

Israeli water policy in a regional context of conflict: prospects for sustainable development for Israelis and Palestinians?

In: Ferragina E., *Water Resources and Development in the Mediterranean Basin*, Naples, 2004.

Stefan Deconinck

Centre for Sustainable Development

Ghent University – Belgium

Stefan.Deconinck@gmail.com

Waternet – on the geopolitics of water scarcity - <http://www.waternet.be/>

“With water, you can make politics. With land, you can make wars”

Shimon Peres on the International Symposium on Sustainable Water Management in Arid and Semiarid Regions, May 15-19, 1995.

Introduction

In our newspapers and on our TV-screens, we can observe the events that take place every day on the surface of the Israeli-Palestinian conflict. These reports from the region west of the Jordan River barely mention the importance of water resources in this clash between Israel and the Palestinian population living under Israeli occupation. Nevertheless, water is one of the five major remaining stumbling blocks in the attempts to establish peace, together with the issues of Jerusalem, Palestinian refugees, Jewish colonies and the status of a future Palestinian entity.

In August 2000, the Israeli government approved a long-term water policy document proposed by the Water Commissioner.¹ The plan outlines the general framework for a water policy towards 2020. Within this period of time, Israel faces the challenge to cope with increasing water scarcity, as a result of the limited availability of natural water resources combined with an increasing demand for water due to population growth and economic development and regular droughts. Therefore, the plan aims at the maintenance the actual level of water consumption by households, industry and agriculture while preserving the country's natural water resources – especially during years with under average winter rains that fail to recharge the underground and surface water systems.

This policy plan cannot only be read as a document for internal water policy. It also involves important water resources shared with the state of Jordan and with the Palestinian population in the Occupied Territories. As such, it will have direct implications for these populations as well. This makes the policy plan an interesting parameter to assess prospects for regional sustainable development.

Therefore, in this contribution water policy will be regarded as an instrument in the struggle for development, in which water plays a crucial role. We will take a close look at the problem of growing water scarcity as a result of the combination of limited water resources and increasing population. We will describe how water has become a tool in the political conflict, and how it can undermine the prospects for sustainable development of the population in the region.

¹ Ministry of National Infrastructures – Water Commission, *Long term tasks of the Israeli water sector*, Tel Aviv, 2000.

Part 1 – the context of water scarcity for Israel and Palestinians

1. Shared water resources for Israelis and Palestinians

The inhabitants of Israel and the Palestinian Territories share their main sources for drinking water. The largest resource is the Jordan River. Compared to other rivers in the Middle East like the Euphrates, the Tigris or the Nile, the Jordan River is a rather modest one - in length as well as in flow. Its main tributaries are the Hasbani, Dan, Baniyas and Yarmuk. The first three rivers converge in Israel, north of the Lake of Galilee, to form the upper Jordan River. Only the sources of the Dan originate within the Israeli borders. The Hasbani springs lie in the part of Lebanon that was until June 2000 incorporated into the occupied Israeli security zone in southern Lebanon, and the Baniyas water drains from the Golan Heights – a territory formerly under Syrian control and since the war of 1967 occupied by Israel (Berman T., 1998).

(MAP of the Jordan River basin)

South of the Lake of Galilee, the Jordan meets with the Yarmuk River, containing water from Syria and Jordan, and continues to flow south toward the Dead Sea. Syria and Jordan established a series of dams on the Yarmuk River for maximum profit of every drop of water. When the river reaches the Palestinian West Bank the upstream riparians used all the water they could. Israel uses the Lake of Galilee as a reservoir to extract drinking water through its National Water Carrier – a network of canals and pipelines – to the populated coastal plain and the farms in the Negev desert. Due to the occupation of the Jordan valley by the Israeli army, the Palestinian population on the West Bank is unable to reach the river at all, and cannot use the water for irrigation or human consumption. But even if they could, they would not find more than a brackish muddy stream. The former Israeli Prime Minister Shimon Peres once declared that nowadays one could find more history than water in the Jordan River.

The other sources for potable water are the aquifers, underground geological structures with the capacity to store water. The water from the aquifers comes in a natural way to surface as a spring; the people living on top of the aquifer can also get access to the water by drilling wells. This is a renewable water resource, replenished by the yearly cycle of the winter rains. Human activity can endanger this resource. Sewage, industrial waste and agricultural pollutants like pesticides and fertilisers can harm the water quality and make it unfit for human consumption. Over-exploitation can cause irreversible damage to the geological structure, and the aquifer can lose its water-storing capacity.

