

DRAFT
ENVIRONMENTAL REPORT
ON
WEST BANK AND GAZA

prepared by the
Arid Lands Information Center
Office of Arid Lands Studies
University of Arizona
Tucson, Arizona
85721

- Mark Speece, Compiler -

National Park Service Contract No. CX-0001-0-0003
with U.S. Man and the Biosphere Secretariat
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THE UNITED STATES NATIONAL COMMITTEE FOR MAN AND THE BIOSPHERE



Department of State, IO/UCS

WASHINGTON, D. C. 20520

An Introductory Note on Draft Environmental Profiles:

The attached draft environmental report has been prepared under a contract between the U.S. Agency for International Development (AID), Office of Forestry, Environment, and Natural Resources (ST/FNR) and the U.S. Man and the Biosphere (MAB) Program. It is a preliminary review of information available in the United States on the status of the environment and the natural resources of the identified country and is one of a series of similar studies now underway on countries which receive U.S. bilateral assistance.

This report is the first step in a process to develop better information for the AID Mission, for host country officials, and others on the environmental situation in specific countries and begins to identify the most critical areas of concern. A more comprehensive study may be undertaken in each country by Regional Bureaus and/or AID Missions. These would involve local scientists in a more detailed examination of the actual situations as well as a better definition of issues, problems and priorities. Such "Phase II" studies would provide substance for the Agency's Country Development Strategy Statements as well as justifications for program initiatives in the areas of environment and natural resources.

Comments on the attached draft report would be welcomed by USMAB and ST/FNR and should be addressed to either:

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A COMMITTEE OF THE UNITED STATES NATIONAL COMMISSION FOR UNESCO

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1.0 General Information

1.1 Preface

This very brief and incomplete draft environmental report on the West Bank and Gaza Strip was put together in two weeks by Mark Speece at the request of Stephen Lintner, U.S. Agency for International Development, Near East Bureau.

1.2 Geography and Climate ^{1/}

The West Bank has an area of about 5575 sq. km. (2200 sq. miles), slightly larger than the state of Delaware. Geographically it is part of Palestine, and is surrounded on three sides by Israel. From the 1949 cease fire until 1967 it was part of Jordan.

In 1967 Israel occupied the West Bank and today the eastern bank of the Jordan River is the cease fire line between Israel and Jordan. A small piece of the West Bank containing Arab Jerusalem was annexed by Israel in 1967 so that most Israeli sources give slightly smaller figures for area. The Gaza Strip is a small area of about 362 sq. km. on the Mediterranean seacoast. Israel borders it on the north and east, and the southwest edge is adjacent to the Egyptian Sinai. From 1949 until 1967, the Gaza Strip was administered by Egypt. Since 1967 it has been occupied by Israel.

The most recent sources on geography and resources of the West Bank are Israeli, and this literature invariably calls the region Judaea and Samaria. Judaea refers to the southern part, and Samaria to the northern portion. The most distinctive topographic feature is the chain of mountains which runs longitudinally through the center of the West Bank. These mountains continue through northern Israel and Lebanon where they are called the Lebanon Mountains. The highest peaks in the West Bank portion of the chain are just over 1000 meters.

These mountains determine the rainfall regime in the West Bank. Rainfall in the south varies from 400 to 500 mm. in the western foothills to around 800 mm. on the western upper slopes. Only a few miles east of the crest, the Judaeian desert receives only about 300 mm., and the shores of the Dead Sea get only 50-100 mm. annually. In the northern part the mountains are not quite as high, and the contrast is not quite as dramatic. Rainfall on the western slopes is somewhat lower, and to the east somewhat higher.

¹Source: Horowitz. 1979.
Karmon. 1971.
Orni. 1973.
Sinai. 1977.
Washington Post. Sept. 7, 1980.

The easternmost portion of the West Bank is the Lower Jordan Valley. This valley is part of the Syrian-East African Rift which extends northward into Lebanon-Syria, southeast the length of the Red Sea, and into East Africa. The bottom of the Lower Jordan Valley ranges from about 270 meters below sea level in the northern area to 370 meters below sea level near the Dead Sea. The Dead Sea itself is nearly 400 meters below (398.5 m. in 1963).

Most rainfall comes between late December and early February, and usually falls in intense storms. The average number of days with precipitation is about 50 per year at Jerusalem, which is typical for the whole West Bank. Areas with the least rainfall tend to get the most violent and short-lived showers.

The upper slopes of the mountains may receive a few days of snowfall. Evaporation rates vary between 4.5-7 mm. per day in the hills and up to 13 mm. per day around the Dead Sea during the summer.

Temperatures in the hills average 16-17°C. In the summer the daily average may be in the mid 20's, while in the winter the average does not get over 11°C. Average temperatures in the Jordan valley and Dead Sea area can be up to 10°C higher than those in the hill regions.

The Gaza Strip is essentially part of the coastal desert which runs along most of the Palestinian coast. The northern part of the strip is part of a coastal sand dune field which continues into Israel. Climatically it is a border area between the Mediterranean and the desert climate of the Negev. Rainfall falls off from nearly 400 mm annually at the Gaza in the north to only about 150 mm at the southern edge.

1.3 Demographic Characteristics ^{2/}

Population figures for the West Bank and Gaza vary somewhat, and occasionally seem to be influenced by political considerations. The Washington Post estimates 720,000 Arab inhabitants on the West Bank plus another 100,000 in Arab East Jerusalem in 1980. It also estimates 14,000 Jewish settlers on the West Bank and 54,000 in East Jerusalem. The largest towns in the West Bank, aside from Jerusalem, are Nablus (45,000), Hebron (40,000), and Ramallah el Bieria (25,000). Twenty two other Arab settlements are called towns in the literature without definition of the term 'town'. There are over 400 Arab villages, and over 70 Israeli settlements. Approximately 20-25 percent of the West Bank population is urban. Approximately 12 percent live in refugee camps. Natural increase

² Source: CACI. 1978.
Karmon. 1971.
Nakhlah. 1980.
Orni. 1973.
Pielemeier. 1975.
U.S. AID. 1978c.
Washington Post. Sept. 7, 1980.

in population was about 3.05 percent in 1976. The population of the Gaza Strip is approaching 500,000 in 1980, with about 46 percent of the population living in refugee camps. If these can be considered urban, nearly 80 percent of Gaza's population falls into this category. There are also at least 22 Israeli settlements in Gaza and North Sinai, but no breakdown was found showing the number in Gaza alone. Natural increase in population was about 3.54 percent in 1976.

1.3.1 Distribution and Composition

The West Bank is very sparsely populated east of the mountain crest. The most densely populated district, based on Israel's 1967 census, is Tulkarm in the northwest, with 217.6 inhabitants per square km. For Jericho, which falls completely within the more arid eastern climate, the figure is 26.9/sq. km. In the Gaza Strip density is about 973/sq. km. Slightly under 50 percent of the population was less than 15 years of age in 1976. In 1967, 94.5 percent of the West Bank's and 99 percent of Gaza's population was Muslim. The rest were Christian. This could change dramatically if Israeli settlement policies continue long term. The plan adopted when the Begin government came to power in 1977 envisions massive Jewish settlement on the West Bank.

1.3.2 Public Health ^{3/}

The crude death rate on the West Bank was 17 per 1000, and in Gaza 17.9, somewhat higher than in Egypt or Jordan and much higher than in Israel. Infant mortality, however, 69 and 79 per 1000 on the West Bank and Gaza respectively, has been declining. Though still far higher than in Israel, these figures are somewhat lower than in Egypt or Jordan. The refugee population of the West Bank is served by the U.N. Refugee Welfare Agency (UNRWA), and this segment of the population enjoys somewhat better health conditions. UNRWA programs have reduced the incidence of many endemic diseases such as conjunctivitis, trachoma, and TB. Provision of adequate supplies of clean water, as well as sewage and garbage disposal programs, helps limit gastroenteritis, diarrheal, skin, and eye diseases. Incidence of diseases in the populations served by the UNRWA are noted in the following table:

³Source: Nakhlah. 1979
Pielemeier. 1975.
U.S. AID. 1978c.

Annual Incidence Rates of Communicable Diseases
per 100,000 population

Disease	1951	1955	1961	1965	1970	1974
Ankylostomiasis	--	95	83	6	0	0.4
Chickensox	--	367	576	513	386	304
Conjunctivitis and Trachoma	63,577	41,320	17,500	5,033	1,692	1,840
Diphtheria	30	5	0.2	0.4	0.2	0.1
Dysentery and Diarrhea	13,357	11,163	6,098	1,204	284	313
Enteric Group Fevers	225	82	52	13	9	10
Infectious Hepatitis	--	--	42	54	79	61
Malaria	7,162	1,352	18	2	0.3	0.3
Measles	375	1,196	1,330	676	274	185
Meningitis (cerebrospinal)	10	5	3	2	0.6	1
Mumps	98	842	436	491	408	416
Pertussis	841	603	482	78	17	13
Poliomyelitis	3	4	4	3	3	4
Tuberculosis (pulmonary)	--	103	76	31	23	20

Source: Pielemeier. 1975.

Similar figures are not readily available for the non-refugee population, but the general situation may be judged by comparison with cause of death figures for Israel and Jordan, and infant cause of death figures for the UNRWA population and for Israel. These tables are presented in Appendix II.

Health conditions are greatly aggravated by severe water shortages and unsanitary practices where water is available. This contributes to the incidence of such diseases as dysentery, typhoid, salmonella, hepatitis, roundworm, whipworm, and hookworm. Climatic conditions contribute to eye and respiratory disease.

Nutrition is generally adequate in the West Bank and very slightly below estimated daily requirements in Gaza. Some malnutrition in the form of protein-calorie deficiencies in infants does exist, but it is caused more by lack of understanding of infant nutritional needs than by lack of food. Availability of food in the occupied areas are compared with 1973 figures for Israel and Jordan in the following table:

	<u>West Bank</u>		<u>Gaza Strip & North Sinai</u>		<u>Israel*</u>	<u>Jordan*</u>
	<u>1973</u>	<u>1976</u>	<u>1973</u>	<u>1976</u>	<u>1973</u>	<u>1973</u>
Calories	2719.0	2767.0	2377.0	2387.0	3063.0	2324.0
Protein (gm)	79.4	81.6	68.5	67.7	95.6	71.0
<u>Animal Protein (gm)</u>	<u>19.9</u>	<u>19.2</u>	<u>12.0</u>	<u>12.3</u>	<u>48.1</u>	<u>9.0</u>

Source: U.S. AID. 1978
*Pielemeier. 1975.

1.4 Economic Characteristics ^{4/}

Any discussion of the economy of the West Bank and Gaza automatically becomes embroiled in politics. Nearly all raw data has been from Israeli sources for the last 13 years, but interpretations differ widely. Israeli economists are fond of pointing to high growth rates (13 percent 1974-75) and improved per capita GNP (US \$ 790 and 520 for the West and Gaza respectively in 1975, compared to 186 and 114 in 1968). They claim that the economy has grown because of linkage with Israel. However, the structure of the economy has changed very little over the last decade, and the Israeli figures also show actual slight declines in contribution of the agricultural and industrial sectors. Israeli policy seems to be to stress the service sector in the occupied territories.

1.4.1 Agriculture

In 1975 agriculture accounted for 30 percent of the GDP and employed 24 percent of labor force in the West Bank. The figures were 29 percent of GDP and 26 percent of labor force for the Gaza Strip. About 36 percent of the land area is under cultivation in the West Bank, and of this 2,022 sq. km., 95 percent is dry farmed. Most of the irrigated area is now in the hands of the Israelis, and only Israeli settlers are allowed to expand irrigation. In the Gaza Strip, 210 sq. km. is cultivated, about 58 percent of the total area, and of this about 45 percent is irrigated.

