Translated by Yesh Din from the Hebrew publication

Water in the Palestinian localities

Since the establishment of the Palestinian Authority Israel has been providing an agreed-upon quantity of water to the PA but it is less than the amount requested. This creates severe discrimination: in the West Bank there are Jewish settlements with ample supply and Palestinian locations where the water supply is limited and many families are struggling to meet their basic water needs. Yoav Kislev reviews the situation of the water supply to the Palestinians following a visit he made to villages in the Jerusalem and Southern Hebron Mountain areas

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A few weeks ago I went with members of the Yesh Din organization to Palestinian villages in the Jerusalem and Southern Hebron Mountain areas. Our hosts told us about a limited and irregular water supply: similar information occasionally appears in the press. The visit made us wonder about the actual situation, the policy and the responsibility.

This article is about the water supply; it is not about the condition of the water resources, their ownership, international law, the basic right to water and similar questions. These grave matters have been extensively discussed elsewhere. The information collected about the water supply in this area is not complete and comes from the few Israeli sources that were found as well as Palestinian sources. It should be pointed out that most of the Palestinian and other sources upon which this article is based present statistical data combined with tendentious and critical arguments. However, the numeral figures appear to be credible; no serious contradictions were found between the figures from the different sources.

Until the interim agreement

In 1967 there were running water systems in only 50 of the 430 Palestinian localities in the West Bank; the rest used water collected in cisterns and carried water to their homes in jars and containers. After the Six Day War responsibility for the water economy in the territories was transferred to the Civil Administration and the water supply was extended to Palestinian locations and refugee camps (Sherman, 1999, p. 63). In 1982 the infrastructure that had been developed was transferred to the Mekorot company, and it provided water to the Palestinians and later also to the settlements. Most of the development occurred in the first decade after the war but later too there was a certain growth in the supply to Palestinians. By the early 1990s about 200 localities were connected to the Mekorot network. Table 1 presents the expansion: even though the population of the West Bank more than doubled, the water consumption per capita in households and industry (urban consumption) grew threefold. There was a similar development in the Gaza Strip. In contrast to that development consumption in agriculture shrank; altogether, the total amount of water per capita declined in the Palestinian territories by about one third between the Six Day War to

1994 (in Israel too the overall per capita amount dropped because of population growth and a limited water supply).

Table 1. Population and water in the Palestinian localities before the Interim Agreement

	West Bank			Gaza Strip		
	1967	**1985**	**1994**	**1967**	**1985**	**1994**
Population	0.6	0.81	1.56	0.48	0.53	0.83
Households and industry						
Water	6	20	50	5	19	32
Per capita	10	25	32	10	36	39
Irrigation						
Water	75	90	70	85	66	75
Per capita	251	111	45	177	125	90
All sectors						
Water	81	110	120	90	85	107
Per capita	135	136	77	187	161	129

Comment: population in millions; water in million m^3; per capita in m^3
Source: Elmusa, 1997, Tables 3.1, 3.2

On September 28, 1995 the Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip was signed including reference to the water question [the agreement is on the Knesset website: a review and critique can be found in B'Tselem (2000) and in all the English language sources in the reference list]. The figures in Table 1 are for the period up to the agreement. Following the agreement the institutions which will be described below were created. Here I will review the water allocation.

Table 2. Withdrawal from Mountain aquifer at the time of the agreement in million m^3 per year

Aquifer	**Palestinians**	**Israel**	**Total**
Eastern	54	40	94
Northeastern	42	103	145
Western	22	340	362
Total	118	483	601

Comment: million m^3
Source: Interim Agreement, 1995

The only groundwater reservoir in Judea and Samaria is the Mountain aquifer; the aquifer has three parts: Eastern, Northeastern and Western (also called Yarkon-Taninim). The Interim Agreement recorded the quantities of water from the mountain aquifer available to both sides at the time of the signing and the amounts that would be added. The amounts that Israel produced at the time of signing (Table 2) include withdrawal from wells in Israel within the Green Line. The total amount extracted by the Palestinians according to Table 2, 118 million m^3 per year (20% of the total) is actually the same quantity stated in Table 1 for the year 1994.

There is agreement between the two sources; but it appears that both tables ignore the rainwater collected in cisterns that still exist in the West Bank.