Israel and the Palestinians share two aquifer systems. The first one, the mountain aquifer, is located under the hills of the West Bank and shared by Israelis and Palestinians as well as Jewish settlers on the West Bank. Although the aquifer is replenished by the winter rains that mainly fall on West Bank territory, a major quantity of the water flows underground across the 'Green Line' (the armistice line that marks the Israeli borders between 1948 and 1967) - thus outside the West Bank - and moves gradually towards the slopes of the hills mainly within Israeli territory. There the water appears on the surface as natural springs and sources, out of reach of the Palestinian population of the West Bank. The second shared aquifer is located under the coastal zone, covering an area including the Palestinian Gaza Strip (Al-Khatib N. et.al., 1993).

2. Water under Israeli occupation

After the war of 1967 and the occupation of the Palestinian West Bank and Gaza Strip, Israeli military commanders became responsible for the governance of these Occupied Territories. A new water regime was imposed and the resources became subject to the Israeli water legislation. Therefore, the water resources in the Occupied Territories became public property that could be “destined for the

requirements of its inhabitants and for the development of the country”, quoting the Israeli water law.(MFA, 2002). Landowners could no longer claim any rights to the water on their property, and the authority over the water resources in the Occupied Territories was transferred from villages and local communities to the so-called Civil Administration.(Issa S, De Bruijn G., 1994). The military commanders of the area, as head of the Civil Administration, became responsible for granting exploitation licences for existing and new water installations, or to plant new citrus gardens. The military commander has the power to withdraw a licence that was previously granted with no possibility of appeal against his decisions. Meters were placed on the Palestinian wells to limit their capacity. The institutional control over the water resources was finally completed in 1982 when water management was transferred to the Israeli national water company *Mekorot*. (UN a; Wolf A., 1994; Issa S, De Bruijn G., 1994; Caponera D., 1994)

The result of this water policy was that the growing Palestinian demand for water was systematically ignored and the necessary licences were almost always refused. The use of more powerful water installations and deeper wells in the Jewish settlements caused the older Palestinian wells to dry out. The majority of the Palestinian wells are now out of operation. Most of the Palestinian villagers are not connected to a waterworks; people have to rely on tank lorries or women have to carry water from distant wells for their daily needs. The present Intifadah has made things even worse, because the Israeli siege makes it harder to reach Palestinian towns and villages, which made the price of water to rise to unbearable heights. Although the Israeli human rights organisation *B'tselem* did not yet find any proof of on purpose destruction of water facilities, a lot of water is lost when the improvised water storage, which are so typical for the rooftops of Palestinian houses, are hit during the bombardments of Palestinian neighbourhoods by Israeli artillery.

On the other side of the hill, Jewish settlements do not have to deal with these restrictions. Settlers can cherish themselves with the surroundings of green lawn and refreshing swimming pools. Unsurprisingly, this adds a great deal to the frustrations on the Palestinian side, when even in the Israeli press opinion makers aired their criticism on these effects of the occupation policy (Matar I., 1992; Baskin, 1993; Ha'aretz, 24/6/2001 a).

The Israeli authorities deny the accusations of a double water policy. It is argued that the existing Palestinian water network has expanded under Israeli governance, and that water consumption has increased by 20% since 1967. Should the supply be insufficient, it is said to be mainly a result of Palestinian mismanagement of the water system. The Palestinian authorities respond that, although the consumption has been increased, the population increase of 84% caused a net decrease in consumption *per capita* (Eaton J. and Eaton D., 1994).