In general, crops for subsistence and those which Israel wishes to import have seen modest to very great production increases. Crops which compete with Israeli agricultural production have been dis-

⁴Sources: CACI. 1978.
Heller. 1980.
Nakhleh. 1980.
U.S. AID. 1978a.
U.S. AID. 1978b.
U.S. AID. 1978c.
Van Arkadie. 1977.
Washington Post. Sept. 7, 1980.
Washington Post. Sept. 8, 1980.

couraged by the occupation administration. This is most obvious in melon production on the West Bank. There is some question whether there has been any expansion in agricultural production compared to the peak years in the early 1960's. The impressive gains of the last decade may simply represent recovery from the drought years of the late 1960's and early 1970's.

The occupation administration has fostered some modernization of the sector, and farmers have shown a willingness to adopt new methods. However, water remains a serious limiting factor. Since the West Bank and Israel share the same water resources, there has been almost no development of irrigation allowed in the West Bank. As a result, production has remained dependent on rainfall, and yields are generally low. In Gaza, rainfall is much less a limiting factor since more area is irrigated and yields are much higher.

1.4.2 Other Sectors

In 1975 industry accounted for 8 percent of GDP in the West Bank and 9 percent in Gaza. It employed 16 and 13 percent of the labor force respectively. Activity is generally limited to handicrafts and food processing. A few industries have grown at a very high rate, such as the building materials and clothing manufacturing industries. These tend to be controlled by Israeli capital rather than being locally owned. Total industrial production has grown more slowly than the GNP as a whole, and there is no policy for development of industry. In fact, the Israeli policy of treating the West Bank as a cheap labor pool conflicts with indigenous development, and employment in Palestinian industrial enterprises may actually be declining.

Construction contributed 16 and 15 percent to GDP in the West Bank and Gaza, and employed 7 and 4 percent of the labor force respectively. However, half of the 31-34 percent of the labor force which is employed in Israel works in this sector.

The services and trade sector accounted for 46 percent of the GDP in the West Bank and 47 percent in Gaza, and employed 41 and 57 percent of the labor force respectively. The service share of GDP has been declining over the last decade, while employment in the sector has risen, a phenomenon which may reflect disguised un- or underemployment.

Trade has steadily shifted toward orientation to the Israeli economy. Two thirds of all exports are to Israel, and these consist mostly of those agricultural products which do not offer much competition to Israeli agriculture. Jordan gets the rest of the exports, except in the case of Gaza where the remainder is split between Jordan and other areas. The occupied areas have become captive markets for Israeli industry. Over 90 percent of their imports come from Israel and are predominately consumer goods. The occupied territories have a massive trade deficit with Israel, which amounted to over 500 million US dollars for the first seven years of occupation alone.

Development policies in the West Bank and Gaza are for all practical purposes non-existent except for the case of Israeli settlements.

Israeli policy seems to be to keep the areas as dependent on Israel as possible, and outside aid is usually discouraged. According to a Washington Post article (Sept. 8, 1980) both U.S. AID and private development efforts are often resisted by the occupation authorities.

2.0 Natural Resources

The occupied territories appear to have almost no exploitable mineral wealth. Some minerals are extracted from waters of the Dead Sea by Israel, notably potash (potassium chloride), sodium chloride, bromine, magnesium oxide, magnesium chloride, and hydrochloric acid.^{5/} Otherwise, the major resources which are economically significant are those connected with agriculture.

2.1 Water Resources ^{6/}

Agriculture on the West Bank depends primarily upon rainfall, and thus is very limited on the eastern side of the mountains. Rainfall ranges from 800 mm. in the highest elevations to less than 100 mm. on the shores of the Dead Sea. Of an estimated 2,707 million cubic meters of water which fell as rain in 1965, about 67 percent was lost to evaporation and evapotranspiration. Because the surface rock is usually fairly porous, most of what is left penetrates into the aquifer system. Estimates of surface runoff are between 45-65 million cubic meters. Figures for 1964-1965 are noted below:

OVERALL WATER BALANCE OF THE WEST BANK (1964-1965)

(In Million Cubic Metres)

	<u>1964</u>	<u>1965</u>
Run-off	64	60
Recharge to Ground Water Deposits	713	726*
Surface Flow of Springs and Rivers	118	111
TOTAL	895	897
Evapotranspiration	2,000	1,810
<u>Rainfall</u>	<u>2,895</u>	<u>2,707</u>

*A typo in original gives 7,126

Source: Journal of Palestine Studies. 1979

⁵ Source: Epstein. 1976.

⁶ Source: Anonymous. 1978.
Clawson, et al. 1971.
Davis, et al. 1980.
Journal of Palestine Studies. 1979.
Orni. 1973.
Saliba. 1968.
Van Arkadie. 1977.

The surface runoff is fairly evenly divided between the western watershed, which is west of the mountain crest and flows into the Mediterranean, and the eastern, which flows into the Jordan Valley. There are a number of small drainages in both watersheds. Only three or four flow all year round; the rest flow only during the rainy season. The perennial streams, such as the Fara'a, which flows from near Nablus into the Jordan, are fed by springs.

The Jordan River and the Dead Sea form the eastern boundary of the West Bank. Estimates of the total annual flow of the Jordan vary between about 1500 and 1900 million cubic meters. About 200 million cubic meters of this is from winter flood flow. The Dead Sea has no outlet and is very saline. Its salt content is the highest in the world, between 30 to 33 percent depending on location and depth. The northern portion of the Dead Sea, which the West Bank shares, is around 700 sq. km. in area and 400 meters deep in places. The southern portion is much smaller and very shallow (250 sq. km.; ave. 6 meters deep).

2.1.1 Groundwater

There are several groundwater basins mostly or totally within the boundaries of the West Bank. These are listed below:

Groundwater Basins and Estimated Potential

(million cubic meters)

Southern Drainage

Yarkon and Crocodile basin (400)
Hebron basin (20)

Northern Drainage

Nablus-Jenin-Gilboa Sincline Basin (100)
Ravich-Gilboa-Taanach basin (35)

Eastern Drainage

Bardela Basin (10)
Malih-Buqnea Basin (2)
Fara'a Basin (10)
Paza'el-'Auja Basin (13)
Judean Desert Basin (6)

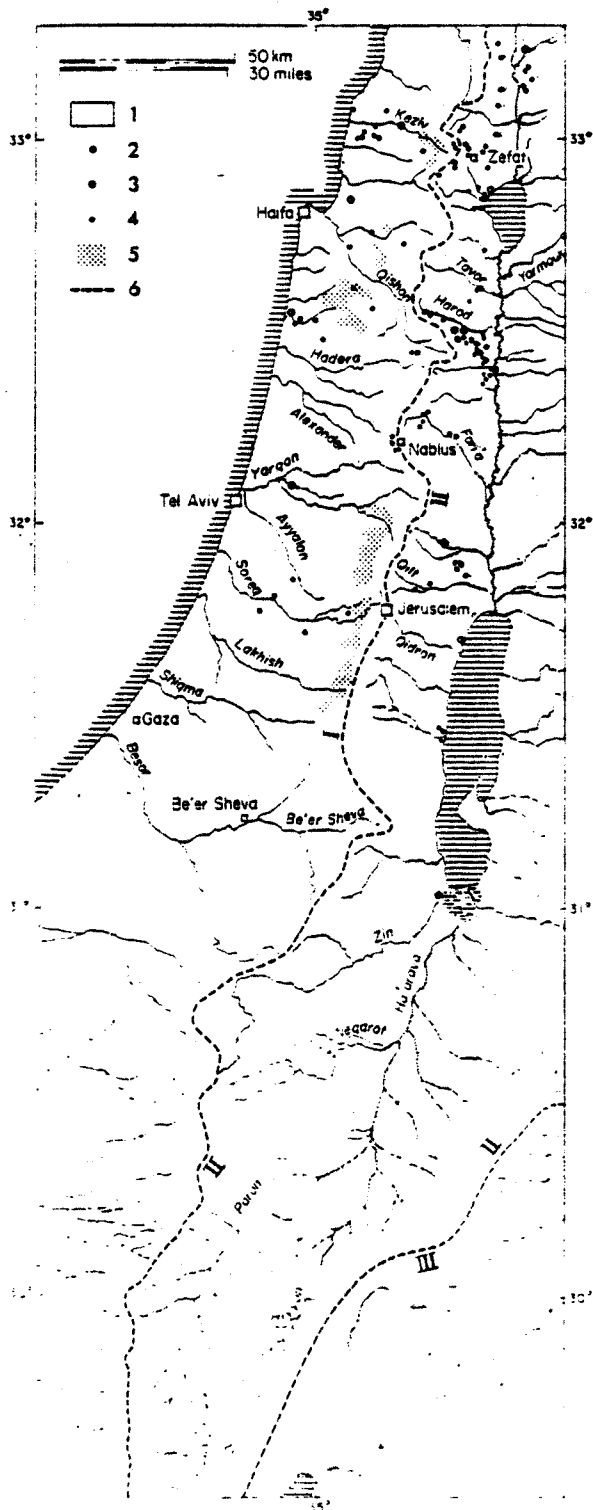
There are no readily available figures on water quality for either surface or groundwater.

Hydrography

KEY

1. Rift valley
2. Major spring
3. Major spring (saline)
4. Spring with discharge of 100–1500 cbm h.
5. Area of many small springs
6. Main watersheds

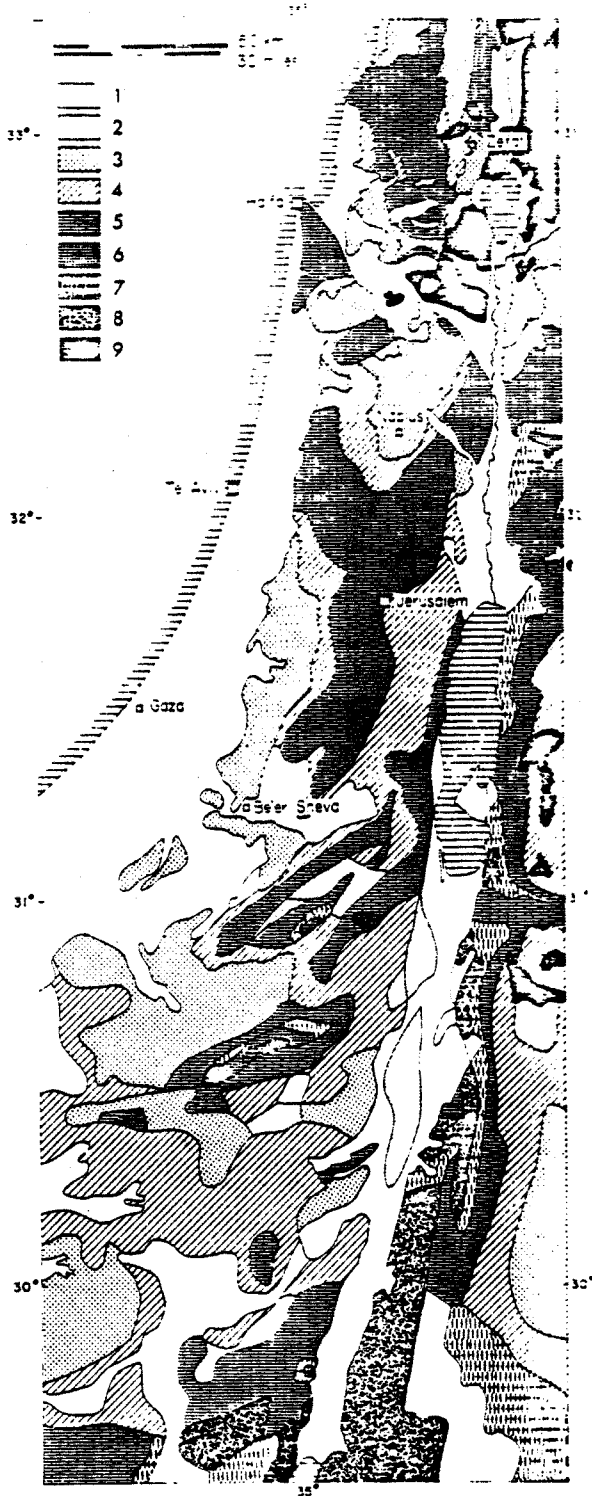
- I. Mediterranean drainage
- II. Dead Sea drainage
- III. Red Sea or interior drainage



Geology

KEY

1. Quaternary (alluvium, sand, loess)
2. Neogene (terrestrial and lacustrine deposits)
3. Lower Tertiary (Eocene, Oligocene: chalk, marl, limestone)
4. Senonian (soft limestone, marl, chalk)
5. Cenomanian-Turonian (dolomites, limestone, marl)
6. Jurassic-Triassic (mainly limestone)
7. Nubian Sandstone
8. Precambrian
9. Volcanic material (basalt)



2.1.2 Water Use and Policy

There are about 330 springs in the West Bank. Of these, about 60 might be classified as large, with an average flow of 50,000 cubic meters annually. Most large springs are found in the eastern watershed, and are used for irrigation. These are concentrated in the Jordan Valley districts of Jericho, Fara'a, and Bardala. In addition, there are about 350 wells and boreholes with pumping capacities from only a few to 250 cubic meters per hour. The total output from these springs and wells is estimated at 50-60 million and nearly 40 million cubic meters annually, respectively.

