin olive oil has recently boomed, nearly tripling in value between 2001 and 2008. This global boom could benefit the Palestinian economy if appropriate policy interventions are implemented.

However, the fact that Israel absorbs most Palestinian agricultural exports, and that exports to regional and global markets must be transported through its ports and through land it controls, renders the viability, profitability and competitiveness of Palestinian agriculture highly sensitive to changes in occupation-related policies. In other words, while a shift in agricultural production from satisfying domestic markets towards foreign markets may support the weak exports sector and generate foreign exchange earnings, it increases the vulnerability of the sector to Israeli policies since all exports are transported to or via Israel.

Among the important contributions of the agricultural sector is its central role in achieving food security and employment generation for the Palestinian people. The 2010–2011 agricultural census shows that about 71 per cent of Palestinian agricultural holdings used all of their produce for family consumption, while 110,000 rural families depended on agriculture as a source of livelihood, with the value of agricultural production at \$1.3 billion in 2011. The Occupied Palestinian Territory is largely, if not completely, self-sufficient in vegetables, grapes, figs, olive oil, poultry meat, eggs and honey. However, due to significant constraints on agricultural activities, food security indicators have worsened in recent years.

The latest available statistics show that the percentage of Palestinian households classified as food insecure rose from 27 to 34 per cent between 2011 and 2012. In 2012, 26 per cent were considered to be marginally food secure and 16 per cent, vulnerable to food insecurity (UNCTAD, 2014). This means that only one in four households in the Occupied Palestinian Territory is food secure. In Gaza, the humanitarian and socioeconomic conditions deteriorated further in 2012, as 57 per cent of households were classified as food insecure, four out of five people depended on humanitarian aid and one third of households reduced the number of daily meals (International Labour Office, 2014).

Palestinian households have been coping with food insecurity by deploying a series of short-term strategies, such as buying food on credit, defaulting on utility bill payments, borrowing from relatives and friends and reducing the variety, quantity and quality of food they consume. The precarious socioeconomic conditions were somewhat alleviated by the Palestinian National Cash Transfer Programme, covering 104,030 households, 54 per cent of which are located in Gaza (UNCTAD, 2014).

With regard to its contribution to job creation, the agricultural sector is the third largest employer in the Occupied Palestinian Territory. The formal labour force in agriculture is in the range of 15 per cent of the total labour force, yet the informal agricultural labour force accounts for an even larger percentage of total employment. Nevertheless, due to constraints on the ability of the Palestinian economy to generate employment opportunities for a growing labour force, employment in Israel and settlements has become a salient feature of the Palestinian economy. The degree of historical dependence on the Israeli labour market as an

outlet for surplus labour may be gauged from the fact that in 1999 and 2000, remittances of Palestinian workers in Israel reached as high as 20 per cent of the gross national disposable income (UNCTAD, 2011).

However, as a result of the start of the second intifada in 2000, Palestinian employment in Israel declined and the domestic Palestinian agricultural sector assumed the role of shock absorber with regard to displaced Palestinian workers. This resulted in raising the share of the sector in total employment and reversing the trend in the early 1960s to the early 1990s when the sector's contribution to employment fell by half. The combined effects of a greater number of workers absorbed by the sector and constraints imposed by occupation resulted in the decline of labour productivity in the agricultural sector relative to the economy as a whole, as noted in the present study. Agricultural productivity fell by more than 50 per cent between 1995 and 2011. The implications of this productivity decline were a reduction in agricultural wages and the earnings of workers employed in the sector, relative to work in the economy as a whole (World Bank, 2013). Table 6 depicts the absolute and relative contribution of the agricultural sector to formal employment.

**Table 6. Contribution of the agricultural sector to employment**

	1995–1997	1998–2000	2001–2004	2005–2008	2009–2012
<b>Total employment</b> (hundreds of thousands)	365	532	468	586	718
<b>In the agricultural sector</b> (hundreds of thousands)	48.5	68.6	70.2	90.8	84.0
<b>Percentage of agricultural labour</b>	13.3	12.9	15	15.5	11.7

*Source:* Palestinian Central Bureau of Statistics, 2012b.

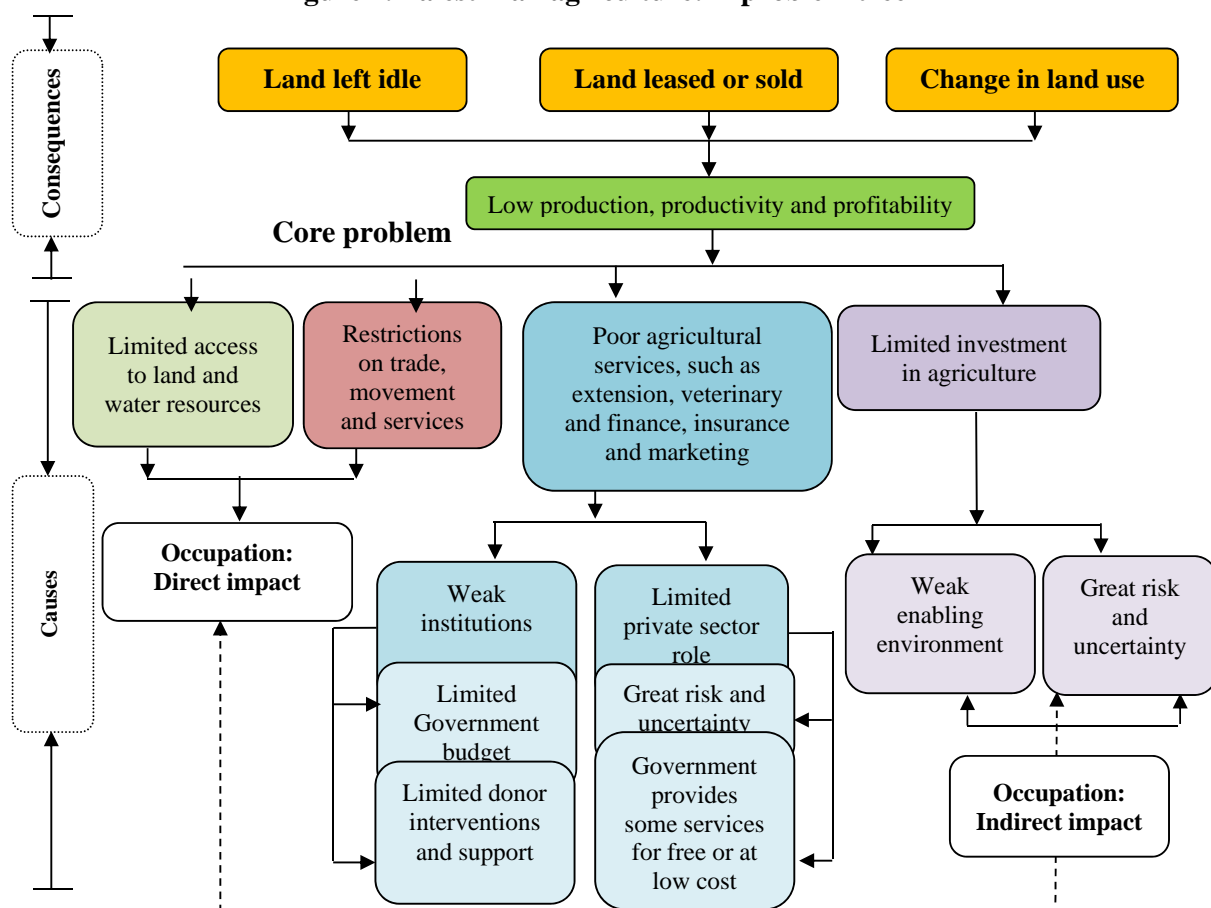
## Chapter II

### Impact of occupation on the Palestinian agricultural base

Occupation imposes severe constraints on the development of the Palestinian agricultural sector and, indeed, the entire economy. It makes the task of achieving sustainable development in the Occupied Palestinian Territory nearly impossible. Distortions emanating from occupation permeate all aspects of Palestinian economic life, especially in rural areas and among farming communities.

The causes of some core problems in the sector, such as low production, productivity and profitability, are in large part due to limited access to land and water resources, restrictions on trade, movement and services and high levels of risk and uncertainty that lower incentives for investment in agriculture. Weak Palestinian institutions and an unfavourable agribusiness environment are additional core problems that need to be addressed by the Palestinian National Authority and its international development partners. As shown in figure 4, some of the agricultural problems are the direct result of measures imposed by occupation, while others are indirectly, or partially, caused by occupation and some are related to the weak capacity of the Palestinian National Authority as well as to insufficient donor support.

**Figure 4. Palestinian agriculture: A problem tree**



This chapter elaborates on the impact of the measures taken by the occupying Power on the Palestinian agricultural sector, which include the following: restrictions on access to land, water and markets; loss of land to settlements and the separation barrier; demolition of structures and infrastructure and the uprooting of trees; restrictions on access to essential agricultural inputs; dearth of credit for agricultural production; flooding of Palestinian markets with agricultural imports from Israel and settlements; and environmental damage.

#### **A. Restrictions on access to land, water and markets**

There are many restrictions by Israel on Palestinian access to and use of agricultural land. For instance, Palestinians need to obtain Israeli permits prior to the construction or repair of infrastructure, including the digging of new wells, the restoration of old wells and the construction of water collection structures. Such permits are difficult and often impossible to obtain, especially with regard to water structures. In addition, in order to build settlements and military camps, the occupying Power confiscated Palestinian areas previously used as rangelands and for crop production. An area of about 650 km<sup>2</sup> along the western side of the Jordan River was confiscated and enclosed, despite the fact that it is fertile and important for off-season production.

Mobility restrictions on Palestinian people and goods have been especially harmful to the agricultural sector. They undermine the ability of farmers to access land for essential work and to access markets in order to purchase agricultural inputs and sell produce. Perishable agricultural produce with a short shelf life has been disproportionately impacted by such restrictions and by the back-to-back system in force, which involves the unloading and reloading of products from and on trucks at checkpoints.

Restrictions on the movement of farmers, services and agricultural trade entail additional time and financial costs, due to the extra time spent at checkpoints, roadblocks and other barriers. These result in inflated transportation costs, greater risks and possible damage, especially to perishable products. There is also the possibility of agricultural services delays or even a lack of provision of services, especially with regard to animal health and plant protection.