There are estimates that about a quarter of the households in the West Bank have water cisterns (Klawitter, not dated). I will add the assumption that the average amount collected per year in a single cistern is 50 m^3 and that a household has an average of eight people. Therefore that source adds on average per capita in the entire West Bank up to 1.5 m^3 a year. The overall addition in the West Bank is 3 million m^3 a year. In addition there are many cisterns in the centers of villages, in institutions and in fields. Assuming the amount of water in those places is equal to the amount in homes the total amount that is thereby added is 6 million m^3 per year.

The Interim Agreement contained the evaluation that the total annual enrichment of the mountain aquifer was 679 million m^3 a year, whereas the production according to Table 2 is lower; it is only 601 million m^3 a year. Accordingly, another quantity was written in the agreement, in addition to the one that appears in Table 2, of 78 million m^3 a year, that would be developed in the future from the Eastern aquifer. That quantity was supposed to be available to the Palestinians.

Future development was also mentioned in another section of the agreement, "the future needs of the Palestinians in the West Bank are estimated at between 70 and 80 million m^3 a year." Also, "to meet immediate needs" during the transitional period a total of 28.6 million m^3 a year would be made available to the Palestinians, including 5 million m^3 a year as an additional supply to the Gaza Strip. The "transitional period" to which the agreement applied was defined as a five-year period. Since it was signed 12 years have gone by and we have still not reached a final agreement. What have been the developments in the area of water?

Since the agreement

Table 3 provides figures on the supply and consumption of water in the Palestinian localities in 2005. The total amount of water in the West Bank grew since the agreement was signed by 36 million m^3 a year (Table 3 compared to Table 1). In the Gaza Strip the growth was greater; likewise, in the Strip as well there was a substantial growth in water per capita in households, but in the West Bank that quantity did not change since the agreement was signed. But a distinction needs to be made between the supply of water and its use. The water systems in many Palestinian localities are old and leaky and there is much water loss. In the absence of detailed information, I will assume that the average loss in the Palestinian localities is 20% (loss in urban localities in Israel is 10% of water supplied, Dauber, 2006). Based on that assumption use in households is 25 m^3 per capita per year (to which we may add 1.5-3.0 m^3, my guess

about the rainwater collected). In the Gaza Strip the consumed amount according to that calculation is about 45 m³ per capita per year.

Table 3. Population and water supply in Palestinian localities in 2005

	West Bank	Gaza Strip	Total
Population	2372	1390	3792
Purchase from Mekorot	44	3	47
From springs	54		54
From wells	58	157	215
Total	156	160	316
Of which for households	75	78	163
Per capita, m³	31.6	56.1	43.0

Comments: population-thousands; water quantities-million m³, except for last row
Source: various tables in Statistical Abstract of Palestine, No. 7, 2006

Table 4 presents the water supply from Mekorot. The figures in the last two tables about the supply to the Palestinians are not identical but the differences are small. The supply to the Jewish settlements in 2005 was 37.8 million m³ per year; the total Mekorot supply to the West Bank during that year was 78.1 million m³. According to the Palestinians, Mekorot derived from drilling in the West Bank some 50 million m³ a year.

If that figure is correct, Mekorot provides the West Bank, from the area within the Green Line, and to the Jewish and Palestinian settlements, about 28 million m³ a year.

In comparison, the total quantity Mekorot supplies a year is about one billion m³ of freshwater and 330 million m³ of treated wastewater and brackish water (Water Commission, 2006).

Table 4. Mekorot water supply beyond the Green Line, million m³, 2005

PA, West Bank	40.3
PA, Gaza	3.2
Jewish settlements	
Jordan Valley	
Agriculture	21.7
Household and industry	1.7
Judea and Samaria	
Agriculture	2.6
Household and industry	11.8

Comments: in 2005 Mekorot also supplied 10 million m³ to the Judean Desert and the Dead Sea. It is not clear how much of that to places in the West Bank side of the Green Line
Source: Water Commission, 2006

Water in Jewish settlements and in Israel

In the West Bank, without the Gaza Strip and without the neighborhoods of Jerusalem, in 2005 there were more than 100 Jewish settlements in which 240,000 residents lived (Statistical Abstract of Israel, 2007, Table 2.7). With that number and according to the quantity that appears in Table 4, the average consumption per household in the Jewish settlements was 56.3 m³ per capita. Detailed figures about water consumption were only published for 11 settlements (with 108,000 residents) (Dauber, 2006). For them, the per capita consumption for residential and urban consumption (including institutions, workshops, offices and so on) is provided in the first line of Table 5. If these features are applicable to all of the Jewish settlements, throughout the West Bank in 2005, then residential consumption was 12.3 million m³ and urban consumption was 17.7 million m³. The figures in Table 4 are lower.

