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Resource Scarcity and Food Security in Palestine

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Summary

Palestine, defined as the West Bank including East Jerusalem and the Gaza Strip, is part of the Fertile Crescent which is considered to be the cradle of civilisation and of domesticated agriculture. Rich soils, optimal climatic conditions and availability of water combine to impart fertility which has been famous since the beginning of recorded history. But the 'Land of Milk and Honey' may be a thing of the past. Palestine is rapidly being pushed beyond its carrying capacity by the pressure of an expanding population upon a shrinking resource base.

Because land and water are the basis for agricultural development and food security, it is not surprising that these two elements are at the centre of the Israeli-Palestinian conflict. For the people of Palestine, the political conflict has had a negative effect on all aspects of sustainable development and food security. The Middle East peace process, starting in Madrid in 1991, offered a golden opportunity for the parties to move to a settlement of the long standing conflict. While an interim agreement was signed at Oslo, implementation is facing serious difficulty and severe restrictions remain on the use of Palestinian land and water resources by the Palestinian people.

At present over 70% of the West Bank and approximately 22% of Gaza are inaccessible to Palestinians. The areas open to Palestinians are geographically separated. Further diminishing Palestinian opportunities for agricultural development is the dual infrastructure that exists in Palestine. A modern network of roads and public utilities is being constructed to serve Jewish settlements and military bases while an antiquated and deteriorating infrastructure serves the indigenous population. Restrictions are even more pronounced on Palestinian use of their water resources. Israel is currently utilising more than 80 % of the Palestinian groundwater resources and denying Palestinians their rightful utilisation of the Jordan River. Palestinians are currently allocated 80 mcm per year for domestic use leaving the per capita consumption under suppressed demand at 25 cm/year which is far below the required standards of water supply. For agriculture, the 2.8 million Palestinians have access to 150 mcm per year which they are using to irrigate around 10 % of their cultivated lands while Israel is enjoying abundant water to irrigate 50 % of its cultivated land. The situation is exacerbated by the fact that Jewish settlers are consuming more than 80 mcm per year from Palestinian water resources. The restrictions on the use of Palestine's resources by the indigenous Palestinian population are so severe

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and pervasive as to thwart sustainable development and food security for the Palestinian people. This in turn calls into question the prospect for a sustainable peace.

Introduction

Agriculture is the largest sector of the Palestinian economy, generating over 22% of the Gross Domestic Product of the West Bank and Gaza and providing employment to over 15% of the population. Land and water constitute the foundation for agricultural development which is the key factor in food security. Thus, it is imperative at this point to look at the status of the agricultural sector in Palestine and explore the potential of agricultural growth and food security.

The Palestinian agricultural sector

The Palestinian agricultural sector shares the combined characteristics of both intensive irrigated farming primarily in Gaza strip, the Jordan Valley and the Northern districts of the West Bank as well as the extensive rainfed farming which is dominant in the West Bank highlands. Despite the small size of the West Bank and Gaza, these areas enjoy a diversity of climatic regions which makes it possible to grow almost anything all year around.

The cultivated areas in the West Bank are 1.66 million dunums which constitute 28.3% of the total area while in Gaza, it reaches 180000 dunums representing close to 50 % of the total area of Gaza strip. Rainfed farming is the predominant agricultural pattern in the West Bank covering 94 % of the total cultivated area. In 1996, the total area of plant production in rainfed areas in the West Bank was 1.52 million dunums, divided mainly between vegetables (5.1 %),field crops and forages (28.5 %), olives (52.9%) and other fruit trees (13.5 %). Productivity of these crops varies annually since it is totally dependent on rain fall and on the suitability of the weather conditions. In 1996, the total area of the irrigated lands in the West Bank was 100,337 dunums while in Gaza, it reached 114000 dunums. Tables 1 and 2 show the cropping patterns in Palestine.

Table 1: Total area and production for different major planted types in the West Bank in 1996

Type	Area (1000 dunum)	Production (1000 ton)
Field Crops	375.048	49.719
Forage Crops	66.369	18.056
Vegetable Crops	145.457	256.405
Citrus	18.836	55.977
Unproductive Olive Trees	22.545	-------

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Productive Olives	785.428	123.661
Other Fruit Trees	214.280	107.046
Total	1,627.963	610.864

Table 2: Total area and production for different planted crops in the Gaza Strip in 1996.