In Gaza, the eight-year blockade since 2007 has not given the local economy a chance to recover. Exports from Gaza are almost completely banned, imports are severely restricted and the flow of all but the most basic humanitarian goods has been suspended. The most recent military operation in July and August 2014 and the two previous military operations in November 2012 and December 2008–January 2009 compounded already dire overall conditions and accelerated de-development in Gaza, a process by which development is not merely hindered but reversed by the forces and policies of occupation. Significant output and employment losses occurred as a result of the blockade and extensive destruction of the agricultural productivity base, including cultivated land, fields, trees, buildings, greenhouses, nurseries, roads, irrigation networks and animal production facilities.

Much of the agricultural and grazing land in Gaza near the border with Israel is prohibited to Palestinian farmers, who are denied access to agricultural lands in the 300 to 1,000 metre-wide buffer zone along the border, as those entering this area risk coming under fire. By 2009, 46 per cent of Gaza's agricultural land was inaccessible or out of production (Palestinian Ministry of Agriculture, 2010). In addition, water supply is limited in Gaza and

groundwater has become increasingly unsuitable for human consumption and agriculture as a result of salinity, contamination by untreated wastewater and inability of the Palestinian National Authority to repair damaged infrastructure.

Under the blockade, the Palestinian fishing industry has collapsed almost completely, with the reach of fishing boats steadily declining since 2000. Fishing off the coast of Gaza is restricted to only 3 to 6 nautical miles, instead of the 20 nautical miles stipulated in the Oslo Accords. Those who sail beyond the limit defined by Israel risk coming under fire, arrest and the seizure of boats and equipment. In addition, the yield from permissible fishing areas has declined due to overfishing and contamination caused by the release of sewage water into the sea following the destruction and disrepair of the sewage treatment facility during military operations. The number of those employed in the fishing industry has declined by 66 per cent since 2000. Israel's restrictions have negatively impacted the livelihoods of thousands of those in the fishing industry, as well as their families and communities, resulting in the decline of nutrition among the population in Gaza, especially children, as the lack of affordable protein has led to serious health problems.

One of the most serious consequences of Israel's restrictions on access to markets, land and water is the extremely high transaction costs to which Palestinian producers are subjected. According to the Palestinian Ministry of National Economy and the Applied Research Institute – Jerusalem, the costs of exporting and importing are twice as much for Palestinian agents as for Israeli agents, while the procedures for importing require four times the amount of time Israeli importers spend on similar activities (Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011). Table 7 compares the trading costs borne by Palestinian producers to those borne by their Israeli counterparts.

**Table 7. Trading costs borne by Israeli and Palestinian firms**

	Exports				Imports			
	Israeli firms		Palestinian firms		Israeli firms		Palestinian firms	
	Duration (days)	Cost (dollars)	Duration (days)	Cost (dollars)	Duration (days)	Cost (dollars)	Duration (days)	Cost (dollars)
<b>Document preparation</b>	4	110	10	310	4	120	17	350
<b>Customs clearance and technical control</b>	1	110	6	300	1	60	12	50
<b>Ports and terminals handling</b>	3	250	3	250	3	250	7	400
<b>Inland transportation and handling</b>	3	200	4	450	2	175	4	425
<b>Total</b>	11	670	23	1310	10	605	40	1225

Sources: S Djankov, C Freund and CS Pham, 2010, Trading on time, Policy Research Working Paper No. 3909, World Bank.

The high transaction costs to which Palestinian agricultural producers are subjected due to various measures by Israel put them at a marked disadvantage in Palestinian markets vis-à-vis their foreign competitors, who operate under normal cost conditions and benefit from the supportive policies of their Governments. This competitive disadvantage stunts Palestinian agricultural development by undermining viability and profitability and thus discouraging investment. As a result, the relative outputs of food, farm products and final manufactured commodities has shown a declining trend, as domestic production of such commodities has

gradually been replaced by imports, mainly from Israel, rendered relatively cheap by the high production costs imposed on Palestinian producers and the support granted by the Government of Israel to Israeli producers.

## **B. Loss of land to settlements and the separation barrier**

Since 1967, Israel's agricultural activities in the West Bank have developed concurrently in two areas, the West Bank highlands and the Jordan Valley. In the highlands in the late 1970s, Israeli agricultural processes began near settlements around Bethlehem and spread north and south. Agriculture in this area is dominated by vineyards, olive groves and fruit trees. Since 2001, there has been rapid growth in agricultural areas around the highland settlements, coupled with restrictions on Palestinian access to large areas around many of the settlements, for security reasons. One study notes that in a number of instances, the areas were closed off by military order, yet at the initiative of settlers themselves (Kerem Navot, 2013). The prohibition of large areas around the settlements to Palestinian entry encouraged settler activity and led to a rise in agricultural activity around the highland settlements, which entailed the annexation of privately-owned Palestinian land.

Similar agricultural land annexation was also practiced in the Jordan Valley. Since the late 1960s, Israel has established military outposts along the Valley, which were later authorized as civilian settlements. Israeli agriculture in the Jordan Valley features dates, field crops and greenhouse crops. Israel also invests significant resources in water treatment and irrigation infrastructure to serve settler agriculture in the Jordan Valley and the northern Dead Sea area, particularly to serve the date industry that has flourished there. As a result of land expropriation and the ongoing expansion of Israeli agricultural areas, the last decades have witnessed a decline of about one third of cultivated Palestinian agricultural land in the West Bank. As noted, this expansion includes the appropriation of actively cultivated private land following the expulsion of Palestinian owners, whether individuals or entire communities, by settlers and the Israeli military.

Settlers have taken control of approximately 170,000 dunum of public and private land in the West Bank between the Jordan Valley and Jordan, which is blocked to Palestinian residents, as it was closed off in 1967 by Military Order 151 (Kerem Navot, 2013). Settlements rely on water infrastructure created by Israel in the Jordan Valley, which involves the transportation of treated sewage for agricultural irrigation in the Valley.

This activity has continued since the mid-1990s, and gained greater intensity in the aftermath of the second intifada. The area under the control of the settlements in Area C is thereby expanded, complicating future transfer of land to Palestinians, especially through the establishment of new outposts, building of new roads around settlements, extension of local tourist infrastructure in areas featuring religious, archaeological or scenic value sites and establishment of large industrial zones.

Land annexation in the West Bank to support Israeli agriculture is not limited to expanding the agricultural area under the control of settlers but also involves a lack of law enforcement to protect Palestinians from the violence of settlers who transgress private land and harass farmers, in violation of laws, including Israeli laws. In the West Bank, the rule of law is often disregarded in favour of the territorial interests of settlements.

The Palestinian agricultural sector is also undermined by the fact that Area C, which constitutes 61 per cent of West Bank area and 63 per cent of its agricultural resources, including the most fertile and best grazing land, remains under Israeli administrative and security control (UNCTAD, 2014). The Israeli administration that controls the area and oversees the provision of public services has shown little regard for the interest of the Palestinian population. As a result, the amount of agricultural land and rangeland in Area C has diminished. Israel has designated 39 per cent of Area C for settlements and their future expansion, 20 per cent for closed Israeli military areas (including firing zones)<sup>3</sup> and 13 per cent for natural reserves. Consequently, Israel bans all Palestinian construction in 70 per cent of Area C, allowing a meagre 1 per cent for Palestinian spatial development, while heavily restricting construction in the remaining 29 per cent (UNCTAD, 2014). Palestinians are deprived of access to 85 per cent of the grazing lands in the West Bank due to the expansion of settlements, military zones and the separation barrier.

Many other restrictions by Israel ensure inefficient and uncompetitive use of Palestinian agricultural land. For instance, Palestinian farmers are not allowed to build structures or dig wells without Israeli permits, which are almost impossible to obtain and are forced to use longer roads and pass through checkpoints, which significantly increase transportation time and financial costs (UNCTAD, 2014).

Restrictions on Palestinian access to Area C and the skewed distribution of the West Bank population creates serious problems in other parts of the West Bank, such as high population densities, environmental issues and a dearth of residential, agricultural and industrial land as well as high costs for such land. For instance, in the Jordan Valley, the industrial sector faces inflated land costs as a result of the artificial scarcity of land induced by lack of access to Area C. This raises the cost of land in Areas A and B by an additional 30 to 150 per cent above similar land in Area C (World Bank, 2012). In addition, the debilitated Palestinian infrastructure limits growth and reduces the competitiveness of the industrial sector.

Cognizant of the critical importance of Area C to the viability of the Palestinian economy and the two-State solution, the report of the Palestinian National Authority to the Ad Hoc Liaison Committee meeting held in Brussels on 19 March 2013 stated that “Area C is an integral part of the State of Palestine [and] the backbone of the Palestinian economy” (Palestinian Ministry of Planning and Administrative Development, 2013). As some 63 per cent of agricultural lands are located in Area C, unhampered access to its resources could greatly expand income from agriculture.

The expansion of Israeli settlements in the West Bank has had a profound impact on the area available for agricultural activities in the Occupied Palestinian Territory. Since 1967, Israel has established about 150 settlements in the West Bank, including East Jerusalem, in addition to some 100 outposts. In 2014, Israel announced a plan for more settlements, in addition to the plan in November 2012 to build 3,000 new settlement units in East Jerusalem and the rest of the West Bank. In total, “43 per cent of the West Bank is allocated to settlement local and regional councils” (United Nations Office for the Coordination of Humanitarian Affairs, 2012b).

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<sup>3</sup> In 1970, Israel declared about 18 per cent of the West Bank, or 30 per cent of Area C, restricted areas designated as firing zones.