The Israeli water policy in the Occupied Territories is opposed not only by the Palestinians, but also by the international community. In the past, the General Assembly of the United Nations repeatedly confirmed that Palestinians can invoke the principle of permanent sovereignty over national resources, applicable to a population under occupation. An international agreement on economic, social and cultural rights, adopted by the UN in 1966, and ratified by Israel, also stipulates that ‘all peoples may, for their own ends, freely dispose of their natural wealth and resources. (...) In no case may a people be deprived of its own means of subsistence’. And recently, Israel was pointed out that it had to protect the interests of the Palestinian civil population as provided for in the Fourth Geneva Convention. This Convention states that an occupying force has to pay a reasonable price for the resources used to maintain its forces, and the national resources (like water) of the occupied territory can by no means be used in favour of the economy of the mother country. (UN, a; Dichter H., UN, b)

In response to the various accusations concerning the violation of international common law, the Israeli Supreme Court ruled that international law is not applicable in the case of the Israeli policy in the Occupied Territories as long as the Israeli Parliament (Knesset) did not incorporate these principles into national law. Thus, according to the Supreme Court, it is not possible to invoke the Geneva Conventions in order to prevent damage to Palestinian interests caused by the current water policy in the Occupied Territories. (Dinstein Y., 1993) However, international customary law, like the

Geneva Conventions, comes under the set of fundamental principles that are applicable *erga omnes*, without any necessary incorporation into national law, even if a state was not involved in the conclusion of these rules.

3. Coping with scarce resources and rising demand

The Israeli-Palestinian water conflict can be visualised when we compare figures concerning Israeli and Palestinian water consumption. In the water policy plan that will be discussed below, the Israeli government handles an average *per capita* consumption of 35m³ for a Palestinian on the West Bank, and 321m³ for Israelis in Israel and the settlements. According to the standards of the World Health Organisation, people with an average *per capita* consumption less than 500m³ live in a condition of severe water stress (Roberts L., 1998). Although the Israeli average is well below this level, it does not keep the Israeli society to adopt a standard of living that is comparable with Western Europe. Israel has adopted strategies to cope with the limited availability of water resources. It has the necessary capacity and vast financial and technical resources to compensate the lack of abundant water resources. Israel succeeds e.g. to enforce high-tech irrigation or to raise public awareness in order to prevent wasting or polluting water resources.

Water is an important resource for the Israeli agriculture, and as much as 80% of the available water resources are allocated to agriculture. This is a remarkable figure, when the economic importance of agriculture is rather limited; it generates only 2% of the Israeli GNP, while households, industry and services generate 98% of the GDP with the water that is left (CBS, 2001). An important part of the agricultural production, like citrus fruits and flowers, is for export – in a way it can be considered export of virtual water. The fact that Israel, as a country that lives under a condition of severe water stress, can waste so much of its scarce water resources in an economically inefficient way and even export virtual water, is again an illustration of the capacity of the country to cope with this water stress. But problems arise at the horizon. A rising birth rate and continuing immigration make the population to grow, and as a result the demand for drinking water in the households will increase. Economic development increases the demand of water as well, and the Israeli government expects that it will need 60% more water to meet the direct needs of the population in 2020². At the same time, it sticks with the creed of the Zionist founding fathers of ‘making the desert bloom’, which means that sufficient water for agriculture must be safeguarded, too, as well as for industry and services. Because Israel is presently already using nearly every available natural water resource, the only possibility to add extra water to its national water system is by means of ‘non-conventional’ water resources, like recycling and desalination. To compensate the other sectors for the loss of their share of drinking water to the households, the long-term water policy plan of the Israeli government aims to increase the use of recycled water in agriculture and to construct a series of desalination plants alongside the seaside. The amount of water generated here must allow the Israeli water management agencies to protect the natural water resources like the Lake of Galilee or the aquifers against irreparably damage during years of drought.

The Palestinians are in a less favourable position. Like Israel, the Palestinian society also faces a problem of growing demand for potable water due to population growth and necessary economic development. Moreover, the Palestinian economy relies for a greater part on (irrigated) agriculture. But almost fifty-five years of displacement and thirty-five years of Israeli occupation of the West Bank and the Gaza Strip left their traces. Israeli water shortages are shifted on the Palestinian society, which cannot count on the necessary financial means for investment or the necessary institutions to impose good management of the limited water resources. The result is that Palestinian households are far from the safety levels set by international organisations, or even the 100m³ per year that is a minimum standard for household consumption in Israel.(Shuval H., 1993). The lack of access to enough water is a heavy burden for future development and the viability of a Palestinian state.