Type	**Area (1000 dunums)**	**Production (1000 ton)**
Vegetable Crops	62.217	260.513
Citrus	43.574	97.192
Other Fruit Trees	40.450	27.530
Field Crops and Forages	33.700	6.500
Total	179.941	385.2

Almost 92.7% of the total irrigated areas in the West Bank are concentrated in two agro-ecological areas; the semi-coastal region (Jenin, Qalqilya, and Tulkarm areas), and the Jordan Valley. Vegetables constitute 67% of the total irrigated areas in the West Bank. About 65.3% of the vegetables are grown under open field, 15.8% under low plastic tunnels, 7.5% under high plastic tunnels and 11.4% under plastic houses. Fruit trees form about 26.5% of the total irrigated lands in the West Bank, while field crops constitute 6.5%. In Gaza Strip, vegetables had the largest area followed by citrus.

Grazing is another important activity within the agricultural sector. Prior to 1967, grazing areas was close to 500,000 dunums. This figure has declined sharply since the Israeli authorities have confiscated or closed vast tracts of land to provide for Israeli security and settlement needs. Grazing areas accessible to Palestinian shepherds are less than 15% of the pre-1967 figure which resulted in an unsustainable ratio of livestock per dunum, and thus overgrazing. The next table shows the total production of livestock in Palestine.

Table 3: Total livestock production in the West Bank and Gaza Strip

	West Bank (1996)	**Gaza Strip (1994)**
Red meat (tons)	16,200	860
Poultry meat (tons)	35,395.7	17,000
Eggs (millions)	209.5	150
Milk (litres)	66,121.6	17,000
Honey (tons)	257.6	184
Fish(tons)	--	1,495

Land and water resources

Land and water are the foundation on which agricultural development relies upon and these two elements are the crux of the Israeli-Palestinian conflict. An outline of the status of land and water resources in Palestine will be presented here.

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Land

The total area of the West Bank including Jerusalem is about six million dunums while the Gaza strip occupies 365000 dunums. Sound management of land resources in Palestine is severely hindered by many political factors. Immediately following the Israeli occupation of the West Bank, about 70,000 dunums adjacent to the Jordan River bank were completely sealed off. Over the past thirty years, Israel confiscated large areas of Palestinians land for building settlements and military camps in addition to imposing restrictions on Palestinian land use as shown in Table 4.

Table 4: Restrictions on land use in the West Bank and Gaza

Type	**Area in Dunums**
West Bank:	
Land confiscated as state land	1,850,000
Land confiscated for public use	50,000
Closed areas	80,000
Combat zones	50,000
Settlements	200,000
Gaza:	
Settlements	37,000

The Middle East peace process was initiated to establish a just and comprehensive peace in the region based on the implementation of UN resolutions 242 and 338 and the principle of land for peace. In Washington and Taba, the world witnessed the historic signing of the declaration of principles and the Oslo I and II accords that were negotiated between the Israeli and Palestinian leaderships. In Oslo I, Palestinians assumed control over 78 % of the Gaza strip and Jericho Autonomous area. In Oslo II, the West Bank was divided into three areas. Area A is under full control of the Palestinian National Authority and covers 2.5 % of the West Bank area representing the major West Bank cities excluding Jerusalem. The redeployment from Hebron was delayed until a special protocol was signed with the newly elected Israeli government. Hebron city was divided into two areas namely H1 which became under Palestinian control, while 15 % of the city, designated as H2, remained under Israeli control. In area B, which covers 25.5 % of the West Bank representing clusters of Palestinian villages, the Palestinian Authority has control over civil affairs. The rest, except for final status issues, is considered area C. Oslo II included, among other things, plans and schedules for further re-deployment of Israeli forces and more Palestinians control over territory, but these steps are stalled. Meanwhile, Israel has continued its policies of building new settlements, thickening of existing ones and building of by pass roads o creating *de facto* realities on the ground that will undoubtedly affect the outcome of the final status negotiations. These policies led to

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a lack of geographical integrity and converted Palestine into a series of bantustans where the construction of an effective and resourcefully efficient national infrastructure and the formulation of an integrated natural resource management are impeded.(Maps 1 and 2)

WATER RESOURCES

Water, perhaps the most scarce valuable resource in the region, is the second focal point for agricultural development. Israel is restricting Palestinian water usage, and exploiting Palestinian water resources. Before 1967, the Palestinians in the West Bank had 720 groundwater wells for agricultural and domestic purposes. After the 1967 war, Israel seized control over all water resources in the Palestinian Territories, closing half of the Palestinian wells and destroying 140 Palestinian water pumps in the Jordan Valley. The River Jordan is an international river that flows along Palestine (Map3). Palestinians are also denied their right of utilizing water resources from the Jordan River, to which both Israel and Palestine are riparians. Groundwater is another important water resource. In the West Bank, there are three groundwater basins as shown in map 4. The Western Groundwater Basin has an annual safe yield of 360 mcm/year of which only 22 mcm are used by Palestinians. The North-eastern Groundwater Basin has an annual safe yield of 140 mcm but Palestinians are limited to utilise only 42 mcm. Out of the Eastern Basin, the Palestinians extract 54 mcm/year and the Israelis extract 40 mcm/year. In Gaza strip, the coastal aquifer has a safe yield of the acquirer is estimated at 60 mcm per year, but current extraction by Palestinians and Jewish settlers exceed 120 mcm annually which led to deterioration of the water quality due to sea water intrusion and pollution. Most Israeli and Palestinian hydrologists agree that the status of groundwater in the Gaza Strip has reached a serious stage.