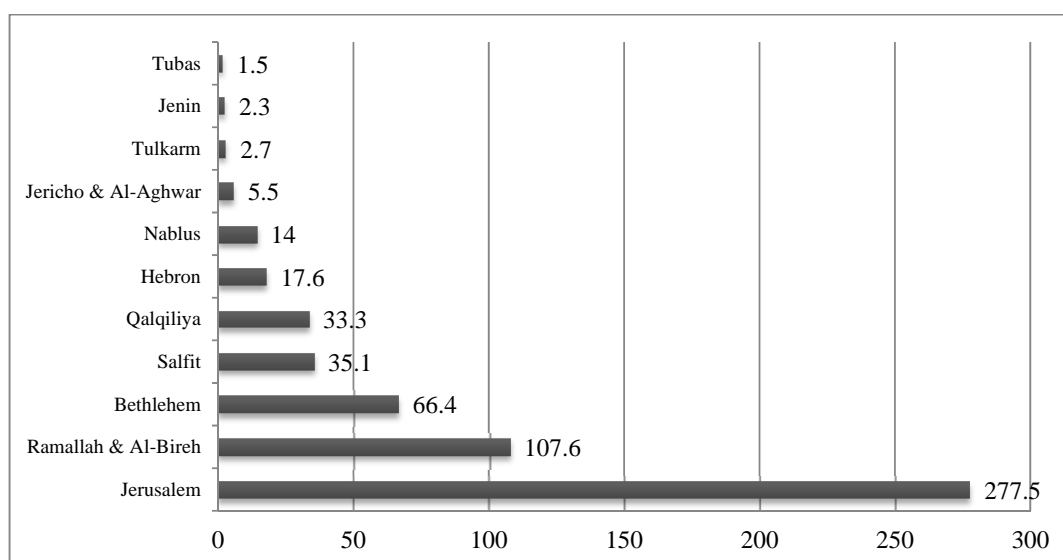
Once the separation barrier is complete, 80 per cent of the settler population in the West Bank and East Jerusalem will be located on the western side of the Barrier. The barrier redefines the borders away from the internationally recognized borders delineated in 1967. In 2012, there were 144 Israeli settlements in the West Bank compared to 1, 34, 126 and 143 settlements in 1967, 1976, 1985 and 2004, respectively (Palestinian Central Bureau of Statistics, 2012a). The area of settlement increased from about 11,700 hectares in the mid-1990s to about 18,700 hectares in 2005 and about 24,000 hectares in 2009. The number of settlers in the West Bank reached about 564,000 in 2012, nearly half located in Jerusalem. Settlers represent 21 per cent of the West Bank population and their 5 per cent annual growth rate is three times that of the population growth of Israel (Palestinian Central Bureau of Statistics, 2013). Table 8 and figure 5 illustrate the development in the number of settlers in West Bank settlements between 2007 and 2012.

**Table 8. Number of settlers in West Bank settlements, 2007–2012**

	<b>West Bank</b> <i>(not including East Jerusalem)</i>	<b>Jerusalem</b>	<b>West Bank</b>
2007	288 726	193 485	482 211
2008	304 283	197 071	501 354
2009	310 373	192 768	503 141
2010	319 686	196 178	515 864
2011	339 134	199 647	538 781
2012	360 370	203 176	563 546

*Source:* Palestinian Central Bureau of Statistics, 2013, Press release on Israeli settlements.

**Figure 5. Number of settlers in Israeli settlements, by governorate, 2012**  
*(Thousands)*

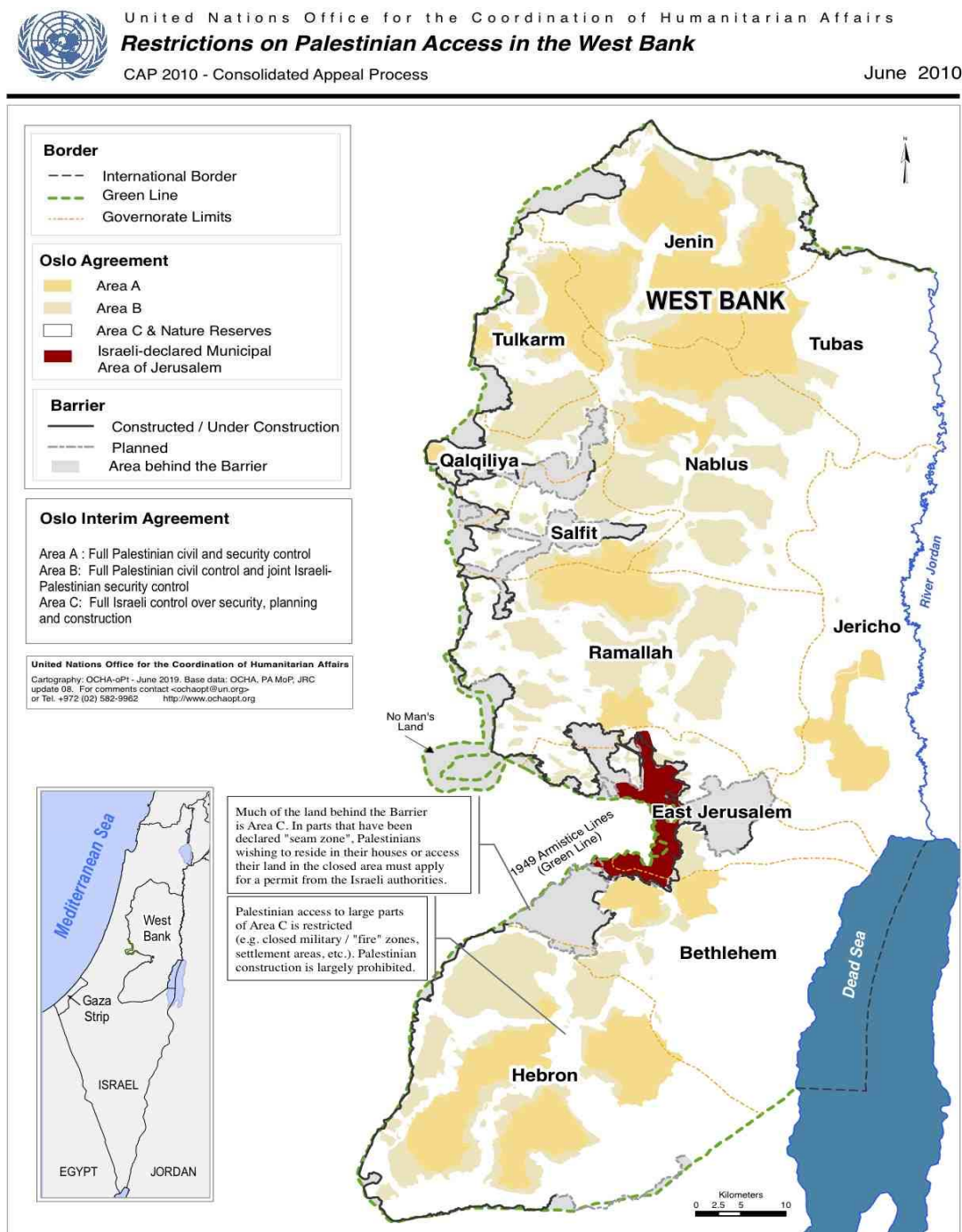


*Source:* Palestinian Central Bureau of Statistics, 2013, Press release on Israeli settlements.



Figure 6 shows that the separation barrier isolates Palestinian communities, fragments domestic markets and renders much of the western part of the land of the West Bank inaccessible to Palestinian producers. Some of the most fertile Palestinian agricultural land is trapped between the Green Line and the separation barrier in the seam zone (UNCTAD, 2014).

**Figure 6. Map of Area C, 2010**



Source: United Nations Office for the Coordination of Humanitarian Affairs, 2010, available at: [www.ochaopt.org/documents/ocha\\_opt\\_restricted\\_areas\\_in\\_west\\_bank\\_oslo\\_june\\_2010.pdf](http://www.ochaopt.org/documents/ocha_opt_restricted_areas_in_west_bank_oslo_june_2010.pdf) (accessed 15 June 2015).

By 2009, almost 9,000 dunums of irrigated land had been expropriated to build the barrier and 10 per cent of West Bank land is now in the seam zone between the barrier and the borders defined in 1967. Thousands of Palestinians who own land in this zone need to obtain hard-to-get permits from Israeli authorities to access and work on their land. The land loss includes grazing areas and areas of settlements and military camps. In areas planted with fruit trees, the fruits either cannot be picked or need certain security arrangements, entailing additional costs. These losses have been especially injurious to smallholder farmers and herders who live near the affected areas.

Obtaining a permit to enter the seam zone is costly and uncertain for Palestinian farmers. For example, in 2010, 40 per cent of applications by Palestinian farmers to access their farmland in the seam zone were denied. Even if a farmer obtains a permit, additional problems may arise. For instance, farmers may not be able to obtain permits for workers to carry out agricultural work, gates on the barrier are often closed for days and farmers must transport agricultural equipment through the barrier and back on the same day as they are not allowed to store equipment on land in the seam zone.

The stringent permit requirement undermines the scope for meaningful economic activity. Limitations on access have forced some permit holders to stop cultivation altogether or shift from labour-intensive to rain-fed, low-value crops. Based on data collected over the last five years, the United Nations Office for the Coordination of Humanitarian Affairs reported that during this time, olive trees in the seam zone had shown an “approximately 60 per cent reduction in yield compared to their equivalents on the Palestinian side of the barrier, where essential activities such as ploughing, pruning, fertilizing and pest and weed management can be carried out on a regular basis” (United Nations Office for the Coordination of Humanitarian Affairs, 2014).

Another similar illustrative comparison may be made between Palestinian agriculture in the West Bank and that practised in Israeli settlements. Though production data from the latter is not available, a World Bank report assessed the loss incurred by the Palestinian agricultural sector and demonstrated that productivity in settlements, unhindered by occupation and a water shortage, was far higher than that on the Palestinian side (World Bank, 2013). The report stated that settlement agriculture had expanded by 35 per cent between 1997 and 2012 to 93,000 dunums in 2012, with crop patterns indicating favourable access to water. For example, while olive trees dominated the agricultural landscape of the Occupied Palestinian Territory since their water requirements were lower, they accounted for only 5 per cent of cultivated area in settlements. The World Bank report stated that settlements provided most of the pomegranates exported to Europe, 22 per cent of the almonds and 13 per cent of the olives, while the Jordan Valley settlements produced 60 per cent of the dates destined to Israel and 40 per cent of exported dates, thus underscoring the significance of agricultural production in settlements.

Further analysis by crop of the changes in Israeli settlement agriculture in the West Bank over a 15-year period indicates that dates accounted for the majority of added area from 1997 to 2012, or some 44 per cent of the total added area over this period, while areas devoted to vineyards grew by 17 per cent, to olive groves by 12 per cent and to field crops by 15 per cent (Kerem Navot, 2013). The significant growth of organic farming in recent years by Israeli producers is due in part to its expansion in settlements, including the production of vegetables, apples, dates, eggs and goat and sheep’s milk products. However, marketing of

such organic products abroad, especially in Europe, does not always clarify that they have been produced in settlements.