² See the second part of this contribution for more details

Four successive years of under average winter rains between 1998 en 2001 painfully confronted the population in the whole region with the threat of water shortages. Bygone summer, the Lake of Galilee crossed the 'red line' that indicated its sustainable yield and reached its lowest point in human memory. The same happened to the mountain aquifer under the West Bank. These resources now stand a chance of being contaminated by pollution or intrusion of saline water – risking the irreversible loss of this natural water resource. This already happened to the aquifer system under Gaza, the only source for drinking water for the Palestinians on the Gaza Strip: 80% of its potential drinking water is unsuitable for human consumption.

Although gloomy projections since the 1970's urged for measures to avert a catastrophe, we still have to wait for reorientations of the regional water policies (Kartin A., 2000). In Israel, short-term policies seem to prevent an open discussion about the fundamental issues related to water consumption. When Infrastructure Minister Lieberman suggested this year to impose restrictions on irrigation in agriculture, in order to safeguard drinking water for the Israeli households, his colleagues in the government blew a whistle on him and refused to discuss any measures of this kind. The Water Commissioner, the most senior officer responsible for water management, in vain requested the municipalities to save 15% of the water consumption (e.g by urging citizens to abandon watering their gardens or washing their cars). (Ha'aretz, 24/6/2001; Jerusalem Post, 9/8/2001)

Part Two: Israeli long term water policy

In the second part of this contribution, we focus on the specific situation of Israeli policy measures in times of water scarcity.

In 2000, Shimon Tal was installed as the new Water Commissioner. He prepared a long term water policy document, which was presented to and approved on a cabinet meeting of the Israeli government in August 2001. This water policy plan will grant us a glimpse at what is behind every day's water issues, and we will see how the Israeli government is dealing with fundamental problems related to water shortages.³

1. Main outline of the long term water policy plan

The plan presents in only nine pages a brief introduction to the present problems of water shortage and the concerns for future water consumption. The year 2020 is the reference year for calculations and predictions in the long term.

In the introductory section, it is stated that the projections of future water requirements are based on the assumption that the yield of the natural water resources will be average during the whole planning period of twenty years. This means that the proposed measures are minimum measures for statistical 'normal' years, and that the stock created in 'good' years must be sufficient to compensate the deficit of 'bad' years, when there is not enough rain to recharge the natural water reservoirs. By way of example, an overview of annual extraction of water from the coastal aquifer between 1980 and 1996 shows that in 16 years, there were only 5 years without over extraction and 11 years with a deficit (Kartin, 2000). The cumulated deficit now results into a continuing salinisation of the coastal area, causing destruction of land and water resources, and an assumed accumulation of salt of 1000 tons every day.

³ A copy of the document was obtained at the office of the Water Commissioner in Tel Aviv in June 2001. Unless marked otherwise, the elements used in this discussion of the plan originate from the plan itself or from the interview at the Water Commissioner's office on June 6, 2001.

The thread of the plan is to guarantee a constant supply of water for consumption, while protection the natural water resources. Therefore, the Israeli government decided to produce additional water, from recycling sewage water for agricultural purposes to desalination of brackish and sea water.

2. Consolidating the long term water consumption

- One of the basic assumptions of the policy document is to maintain the actual level of per capita consumption (private/domestic and public). Between 1989 and 1998, this level varied from 101m³ (1991) to 128m³ (1989 and 1998) for the Jewish sector⁴. In the same period, the level of water consumption by the non-Jewish sector increased slightly from 29m³ to 47m³. The long term task is to fix the consumption for every Israeli on 130m³ a year.
- In the plan is estimated that the population of Israel in 2020 will be around 8,6 million people. The total water requirement to meet the per capita needs will then be 1120 million m³ (an increase of 415 million m³ or nearly 60%).
- An other important assumption is the preservation of the agricultural production in Israel: 'the land must remain green', to cite a staff member at the Water Commissioner's office. In an average year, the agricultural consumption of potable water is estimated at 880 million m³. To preserve agriculture in 2020 at its present scale, an amount of 530 million m³ of high quality water is required each year, supplemented with 620 million m³ of treated sewage water.
- Industrial water demand will increase too in the next 20 years: 30 million m³ for potable water and 25 million m³ for water of lower quality.
- The plan also mentions the Palestinian population in the Occupied Territories. The water supply of the population of the Gaza Strip is presumed not to be based on the Israeli national water system, and will not be taken into consideration for redistribution. Because Israel and the Palestinian population share the western part of the mountain aquifer, the plan proposes an additional transfer of 115 million m³ from the Israeli national water system to the Palestinians on the West Bank. This will gradually raise the average level of water consumption on the West Bank from 35m³ to 70m³ each year in 2020. These amounts include domestic, agricultural and industrial water consumption.
- As part of the peace agreement with Jordan, Israel agreed to transfer a yearly amount of 55 million m³ to the Hashemite kingdom. For the sake of the argument, it is presumed that this amount will remain the same in 2020.