Total water consumption for agriculture was estimated to be about 90 million cubic meters in 1978. Over 70 percent of this is in the Jordan Valley, and over 15 percent is used by Israeli settlers. The amount of water used for agriculture by the Arab population has hardly changed since the beginning of the occupation. Development of water resources for irrigation is generally not allowed except for Israeli settlements, and even development for municipal uses is restricted.

Since Israel shares most of the aquifers with the West Bank, it will not allow exploitation of these aquifers beyond the level that existed before the occupation, as this would compete with Israeli water needs. Moreover, the Israeli settlements in the occupied territories are heavy water users. There have been some reports that Arab wells or springs have gone dry when in competition with generally deeper and heavier pumped Israeli wells nearby.

The Gaza Strip is almost completely dependant on groundwater. In 1973 there were 1,200 wells, yielding 65 million cubic meters annually most of which went for agriculture. The major problem seems to be that overpumping may lead to salt water intrusion into the aquifer.

2.2 Soils and Land Use ^{7/}

Most soils data comes either from Israeli works which deal with the West Bank as part of Israel, from pre-1967 works on Jordan, or from works looking at all of Palestine as a geographical unit. There is no readily available survey focusing specifically on West Bank soils. The major soil groups which can be distinguished are as follows:

Terra Rossa (1 on the following map). This is the predominate type in the West Bank, as it is a soil generally associated with hilly and mountainous regions in Palestine. Most of the highlands west of the mountain crest are of this type. It is typically red to light brown, contains little humus, and is mostly clayey

⁷Source: Clawson, et al. 1971.
Horowitz. 1979.
Orni. 1973.
Zohary. 1962.

and poor in lime. Terra rossa is generally fertile. The CaCO_3 content may range from 15 to 40 percent. The profile is generally fairly shallow, ranging from a few centimeters to half a meter thick, except in intermountain valleys. Here alluvial action may have built up a thick layer.

Rendzinas. These are fairly common on the eastern slopes of the mountains, where they are classified as brown or dark Rendzinas (2), and in the hills between Nablus and Jenin, where they are classified as pale Rendzinas (3). They also occur in many areas in association with Terra rossa. These soils are generally rich in lime (30-80 percent), and are somewhat more developed and thicker than Terra rossa.

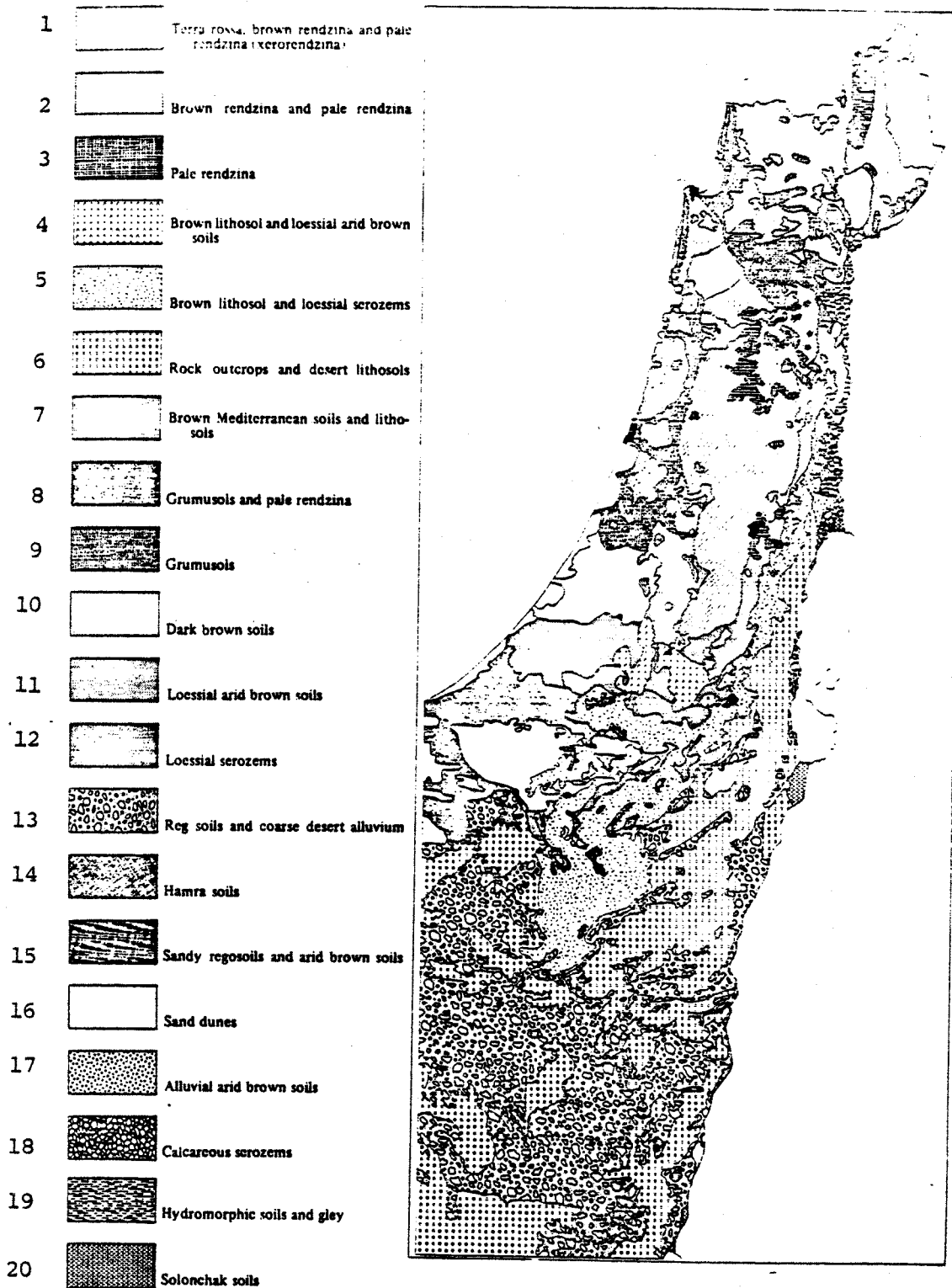
Soils of the Judaeen Desert. These are classified as Brown lithosol and loessial serozems (5), and as rock outcrops and desert lithosols (6) on the following map. They are found in the southern portion of the West Bank between the Jordan valley and the mountains. The second of these classifications is actually mostly rocky desert (hammada) with only patches of soil in scattered areas. These areas may be rather saline. The lithosols and loessial serozems are generally poorly developed, with little nutritive matter, are high in CaCO_3 (60-90 percent), but are not usually saline.

Saline Soils. Classified as Calcareous serozems on the following map (18), these are found throughout most of the West Bank's portion of the Jordan valley. These soils have a salt content ranging from around 2 percent of dry matter content in the northern part of the West Bank's Jordan valley, to up to 6 percent in the southern parts. The area right on the Dead Sea (20) may have up to 20 percent soluble salt content.

Others. There are a number of other types of soils found in the West Bank in small pockets. The only ones which seem worth mentioning are the alluvial soils. These are found in pockets in the Fara'a valley east of Nablus and appear as Grumusols and Dark brown soils (9, 10) on the following map. There is also a small pocket around Jericho which is not shown. They are formed largely of Terra rossa and Rendzina which has been transported to the areas. These alluvial soils are of heavy texture, have a high moisture-holding capacity, and are among the best agricultural soils.

The Gaza strip contains a belt of sand dunes (16) along the coast, part of the dunes system which is all along the Palestine coast. These mostly silica dunes are active and may reach from 10 up to 50 meters in height. Inland, sandy regosols and arid Brown soils (15) predominate in the south, while loessial arid Brown soils (11) are found in the north. The former are developed from coarse windblown materials, the latter from windblown silt. Both can be productive under irrigation.

At the northern tip of inland Gaza are some dark brown soils (10). These are generally developed from highland soils washed down to the plains, and are fairly well suited for agriculture.



Soil associations in the country (by courtesy of Prof. D. H. Yaalon)

Source: Orni. 1973.

2.2.1 Agriculture ^{8/}

Of total area of 5.5 million dunums in the West Bank (10 dunums = 1 hectare), just over 2 million are cultivated, about 36 percent of the total area. About 100,000 dunums, 5 percent of cultivated area, is irrigated. Much of the agriculture is subsistence oriented. Field crops accounted for 41 percent of cropping by area in 1973, and half of this area went to wheat. Barley was the next most significant field crop, and others are noted in the table below. Orchards accounted for 38 percent of cultivated area, and of this about three-fourths was olives. About one-sixth of agricultural land was in preparation, fallow, or not planted for some other reason. Of irrigated area, two-thirds was used for vegetables, and most of the rest for citrus fruits.

Vegetables are a major cash crop. Although they accounted for only 4 percent of planted area, vegetables made up 24 percent of the crop by value. Citrus and other fruits accounted for nearly 36 percent of the crop by value, and olives for slightly more than 20 percent. Field crops, 41 percent of the cultivated area, contributed under 20 percent to the value of agricultural output.

Few detailed figures are available on distribution of crops by location or on the degree of specialization. General patterns are that viticulture is common in the area around Hebron, where olives, almonds, and other deciduous fruits are also found. There is no particular specialization in the area around Bethlehem and Jerusalem. North of here to about the area of Nablus olives predominate. In the northernmost portion of the West Bank there is a wide variety of important crops. Field crops are very common, and sometimes two crops a year can be planted. Unirrigated vegetables are also grown, and some tobacco and citrus. In the irrigated areas of Fara'a and Sukkot valleys and at Jericho, nearly all crops can be grown.

Figures from 1967 showed that 68 percent of all farms had fruit orchards, and 26 percent of farms raised only fruit. Field crops were grown by 58 percent, and by 13 percent exclusively. The figures for vegetables were 29 percent and 3 percent respectively. Farms generally range from 10-40 dunams in size. This small area and the nature of the terrain inhibit mechanization. Moreover, since the vast majority of agriculture is dependent on rainfall yields are generally low. In drought years production declines and in good years it increases. The standard Israeli claims of average increases in production on the order of 10-15 percent since the occupation

⁸ Source: Anonymous. 1978.
Bergman. 1976.
Bull. 1975.
Clawson, et al. 1971.
Journal of Palestine Studies. 1979.
Orni. 1973.
U.S. AID. 1978b.
Van Arkadie. 1977.
Washington Post. Sept. 7, 1980.

Land Use in Agriculture
(In Thousands of Dunams*)

	1968	1973
Total Cultivated Area	2045	2017**
Field crops	890	827
wheat	465	430
barley	231	150
vetch	48	30
sesame	18	40
lentils	61	60
chick peas	32.5	80
tobacco	4.5	6
others	30	31
Orchards	680	765
olives	514	580
grapes	54	62
citrus fruits	24	24
figs	38	15
almonds	34	61
others	17	23
Melons	43	10
Vegetables	70	80
In preparation	362	335
Included in the above:		
Irrigated Area	57	81
Vegetables	31	54
Citrus fruits	24	24.5
Bananas	2	2.5

* A dunam is approximately one-quarter of an acre.