### **C. Demolition of structures and infrastructure and the uprooting of trees**

Palestinian agricultural structures and assets have been subjected to recurrent demolition by the occupying Power. Affected productive assets include animal sheds owned by Bedouin, water wells, village roads, plastic houses and irrigation systems. The Israeli Committee Against House Demolitions and the Israeli non-governmental organization B'Tselem record, regularly update and report on human rights violations. Based on information collected from Israeli official sources, United Nations agencies and other sources, the Israeli Committee Against House Demolitions estimates that, between 1967 and 2013, some 27,000 Palestinian structures in the Occupied Palestinian Territory were demolished. Other organizations, such as Oxfam, report that Palestinian assets, including sources of water, have often been vandalized by Israeli settlers, who have also attacked Palestinians trying to repair their water.

Other adverse factors include the systematic uprooting of productive trees, land levelling and denial of access to water by Palestinians. Following the start of the second intifada, more than 1 million trees in Gaza and almost 600,000 trees in the West Bank were uprooted, and it is estimated that about 2.5 million fruit trees have been uprooted since 1967 (Applied Research Institute – Jerusalem, 2007, and Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011). The policy of uprooting trees has been carried out for a number of reasons, including the construction of Israeli settlements and the separation barrier.

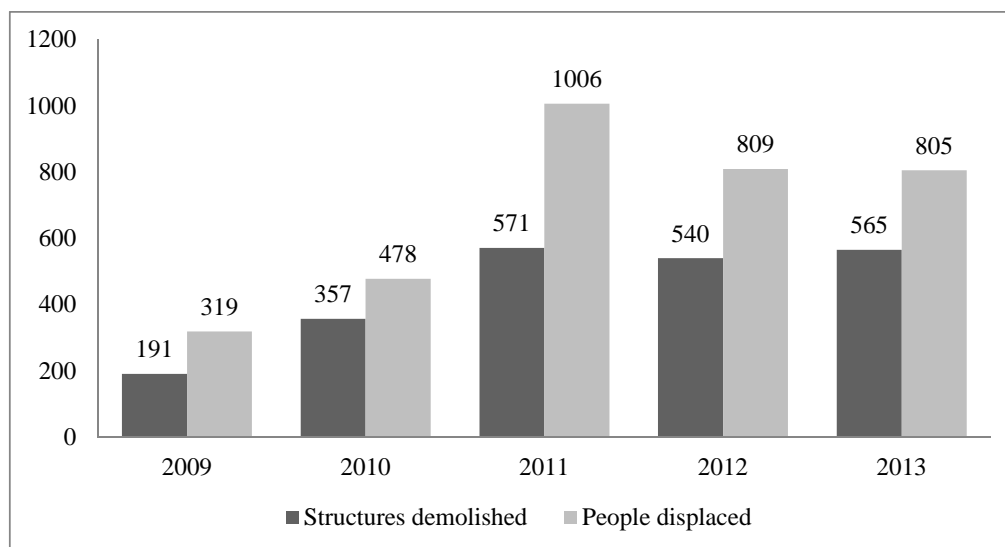
The uprooting of trees inflicts significant damage on the Palestinian economy and undermines the income and livelihood of the Palestinian people. The annual loss to the Palestinian economy is represented by the value of the economic production of the trees. The Applied Research Institute – Jerusalem estimates that around one third of the 2.5 million uprooted fruit trees were olive trees and that the remaining two thirds comprised other types of fruit, including about 34,000 palm trees. If the average annual productivity of one olive tree is about 70 kg, with olive production valued at the ex-farm price of \$1.1 per kg, based on data from the Palestinian Central Bureau of Statistics for 2008, then the annual cost of uprooted olive trees may be conservatively estimated at \$64 million.

In Gaza, recurrent Israeli military operations have generated infrastructural needs and agricultural land, property and other productive assets have been decommissioned (United Nations Office for the Coordination of Humanitarian Affairs, 2013). In the West Bank, “to maintain and reinforce the ongoing land transformation process, Israel established an extremely rigid permit regime, whereby any Palestinian building without a permit can be demolished and its inhabitants displaced” (UNCTAD, 2014). According to the Israeli non-governmental organization Bimkom – Planners for Planning Rights, between 1988 and 2013, the Israeli Civil Administration issued 12,570 demolition orders against Palestinian structures in Area C.

As shown in figure 7, during the period 2009–2013, 2,224 Palestinian structures were demolished, including residential structures and schools in firing zones. The demolitions peaked in 2011, with more than 1,000 structures demolished in one year. Consequently, 3,417 Palestinians in Area C were displaced during this five-year period. Thousands of people

remain at risk of facing demolitions, most notably in the periphery of Jerusalem, the Jordan Valley and in areas intended for settlement expansion or closed military zones. A trend in 2011–2012 was the demolition of donor-funded structures; from January 2011 to September 2012, some 150 donor-funded structures were demolished.

**Figure 7. Displacement and demolitions in Area C, 2009–2013**



Sources: United Nations Office for the Coordination of Humanitarian Affairs, 2013 and 2014.

In contrast, the Israeli settler population in Area C rose from 800 in 1972 to more than 360,000 in 2012 (Palestinian Central Bureau of Statistics, 2013). The 5 per cent annual growth rate of settlers is three times that of the population growth of Israel. Settlers in Area C live in at least 125 settlements and 100 outposts, with areas for future expansion nine times larger than the present built-up areas (B'Tselem, 2013).

#### **D. Restrictions on access to essential agricultural inputs**

Israel bans items deemed dual-use which are, according to the classification of the Government of Israel, goods, raw materials, equipment and spare parts that have civilian purposes as well as potentially security-threatening uses to which they may be diverted once imported into the Occupied Palestinian Territory. Israel's restrictions on dual-use chemicals and fertilizers have been in place for decades. However, in 2002, the Government of Israel began to tighten restrictions on access to chemicals and fertilizers by lowering the maximum concentration levels allowed.

Israel has progressively added more materials, machinery and equipment (including for telecommunications) to the list of items considered dual-use. In 2008, as part of the Defence Export Control Law, a new list was established that included 56 items, such as fertilizers, chemicals and raw materials for industry, steel pipes, lathes and milling machines, optical equipment and navigation aids. Banned fertilizers include ammonium nitrate ( $\text{NH}_4\text{NO}_3$ ), potassium nitrate ( $\text{KNO}_3$ ), urea ( $\text{CH}_4\text{N}_2\text{O}$ ), urea nitrate ( $\text{CH}_4\text{N}_2\text{ONO}_3$ ), fertilizers containing nitrogen, phosphorus and potassium (at percentages of 27-10-17 and 20-20-20) and any

fertilizer containing any ammonium nitrate, potassium nitrate or urea (Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011). Even where certain restricted inputs are authorized, special permits are required to transfer them to the West Bank, involving a lengthy bureaucratic process that must be repeated for each shipment. The dual-use system therefore imposes additional costs on Palestinian farmers, including direct financial costs, as well as delays, even when permits are secured. The use of alternatives that are of lower quality and effectiveness exacts additional costs on Palestinian producers.

Israel's restrictions on access to fertilizers of suitable concentration have been especially punitive. Currently, the use of fertilizers by Palestinian farmers is at 40 per cent of levels in Jordan (Office of the Quartet Representative, 2013). Israel has restricted imports of many goods and chemical components as such imports may be used to make explosives or other weapons. As a result, Palestinian farmers are allowed to import only specific types of fertilizers, which are suboptimal and sometimes ineffective. According to one study, the import of hydrogen peroxide at 37 per cent concentration, used for food preservation, was restricted, and hydrogen peroxide at 17 per cent concentration was used instead, but was not an effective means of preservation, leaving some Palestinian products less competitive than Israeli ones as they had a shorter shelf life (Toaldo, 2013). In many cases, restrictions on Palestinian imports of raw materials and industrial inputs have forced Palestinian producers to rely on Israeli products intended for use by end-consumers. This has created vested corporate interests in Israel and should not be confused with security needs.

Estimated costs of the use of inappropriate fertilizers in the Occupied Palestinian Territory includes two types namely, direct costs arising from the use of alternative fertilizers that are more costly than the more effective but banned fertilizers and indirect costs arising from loss of productivity due to the use of relatively less effective alternative fertilizers (Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011). For example, the main alternative to the solid fertilizer with the nitrogen, phosphorus and potassium rating 20-20-20 is the liquid fertilizer with the rating 13-13-13. These fertilizers are used for irrigated vegetables, both protected and in the open, as well as for fruit trees, which are mainly rain-fed in the Occupied Palestinian Territory. The fertilizer with the 20-20-20 rating has a higher concentration of nitrogen, phosphate and potassium per kg than the fertilizer with the 13-13-13 rating. More of the latter therefore needs to be applied for a given area of land to receive the same quantity of active ingredients. The use of the latter results in extra costs for Palestinian farmers; the estimated extra costs for rain-fed fruit trees and vegetables are in the range of \$29 million per year. In addition, farmers need to use more of this fertilizer per dunum of cultivated land due to the lower concentration of nutrient elements, and this results in a much higher injection of inert materials into the soil than would be the case with the use of the fertilizer with the 20-20-20 rating, thus substantially diminishing soil quality and increasing its salinity. Based on its experience working with Palestinian farmers, the Applied Research Institute – Jerusalem estimates the agricultural productivity decline as a result of using the fertilizer with the 13-13-13 rating and other accessible fertilizers containing one or more of the elements nitrogen, phosphate and potassium instead of the recommended but banned fertilizers to be in the range of 20 to 33 per cent (Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011). Restrictions on the importation of fertilizers do not apply to Israeli settlements in the West Bank.

The total value added of the agricultural production of vegetables, fruit trees and crops (excluding field crops, for which fertilizers are not intensively used) amounted to

\$567 million in 2008, the latest year for which such data is available. Twenty per cent of this value added is \$113.4 million per year. Adding the estimated extra costs of \$29 million suggests that, at a minimum, the total annual cost of the restrictions on dual-use fertilizers in agriculture is in the range of \$142 million (Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011).