The figures mentioned above are resumed in the following table:

| Year | Water consumption in Israel | | | | | West Bank | Jordan |
|------|-----------------------------|---------------|-------|---------------|----------------------|---------------|---------------|
| | Domestic | Industry | | Agriculture | | Potable water | Potable water |
| | Potable water | Potable water | Other | Potable water | Treated sewage water | | |
| 2000 | 705 | 100 | 35 | 880 | 270 | 30 | 55 |
| 2020 | 1120 | 130 | 60 | 530 | 620 | 145 | 55 |

Table 1 – distribution of the Israeli water resources (million m³)

⁴ 'Jewish sector' and 'non-Jewish sector' is the jargon of the document. The Jewish sector are Jewish Israeli citizens living in Israel and the Jewish colonists in the Occupied Palestinian Territories and the Golan Heights. The non-Jewish sector are non-Jewish Israeli citizens (carrying Israeli passports) living in this area, thus not including the Palestinian population of the occupied West Bank and Gaza.

In 2020, the total yearly needs for potable water will be 210 million m³ per year greater than now. The amount of water of lower quality (including treated sewage water) needed for agriculture and industry will be 375m³ million higher.

At this moment, the exploitation of the available natural water resources reaches already its maximum level – the actual freshwater consumption of 1785 million m³ a year mentioned in the plan is already causing a deficit for the average water yield (1555 million m³). The even larger demand in 2020 (2000 million m³) cannot be met by the rivers and aquifers at all. Therefore, the Israeli government has to call upon additional, non-conventional water resources.

3. Creating additional water resources

In the plan, the Israeli government clearly states its preference for desalination of salt water to remove the pressure on the natural water resources.

Table 2 brings together the necessary figures to calculate the extra amount of water that is needed to bridge the gap between the available natural water resources and the consumption needs in 2020.

| Quantity required in 2020 | Quantity available in nature | Deficit | Existing non-conventional resources in 2000 | Desalination capacity needed in 2020 |
|---|------------------------------|---------|---|--------------------------------------|
| 2000 | 1555 | 455 | 50 | 395 |
| Table 2 – water resources and consumption needs in 2020 (million m ³) | | | | |

The deficit of potable water will rise to 395 million m³ a year in 2020. In the plan, desalination of salt water is brought up as the solution to provide the necessary water to restore the natural balance. To achieve a desalination capacity of 395 million m³ a year, a series of additional desalination plants has to be built in the next twenty years, and the plan charts a timetable for their construction. Based on the simple calculation that the capacity must gradually increase with a rate of 20 million m³ per year, the government has to initiate the construction of a desalination plant with a capacity of 50 million m³ every two and a half years.

Treated sewage water will be an other major source. This water can be used for irrigation in agriculture. Alternatively, a part of the water can also be returned to the rivers. This extra water will prevent them to run dry, or will prevent pollution by keeping the flow of the water strong enough to carry pollutants into the sea.

The waste water coming from households and industries (1120 million m³⁵ and 160 million m³⁶ respectively), increased with an amount of sewage water flowing into Israel downhill the West Bank (50 million m³) brings the potential quantity to recycle on 1300 to 1320 million m³. Not all the consumed water will reach the treatment plants as waste water (part of it is used for irrigation of gardens and cleaning, some water will be lost through leakage or evaporation, part of the water of will be discharged directly into rivers or the sea, etc). Through a series of calculations, it is estimated that the amount of treated sewage water that will be available in 2020 will be 830 million m³. To handle this amount, the capacity of the treatment plants has to be increased with 560 million m³, or 25 to 30 million m³ a year (table 3).

⁵ This is the figure of the municipal water consumption.