**In the original source this total was shown as 2022. however, the correct sum of the sub-totals is 2017 as shown here. it is not possible to identify the source of the error from published data.

Source: Van Arkadie. 1977.

began do not seem to be very revealing. Israeli statistics normally give only value of the crop, without citing quantity. Furthermore, the base year is invariably 1967. Not only was that a relatively dry year, but agriculture was severely disrupted by the war.

For example, olive production during the first seven years of occupation peaked at 70,000 tons, compared to a peak of 114,000 tons in 1961. Production of most crops does not fluctuate as dramatically this case, but in general, yields in 1980 are about the same as in the early 1960's.

No land use figures are available for the 210 sq. km. of cultivated land in Gaza. Forty-five percent was irrigated, which means that

Gaza agriculture is much less dependent on rainfall. Output by value for a square kilometer was thus much higher, US \$ 172,000 against US \$ 42,000 for the West Bank.

2.3 Vegetation ^{9/}

The predominant vegetation zone in the West Bank is the hill vegetation Mediterranean zone (1), which covers most of the highland area. The climax vegetation has almost disappeared except in small scattered areas but it includes several communities. One of the most important is the *Pinus halepensis-Hypericum serpyllifolium* community, which grows mainly on calcareous soils (rendzina) and is accompanied by *Quercus calliprinos*, *Pistacia palaestina*, *P. lentiscus*, *Ceratonia siliqua*, *Phyllirea media*, and other trees and shrubs. The *Quercus ithaburensis* community is another, in which this tree is the main constituent and is sometimes accompanied by *Q. calliprinos*, *Pistacia palaestina*, *P. atlantica* or *Styrax officinalis*.

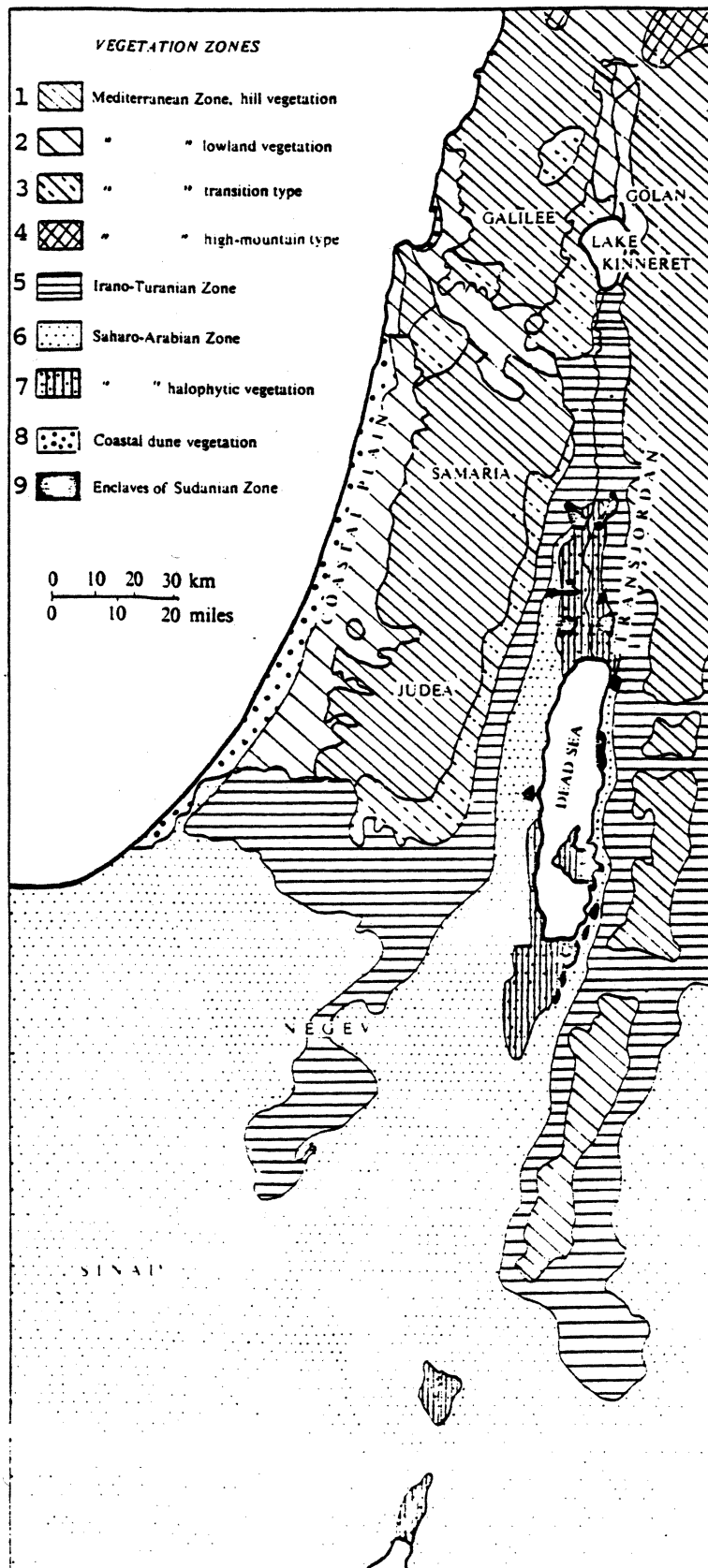
The forest and maquis of *Quercus calliprinos* and *Pistacia palaestina* occupy considerable areas and are accompanied by trees such as *Pistacia lentiscus*, *Crataegus azarolus*, and *Ceratonia siliqua* among others. Whenever humidity and water availability are somewhat above average, this forest is also accompanied by trees such as *Laurus nobilis* and *Cercis siliquastrum* among other northern elements.

Transition areas between the Mediterranean and the Irano-Turanian belts (3) are sometimes occupied by a maquis made up mainly of *Amygdalus communis* and *Crataegus azarolus*. The typical garigue communities are dominated by *Salvia triloba*, *Phlomis viscosa*, *Calycotome villosa*, and *Cistus salvifolius*, and the typical batha plants are *Poterium spinosum* and *Thymus capitatus*, among many other herbs.

The Irano-Turanian zone (5) in the West Bank consists of a strip along the eastern foothills and Jordan Valley. In the north this vegetation zone covers the valley, while in the south other zones intrude between it and the Jordan River and Dead Sea. It may seem to resemble the batta (the final stages of forest degeneration of the Mediterranean zone), but is composed of different species. This zone is essentially steppe. Trees and shrubs occasionally accompany the steppes, of which some of the more important are *Zizyphus lotus*, *Pistacia atlantica*, *Artemisia herba-alba*, *Noea mucronata*, *Haloxylon articulatum*, and *Rhus tripartita*. The first two trees, *Zizyphus* and *Pistacia*, sometimes form a kind of savannah where they grow quite sparsely, separated by areas of grasses and other small herbs.

The Saharo-Arabian zone (6) and a zone of halophytic vegetation (7) which is often grouped with it occupies the southeast corner of the West Bank. This is pure desert vegetation and is quite sparse, sometimes occurring

⁹ Sources: Horowitz. 1979.
IUCN. 1978.
Orni. 1973.
Zohary. 1962.



Source: Orni. 1973.

only on wadi floodplains. The most abundant plants are *Zygophyllum dumosum*, *Anabasis articulata*, and some others. In gypsiferous soils, which are especially abundant near the Dead Sea, plants such as *Suaeda asphaltica* and *Chenolea arabica* are common.

The sebkhas, salt playas with halophytic vegetation are inhabited by several species of *Tamarix*, which occasionally cover the area so densely as to become dense groves. There are also a number of other plants of which the most abundant are *Suaeda monoica*, *Statice pruinosa*, *Alhagi maurorum*, and various species of *Atriplex*.

There are also several small pockets of Sudanian zone vegetation (9) in the southeast West Bank. The most prominent of the several species found in these environments is the lotus tree (*Zizyphus spina Christi*), but species of *Acacia*, *Balanites aegyptiaca*, *Moringa aperta*, and *Salvadora persica* can also be found.

The coastal dune vegetation (8) predominant in Gaza consists mostly of *Artemisia monosperma* and *Lotion cretici* with their associated plants. The natural vegetation of the lowland Mediterranean zone (2) which touches the northeastern edge of Gaza can no longer be determined. The Irano-Turanian zone discussed above also extends to the eastern edge of the Gaza strip. The Saharo-Arabian zone in Gaza is somewhat different from the hammada type vegetation found in the southeastern West Bank. In the sandy areas of the desert the most common plants are *Zilla spinosa*, *Noea micronata*, *Haloxylon persicum*, *H. salicornicum*, *Retama roetam*, *Artemisia monosperma*, and *Aristida scoparia*.

The species *Iris lortetii* and *Rumex rothschildianus* are listed in the IUCN Plant Red Data Book as endangered. The former is an Irano-Turanian zone plant known in eastern Upper Galilee, and may also occur in the northeast West Bank. The latter occurs in the coastal dunes from Gaza up the coast.

2.4 Fauna ^{10/}

Fauna may be most conveniently classified according to their associations with vegetation zones, even though boundaries may be somewhat less distinct. It is not possible with readily available information to focus specifically on the West Bank or Gaza, but these groups of fauna can be discussed for Palestine.

The Mediterranean fauna includes mammals such as *Rhinolophu blasii*, *Microtus guentherii*, *Lepus syriacus*, and *Lynx pardina*. This group accounts for about 25 percent of the approximately 100 mammal species in Palestine. Typical Mediterranean birds are *Sylvia melanocephala* and *Alectoris graeca*. Of about 350 bird species, this group comprises about 26 percent.

¹⁰ Source: Horowitz. 1979.
IUCN. 1976.
Orni. 1973.

Mediterranean reptiles such as *Agama stellio* and *Coluber jugularis*, among others, form about 40 percent of the reptilian fauna of Palestine, which includes a total of some 80 species.

Most groups of Mediterranean insects or other invertebrates comprise more than 50-60 percent of the total.

Irano-Turanian animals comprise about 15 percent of the total fauna of Palestine. Typical mammals are *Dryomys pictus*, *Vormela peregusna*, and *Lepus judeae*; birds, *Oenanthe nomacha* and *Lanius nubicus*; and reptiles *Ophisops elegans*, and *Leptotyphlops phillipsi*.

Saharo-Arabian animals comprise about 15 percent of Palestine's fauna. For mammals and reptiles, however, the figures are around 40 percent. Among mammals are the many desert mice such as *Acomys cahirinus*, *Meriones crassus*, and *Gerbillus allenbyi* and some gazelles. Reptiles include *Agama sinaita*, *Varanus griseus*, *Psammophis schokarii*, and *Naja haje*.

Birds of this group comprise about 22 percent of the avifauna of Palestine, with species such as *Ammomanes deserti* and *Pterocles senegallus*.

The IUCN Red Data Book lists the following animals as endangered in both Israel and Jordan:

<i>Canis lupus</i>	Wolf
<i>Panthera pardus tulliana</i>	Anatolian leopard
<i>Gazella dorcas saudiya</i>	Saudi Arabian dorcas gazelle
<i>Gazella gazella arabica</i>	Arabian gazelle

In addition, *Gazella subgutturosa marica* (sand gazelle) is also listed for Jordan and may occur in the eastern West Bank.

3.0 Major Environmental Problems ^{11/}

Major environmental problems of the West Bank and Gaza Strip are typical of those found in arid areas of the world. However, these areas are not typical in that they are under military occupation, which greatly complicates some of the problems. Israel has begun to utilize the natural resources of the region for Israeli purposes, while placing restrictions on the use of these resources by the local Arab population, above a certain minimum level. One third of the area of the West Bank has been taken over by Israel and is beyond even nominal control by the West Bank inhabitants. Tariff and trade policies are structured so as to mold West Bank agriculture to the requirements of the Israeli economy.