In light of the current constraints imposed by Israel on Palestinian farmers, they have adopted a series of measures and technologies aimed at optimising the use of the available water resources. Modern irrigation technologies have been adopted since the seventies. For example, in Jericho and Nablus districts, 97% of the vegetables are irrigated by the drip systems, and 2.4% are irrigated by sprinklers. In citrus orchards, the majority of the area is served by modern irrigation methods. All of bananas' areas are irrigated by the drip systems. In addition, Palestinian farmers are using agricultural ponds as a water storage technique which allows improving the conservation and efficiency in water use in the irrigation water delivery. Agricultural ponds have played an important role in irrigated agriculture through allowing better control of water irrigation management and improving the water use efficiency. Needless to say, the Palestinian farmer has been able to adopt and harness the new technologies despite the continuos Israeli repression and practices.

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Agricultural production and Food Security

In the absence of a national government in Palestine between 1967 and 1995, a mix of economic and political considerations shaped Palestinian agricultural practices. In irrigated agriculture, economic issues forced Palestinians to shift from fruit trees towards high cash value crops such as vegetables and recently flowers. For instance, the areas planted by citrus in Gaza declined from 69,200 dunums in 1983 to 43,574 dunums in 1996. Palestinian farmers harnessed the new agricultural technologies and their production was competitive to that of Israel. Palestinians embarked on promoting the marketing of their produce to Europe and other countries. In rainfed farming, Palestinians shifted from field crops to olives. The reasons behind that are :

- income from field crops is low compared to job opportunities in Israel
- olives do not require a lot of work
- the planting of olives indicates that the land is cultivated which protects it from Israel's appetite to confiscate uncultivated land since planting field crops does not provide evidence that the land is cultivated all year round.

As a result of these factors , Palestine moved away from food security. Palestine became an exporter of vegetables, olive and citrus and an importer of field crops and limited types of fruits and vegetables which are produced in quantities less than their demand and/or not available during certain periods of the growing season. Tables 6 shows the balance between production and consumption in Palestine for different branches of plant production, while table 7 shows the quantities and export-import channels for the plant production in Palestine.

Table 5: The total production and consumption for major agricultural types in Palestine in 1996

	Production (1000 ton)	**Consumption (1000 ton)**	**Surplus or deficit**
Vegetables	516.9	645	-128.1
Field crops	35.8	350.3	-314.5
Citrus	153.2	42.2	111.0
Fruits	134.6	154.1	-19.5
Olives	126.1	80.4	45.7

Table 6: Total quantities of exported and imported vegetables and fruits to Palestine (West Bank and Gaza Strip) in 1996 (1000tons).

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	Export to and/or through		Total	Imported from Israel
	Jordan	Israel		
Vegetables	---	105.1	105.1	192.7
Fruits	62.7	31.5	94.2*	88.6*
Total	62.7	136.6	199.3	281.3

* Without olives.

Palestinians can reduce the food security gap once the restrictions on utilising their land and water resources are lifted. It is useful here to look at the potential of agricultural development in Palestine once the issues of land and water are solved according to the term of reference of the peace process, namely UN resolutions 242 and 338.

The potential exists for horizontal expansion of irrigated areas in the West Bank once Palestinians restore their water rights in the Jordan river and the West Bank aquifers and assume control over their lands. The potential exist for irrigating an additional 400,000 dunums of land in the Jordan Valley, Tulkarem and Jenin. According to Oslo II agreement, Israel recognised the Palestinian water rights, but these are to be negotiated in the permanent status negotiations. However, so far, no negotiations have taken place to remunerate the Palestinian water rights. According to the Johnston Plan, a West Ghour Canal was proposed to supply Palestinians with water but this project was never carried out. The West Ghour canal alone , once built will provide enough water to irrigate at least an additional 150,000 dunums creating job opportunities for 300,000 Palestinian workers. It is worth mentioning here that at present, the 680 Jewish families in the Jordan Valley settlements are extracting more than 40 mcm of water annually to generate an annual turnover of 75 million US dollars. With this amount of water, 75000 Palestinians can become fully employed.