Another key issue is related to the productivity of livestock and the availability of fodder in Gaza, especially during the dry season. Fodder is brought in from Israel in bales, but is often of unsuitable quality and is not brought in on a regular basis. Fodder should be continuously available to livestock, with no supply interruption. The high cost of imported fodder in northern Gaza imposes additional burdens on farmers. This inflated cost is partly responsible for the relatively low daily productivity per Friesian cow in Gaza, which is 20 litres of milk compared to 27 litres in Israel. In addition, the production cost of pasteurized milk in Gaza is 1.7 new Israeli sheqels (\$0.45) per litre, compared to 1.4 new Israeli sheqels (\$0.37) in Israel.

The comparatively low agricultural output and productivity in the Occupied Palestinian Territory reflect the fact that the sector is currently limited, in part by the restrictions on the importation of suitable inputs and the predominance of low productivity, rain-fed crops. However, if occupation restrictions are eased, it is estimated that a shift to high-yield crops may lead to a twentyfold increase in financial returns in a single season (Office of the Quartet Representative, 2013). However, the prerequisites for such a transformation are access by Palestinian farmers to Palestinian water resources and access to knowledge, seeds, fertilizers of suitable concentration and financial services.

## **E. Dearth of credit for agricultural production**

Lack of access to finance is another salient constraint on Palestinian agriculture. Access to credit is compromised by the impact of the ongoing occupation and an unfavourable political environment. Additional constraints are related to the small size of the typical agricultural production unit, the lack of acceptable collateral for commercial loans and the high level of risk associated with agricultural production, emanating from occupation-related restrictions, weather and/or price fluctuations. Annual demand for agricultural loans in the Occupied Palestinian Territory is estimated at \$150 million (Palestinian Ministry of Agriculture, 2010). Despite this relatively modest level, lending institutions have not shown interest in meeting the demand due to the high level of risk involved. For example, from January to September 2011, the share of agriculture in the total private credit of banks was a mere 1 per cent, while the trade, construction and services sectors accounted for 21, 17 and 16 per cent, respectively (Palestinian Monetary Authority et al., 2012). Credit institutions do not have financial products suitable for the poorly resourced smallholder farmers who lack collaterals acceptable to banks. The establishment of farmers' cooperatives to act as interest groups may help address the challenges facing farmers in this area.

Primary crop and livestock producers are not the only possible beneficiaries of access to finance. If finance becomes available, profitability stands to improve higher up the value chain in many production areas such as for olive oil, dried fruits and other food and dairy products. Small-sized factories for these products already exist in different areas throughout the Occupied Palestinian Territory. Most of these factories may become more profitable and commercially viable with targeted support for better access to finance, quality control and

branding certification. Given the fact that there is a significant market for these products in and outside the Occupied Palestinian Territory, better quality control, cost effectiveness, improved productivity and competitiveness vis-à-vis imported substitutes are needed.

#### **F. Flooding of Palestinian markets with agricultural imports from Israel and settlements**

As a result of the various restrictions on Palestinian economic activity, the Palestinian economy has been characterized by a persistent overall trade deficit, which reached 47 per cent of the gross domestic product in 2012 and 41 per cent in 2013. The growth of exports, including agricultural exports, has been weak and has failed to keep up with the increases in imports. In 2012, at \$1.7 billion, exports barely covered one quarter of the imports bill. At 7 per cent of the gross domestic product, the share of exports in domestic output is among the lowest in the world.

Exports originate almost entirely from the West Bank, as Gaza remains under a blockade. The small and weak exports sector is characterized by low value added, low technological content and weak forward and backward linkages with other economic sectors. The weakness of the exports sector is directly linked to the inability of Palestinian farmers to access the land and natural resources in Area C. The two export-oriented and import-substituting tradable goods sectors, manufacturing and agriculture, have virtually collapsed and their combined share in the gross domestic product has fallen since the establishment of the Palestinian National Authority in 1994, from 31 per cent to only 15 per cent in 2011.

A salient feature of Palestinian foreign trade is the forced dependence on the Israeli economy. Restrictions and the high costs of trade with the rest of the world have left Israel as the only viable source of imports and foreign market for Palestinian exports. This dependence is affirmed by the fact that Israel accounted for 70 per cent of Palestinian imports and absorbed more than 80 per cent of its exports in 2012, leaving a bilateral trade deficit of \$3.7 billion, equivalent to 77 per cent of the total Palestinian trade deficit and 37 per cent of the gross domestic product.

Food imports from Israel and Israeli settlements are widespread throughout the Occupied Palestinian Territory. These imports are problematic, especially during peak harvesting seasons and when their quality is below export standards, as they are channelled into Palestinian markets and this undermines domestic producers, who find themselves unable to compete with such cheaper, and often subsidized, imports from Israel. The practice of flooding the Palestinian market with Israeli products puts competing Palestinian products at a disadvantage, especially in light of the additional production costs borne by Palestinian farmers as a result of occupation. Palestinian farmers have often urged the Palestinian National Authority to protect them from the perceived flooding of Israeli imports into the Palestinian market, especially during peak harvesting seasons. However, the Palestinian National Authority lacks the capacity to protect domestic producers from unfair competition or market vagaries. The thin capacity and chronic fiscal crisis of the Palestinian National Authority leaves no means to extend the kind of support necessary to enhance the competitiveness of domestic producers in agriculture and other sectors.

Over the years, UNCTAD has noted that the overall trade deficit and the bilateral trade deficit with Israel are not the result of policies pursued by the Palestinian National Authority,

but are mainly rooted in the range of increasingly complex political and economic constraints that have been limiting Palestinian trade and development since 1967. The UNCTAD report in 2011 on the Palestinian tradable goods sector stated that a “relaxation of the pervasive restrictions imposed by Israel on Palestinian trade is bound to reshape its pattern by increasing exports to regional and global markets, other than Israel, by about 40 per cent and reducing the extreme dependency on the Israeli market for imports by 50 per cent” (UNCTAD, 2011).

## **G. Environmental damage**

The Palestinian agricultural sector has been significantly impacted by the direct and indirect effects of occupation on environmental damage in the Occupied Palestinian Territory (Palestinian Environmental Quality Authority, 2010). In 2010, on World Environment Day, the Palestinian Central Bureau of Statistics issued a press release drawing attention to related issues, entitled “The Palestinian environment to where?” Although the impact of environmental damage on the Palestinian agricultural sector remains to be quantified, it is important to highlight it and add it to the development policy agenda. The damage is in part a result of the construction of settlements and bypass roads and the depletion of water resources such as through overpumping of the Gaza coastal aquifer, with associated consequences, including seawater intrusion. In addition, the redirection of and extraction from the Jordan River has impacted the entire basin and the Dead Sea.

Environmental degradation is also caused by settlers, through the discharge of untreated wastewater into nearby wadis and release of solid domestic and industrial waste from settlements onto Palestinian lands. In addition, several incidents of dumping of hazardous and toxic waste in the West Bank have been documented. The uprooting of trees by the military and settlers contributes to desertification. Often, construction activities result in the cutting of trees and the erosion of soil.

The quantity of wastewater discharged into the environment is estimated at about 106 million cubic metres (mcm) per year (Palestinian Environmental Quality Authority, 2010). Of the 30 Palestinian plans for wastewater treatment plants submitted to the Joint Water Committee since 1995, only four received Israeli approval. Despite approval by the Joint Water Committee, their construction has been repeatedly delayed.

In 2009, almost 40 per cent of all sewage produced in the West Bank, including East Jerusalem, originated from Israeli settlements, many of which disposed of raw sewage directly into the surrounding environment. Today, Israeli settlements release approximately 35 mcm of untreated sewage each year into the surrounding environment. This undermines Palestinian agricultural land, polluting water sources and endangering the health of entire communities (Palestinian Water Authority, 2011).



## Chapter III

### Water scarcity desiccates the Palestinian agricultural sector

The impact of the post-1967 occupation of the West Bank and Gaza Strip on Palestinian water resources has been profound. Palestinian use of water for agriculture is estimated at one tenth that of Israel's use. On a per capita basis, water consumption in Israel is more than five times that of Palestinians in the West Bank (Ma'an Development Centre, 2010). The key water sources in the Occupied Palestinian Territory are the Jordan River, springs and groundwater. This chapter provides a summary of the availability of each of these sources to Palestinian farmers and their scarcity.

#### A. Jordan River

About 11 per cent of the Jordan River basin lies in the West Bank. In the 1955 Jordan Valley Unified Water Plan, the 257 mcm annual Palestinian share was considered part of the 774 mcm Jordanian share.<sup>4</sup> Since 1967, Palestinians have been denied water rights, as the areas along the western side of the river have been confiscated and declared military security zones (Haddad, 1993). Before the 1967 occupation, Palestinian farmers had about 150 pumps on the Jordan River, pumping about 30 mcm annually. Many of these pumps were destroyed by the occupying Power (Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011).

A World Bank report stated that only 35 per cent of irrigable Palestinian land was actually irrigated, which cost the economy 110,000 jobs per year and 10 per cent of the gross domestic product (World Bank, 2009). An equitable per capita distribution of the Jordan River water would entail a much greater share for the Occupied Palestinian Territory than the current levels of 257 to 268 mcm, compared to Israel's use of approximately 770 mcm (Glover and Hunter, 2010). If the full Palestinian share of the Jordan River water was available, the Palestinian agricultural output would increase substantially.

It is not an easy task to isolate and quantify the direct, indirect, short, medium or long-term impact of restrictions on access to water on the agricultural sector, yet some approximations may be made, which suggest an order of magnitude. Assuming that the Palestinian share of the Jordan River, estimated at 257 mcm, has been transferred to Israel since 1967 and that the current value of each cubic metre as estimated by the Ministry of Agriculture is \$0.25, this suggests an annual value for the share of roughly \$65 million and a total loss for the period 1967–2013 of about \$3 billion. Had the water been available for Palestinian agriculture and assuming that 100 mcm had been used for agriculture, it would have been enough to irrigate around 120,000 dunum, creating about 120,000 jobs and raising agricultural output by about 960,000 tons and annual production value by around \$400 million.

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<sup>4</sup> The Jordan Valley Unified Water Plan of 1955 was a plan for the unified water resource development of the Jordan Valley. It was based on an earlier plan commissioned by the United Nations Relief and Works Agency for Palestinian Refugees in the Near East and approved by technical water committees of all the regional riparian countries namely, Israel, Jordan, Lebanon and Syria. Though the Plan was rejected by the Arab League, both Israel and Jordan agreed to abide by the cited volume allocations.