Water

Restricted access to resources by the Arab population is most apparent with regard to water. Usable water is in short supply in the occupied territories. Rainfall supplies about 95 percent of water to agriculture, and yields are low. Furthermore, rainfall is not dependable, and the size of cultivable areas and yields can vary greatly from year to year. However, there is no additional water available to the West Bank population, because the Israeli administration will not allow expansion of irrigation for Arab farmers.

Domestic water services on the West Bank are available to towns and large villages only, and water services supply only about one half of domestic requirements. However, even urban water supply expansion is severely restricted.

Israeli settlements in the occupied territories, on the other hand, face no restrictions on development of water supply for either agricultural or urban use. Deeper and more heavily used Israeli wells may mean that Arab water supplies dry up in areas near Israeli settlements. Israel itself is currently exploiting nearly 100 percent of its own available renewable water resources, and any expansion of water use in Israel depends on control of West Bank water. Thus, given the constraints imposed upon the local population by Israeli policy, any programs addressing water shortages among the non-Israeli population on the West Bank must aim at increased efficiency of water use rather than hoping for an expanded supply.

¹¹ Source: Anonymous. 1978.
Clawson, et al. 1971.
Davis, et al. 1980.
Horowitz. 1979.
Journal of Palestine Studies. 1979.
Orni and Efrat. 1973.
U.S. AID. 1978b.
Washington Post. Sept. 7, 1980.
Washington Post. Sept. 8, 1980.
Zohary. 1962.

Other water problems are lowered water tables and salinization where heavy pumping occurs. No statistics are readily available on these aspects, but it appears that salinization is becoming a problem in the Nablus area. In the Jordan Valley, salinization has always been a problem, and most soils must be thoroughly leached before being cultivated. In Gaza, where nearly half the cultivated area is irrigated, the water table is dropping, and salt water intrusion is occurring.

The sinking level of the Dead Sea is also a problem which the West Bank shares with Jordan and Israel. The level has been declining at about 0.5 meters per year, and the shallow southern part is now normally separated from the larger, deeper northern part by a land bridge.

Devegetation

The Middle East, including Palestine, has been populated for millennia, and agricultural and pastoral activities have greatly altered the flora and fauna of the region. Clearing for agriculture and for fuel, as well as browsing by goats, has left only isolated pockets of the original natural maquis forest of the mountains. Degenerated stages of the maquis are garrigue, in which original species have evolved into large bushes, and batta, a stage dominated by dwarf bushes. These stages are more common in those few highland areas which still have areas of natural vegetation, but a good many areas do not have any. Overgrazing is a major problem also, although again little information is available on the magnitude of it.

Erosion

As in all areas of adverse arid environments, erosion is a factor even without complications due to human activity. As is true elsewhere under similar conditions, devegetation resulting from agricultural and grazing practices greatly aggravates the problem. The major cause of erosion in the West Bank is surface runoff. Many terraces which could have impeded the process have been abandoned and are decaying. Wind erosion may be a significant factor in the desert areas of the southeast West Bank and in Gaza. Many coastal dunes are active, and the general direction of movement is eastward, or inland.

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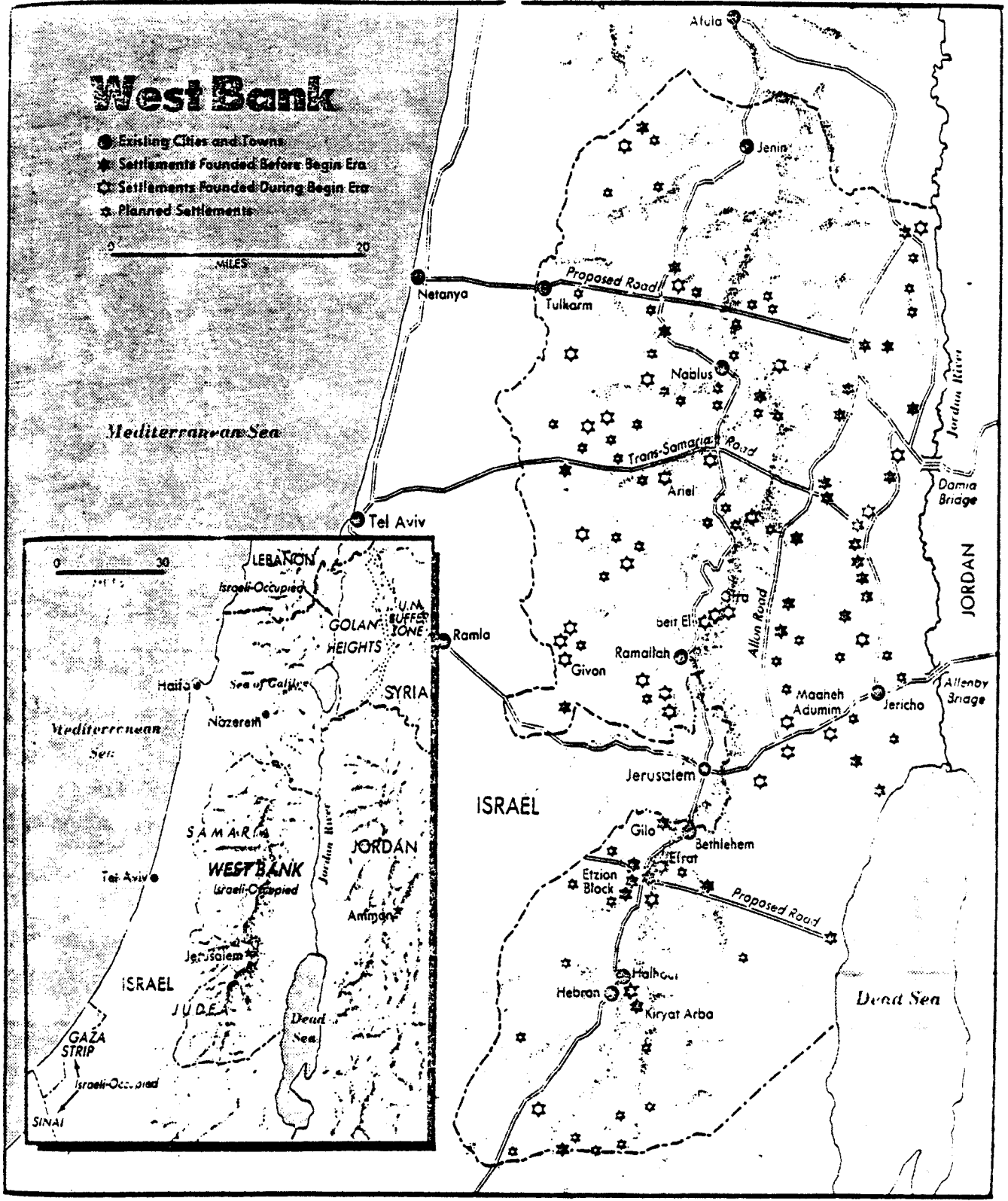
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Appendix I

Geography and Climate

1. General Reference Map of the West Bank
2. Climatic Data for Jerusalem
3. Rainfall Pattern in Palestine

1. General Reference Map of the West Bank



Source: Washington Post. Sept. 7, 1980.

2. Climatic Data for Jerusalem

A. Average Monthly Rainfall (mm)

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
153.0	143.0	68.0	22.8	2.7	-	-	-	0.8	9.2	61.8	89.4

B. Monthly Average of Relative Humidity (In %)

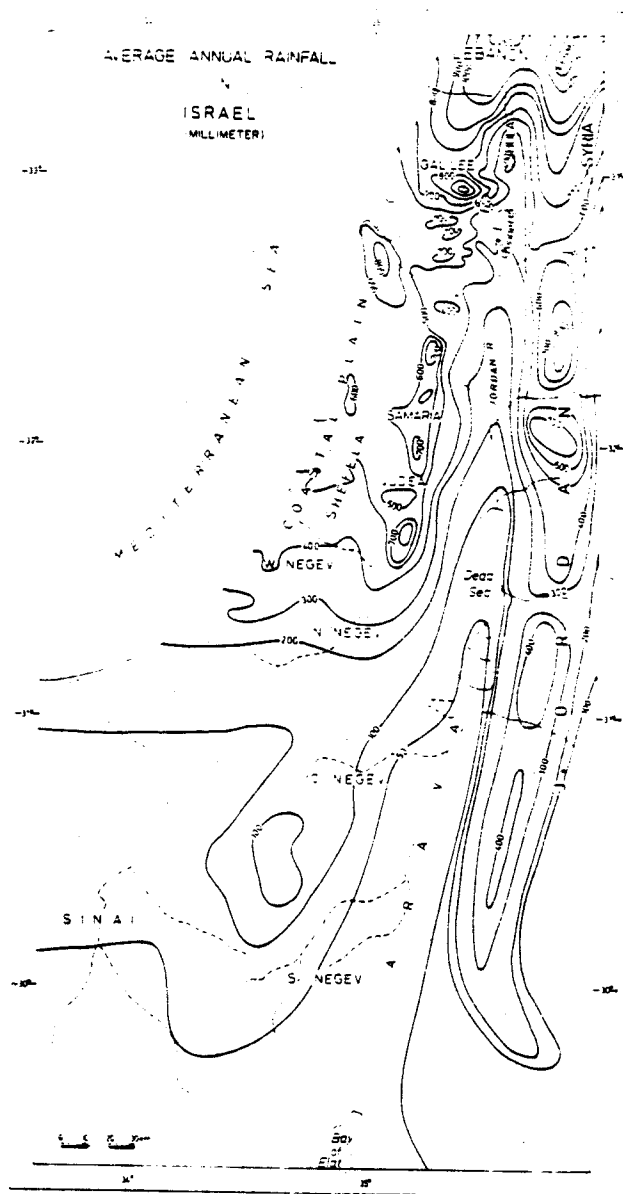
72	58	47	38	54	45	53	49	60	61	42	63
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C. Monthly Mean Temperatures (°Centegrade)

9.7	11.6	13.8	17.7	21.3	23.7	24.4	25.0	23.9	21.8	17.2	12.3
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Source: Orni. 1973.

3. Rainfall Pattern in Palestine



Source: Horowitz. 1979.

Appendix II

Population and Demography

1. Population of West Bank and Gaza Strip
2. West Bank Population and Natural Increase
3. West Bank Population Projections
4. Gaza Strip and North Sinai Population and Natural Increase
5. Gaza Strip and North Sinai Population Projections
6. Total Registered Palestine Refugee Population and Camp Population
7. Population, Area, Density of the West Bank by District, Gaza Population and Density.
8. Population Density of West Bank - Map
9. Settlement Distribution on West Bank and Gaza
10. Demographic Indicators
11. Population by Sex and Age (1973 absolute number)
12. Population by Sex and Age (percentages)
13. Cause of Death: Israel and Jordan
14. Infant Deaths by Cause: UNRWA served population and Israel
15. Health Services in the West Bank
16. Health Services in the Gaza Strip

1. Population^a of West Bank and Gaza Strip

(thousands)

<u>Year</u>	<u>West Bank</u>	<u>Gaza Strip</u> ^b	<u>Total</u>
1922	223 ^c	18	241
1931	274 ^c	17	291
1946	387 ^c	30 ^c	417
1952	686	295	981
1961	729	370	1,099
1967 (Sept.)	596 ^d	347	943
1968 ^e	584	326	910
1978 ^e	700	420	1,120

^a Data in this table are estimates from many different sources that may not be consistent among themselves.

^b Excluding North Sinai population.

^c Unreliable estimates.

^d Israeli census of September 1967, excluding population of the refugee camp of Shurafat.

^e End of the year estimates.

Source: CACI. 1978.

2. The West Bank -- Population and Natural Increase, 1967-1977

<u>Year</u>	<u>Population at the Beginning of the Period (thousands)</u>	<u>Annual Rate of Natural Increase (percent)</u>	<u>Annual Rate of Increase De Facto Population (percent)</u>
1967	595.9 ^a	0.50 ^b	-1.7
1968	585.7	2.00 ^c	-0.7
1969	581.7	2.11 ^c	2.3
1970	595.2	2.30 ^c	1.5
1971	603.9	2.63	2.2
1972	617.3	2.72	1.9
1973	629.0	2.69	2.7
1974	646.2	2.80	2.4
1975	661.6	2.81	0.5
1976	665.1	3.05	0.9
1977	670.9

^a Based on September 1967 census.