⁶ 130 million m³ from potable water consumption, plus an estimated half of the consumption of water of lower quality (60/2 million m³)

| | Potential waste water | Available after treatment | Treatment capacity in 2000 | Required additional capacity in 2020 | Required for agriculture | Surplus |
|---|-----------------------|---------------------------|----------------------------|--------------------------------------|--------------------------|---------|
| Million m ³ | 1300/1320 | 830 | 270 | 560 | 620 | 210 |
| Table 3 – waste water treatment and output of clean water in 2020 | | | | | | |

In table 1 was mentioned that agriculture will require 620 million m³ of treated waste water for irrigation. The plan suggests to use the surplus of 210 million m³ for river rehabilitation or even expansion of irrigated agriculture. A preferred third alternative, if possible, is to continue the cleaning process until the water quality is high enough to make the treated water suitable for municipal use (high quality, but non-potable water). This can save some amounts of potable water in the natural water reservoirs, that would otherwise have been reserved to consumption.

4. Protection of the natural water resources

It is important to recall that the measures enunciated in the policy plan are expected to be sufficient to safeguard future Israeli water consumption in situations of average rainfall. In fact, this 'average' situation also presumes an average amount of natural water resources as a starting for the planning period. In other words, for an optimum take-off, the surface and underground water reservoirs (Lake of Galilee and the aquifers) are supposed to be half full, in order to act like a buffer in under average years. But in reality, this was not the case at all, and the take-off of the planning period started in the least favourable position as the natural water resources reached their point of unsustainable yield. To make the plan work, it would be essential to build up this buffer by raising the actual level of the natural resources. Table 4 contains the figures concerning the amounts of water needed to accomplish this:

| | Lake of Galilee | Western aquifer | Coastal aquifer | Total |
|--|-----------------|-----------------|-----------------|-------|
| Number of meters to rise | 2 | 4 | 2 | |
| Necessary amount of water (million m ³) | 350 | 350 | 400 | 1100 |
| Table 4 – Restoring the natural water resources until the level of a sustainable yield | | | | |

The total amount of fresh water necessary to rise the levels of the natural water resources from to actual level of unsustainable yield, to a safe average level is 1100 million m³. To obtain this additional water, the policy document opts here too for desalination. When the pace of construction of the previously mentioned desalination plants is forced with an additional capacity of 100 million m³ within the next 10 years, it would generate the amount of 1100 million m³. When climate change or an accidental series of years with poor rainfall causes the average rainfall fails to occur - and the average yield of the natural water resources keeps dropping - the pace of the construction of desalination plants has to be increased to guarantee a safe water yield. After a period of abundant rainfall, it may be decided to slow down the average pace of construction when the natural water reservoirs will receive their additional water from precipitation instead of desalination.

5. Brief annotation on the plan

a) a policy plan at last!

With this plan, the Israeli government, for the first time in more than 15 years, made explicit its view on the role that water has to play in long term development. It chooses unambiguously a certain direction and clearly points out which steps have to be taken in order to achieve the goals.

b) an integrated approach?

An integrated approach to the water system is essential from the standpoint of sustainable water development, and the long term policy plan is an example of the initiation of such an approach.

The policy document involves the totality of the Israeli (fresh) water resources, it stresses the different functions of the water systems (consumption, environmental conservation, desalination, treatment, water quality, water quantity) and it focuses on the evaluation of different system components (precipitation, sewage, surface and ground water, reservoirs).

But the plan seems to go no further than this initial impetus. The proposed implementation remains on a very general level. The proposed measures contain e.g. no reference to an examination of the evolution of needs for water consumption, and it does not distinguish the needs within the sectors.

The document outwards the continuation of the traditional water Israeli policy where agriculture holds a prominent position. As previously shown, agriculture is a minor economic sector but a major water consumer, and the document affirms the devotion of Israeli politics to this water-inefficient way of economic production. The unqualified support for agriculture seems a basic principle around which the policy document is constructed, and not the reverse.