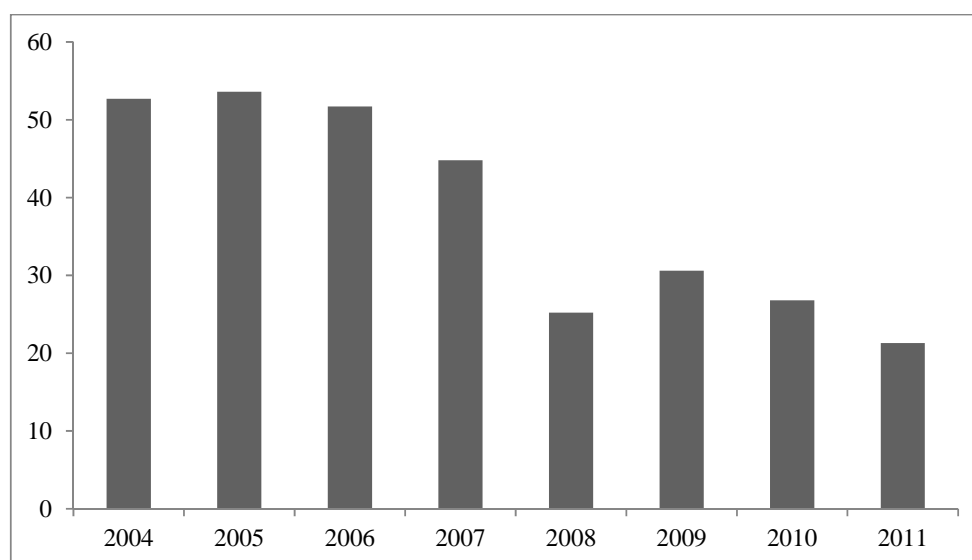
## B. Spring water

Springs are an important source of water in the West Bank. In 2011, the discharge of the 400 springs was in the range of 21.3 mcm. However, as shown in figure 8, the discharge has been declining since 2004. Variations in spring discharge, which are due to fluctuations in annual rainfall, directly impact the amount of water available for agricultural production.

The Palestinian National Authority states that Israel has repeatedly not approved Palestinian requests to develop the Al-Fashkha springs, located along the western shore of the Dead Sea, with an estimated 100 mcm of brackish water flowing into the Dead Sea annually (Palestinian Water Authority, 2012). This resource, if developed properly, could add 100 mcm of fresh water to be used for drinking and irrigation purposes. In addition, confiscation of West Bank land to build settlements has resulted in the control by Israeli authorities of a growing number of the 152 freshwater springs in the West Bank. Consequently, agricultural activities have become less viable and many Palestinian farmers have been forced to abandon or reduce cultivation (United Nations Office for the Coordination of Humanitarian Affairs, 2012a).

With respect to surface water harvesting and collection, the Occupied Palestinian Territory experiences a range of rainfall intensities. In the event of high rainfall intensity, most of the rain and water flows into wadis and valleys and from there either to the Mediterranean or the Dead Sea. Israel does not permit the establishment of small and medium-sized dams to be used to collect and store such water and release it at appropriate times throughout the year. If such structures were permitted, significant water resources could be collected every year, to be used for drinking and irrigation purposes.

**Figure 8. Annual discharge of springs, 2004–2011**  
(Million cubic metres)



Source: Palestinian Central Bureau of Statistics.

### C. Groundwater

With regard to groundwater, the annual recharge in the Occupied Palestinian Territory is estimated at about 734 mcm, of which about 679 mcm is in the West Bank and 55 mcm in Gaza (Palestinian Water Authority, 2011, and World Bank, 2009). Groundwater resources in the West Bank include three main aquifers, the north-eastern, eastern and western. The latter is the largest of the three and some 80 per cent of the recharge area of its basin is located in the West Bank. However, salinity has undermined the suitability of groundwater for human consumption and agriculture. In some areas, water has also become contaminated by untreated sewage. In addition, the Palestinian National Authority is unable to repair treatment plants due to a lack of resources and access constraints, particularly prevalent in Gaza. Table 9 lists the water resources and their uses in the Occupied Palestinian Territory.

**Table 9. Water resources and their uses in the Occupied Palestinian Territory, 2011**  
(Million cubic metres)

	Domestic	Agriculture	Total
<b>West Bank</b>			
Western basin	7.9	17.1	25.0
Eastern basin	7.13	12.0	25.7
North-eastern basin	11.9	2.9	14.8
Springs	5	16.3	21.3
Mekorot (national water company of Israel)	52	5	57.0
Surface water	0	4	4.0
<b>Total - West Bank</b>	<b>90.5</b>	<b>57.3</b>	<b>147.8</b>
Gaza Strip coastal aquifer	92.8	86	178.8
<b>Total - occupied Palestinian territory</b>	<b>183.3</b>	<b>143.3</b>	<b>326.6</b>

Source: Palestinian Water Authority, 2011.

In response to the growing water shortages, concerted efforts were made to harvest and collect surface water, mainly in cisterns with capacities of 80–100 mcm. It is estimated that the annual water collected is in the range of 3 to 4 mcm, most of it used for the supplementary irrigation of fruit trees, in particular olives. Although water available for all uses in the Occupied Palestinian Territory increased from 244 mcm in 2001 to 327 mcm in 2011, less than one third of the increase was used for irrigation. This is due, in part, to the high cost of water in the Occupied Palestinian Territory and the priority accorded to securing fresh drinking water for use by a growing population.

An interim arrangement for the development and use of Palestinian water resources was established in the Declaration of Principles on Interim Self-Government Arrangements in 1993 (also known as the Oslo I Accord), which acknowledged Palestinian water rights, but left them undefined, pending final status negotiations. Although most aquifer basins are located in the West Bank, the Oslo Accord allocated only one quarter of the water (138.5 mcm) of the three West Bank aquifers to Palestinians, with Israel allocated the remainder.

During a five-year interim arrangement from 1995 to 2000, water-related decisions were intended to be taken by the consent of the two parties. However, this arrangement left the Palestinian people with a minimal share of water resources. The interim arrangement continues to exist, more than a decade after its expiry date.

In addition, the asymmetrical power of the two parties and Israeli settlement infrastructure and control of Area C has ensured Israel's control of water resource allocation. Israel controls the quantity of water extracted by Palestinians and has veto power over Palestinian investment in water infrastructure. However, the Palestinian National Authority does not have the same power, nor does it have access to data on water use by Israel. Israel has been extracting water above the level determined by Article 40 and "confiscates 82 per cent of Palestinian groundwater in the West Bank" for use inside Israel's borders or in its settlements (Palestinian Ministry of Agriculture, 2010). Overpumping could deplete the aquifers and, as such, represents a serious threat to the future of Palestinian water resources.

#### **D. Denial of Palestinian water rights**

Due to restrictions on drilling and the rehabilitation of water infrastructure, Palestinian per capita water extraction has been falling. By 2007, Palestinians in the West Bank had about 123 litres per capita per day, an amount which has since declined in some areas, and Israelis had over four times more, about 544 litres per capita per day (World Bank, 2009). In addition, Palestinians have access to only 10 per cent of the annual recharge capacity of the West Bank water system (Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011).

The Palestinian National Authority and Palestinian farmers are denied the right to construct wells to meet the growing demand for water, even when that water originates almost entirely in the West Bank. In practice, Israel extracts more than the share identified by the interim arrangement, while Palestinians obtain less and must therefore import over 50 per cent of their water from Israel (Ma'an Development Centre, 2010). For instance, public infrastructure and private investment are restricted in Area C and Palestinian investment activities in this area require permission from Israel. Applications by the Palestinian National Authority for such permission are routinely rejected or, at best, delayed for years. For example, permission for the Palestinian Water Authority to implement the wadi Al-Zumar wastewater project was received after 10 years.

As a result of Israel's restrictions on Palestinian water resources and the diversion of Palestinian water resources to Israeli settlements, protected irrigated agriculture comprises only 2.3 per cent of cultivated land in the West Bank, even though irrigated land is, on average, 15 times more productive than rain-fed land. It is estimated that the 2.3 per cent of protected irrigated agriculture contributes about 50 per cent of total plant production. This is a clear indicator of the presence of a great potential that has yet to be tapped.

The international community has acknowledged the water crisis in the Occupied Palestinian Territory and its impact on the economy. In this regard, the European Parliament, in its Resolution 2694, recognized the problems related to access to water and their implications and stressed the importance of protecting the Palestinian population and their rights in Area C and in East Jerusalem, as essential elements for the viability of the proposed two-State solution, stating the following: "whereas the Palestinian population in the West

Bank, in Area C in particular, and in East Jerusalem faces serious water shortages; whereas Palestinian farmers are seriously affected by the lack of water for irrigation, which stems from the use of most of the water in question by Israel and by Israeli settlers; whereas the availability of sufficient water resources is essential to the viability of a future Palestinian State” (European Parliament, 2012). The resolution calls on the Israeli Government and authorities to meet their obligations under international humanitarian law, in particular by ensuring a fair distribution of water meeting the needs of the Palestinian population.

## Chapter IV

### **Estimates of the economic cost of the besieged Palestinian agricultural sector**

The restrictions on Palestinian water and agricultural development impose multiple direct and indirect costs on the Palestinian economy in terms of lost output, employment and exports opportunities, as addressed in this chapter. The Palestinian National Authority states that if Israel's occupation of and restrictions on Area C were lifted and if water resources were distributed in a fair and equitable manner, the Palestinian agricultural sector could dramatically expand its production. This would occur mainly through reclamation and irrigation of all lands suitable for agriculture and the development of high-value crops in the Jordan Valley. The potential additional value of production from such an expansion is considerable and confirms the huge potential for the growth of agribusiness in Area C as a cornerstone of Palestinian sovereignty and economic development (Ministry of Planning and Administrative Development, 2013).

The estimated economic costs of occupation in terms of lost potential output for 2010 were \$6.9 billion, or about 85 per cent of the gross domestic product (Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011). Had such a loss not been incurred and had the potential output been realized, the budget of the Palestinian National Authority would have been balanced, with significant resources left available for development spending towards sustainable economic growth and development.