The main deficit will remain in animal production and feed in particular. At present, the overall feed produced locally satisfies less than 10 % of the cattle and sheep feed and less than 15% of the chicken feed demand. This rendered animal production in the West Bank and Gaza to be quite dependant on imports.

Palestinian fears of a dry peace

There is a growing fear among Palestinians that the Israeli government is not serious in its peace aspirations. Israel has not implemented its commitments stipulated in the interim agreements, while at the same time, it is continuing its unilateral steps of swallowing more Palestinian land for settlements and bypass roads. There is very little that the Palestinian layperson can point out to indicate visible fruits of the peace process. Over the past three years, the GNP per capita in Palestine declined by 30 % and

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unemployment rose to record levels of up to 40 %. Restrictions on movement and closures are becoming the norm rather than the exception. Different maps representing the Israeli security and strategic zones in the West Bank are being debated by Israeli leaders. Water security became one of the criteria that was used for determining the extent of further re-deployment of Israeli forces. According to this map, Israel will not re-deploy from Palestinian areas overlying the Western Aquifer System in the West Bank (Map 5). The Israeli Defence Forces came up with their own security map which calls for the retention of the Jordan valley by Israel (Map 6) . Common areas between the above described maps are represented in a strategic combined map made public on 4 December 1997. According to this map, 60.5% of the West Bank is to be placed under Israeli control and 39.5% is to be designed for the Palestinian Authority. This 39.5% is divided into three separate and distinct cantons. The Jordan Valley, the 'food basket' of the West Bank, is completely out of Palestinian reach, as are the Eastern Slopes which serve as natural grazing areas and host hundreds of endemic flora and fauna species. Absolutely no sustainable and integrated development of Palestinian infrastructure could take place, essentially rendering a Palestinian state physically unattainable and unsustainable. Certainly, such maps are totally rejected by the Palestinians as they violate the essence of the peace process and the international legitimacy.

To alleviate Palestinian fears of a dry peace, the following steps are needed:

1. Israel should lift the restrictions imposed on Palestinians to utilise the land and water resources especially in the Jordan Valley and the Eastern Slopes. Israelis and Palestinians should start working immediately on clearing the heavily mined areas in the Jordan Valley which covers an area of 170000 dunums in preparation for the future.
2. Israel should cease immediately its unilateral acts of land confiscation and expansion of settlements that jeopardise the outcome of final status negotiations.
3. Israel should honestly and accurately implement all the signed agreements with the Palestinians.
4. Israel need to freely provide Palestinians with water data. It is regrettable that although Israel committed itself to such an undertaking in Oslo II, it has so far done very little.
5. Israel need to immediately satisfy Palestinians needs for water . Assuming that a Palestinian minimum domestic water demand per capita to be 50 CM, then the Palestinians should be allocated immediately an additional 70 MCM per year .
6. Israel, Jordan and Palestine need to start the process of constructing the West Ghour Canal which was agreed upon by the Johnston plan.
7. The international community need to start the process of building a basin wide regional authority for the Jordan River basin. All riparians need to be involved.

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8. A mechanism must be established to ensure that negotiations on Palestinian water rights between Israelis and Palestinians take off seriously. So far, there has been no progress on this front and it appears that Israel is attempting to impose its will on the Palestinians.

While the potential exists for improving food security in Palestine, very little could be done now in the development of land and water resources under the present political circumstances. However, planning and preparations for achieving such a goal need to be initiated now. Palestinians , meanwhile, need to start working on :

- building decision-support systems for management and optimization of natural resources' utilization under a complex political situation
- identifying land use patterns and soil distribution
- reclaiming land and constructing agricultural roads to reach terminal areas
- Re-greening Palestine by afforestation and combating desertification;
- Launching public awareness programs to promote sound natural resource management
- Rehabilitating pilot plots of range land in the Eastern Slopes
- Encouraging the cultivation of legumes, forages, and aromatic plants to reduce dependency
- Promoting the cultivation of fruit trees to substitute imports
- Developing water harvesting and collection
- Using grey water and treated waste water for irrigation

Conclusion

The ultimate objective from the current peace process is to arrive at a comprehensive, just and lasting peace in the whole region where all the peoples of the area can join their efforts to develop the area and promote progress and prosperity in the region. Land and water are certainly the most important issues in the peace process. It is regrettable that the recent political changes in Israel has brought into power those who are advocating the retention of Palestinian land and water resources. While in principle, the resolution of the these issues will be based on the principles of international legitimacy, there is so far no mechanism for institutionalizing such a process. If these issues continue to be addressed with an eye for might rather than justice, Palestinians will remain the victims of an unjust peace. And, as is so often pointed out, an unjust peace is no peace at all.

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