The same impression gives the choice for desalination to provide additional water. The plan does not discuss the various alternatives for extra water— conventional nor non-conventional— or opportunities for water saving (e.g. possible reduction of water in agriculture). Desalination as the most appropriate way to solve the water shortage seems to be taken for granted, without any reference to studies that can substantiate this preference. With respect to desalination, the plan is the confirmation of the water policies developed since the 1980's. But the plan does not note any measures to receive the consequence of the choice for desalination, like increased energy needs and emission of combustion products (how will Israel deal with the engagements of the Kyoto protocol it signed in 1998) or the disposal of residual products of inland desalination and waste water treatment.

c) feasibility of the implementation

An analysis of the costs and the benefits of the implementation of the proposals is not included in the plan. This makes it difficult to assess the feasibility of the plan in practice. Much seems to depend on the administrative transaction of the government's decisions. Anyway, the implementation fell behind at the very beginning. In June 2001, on the eve of the umpteenth summer with increasing water scarcity after a period with under average rainfall, the Finance Ministry gave up its opposition against water desalination and approved and tenders for the construction of the first plants with a capacity of 200 million m³ could be issued. In September 2001, the first tender was granted for a plant with a capacity of 15 to 65 million m³ a year (construction cost: \$ 150 million). It is clear that the desalination facilities will come into operation no earlier than the end of 2002, thus too late according to the schedule (Globes, 4/9/2001; Ha'aretz, 7/6/2001; Ha'aretz, 9/7/2001)

d) Lacking a regional approach

With this long term water policy document, the Israeli government chooses a national solution to a regional problem. In some degree the water needs of neighbouring countries is taken into account, but it is the result of a unilateral Israeli initiative. The decision to raise the Palestinian *per capita* consumption to 70 m³ in 2020 is a step into the direction of democratisation of access to the water resources, but at the same time is it something that the Israeli government cannot decide on its own

since the division of the shared water resources (Jordan, western and north-eastern aquifer) between Israel and the Palestinian population on the West Bank is subject to a final peace agreement that still has to be concluded. The plan states that the amount of 70m³ is a figure agreed upon during the activities of the Joint Water Commission⁷, but Palestinian participants in the committee assert that this is not true to the facts⁸.

The yearly transfer of water to Jordan is part of the peace agreement of 1994 between Israel and the Hashemite kingdom. The 55 million m³ is political 'small change' that Israel pays to preserve a cordial relation with its Arab neighbouring country. In practise, the yearly transfer is even larger (around 75 million m³ a year).⁹

Despite these transfers, the plan fails to look more profoundly for solutions to the water crisis on a regional level. Although it sound premature to suggest cooperation among all the basin states in this stage of the Israeli-Arab conflict, the plan might have involved at least a Jordanian input to tackle the common challenges. Looking further than 2020, it will be even harder to cope with water scarcity and development, and solutions on a regional level involving scale effects will be inescapable. To have the desired effect in 2020, it is necessary to set out a thinking process to introduce the necessary skills, ideas and financial capital just now.

Part 3 – Conclusion

Since the beginning of the peace process in 1993, no fundamental progress was made towards the solution for the water conflict or the aversion of the predicted scarcity. In the present stage, the Palestinians can manage their own water supply in the area where civil authority was transferred to the Palestinian Authority after the re-deployment of the Israeli army. Israel acknowledges the Palestinian water rights but made clear that this would not lead to practical implications in the field. A Joint Water Committee supervises the implementation of the engagements and discusses issues such as co-ordinated management and protection of water resources, management of water and sewage systems, exchange of information, or dispute resolution. No necessary measures are established in which additional water resources can be developed to contain the future scarcity in a structural and sustainable way. In the present situation, it is not clear when a final solution of the Israeli-Palestinian conflict can be expected.

In the peace agreement between Israel and Jordan of 1994, both countries found a way to solve their differences over the use of the shared water resource. Last summer, Lebanese infrastructure programmes affecting the water flowing to Israel caused extra tension between the two countries. The Golan Heights still stand in the way of a rapprochement between Israel and Syria. The continuing Israeli occupation of Palestinian territory and the displacement of millions of the Palestinian Diaspora will not bring peace in the area west of the Jordan River.

Without a sustainable solution for the water conflict, Israel and the Palestinians are heading for a disastrous water crisis in the first quarter of this century. A unilateral approach by Israel, Syria and Jordan, based on better and more efficient use of the existing water resources is not sufficient to guarantee a sustainable solution. Recycled and desalinated water, improved irrigation techniques, the shift of water consumption from agriculture to domestic use, modernisation of water supplies, prevention of leakage, and water pricing policies can only be considered as possibilities for the short term. On the long term, they cannot provide the extra amount of water that is necessary to meet the demand caused by population growth and economic development. A sustainable water policy can

⁷ In the Joint Water Commission (JWC) has been established according to the Interim Agreement between Israel and the PLO (1995). Its composition and competences are established in article 40 of the agreement.