More recently, the World Bank provided partial estimates of the cost of Israel's occupation of Area C, including the economic benefits that Israel and its settlements presently derive, as well as the potential direct and indirect benefits to Palestinians if Israel's restrictions on access were lifted (World Bank, 2013). Using a constructed counterfactual scenario assuming no physical, legal or regulatory constraints on Palestinian investment and no restrictions on Palestinian economic agents to invest, produce and sell in Area C, the report concluded that the Palestinian gross domestic product could be expanded significantly with free access to 326,400 dunums of arable land, hundreds of thousands of dunums of rangeland and forests and access to irrigation water in Area C. However, irrigating the 326,400 dunums of additional agricultural land notionally available to Palestinians in Area C would require some 189 mcm of water per year, while current Palestinian allocation under the Oslo Accords is 138.5 mcm. The report estimated that irrigating this unexploited area, as well as accessing additional rangeland and forests, could deliver an additional \$704 million in value added to the Palestinian economy, equivalent to 7 per cent of the gross domestic product in 2011.

The potential increase in the output of Area C, as estimated in the World Bank report, was partial, conservative and non-exhaustive. For instance, 187,000 dunums directly used by the settlements were excluded from calculations of land potentially cultivable by Palestinians. If the land in Area C had been transferred to the Palestinian National Authority by 2000, as envisaged in the Oslo Accords, the cultivable land area available for Palestinians would be 57 per cent larger than the area cited in the report that is, 513,400 dunums instead of 326,400 dunums. This would imply that occupation exacted a much higher toll on the Palestinian agricultural base (UNCTAD, 2014). However, it is important to note that the World Bank calculations were restricted to the direct and indirect effects of the occupation of Area C, which accounts for more than 61 per cent of West Bank land. However, without including Gaza, as there are investment constraints in the remainder of the West Bank – that

is, Areas A and B – including constraints on agriprocessing activities along urban fringes, the potential incremental improvements in the West Bank’s agricultural output in an occupation-free environment would be much greater than those estimated in the World Bank report.

Over and above the toll exacted by occupation on the Palestinian agricultural sector, the World Bank report estimated that the direct potential incremental output from the sectors evaluated (agriculture, exploitation of Dead Sea minerals, stone mining and quarrying, construction, tourism, telecommunications and cosmetics) would amount to at least \$2.2 billion per annum in valued added terms, a sum equivalent to 23 per cent of the gross domestic product in 2011. The majority of this would be derived from the exploitation of agricultural resources and Dead Sea minerals.

In addition, the report stated that the indirect benefits of removing restrictions in Area C would be significant. Such benefits would stem from removing the dynamic costs caused by the lack of physical and institutional infrastructure. Some examples cited in the report included the inability of the Palestinian National Authority to develop access roads, which added to the time and costs of trips made. The poor road network in turn impeded the development of other infrastructure, such as banking services, thus adding to the constraints on investors and the private sector in general. The report estimated that, by capturing conservative multiplier effects, the total, direct and indirect, potential value added achievable by alleviating current occupation-related restrictions on access to Area C would be \$3.4 billion or 35 per cent of the gross domestic product in 2011.

In terms of sectoral linkages, it had been shown that tourism, for instance, may stimulate agricultural production and if the tourism potential of Area C were exploited, there would be a corresponding increase in demand for agricultural products, such as dairy and bakery products, fruits and nuts, which could be produced locally. With regard to fiscal aspects, if the potential incremental improvement in the gross domestic product were tapped by the Palestinian National Authority, increased tax revenues would be in the range of \$800 million, part of which could be used to finance badly needed investment to enhance the weak and decaying agricultural infrastructure and boost the productivity and competitiveness of Palestinian farmers.

The report and previous studies by the World Bank and by the Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem stated that the quantification of the true cost of occupation to the Palestinian economy in general and to the agricultural sector in particular, remained urgent, though complex and difficult. Estimating the economic costs of occupation requires collective and collaborative action by the Palestinian National Authority, donors and the international community. Stakeholders should collaborate and support efforts for documentation, analysis and studies aimed at the quantification of the economic costs of occupation and for placing it on the Palestinian development agenda.

## Chapter V

### Conclusions and recommendations

#### A. Build on the strengths and opportunities in the agricultural sector

The present study shows that the key obstacles facing the Palestinian agricultural sector, if not the entire Palestinian economy, are mostly related to occupation and less related to the economic policies of the Palestinian National Authority, whose ability to steer the economy is limited by a lack of fiscal resources and policy space. For decades, occupation has involved the expropriation of land and water resources, bankrupted farmers and producers, weakened the competitiveness of existing businesses, limited marketing opportunities, reduced the land and natural resources on which productive enterprises could be developed and thwarted private sector investment by increasing the costs and risks to producers.

In addition, production and transaction costs have increased drastically and eroded the competitiveness and profits of Palestinian producers, who find it increasingly difficult to compete with products originating in Israeli settlements and other countries where producers have advanced technologies and unconstrained access to water and markets, not only at normal costs but in many cases at reduced costs due to different types of subsidies.

Despite the damage incurred since 1967, however, the strategic Palestinian agricultural sector remains one of the most resilient pillars of the Palestinian economy, as it is capable of achieving faster and more sustainable recovery compared to other sectors. Various studies confirm that the removal of constraints on the sector and its empowerment, with unrestricted access to land, water and markets, coupled with sufficient investment in infrastructure, could lead to a considerable expansion of irrigated land, especially in Area C and the Jordan Valley, and that this could raise the agricultural value added by more than 25 per cent of the gross domestic product (Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011). For Palestinian agriculture – currently operating at perhaps one quarter of its potential – to develop fully, there is an urgent need to address the problem of lack of Palestinian control over scarce land and water resources. Without sovereignty of the Palestinian people over natural resources, there is no scope for designing and implementing meaningful plans to achieve sustainable development in the Occupied Palestinian Territory.

Economic and agricultural recovery in the Occupied Palestinian Territory requires credible steps towards a sovereign Palestinian State as envisaged by the consensus of the international community. In the meantime, sustained economic growth may only be attained by lifting the blockade on Gaza, the closure policy in the West Bank and the restrictions on public and private investment, especially in Area C.

Economic recovery also requires timely, predictable and substantial donor support, not only for budget purposes, but to fund investment to revive the damaged productive base. Of the \$2.4 billion in aid disbursed by donors in 2009, budget support accounted for \$1.4 billion, covering 85 per cent of the recurrent budget deficit, while funding for development projects was \$390 million that is, 16 per cent of total aid disbursements (World Bank, 2010). Given indifference to development expenditure in the budgets of the Palestinian National Authority and donor aid, even greater neglect of the agricultural sector continues.



The potential for agriculture to contribute to economic recovery is real and substantial. As the level of Palestinian agricultural productivity per unit of land is low, a realistic prospect for increasing it requires targeted action to enable primary and secondary agricultural producers to be more competitive in the Palestinian market vis-à-vis imports from Israel and elsewhere, while also enhancing the competitiveness of agricultural exports to foreign markets. Improving the value chain at every step is an essential ingredient of a strategy to strengthen the competitiveness of Palestinian agricultural producers.

Much may be done, even under current conditions, to arrest the decline of the Palestinian economy through better utilization of agricultural and other resources. Appropriate policy intervention should be based on recognition of the strengths and weaknesses of the agricultural sector, as well as of opportunities in the sector. Strengths and opportunities include, but are not limited to, the following:

- (a) Centuries-old traditions and expertise in working the land for fruits and vegetables and raising livestock, with resilience that ensures continuity
- (b) Disease-resistant and climate-adapted crop varieties and livestock breeds
- (c) Diversity of climate and agricultural environments, enabling the Occupied Palestinian Territory to produce and export a range of crops over a full year
- (d) Significant goodwill, as well as actual and potential support from the international community and key donors, which may be directed to enhancing investment in the agricultural sector
- (e) The fact that there is great demand in domestic and international markets for olive oil from the Occupied Palestinian Territory ensures a potentially large and lucrative niche market
- (f) Many potential investors from the Palestinian diaspora who may be attracted to invest in primary agricultural or secondary production, if a favourable environment is established
- (g) Policy interventions that may benefit from value chain analysis to show how much value may be added to agribusiness ventures
- (h) Possible advantages to utilizing the knowledge, experience and skills of the numbers of Palestinian agricultural workers currently unemployed or underemployed and representing a pool of skilled labour that is largely neglected and underutilized at present

The optimal utilization of existing agricultural resources requires serious and far-reaching policy intervention by the Palestinian National Authority and its international development partners. The following subsections provide some suggestions for strengthening the Palestinian agricultural sector and reversing its downward momentum.

## **B. Palestinian National Authority and donors should increase investment in the agricultural sector**

The agricultural sector accounted for only 1.4 per cent of total international aid (around \$14 million, out of \$1 billion) between 1994 and 2000 and, between 2000 and 2006, its share decreased to around three quarters of 1 per cent or \$30 million, out of \$4 billion (Taghdisi-Rad, 2011). Similarly, between 1999 and 2008, only about 10 per cent of donor funding to Palestinian non-governmental organizations was directed towards rural development.

Despite minimal increases in the developmental budget allocated to agriculture in recent years by the Palestinian National Authority and donors, the budget remains much less than is needed in this strategically important sector. Therefore, as a result of a combination of

constraints imposed by occupation and neglect, the contribution of the agricultural sector to the gross domestic product has dropped from around 13.3 per cent in 1994 to 5 to 6 per cent in recent years.

Despite nominal recognition of the importance of the agricultural sector, in practice, since its inception, the Palestinian National Authority has allocated to the agricultural sector little more than 1 per cent of its total annual budget, while around 85 per cent of the agricultural budget was allocated to the salaries of the staff of the Ministry of Agriculture, a pattern that continues to the present (UNCTAD, 2012). It is abundantly clear that the various resource and access constraints have prevented the Palestinian National Authority from providing adequate support to the besieged agricultural sector. Recurrent economic, political and humanitarian crises, for example the military operations in July and August 2014, have claimed much of its scarce resources, energy and policy attention. However, the Palestinian National Authority has emphasized in its 2014–2016 National Development Plan the need for a strategy to build a sustainable and internationally competitive agricultural sector.

To overcome the chronic difficulties in the Palestinian agricultural sector, policy intervention is needed to strengthen farmers' organizations, control production costs and maximize returns. Special targeted efforts are also needed to support smallholder farmers in such areas as marketing, for instance, through the establishment of agricultural marketing cooperatives or via a corporation to provide crop and veterinary services, together with services in the areas of packaging, cold storage, transportation and the final marketing of produce. Provision of training to farmers and workers to enhance their capacities and skills should be part of a total package that includes raising awareness and advocacy campaigns to further farmers' interests.