Table 5. Water consumption in Jewish settlements and in Israel, m³ per capita for 2005

	Residential consumption	**Urban consumption**
11 settlements in the West Bank	51.2	73.9
Cities and towns		
Jewish and mixed	59.7	86.4
Minorities	52.2	65.2
Local councils		
Jewish places	71.3	95.1
Minorities	50.0	63.4

Comments:
a. The mixed cities are Jerusalem, Haifa, Tel Aviv-Jaffa and others
b.. The figures for cities, towns, and local councils also include the figures for the 11 settlements in the first row
c. The figures in the table are net of water loss
Source: Dauber, 2006

Table 5 contains for comparison figures about the per capita consumption in all of the municipalities and local councils in Israel (including the ones in the occupied territories). The fact that the per capita consumption in the 11 settlements is lower than the equivalent figure for all localities in Israel results from the fact that in the settlements in the West Bank there are less gardens and parks and the families there are larger (in large families the per capita consumption is relatively small).

As Table 4 shows, in the West Bank there is also Jewish agriculture. The biggest concentration is in the Jordan Valley but there are also orchards in the Gush Etzion area and in recent years there has been a planting boom in other settlements as well, in many cases of olive trees and grapevines. In the Jordan Valley the water supply for agriculture in 2005 was 21.7 million m³ (Table 4). I only found detailed figures for 1999 (Ministry of Agriculture, 2001). At the time 4049 people resided in the Jordan Valley settlements. They cultivated 40,000 dunams and used 38 million m³ of water. That amount represents 950 m³ per dunam per year. The Palestinian Authority in the West Bank had, according to Table 3 (in 2005) 81 million m³ of water for agriculture and industry. Industry includes stone mills which consume substantial

quantities of water and agriculture includes watering of animals, vegetable plots and small greenhouses here and there. But even if we ignore industry, the average is 58 m^3 per dunam per year, less than 1/10 of the quantity per dunam available to Israeli farmers in the Jordan Valley. Most of the Palestinian agricultural areas are cultivated by dry farming and do not use irrigation water. The agriculture is dry because it does not have water.

The water systems

The 1995 Interim Agreement divided the West Bank into three areas of control: A - Palestinian civilian and military control; B -Palestinian civilian control and Israeli military control; and C - Israeli civilian and military control. "Powers and responsibilities in the areas of water and sewage in the [entire] West Bank referring to Palestinians only" were discharged to the Palestinians. Following the agreement two main Palestinian bodies now operate in the area of water. One is the Palestinian Water Authority, which is parallel to our own government authority. It is responsible for the resources and water allocation in places where it has the power to decide. The other body is the West Bank Water Department. That is a unit that was transferred from the Civil Administration which continues to pay its salaries; it operates Mekorot facilities and supplies water to the Palestinian localities and in certain cases to Jewish settlements as well. On the ground the water department is completely subordinate to Mekorot's instructions. It is independent in three areas: formally it is the party that buys the water from Mekorot; in places where the hookup to Mekorot is for a cluster of villages, the water department allocates the quantity between the consumer villages; it is required to collect the fee from those villages. However, the quantity bought from Mekorot is only one third of the general supply in the West Bank (Table 3). In many towns and villages the water supply is under the responsibility of the local councils, which operate wells or buy water from other sources (Selby, 2003, p. 161, describes the water system in Hebron and its environs). The Interim Agreement also established a Joint Water Committee for Israel and the Palestinian Authority. The Committee is responsible for the resources and supply throughout the West Bank and its functions are similar to those of the Government Authority in Israel (the former Water Commission). The Committee has an equal number of members from each side and all of its decisions are made by consensus; that means each side can veto the proposals of the other. The representatives of the parties on the committee are the directors of the water authorities, ours and the Palestinian Authority’s. The Committee discusses resource allocations, and it grants production or construction licenses for water and sewage plants. Both the Palestinian and the Israeli side have raised claims that despite the formally equal structure both sides do not have equal power in the Committee (Selby, 2000, p. 113, brings the Palestinian charges of Israeli aggression; Sherman, 1999, p. 102, explains that the Palestinians who sit at the top of the reservoir can stop vital Israeli plants in the committee).