^b Based on incomplete information.

^c Low population growth rate is partly due to change in population age structure as a result of the 1967 flight of a large number of West Bank residents to East Bank (Jordan).

Source: CACI. 1978.

3. West Bank Population Projections

(thousands)

<u>Year</u>	<u>Increase of West Bank Population^a</u>	<u>Cumulative Increase, Due to Immigration^b</u>		<u>Total Population^c</u>	
		<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>
1979	736.3	12.6	26.4	748.9	762.7
1980	760.3	25.6	53.6	785.9	813.9
1981	785.3	39.0	81.6	824.3	866.9
1982	811.7	52.7	110.5	864.4	922.2
1983	839.2	66.9	140.2	906.1	979.4
1984	868.2	81.5	170.8	949.7	1,039.0
1985	898.6	96.6	202.3	995.2	1,100.9

^a Due to natural increase only.

^b Cumulative increase of number of immigrants assuming 3 percent natural increase.

^c Assuming no emigration.

Source: CACI. 1978.

**4. Gaza Strip and North Sinai -- Population and
Natural Increase, 1967-1977**

<u>Year</u>	<u>Population at the Beginning of the Period (thousands)</u>	<u>Annual Rate of Natural Increase (percent)</u>	<u>Annual Rate of Increase of De Facto Population (percent)</u>
1967	389.7 ^a	0.85 ^b	-2.3
1968	380.9	1.94 ^c	-6.6
1969	355.9	2.59 ^c	1.8
1970	362.2	2.43 ^c	1.5
1971	367.7	2.88	2.2
1972	375.9	3.06	2.0
1973	383.5	3.16	3.6
1974	397.2	3.32	2.8
1975	408.5	3.38	2.4
1976	418.5	3.54	2.5
1977	429.0

^a Based on September 1967 census.

^b Based on incomplete data.

^c Low population growth rate is partly due to change in population age structure as a result of the 1967 flight of a large number of Gaza Strip and North Sinai residents to other countries.

Source: CACI. 1978.

5. Gaza Strip and North Sinai -- Population
Growth Projections, 1978-1985

	<u>Natural Increase</u>		<u>Population (thousands)</u>		<u>Yearly Rate of Increase (percent)</u>
	<u>Rate Per Thousand</u>	<u>Thousands</u>	<u>At Year-End</u>	<u>At Beginning of the Year</u>	
1978	36.5	16.2	460.7	444.4	3.7
1979	37.0	17.0	477.7	460.7	3.7
1980	37.5	17.9	495.6	477.7	3.75
1981	38.0	18.8	514.5	495.6	3.8
1982	38.5	19.8	534.3	514.5	3.8
1983	39.0	20.8	555.1	534.3	3.9
1984	39.5	21.9	577.0	555.0	3.95
1985	40.0	23.1	600.1	577.0	4.0

Sources: CACI. 1978.

6. Total Registered Palestine Refugee Population and Camp
Population By Location, 1977 ^{1/}

	<u>Total Registered Population</u>	<u>Number of Camps</u>	<u>Number Persons Living in Camp</u>	<u>% of Registered Population Living in Camps</u>
West Bank	302,620	20	77,999	26%
Gaza Strip	346,007	8	198,826	57%
Other Locations	<u>1,057,859</u>	<u>33</u>	<u>368,003</u>	<u>35%</u>
Total	1,706,486	61	644,858	38%

^{1/} Source: Report of the Commissioner - General of the UNRWA for Palestine Refugees in the Near East, 1 July, 1976 - 30 June, 1977, UN General Assembly Official Records, 32nd Session.

Source: U.S. AID. 1978c.

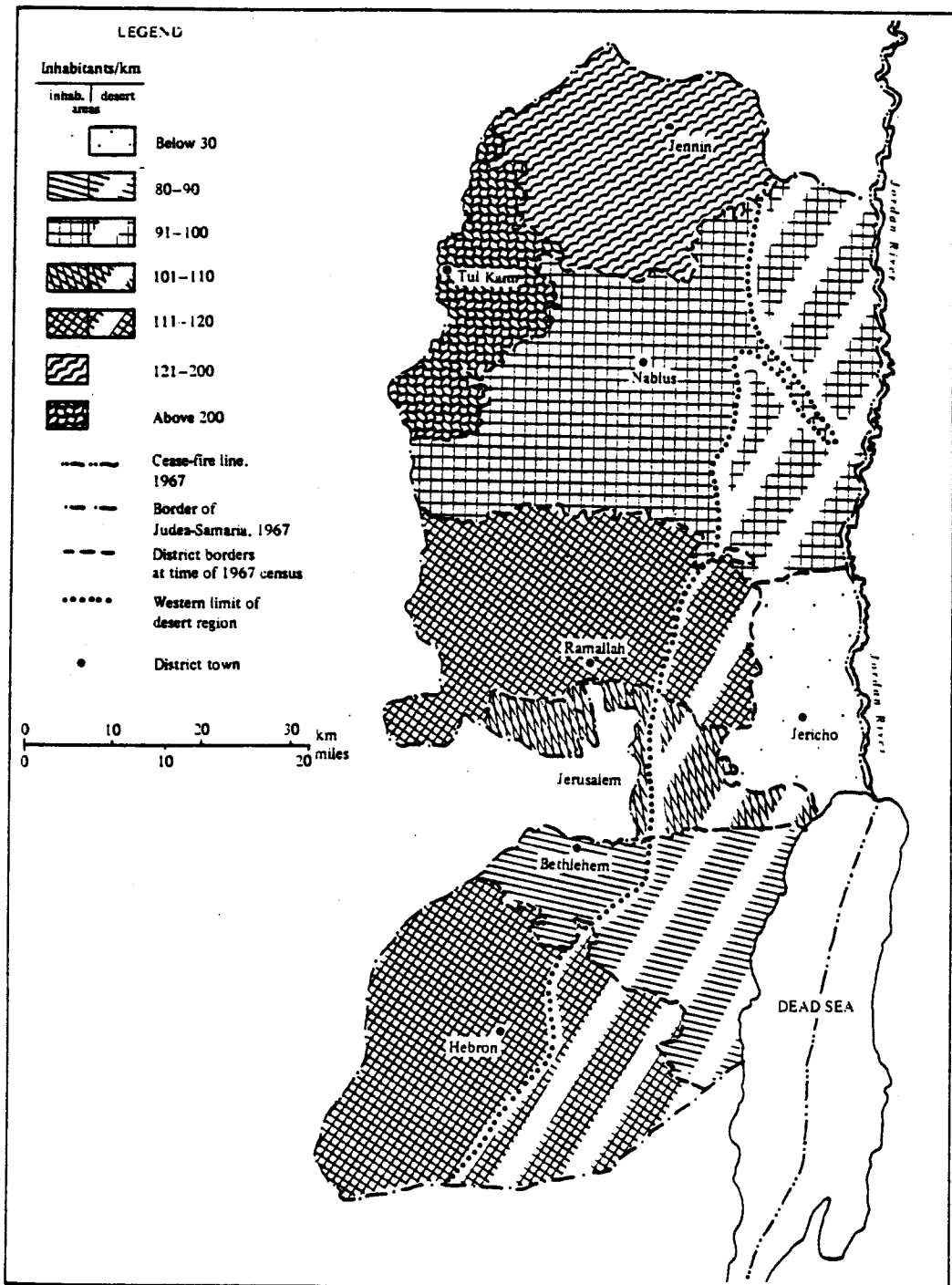
7. Population, Area and Population Density in the West Bank by District;
Gaza Population and Density.

(1967)

<u>District</u>	<u>Population</u>		<u>Area</u> <u>(Sq.Km.)</u>	<u>Density</u> <u>per</u> <u>(Sq.Km.)</u>
	<u>Absolute</u> <u>Numbers</u>	<u>Percentages</u>		
West Bank Total	598,637	100.0	5,505.0	108.7
Hebron	118,358	19.7	1,056.2	112.1
Bethlehem	49,515	8.3	565.2	87.6
Jerusalem	29,904	5.0	284.1	105.3
Jericho	9,078	1.5	338.1	26.9
Pamallah	88,877	14.8	770.3	114.9
Nablus	152,381	25.5	1,587.4	96.0
Tulkarm	72,229	12.1	332.0	217.6
Jenin	78,295	13.1	571.7	137.0
Gaza	356,261			973

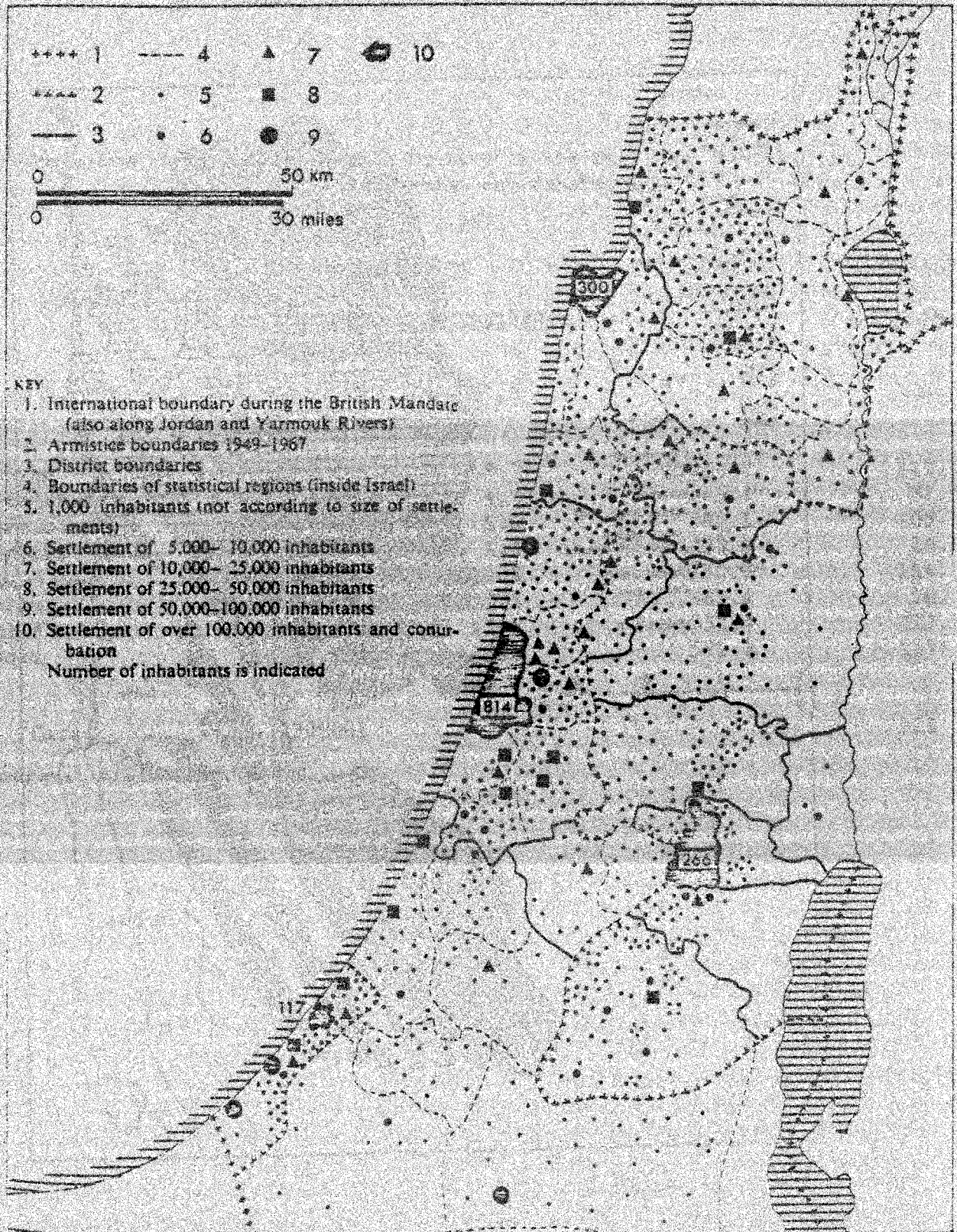
Source: Pielemeier. 1975.