A proper framework may be designed to tap the potential of cooperatives in developing the Palestinian agricultural sector while learning lessons from the experiences of successful cooperative from around the world. Ideally, this framework should be part of a comprehensive overhaul of policies and legislation governing and influencing agricultural production, processing and trading. Related to an initiative for cooperatives, efforts may also be made to develop niche markets abroad for olives and other agricultural products for which a competitive advantage may be established. Efforts should also be exerted to improve productivity along the entire value chain. Such efforts may include the revitalization and upgrading of the Palestinian Standards Institution and Palestinian Olive Oil Council.

Efforts to promote investment in the agricultural sector need to be preceded, however, by studies to identify, prioritize and appraise potential areas for agricultural investment, to provide a basis for concerted interventions by the Palestinian National Authority and its development partners. The Ministry of Agriculture and donors may conduct consultations to identify the best ways to finance the 2014–2016 Agricultural Action Plan in order to ensure appropriate prioritization and an optimal allocation of funds. Donors may also enhance their support for Palestinian economic development by favouring, whenever possible, Palestinian agricultural producers and supply sources in purchasing the various types of goods they use and distribute among Palestinians.

### **C. A Palestinian agricultural development bank is urgently needed**

The 2012 report on UNCTAD assistance to the Palestinian people highlighted the urgent need to establish a well-funded, not-for-profit public agricultural development bank to

support the Palestinian National Authority and mitigate and reverse the impact of Israel's restrictions on Palestinian agriculture and the ensuing failure of the market to provide badly needed financing and insurance services to farmers (UNCTAD, 2012). As the agricultural sector can have a strategic role in preserving Palestinian land and water against confiscation, the tasks of the proposed bank could include sharing the risks inherent in agricultural activities, whether related to natural factors, political factors or fluctuations of input and output prices. The mandate of the bank should include the provision of credit and insurance services to farmers, support for marketing and post-harvest services and the funding and guaranteeing of investment in agricultural and water-related infrastructure.

Corrective measures to be implemented by the Palestinian National Authority and proposed bank may include subsidizing certain factors of production to compensate for the cost of Israel's restrictions on the importation of fertilizers and offset other costs stemming from occupation. Measures could also take the form of the following programmes: to compensate farmers for uprooted trees and plant new trees; to promote Palestinian agricultural products domestically and internationally; and for land improvement and reclamation.

#### **D. Livestock breeds, fodder and field crops should be improved**

In both the West Bank and Gaza Strip, there is significant potential for improving livestock production, especially of dairy cows. Fodder may be grown in Gaza, using treated wastewater or even atmospheric water through the condensation of moisture at night. Saltbush (atriplex) is saline-tolerant and can survive in the West Bank and Gaza Strip environments. Nitrogen-rich alfalfa and berseem may be grown among citrus trees, all of which need irrigation with fresh, non-brackish water. In addition, medick, which grows well in the Libyan pre-desert and in dryland Australia (on 150–250 millimetres of rainfall), needs no care, is nutritious and may be grazed in situ. Its prostrate growth stabilizes dunes and its spiny seeds may be harvested by dragging across a sheep's fleece. Finally, legumes such as cowpea and sweet potato may be pelletized to feed chickens and fish in Gaza ponds when the relative cost is favourable.

#### **E. Unhampered access to Area C is required**

As increasingly recognized by the Palestinian National Authority and the international community, Area C and East Jerusalem are critically important for Palestinian development plans and projects. As previously noted, in its report to the Ad Hoc Liaison Committee meeting held in Brussels on 19 March 2013, the Palestinian National Authority stated that Area C is "the backbone of the Palestinian economy". Given this critical importance, efforts should be exerted by the Palestinian National Authority and international community to ensure that Palestinians have unhampered access to the land currently designated as Area C, which accounts for two thirds of West Bank agricultural land. There is also a need to ensure Palestinian access to 85 per cent of the grazing lands in or near Area C. Without access to Area C, Palestinian agricultural development is not conceivable, nor are a viable Palestinian State and economy possible.

An agricultural and rural development plan for this area is long overdue. One component of this plan should be the construction of small to medium-sized water collection and harvesting systems, to harness rainfall and flood-water. There also an urgent need to negotiate with the Israeli authorities the right to construct wells and maximize the use of

rainwater in Area C. In addition, the Palestinian National Authority needs to be proactive in offering all assistance it can to farmers in Area C, especially those who are severely affected by settlements and the separation barrier.

#### **F. The impact of using the Israeli currency and exchange rate should be offset**

In recent years, UNCTAD has noted that the decline of the agricultural sector is part of a wider malaise afflicting the Palestinian tradable goods sector, comprised of the agricultural and industrial subsectors. UNCTAD has also emphasized that the Palestinian economic development bottleneck is characterized by a weakened tradable goods sector limited by the blockade, atrophy of the productive base and weak international competitiveness rooted in the involuntary use of the Israeli currency and the associated exchange rate. Development of the Palestinian tradable goods sector and the agricultural subsector has been stunted not only by destruction of the productive base and high transaction costs but by an uncompetitive exchange rate resulting from use of the Israeli currency, the exchange rate of which reflects the conditions and interests of the more advanced and structurally different Israeli economy.

The combined effects of these factors have put Palestinian agricultural and other producers in the tradable goods sector at a marked disadvantage in domestic as well as external markets vis-à-vis Israeli and other foreign competitors. This disadvantage has weakened overall development by forestalling the cumulative effects of growth and long-term learning obtained from sustained production activities. It has also deepened the dependency on aid and remittances, which together exceed 60 per cent of the gross domestic product, as the main sources of foreign exchange, investment and aggregate demand.

In addition, the weakened tradable goods sector has skewed the structure of the economy by fostering an unhealthy concentration of economic activity in the non-tradable goods sector, mainly services and construction, at the expense of the manufacturing and agricultural sectors. This concentration of economic activity is unhealthy due to the limited room for further expansion in the services and construction sectors, as they are less dynamic than the manufacturing and agricultural sectors and have a limited capacity for job creation and technological innovation.

As shown in reports on UNCTAD assistance to the Palestinian people, the real exchange rate is a key determinant of Palestinian trade flows, including agricultural imports and exports. It is evident that the use of the monetary and exchange rate policies of the more advanced Israeli economy undermine Palestinian competitiveness and the evidence that the use of the Israeli currency is inimical to Palestinian development should no longer be ignored (UNCTAD, 2010 and 2011).

Since, at present, the political and institutional prerequisites for introducing a Palestinian currency do not exist, a plausible corrective intervention to offset part of the effects of using the Israeli currency may be a tax and subsidy scheme whereby selected imports are taxed and the revenue thus raised is used to strengthen not only export-oriented agriculture but also import-competing agricultural production. Such a scheme should not be interpreted as a typical example of trade management but as an action to correct the limited competitiveness caused by the use of the Israeli currency and to offset the additional costs borne by Palestinian producers due to occupation, a closure policy and internal market fragmentation.

## **G. The environment should be protected**

Major environmental threats such as drought, desertification, land degradation and climate change affect and are affected by agricultural practices and malpractices. It is therefore imperative that the Palestinian National Authority adopt policies consistent with encouraging safe and appropriate land use and sound agricultural practices such as soil conservation, afforestation, rangeland rehabilitation, water harvesting, water-saving applications, tree planting, agrobiodiversity protection, treated sewage water reuse and crop residue recycling.

## **Annex. Forbidden and restricted chemicals in the West Bank**

*Source:* Palestinian Ministry of National Economy and Applied Research Institute – Jerusalem, 2011.

1. Chlorate salts
  - (a) Potassium chlorate ( $\text{KClO}_3$ )
  - (b) Sodium chlorate ( $\text{NaClO}_3$ )
2. Perchlorate salts
  - (a) Potassium perchlorate ( $\text{KClO}_4$ )
  - (b) Sodium perchlorate ( $\text{NaClO}_4$ )
3. Hydrogen peroxide ( $\text{H}_2\text{O}_2$ )
4. Nitric acid ( $\text{HNO}_3$ )
5. Musk xylene ( $\text{C}_{12}\text{H}_{15}\text{N}_3\text{O}_6$ )
6. Mercury (Hg)
7. Hexamine ( $\text{C}_6\text{H}_{12}\text{N}_4$ )
8. Potassium permanganate ( $\text{KMnO}_4$ )
9. Sulphuric acid ( $\text{H}_2\text{SO}_4$ )
10. Potassium cyanide (KCN)
11. Sodium cyanide (NaCN)
12. Sulphur (S)
13. Phosphorus (P)
14. Aluminium powder (Al)
15. Magnesium powder (Mg)
16. Naphthalene ( $\text{C}_{10}\text{H}_8$ )
17. Fertilizers
  - (a) Ammonium nitrate ( $\text{NH}_4\text{NO}_3$ )
  - (b) Potassium nitrate ( $\text{KNO}_3$ )
  - (c) Urea ( $\text{CH}_4\text{N}_2\text{O}$ )
  - (d) Urea nitrate ( $\text{CH}_4\text{N}_2\text{ONO}_3$ )
  - (e) Fertilizers containing nitrogen, phosphorus and potassium at 27-10-17 concentration
  - (f) Fertilizers containing nitrogen, phosphorus and potassium at 20-20-20 concentration
  - (g) Any fertilizer containing any of the chemicals in (a) to (c)
18. Nitrous salts of other metals:
  - (a) Sodium nitrate ( $\text{NaNO}_3$ )
  - (b) Calcium nitrate ( $\text{Ca}(\text{NO}_3)_2$ )
19. Pesticides
  - (a) Lannate
  - (b) Endosulfan ( $\text{C}_9\text{H}_6\text{Cl}_6\text{O}_3\text{S}$ )
20. Nitrite salt
21. Methyl bromide ( $\text{CH}_3\text{Br}$ )
22. Potassium chloride (KCL)
23. Formalin ( $\text{CH}_2\text{O}$ )
24. Ethylene glycol ( $\text{C}_2\text{H}_6\text{O}_2$ )
25. Glycerine ( $\text{C}_3\text{H}_8\text{O}$ )

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