According to the agreement, the Palestinians pay the "real cost" of Mekorot water. That cost is computed at the plants that provide water to the occupied territories, including transmission to the localities. The price of water calculated that way is similar but not identical to the price local councils in Israel pay for Mekorot water (in the Jordan Valley f the price is lower). Again, from Mekorot's point of view, the water supply at the entrances of the Palestinian local councils is to the West Bank Water Department, and that is the body that should be collecting the fees from its customers. Actually, the Palestinian local councils have trouble collecting fees from the residents and even if they succeed the money is not always transferred to the Water Department; it, in turn, does not pay Mekorot. Therefore, Israel offsets the water debts from the tax money collected in Israel and routinely transferred to the Palestinian Authority. Mekorot receives what it deserves from Israel's Treasury. Since the agreement was signed the sum that was offset against water debts reached more than NIS 450 million (quote from Fadel Qawash, director of the Palestinian Water Authority, IMEMC NEWS, 2007). (A similar offsetting of different sums was also made for sewage that flows into Israel and against arrears in payments for electricity). The West Bank Water Department is pressing its localities to improve their payment regime and sometimes even cuts off the supply, just as the local councils also try to collect from their residents (PHG, 2006, p. 19). But success is rare. This puts the Palestinian Authority on the horns of a dilemma: every addition of water it manages to receive from Mekorot for its villages will be at the expense of the authority’s own money.

As opposed to our Water Authority, which is only an overseeing and regulating body, the Palestinian Water Authority also invests in plants and develops water systems, mostly with donor funding. Since the Interim Agreement the Authority increased the water supply to the residents by more than 12 million m^3 a year (Messerschmitt, oral communication). But that activity often comes up against professional and administrative difficulties, competition between donor parties and even disputes and conflicts between Palestinian local councils and between them and the Water Authority (Selby, 2003, p. 157).

Reports about the water problems in the occupied territories come with extreme criticism; for instance, a British researcher (Selby, 2003) begins his book about water with a description of Operation Defensive Shield as a cruel and destructive operation, and the subtitle of a report by the Palestinian Hydrological Group (PHG, 2006) is "Israel's continuous assault on Palestinian water, sanitation and hygiene during the intifada." Neither report mentions, even by a hint, the events that preceded the operation and the tightening of military control in the occupied territories. The arguments made by Palestinian and other writers against Israel regarding water itself are also many and varied: among them is that the Mountain aquifer completely belongs to the Palestinians and Israel must stop withdrawing from it, as well as from the wells west of the Green line; that the IDF deliberately destroys water and sewage facilities and soldiers shoot at water tanks on rooftops of houses; that the checkpoints obstruct the movement of water tankers and repair crews; settlers harass Palestinian systems; the prices Israelis and settlers pay Mekorot are subsidized while the Palestinians have to pay the full price; the Civil Administration blocks cisterns (yes, I saw) and on and on.

On the other hand, Israel criticizes the lack of Palestinian willingness to cooperate even when cooperation is offered and reports of water theft and disregard, both in the Palestinian towns and villages and from Mekorot's carrier pipes. As I wrote at the beginning of this article, I am not going to discuss those issues here. I refer only to the water supply; it is limited, in three ways.

The first way is that Israel, at the Joint Water Committee, prevents the development of Palestinian water resources wherever such development may be detrimental to the amount of water available to us. The second way is that there are still 220 Palestinian localities with 215,000 residents (about 10% of the population) which are not connected to any running water systems (B'Tselem, 2000). Their water supply is from collection in cisterns and provided by tankers. The third way the water supply is limited is that the supply to the localities connected to Mekorot is limited, disrupted and irregular. This is done by several methods: for instance, in two places there are reports of storage tanks that jointly supply water to Jewish or Israeli settlements and to Palestinians. The pipe going to the Palestinians is attached higher than the pipe going to the Israeli customers. Thus, when the flow is limited or consumption is high, supply to the Israelis may continue while to the Palestinians it is disrupted. (Selby, 2003, p. 88 describes a tank in Hebron; PHG, 2006, p. 22, reports a similar arrangement at Har Adar.) In other places the line to the Palestinian settlement goes through a small diameter pipe segment and the flow is limited (in one place I saw a 1 inch pipe; it was replaced after a visit by Yesh Din and a request from our Water Authority); another way to reduce the flow is to insert in the line to the Palestinian village a reduction valve (PHG, 2006, p. 22); in some villages pressure regulators were installed, preventing the water from reaching high places. Stopping the water supply for hours or days is another simple solution; there are places where it is reported that water flows for only a few hours a week and even less. In such cases the Palestinians themselves assign the limited supply inside the village to homes or neighborhoods so that at least once in each period water will reach every household. The residents collect water in tanks or cisterns; and supplementary supply comes in water tankers, when it comes, and at prices that are much higher than the price of water in the pipe.