8. Population Density of West Bank - Map



Source: Orni. 1973.

9. Settlement Distribution on West Bank and Gaza



Source: Karmon, 1971.

10. Comparative Demographic Indicators: The Administered Territories and Nearby Nations

<u>Indicators</u>	<u>West Bank</u>	<u>Gaza Strip & North Sinai</u>	<u>Jordan</u>	<u>Israel</u>	<u>Egypt</u>
1977 population (in millions)	0.7	0.4	2.9	3.6	38.9
Total Fertility Rate	7.1	7.3	7.1	3.7	5.2
Crude Birth Rate	47.0	53.0	48.0	28.0	38.0
Crude Death Rate	17.0	18.0	15.0	7.0	15.0
Natural Rate of Increase	3.0	3.5	3.3	2.1	2.4
% of Population Under 15	47.0	48.0	47.0	33.0	44.0
Infant Mortality Rate	69.0	79.0	97.0	22	116.0

Source: U.S. AID. 1978c.

**Population by Sex and Age,
December 31, 1973**

(In Thousands)

	<u>The West Bank</u>			<u>The Gaza Strip and North Sinai</u>			<u>Total</u>		
	<u>Females</u>	<u>Males</u>	<u>Total</u>	<u>Females</u>	<u>Males</u>	<u>Total</u>	<u>Females</u>	<u>Males</u>	<u>Total</u>
	327.4	330.0	657.4	205.3	200.0	405.3	532.7	530.0	1,062.7
-4	55.6	63.0	118.6	35.3	39.6	74.9	90.9	102.5	193.4
-9	47.2	53.1	100.3	29.9	32.9	62.8	77.1	86.0	163.1
0-14	48.0	52.9	100.9	28.7	31.1	59.8	76.7	84.0	160.7
5-19	36.2	40.3	76.5	23.9	25.8	49.7	60.1	66.1	126.2
0-24	24.2	24.2	48.4	18.0	17.0	35.0	42.2	41.2	83.5
5-29	18.9	15.1	34.0	13.7	9.1	22.8	32.6	24.2	56.8
0-34	16.9	12.0	28.9	10.9	6.1	17.0	27.9	18.1	45.9
5-39	15.4	11.2	26.6	9.9	6.7	16.6	25.3	17.8	43.1
0-44	15.0	11.2	26.2	9.7	7.2	16.9	24.7	18.3	43.1
5-49	12.6	10.1	22.7	7.5	6.4	13.9	20.1	16.5	36.6
0-54	8.8	7.9	16.9	4.9	4.9	9.8	13.9	12.9	26.8
5-59	6.8	6.3	13.2	3.6	3.3	6.9	10.4	9.7	20.1
0-64	6.1	6.1	12.2	2.8	2.7	5.5	8.9	8.8	17.6
5-69	6.0	6.1	12.0	2.5	2.7	5.2	8.5	8.8	17.3
0-74	3.4	4.7	8.1	1.2	2.1	3.3	4.6	6.9	11.5
5+	6.0	5.8	11.8	2.7	2.5	5.2	8.8	8.2	17.0

Source: Van Arkadie. 1977.

12. West Bank — Population by
Sex and Age,^a 1967, 1971, and 1976
(percentages)

<u>Age Group</u>	<u>Males</u>			<u>Females</u>		
	<u>1976^b</u>	<u>1971</u>	<u>1976</u>	<u>1967^b</u>	<u>1971</u>	<u>1976</u>
0-4	18.8	18.3	18.6	16.9	16.2	17.0
5-14	32.4	33.2	30.7	28.0	29.8	27.8
15-24	14.6	18.1	22.1	15.8	17.8	20.2
25-49	18.7	18.6	18.4	24.6	25.2	25.0
50-64	7.9	6.8	6.2	8.1	6.5	6.5
65 and over	7.0	5.0	4.1	6.2	4.5	3.5
All ages:						
Percent	100.0	100.0	100.0	100.0	100.0	100.0
Thousands	295.6	313.6	336.5	300.4	312.0	334.4

Gaza Strip and North Sinai — Population by Sex
and Age,^a 1967, 1971, and 1976

<u>Age Groups</u>	<u>Males</u>			<u>Females</u>		
	<u>1967^b</u>	<u>1971</u>	<u>1976</u>	<u>1967</u>	<u>1971</u>	<u>1976</u>
0-4	21.0	19.2	20.3	18.0	16.6	18.1
5-14	32.8	33.9	30.2	28.2	29.5	26.8
15-24	15.6	19.6	22.3	17.5	20.5	20.7
25-49	18.6	18.2	18.7	24.8	25.4	26.7
50-64	6.1	5.5	5.7	6.4	5.0	2.4
65 and over	5.1	3.6	2.8	4.3	3.0	2.4
All ages:						
Percent	100.0	100.0	100.0	100.0	100.0	100.0
Number	189.1	186.4	211.9	200.6	195.5	217.1

^a The figures for age structure reportedly were smoothed and rounded by the Israel Central Bureau of Statistics because the reports on age ranges within the population are inaccurate and because of the difficulty in collecting change components.

^b September 1967 census.

Source: CACI. 1978.

Table 13
 Total Causes of Death: Israel 1971, Jordan 1970
 (Percent of total deaths attributed to cause listed)

	Total Population (%)	Jews (%)	Non-Jews (%)	Jordan	Total Population - %
Heart disease	32	34	21	Symptoms, ill-defined	16
Malignant neoplasms	16	18	7	Heart disease	12
Cerebrovascular disease	13	14	8	Diarrheal disease	9
Congenital	6	5	16	Pneumonia	8
Accidents	5	4	7	Accidents	5
Symptoms, ill-defined	5	4	6	Birth-related	4
Pneumonia	3	2	6	Cerebrovascular	3
Bronchitis	2	2	2	Malignant neoplasms	3
Diabetes	2	2	1	Measles	2
Enteritis, other diarrheal diseases	1	less than 1	5		
Cirrhosis of the liver	1	1	less than 1		

(Columns do not add to 100%)

Source: Israel - 1974 Supplement to the Fifth Report on the World Health Situation
 Jordan - 1972 Supplement to the Fourth Report on the World Health Situation

Source: Peilemeir. 1975.

Table 14

Infant Deaths by Cause - Percent of Total
 Infant Deaths for Each Population Group
 I S R A E L - 1 9 7 1

UNRWA - All Fields (1973)	non-Jews		Jews	All
Diarrheal diseases	33%	Enteritis 16%	3%	9%
Respiratory diseases	28	Pneumonia 14	6	10
Prematurity	9	Birth injuries, etc. 14	32	26
Nutritional	7			
Perinatal	4	Perinatal 16	24	21
Congenital	4	Congenital 20	21	21
Measles	3	Infective 3	2	2
Accidents	2	Accidents 2	1	1

Source: UNRWA - Report of the Commissioner-General. 1 July 1973-30 June 1974, p. 25.
 Israel- 1974 Supplement to the Fifth Report on the World Health Situation.

Source: Peilemeier. 1975.

Table 15

Health Services in the West Bank in 1967-1970; 1973

	<u>1967</u>	<u>1970</u>	<u>1973</u>
Population	598,647	616,073	650,700
Number of government hospitals	8	8	7
Number of Beds	553	635	646
Non-governmental hospitals	8	7	8
Number of beds	328	233	393
Total hospital beds	881	868	1,039
Number of beds/1,000 population	1.5	1.4	1.6
Number of operations in government hospitals	4,221	8,293	6,899
Number of operations in non-government hospitals	951	1,066	2,591
Number of operations/1,000 population	8.6	15.2	14.6
Hospitalizations/1,000 (government hospitals only)	48.2 (1968)	64.7	65.7
Medical personnel/general hospital beds (gov't.)	0.31	0.46	0.40
Other personnel/general hospital beds (gov't.)	0.32	0.30	0.23
Bethlehem Mental Hospital (1), number of beds	400	400	370
Occupancy rate (Mental Hospital)	82.0%	80.5%	94.8%
Occupancy rate (government hospitals)	50.6%	67.7%*	59.3%
Occupancy rate (non-government hospitals)	41.4%	60.1%	68.9%
Number of deliveries in hospitals	2,958	4,934	8,200
Percentage of hospital deliveries	11.4	19.6	27.6
Number of visits to government MCH clinics	92,546	156,901	69,876
	<u>1968</u>	<u>1970</u>	<u>1973</u>
Number of visits to government clinics (curative)	564,309	1,073,777	747,934
Number of visits to non-government clinics (curative)	448,227	256,372	109,257
Immunization in children:			
Smallpox	23,063	28,075	12,479
Polio (Sabin, 1)	22,975	32,409	21,428
Triple (DPT, 1)	3,961	18,660	20,492
Measles	—	17,630	12,768

(* Due mainly to the cholera outbreak)

Source: 1967-70 - Samuel Shye. A Development Plan for the Administered Territories, Jerusalem, 1972, p. 165.

1973 - "Health Assistance to Refugees...in the Middle East." Report of the Government of Israel to the 27th World Health Assembly, May 1974.

Source: Peilemeier. 1975.

Table 16
Selected Indices of Health Service
Gaza Strip - 1973

	<u>Number</u>
Population	401,000
Number of Government hospitals (general)	3
Number of (general) hospital beds	706
Non-Government hospitals	1
Number of non-Government beds	92
Total general hospital beds	798
General beds/1,000 population	1.98
Number of operations in Government hospitals	9,548
Number of operations in non-Government hospitals	2,675
Number of operations/1,000 population	30.48
Hospitalizations/1,000 population (Government hospitals only)	26.98
Medical personnel/general hospital bed (Government)	0.64
Other personnel/general hospital bed (Government)	0.46
Number of special hospitals:	
Tuberculosis Hospital (under joint management of Government and UNRWA)	2
Government Ophthalmology Hospital	
Number of Tuberculosis Hospital beds	210
Number of Government Ophthalmology Hospital beds	57
Occupancy rate, Government hospitals (general)	75%
Occupancy rate, Government hospitals (special)	63%
Occupancy rate, non-Government hospitals	70%
Number of hospital deliveries	3,491
Percent of hospital deliveries	26%
Number of visits to Government clinics	1,889,695
Number of visits to non-Government clinics (OP Clinic in Baptist Hospital)	43,714
Number of visits to Government MCH clinics	25,091

Source: "Health Assistance to Refugees...in the Middle East." Report of the Government of Israel to the 27th World Health Assembly, May 1974.

Source: Peilemeier. 1975.

Appendix III

Economic Data

1. West Bank and Gaza: Gross National Product by Economic Sector
2. West Bank and Gaza: Sector Composition of GNP (percentages)
3. Foreign Trade
 - a. West Bank
 - b. Gaza Strip
4. Agricultural Output
 - a. West Bank
 - b. Gaza Strip
5. Population and Labor Force
6. Labor Force Participation 1976
7. Various Indicators of Employment by Sector
 - a. Sector employment of refugees and non-refugees
 - b. Employment by sector showing percent of workforce working in Israel
 - c. Employment in sector including workers in Israel
 - d. Place of employment

1. West Bank and Gaza: Gross National Product at Factor Cost, by
Economic Sector, 1967-75

(\$ million, at 1974 prices)

	Average			Percent average annual change		
	1968-69	1972-73	1974-75	1968-69 to 1974-75	1968-69 to 1972-73	1972-73 to 1974-75
<u>West Bank</u>						
Agriculture	78	113	143	11	10	13
Industry	17	36	32	10	11	9
Construction	9	31	49	32	35	27
Public and community services	35	45	49	6	7	4
Commerce, transport, other services ^a	64	102	110	9	12	4
Gross domestic product	<u>203</u>	<u>317</u>	<u>383</u>	<u>11</u>	<u>12</u>	<u>10</u>
Factor income from abroad	21	103	116	32	48	6
Less: Factor pay- ments abroad	4	4	4	-	-	-
GNP (at factor cost)	<u>220</u>	<u>416</u>	<u>495</u>	<u>14</u>	<u>17</u>	<u>9</u>
<u>Gaza Strip</u>						
Agriculture	21	36	40	12	15	7
Industry	3	9	12	23	27	15
Construction	5	18	23	30	41	11
Public and community services	21	32	33	8	11	1
Commerce, transport, other services ^a	45	46	45	-	-	-
Gross domestic product	<u>95</u>	<u>141</u>	<u>153</u>	<u>8</u>	<u>11</u>	<u>4</u>
Factor income from abroad	4	51	67	60	89	14
Less factor pay- ments abroad	2	2	2	-	-	-
GNP (at factor cost)	<u>97</u>	<u>190</u>	<u>218</u>	<u>14</u>	<u>18</u>	<u>7</u>
<u>Total Occupied Areas</u>						
Gross domestic product	<u>298</u>	<u>458</u>	<u>536</u>	<u>10</u>	<u>11</u>	<u>8</u>
Gross national product	<u>317</u>	<u>606</u>	<u>713</u>	<u>14</u>	<u>17</u>	<u>8</u>

^aIncludes errors and omissions

Source: U.S. AID. 1978a.

2. West Bank and Gaza

SECTOR COMPOSITION OF THE Gross National Product (percentages, at current prices)

	1968	1969	1970	1971	1972	1973	1974	1975	Average		
									1966-69	1972-73	1974-75
Agriculture	36	40	35	38	39	35	45	30	38	37	38
Industry	8	9	9	9	8	9	8	8	9	8	8
Construction	3	5	6	6	7	10	11	16	4	8	13
Public and community services	18	16	17	16	13	14	13	13	17	14	13
Commerce, transport, and other services ^a	35	30	33	31	33	32	23	32	32	33	28
Total domestic product	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
Domestic product	97	90	83	77	74	75	78	75	93	75	77
Factor income from abroad (net)	3	10	17	23	26	25	22	25	7	25	23
Total national product	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
<u>Gaza Strip</u>											
Agriculture	28	28	30	30	32	29	26	29	28	30	28
Industry	3	4	6	5	6	6	8	9	4	6	9
Construction	3	6	6	5	8	14	14	15	5	11	14
Public and community services	20	20	21	19	18	20	22	22	20	19	22
Commerce, transport, and other services ^a	46	42	37	41	36	31	30	25	43	34	27
Total domestic product	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
Domestic product	100	96	87	86	74	70	70	71	98	72	71
Factor income from abroad (net)	0	4	13	14	26	30	30	29	2	28	29
Total national product	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
<u>Total administered areas</u>											
Domestic product	98	91	84	80	74	73	76	74	95	74	75
Factor income from abroad (net)	2	9	16	20	26	27	24	26	5	26	25
Total national product	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

a) Includes errors and omissions.

Source: Bergman. 1976.

3. Foreign Trade

A. Foreign Trade of Gaza Strip, By Country of Origin And Destination, 1972, 1974-76

(percentage distribution)

	1972	1974	1975	*1976
Exports				
To Israel	48	61	64	64
To Jordan	10	18	20	23
Overseas	42	21	16	13
Total	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
Imports				
From Israel	89	89	94	91
From Jordan	--	--	--	--
Overseas	11	11	6	9
Total	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

Source: Bergman. 1976.

* 1976 from U.S. AID. 1978b.

B. Foreign Trade of The West Bank, By Country of Origin And Destination, 1972, 1974-76

(percentage distribution)

	1972	1974	1975	*1976
Exports				
To Israel	49	70	66	62
To Jordan	49	29	33	35
Overseas	2	1	1	3
Total	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
Imports				
From Israel	82	90	89	90
From Jordan	5	2	2	2
Overseas	13	8	9	8
Total	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

Source: Bergman. 1976.

* 1976 from U.S. AID. 1978b.

4. Agricultural Output

4a. Agricultural Output

	The West Bank		
	1967/68	1971/72	1972/73
Value in Millions of Israeli Pounds			
Total Output	135.0	347.1	399.5
Crops	87.9	233.3	253.9
field crops	11.0	37.2	48.7
vegetables	19.5	54.4	60.9
melons and pumpkins	6.0	1.5	1.5
olives	19.6	73.5	52.5
citrus fruits	10.5	18.1	27.1
other fruits	21.3	48.6	63.2
Livestock and			
livestock products	45.0	110.5	142.5
meat	25.1	70.1	90.2
milk	15.7	32.5	43.1
eggs	3.2	7.0	7.2
miscellaneous	1.0	1.9	2.0
fish	—	—	—
Investments in			
forestry and new			
fruit plantations	2.1	3.3	3.1
Purchased inputs	21.4	42.9	63.5
Income Originating			
in Agriculture	113.6	307.1	336.0
Quantity in Thousands of Tons			
Field crops	23.5	55.3	43.3
Vegetables	60.0	103.1	93.4
Melons and pumpkins	36.0	8.0	3.3
Olives	28.0	70.0	21.0
Citrus fruits	30.0	47.6	58.6
Other fruits	47.9	56.5	58.9
Meat	10.3	18.7	20.9
Milk	30.3	43.8	44.3
Eggs (million)	25.0	30.0	38.0
Fish	—	—	—

SOURCE: Van Arkadie. 1977.

46. Agricultural Output

	The Gaza Strip and North Sinai		
	1967/68	1971/72	1972/73
Value in Millions of Israeli Pounds			
Total Output	53.3	149.5	192.2
Crops	41.3	113.8	140.9
field crops	0.3	1.3	1.7
vegetables	9.3	16.9	20.6
melons and pumpkins	2.5	2.5	3.4
olives	—	—	—
citrus fruits	21.6	75.6	92.0
other fruits	7.6*	17.5*	23.2
Livestock and livestock products	10.9	33.9	49.5
meat	3.6	12.7	17.3
milk	3.3	7.3	12.2
eggs	1.1	3.8	4.9
miscellaneous	0.2	0.3	0.5
fish	2.7	9.8	14.6
Investments in forestry and new fruit plantations	1.1	1.8	1.8
Purchased Inputs	17.0	42.1	61.8
Income Originating in Agriculture	36.3	105.5	128.9
Quantity in Thousands of Tons			
Field crops			
Vegetables	31.8	38.9	42.5
Melons and pumpkins	12.5	4.6	5.0
Olives	—	—	—
Citrus fruits	91.0	178.0	205.2
Other fruits	19.0*	26.3*	21.4*
Meat	1.7	3.0	3.5
Milk	6.8	9.7	11.2
Eggs (million)	10.0	24.0	30.0
Fish	3.7	4.2	4.6

* Including olives.

Source: Van Arkadie. 1977.

5. Population and Labor Force, 1972-75

(in thousands unless otherwise stated)

	Total areas					West Bank					Gaza Strip				
	1972	1973	1974	1975	1976	1972	1973	1974	1975	1976	1972	1973	1974	1975	1976
Average population	1,018.0	1,049.7	1,083.8	1,106.8	632.0	650.6	669.5	680.5	686.0	399.1	414.1	426.4			
Working-age population ^a	541.6	552.0	573.8	591.8	336.5	341.6	355.2	366.8	205.1	210.4	218.6	225.1			
Civilian labor force	191.1	196.4	212.5	206.7	126.5	127.7	139.0	133.9	64.6	68.7	73.5	72.9			
Labor force as a percent of average population	18.8	18.7	19.6	18.7	20.0	19.6	20.8	19.7	16.7	17.2	17.7	17.1			
Labor force participation rate (%) ^b	35.3	35.6	37.0	34.9	37.6	37.4	39.1	36.5	31.5	32.7	33.6	32.4			
Male participation rate (%)	65.6	66.2	66.1	62.9	66.5	66.6	66.1	61.9	64.0	65.7	63.1	64.6			
Employed in the areas	136.3	133.4	141.7	138.6	90.3	87.7	94.9	92.0	46.0	45.7	46.8	46.7			
Employed in Israel	52.4	61.3	68.7	66.3	34.9	38.6	42.6	40.4	17.5	22.7	26.1	25.9			
Total employed	188.7	194.7	210.4	204.9	125.2	126.3	137.5	132.4	63.5	68.4	72.9	72.6			
Unemployed job-seekers	2.4	1.7	2.1	1.9	1.4	1.3	1.5	1.5	1.0	0.4	0.6	0.4			
Unemployment rate (%) ^c	1.3	0.9	1.0	0.9	1.1	1.0	1.1	1.1	1.5	0.6	0.8	0.6			

a) As defined in family surveys, the population includes those who migrated to Jordan less than a year before the survey date.

b) The ratio between labor force participants and the working-age population (14+) as qualified in note a; the data on the working age population are therefore biased upward in 1975, while participation rates are biased downward.

c) Unemployed job-seekers as a percentage of the total labor force.

Source: Bergman. 1977.

6. Labor Force Participation 1976

	<u>% of Adult Population in Labor Force</u>	<u>% of Male Adult Population in Labor Force</u>	<u>% of Female Adult Population in Labor Force</u>	<u>% of Labor Force Who are Female</u>	<u>% of Adult Population Who are Female</u>
West Bank	35.4%	59.7%	12.8%	18.7%	51.8%
Gaza Strip & North Sinai	33.0%	65.6%	4.2%	6.8%	53.2%
of which refugee camp population	31.5%	62.5%	5.0%	8.5%	53.9%

Source: U.S. AID. 1978c.

7. Various Indicators of Employment by Sector

A. DISTRIBUTION OF AREA RESIDENTS EMPLOYED BY ECONOMIC SECTOR, 1974-75 (averages in percent)

Sector	West Bank		Gaza Strip	
	Refugees	Nonrefugees	Refugees	Nonrefugees
Agriculture, forestry, and fishing	17	32	26	27
Industry	18	16	14	13
Construction	22	23	19	23
Trade, restaurants, and hotels	14	11	14	13
Transport, storage, and communications	5	4	7	8
Public services	17	11	15	11
Others	7	3	5	5
Total	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

Source: Bergman. 1976.

B. Employment by Sector Showing % of Workforce Working in Israel

	1965/6		1968		1975	
	West Bank	Gaza	West Bank	Gaza	West Bank	Gaza
Domestic Employ- ment (%)						
Agriculture	47	34	40	33	24	26
Industry	9	3	14	12	16	13
Construction	11	8	13	9	7	4
Services	33	55	33	46	41	57
Domestic Employ- ment as % Total Employment	100	100	94	98	69	64
Employment in Israel	-	-	6	2	31	36

Source: U.S. AID. 1978b.

C. Percent Distribution of Employed Persons by Place of Work and Economic Sector, 1970-76.

	<u>Employed in West Bank</u>		<u>Employed in Gaza Strip & North Sinai</u>		<u>Employed in Israel</u>	
	<u>1970</u>	<u>1976</u>	<u>1970</u>	<u>1976</u>	<u>1970</u>	<u>1976</u>
Agriculture	42.5	33.9	31.6	26.5	24.4	15.4
Industry	14.6	14.9	12.1	13.5	11.6	19.7
Construction	8.4	10.0	8.5	4.6	54.3	50.3
Other	<u>34.5</u>	<u>41.2</u>	<u>47.8</u>	<u>55.4</u>	<u>9.7</u>	<u>14.6</u>
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: U.S. AID. 1978c.

D. Place of Employment

(in thousands)

	<u>West Bank</u>		<u>Gaza Strip & North Sinai</u>	
	<u>1968</u>	<u>1976</u>	<u>1968</u>	<u>1976</u>
Labor Force	93.0	131.3	53.6	76.3
Employment	82.9	129.7	44.5	76.1
Employees working in Israel	3.3	37.1	0.9	27.5
Employees working within territory	79.6	92.6	43.6	48.6
% Unemployment	10.8%	1.2%	16.9%	0.3%
% Employment in Israel	4.0%	29.0%	2.0%	37.0%

Source: U.S. AID. 1978c.