For balance it should be noted: it is likely that even if the Palestinian demands were fulfilled as requested and the water reservoirs and systems were handed to the Palestinians, the water supply would still be far from perfect for a very long time. The economy of the territories is poor and the residents are not used to paying for services. The areas under PA control are disconnected from each other. Local political forces often have more power than the overall authority. Even with the generous help of donors there would not be a Mekorot company in the West Bank any time soon nor would an inter-regional system be created that would guarantee a credible and plentiful flow at every place and to every household. Nor do such systems of rich economies exist in all the neighboring countries; many families in Amman receive water only once a week (http://www.water-technology.net/projects/greater_amman) nor is the water supply in Damascus complete (http://www.irinnews.org/report.aspx?reportid=61878) (major investments are supposed to

improve the situation in both cities). Does recognition of those limitations absolve us of responsibility for the water situation in the occupied territories?

Summary

For our purpose the period since the Six Day War can be divided into three parts: the ten years after the war were a period of development and expansion of services to the population of the territories. In the second period, the 18 years from the late 1970s (and change of government in Israel) to the Interim Agreement, services to the Palestinians were not increased and the expansion of infrastructures was mainly meant to guarantee the water supply to the growing Jewish population. Since 1996, in the third period, we are operating in the framework of the Interim Agreement. Now I will offer a summary of the last period; it will be on two levels, political and personal. On the political level, the Interim Agreement was signed for five years but 12 years have gone by and it has neither been replaced nor changed. The agreement stipulated the immediate addition of 23 million m^3 a year to the Palestinian localities in the West Bank and an additional 78 million m^3 from the eastern Mountain aquifer.

Between the period of Table 1 to the period of Table 3 the quantity of water in the West Bank grew by 35 million m^3, so that the immediate quantity was indeed supplied and supplements are occasionally given to places with a severe shortage. However, the additional withdrawal from the eastern Mountain aquifer was only partly realized. The explanations I found for the partial realization are the especially high cost of production from that source and the high salinity of that water. Some also doubt the Interim Agreement's estimates as to the amount of water that can be produced from the eastern reserve (Scarpa, 2006; Selby, 2003, Ch. 5).

As for the Gaza Strip, the agreement does not state the amount supplied from Israel to Gaza before the agreement, so that I do not know whether the quantity of 3 million m^3 from Mekorot in Table 3 is part of the quantity of 5 million m^3 referred to in the Interim Agreement or whether that quantity was already supplied before it.

As to the personal level. On average, the amount of water per capita in the Palestinian localities in the West Bank does not reach 60% of the quantity consumed by the Jewish settlements in the same area; and if we take into consideration water loss the level is even lower. But the average occludes differences between the places: some, as mentioned, are not connected to a central system and in many others the supply is limited and disrupted. Were water consumption in the Palestinian households free, as it is in Israel, the amount consumed would be higher and it would also grow as the population grows, even if all of the families had to pay the full price of water. Tanker water is much more expensive. (If water consumption in the West Bank was at the level accepted in the Arab localities in Israel, 50 m^3 per capita per year, the

overall quantity would be 45 million m³ a year greater than the quantity consumed today. It is likely that some of the additional quantity would come through Mekorot lines and some by our giving up joint resources in the Mountain aquifer). But Mekorot's water regime is not the private caprice of the company and the position of our representatives in the Joint Water Committee is no accident; they reflect State direction. Apparently, although I did not see this in writing, it is the State's view that the Interim Agreement was fulfilled, even in access, and there is no need for us to help with additional quantities of water. The technical difficulties Mekorot poses and the restrictions we impose on the committee were intentionally made in order to limit the supply to the residents of the territories.

But the State of Israel did not only sign the Interim Agreement, it also controls the territories. In the areas it controls a growing number of Jewish residents live, who receive a free water supply, to households, gardens, public parks, swimming pools as well as agriculture -- as well as Palestinians, to which the supply is limited and irregular. That is clear-cut discrimination and it is our responsibility.

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