⁸ Interview at the Palestinian Water Authority, June 9, 2001.

⁹ Interview at the Water Commissioner's Planning Office, June 7, 2001.

only be achieved on a regional level, and has to include the other states in the Jordan River basin in a co-operation scheme. A prerequisite for success is the joint administration of the existing water resources. Of course, this cannot be achieved without regional peace.

The challenges of combating water shortages are as massive. Huge financial inputs as well are necessary to enhance the capacity of the whole population of the region to cope with this threat. The international donor community can play an important role in providing this financial support – under conditions of regional peace. But the international community is still more preoccupied with day-to-day events like the so-called ‘war on terrorism’ and less interested in a sustainable solution that will spare many people and us much misery in the future.

References and background material

Abu Zahra B., Water crisis in Palestine, in: *Desalination* 136, 2001.

AL-Hadidi M., Brackish water management and use in Jordan, in: *Desalination*, 126, 1999.

Al-Khatib N., Assaf K., Kally E., Shuval H., *A proposal for the development of a regional water master plan*, Jerusalem, IPCRI, 1993.

B'tselem, *Thirsty for a solution. The water crisis in the Occupied Territories and its resolution in the Final-Status Agreement*, Jerusalem, 2000.

B'tselem, *Not even a drop. The water crisis in Palestinian villages without a water network*, Jerusalem, 2001.

Baskin G., *Water, conflict or cooperation*, Jerusalem, IPCRI, 1993.

Beaumont P., *Drylands. Environmental management and development*, London, Routledge, 1993.

Berman T., Lake Kinneret and its catchment: international pressures and environmental impacts, in: *Water Policy*, 1, 1998.

Caponera D., *The legal-institutional issues involved in the solution of water conflicts in the Middle-East: the Jordan*, in: Isaac J., Shuval H., *Water and peace in the Middle East. Proceedings of the first Israeli-Palestinian International Academic Conference on Water*, Zurich, Switzerland, 10-13 december 1992, Amsterdam, Elsevier, 1994.

CBS, Israeli Central Bureau for Statistics, <http://www.cbs.gov.il/>

Cosgrove W., Rijsbergman F., *World water vision. Making water everybody's business*, World Water Council, 2000.

Deconinck S., *Waternet – water and conflict in the Middle East*. <http://waternet.rug.ac.be/> (now: www.waternet.be)

Dichter H., The legal status of Israel's water policies in the occupied territories, in: *Harvard International Law Journal*, 35, 2, 1994.

Dinstein Y., The Israel Supreme Court and the law on belligerent occupation: deportations, in: *Israel Yearbook on Human Rights*, 23, 1993.

Eaton J., Eaton D., *Water utilization in the Yarmuk.Jordan, 1192-1992*, in: Isaac J., Shuval H., *Water and peace in the Middle East. Proceedings of the first Israeli-Palestinian International Academic Conference on Water*, Zurich, Switzerland, 10-13 December 1992, Amsterdam, Elsevier, 1994.

Elmusa S., *Water conflict. Economics, politics, law and the Palestinian-Israeli water resources*, Washington, Institute for Palestine Studies, 1997.

- Friedler E., 'Water reuse – an integral part of water resources management: Israel as a case study', in: *Water policy*, 3, 2001.
- German Federal Ministry for Economic Cooperation and Development, *Water – a key to sustainable development. Issue paper for the International Conference on Freshwater, Bonn, 3-7 December 2001*.
- Gleick P., *The world's water. The biennial report on freshwater resources 1998-1999*, Washington, Island Press, 1998.
- Gleick P., *The world's water. The biennial report on freshwater resources 2000-2001*, Washington, Island Press, 2000.
- Globes, *VID wins \$150 million Ashkelon desalination plant tender*, 4/9/2001.
- Green Cross International, *Water for peace in the Middle East and Southern Africa*, 2000.
- Ha'aretz, *Finance Ministry reverses its opposition to desalination and water importation*, 7/6/2001.
- Ha'aretz, *Facing a water shortage*, 9/7/2001.
- Ha'aretz, *The long dry summer*, 24/6/2001 (a).
- Ha'aretz, *Watered-down advise*, 24/6/2001 (b).
- Haddad M., Lindner K., Sustainable water demand management versus developing new and additional water in the Middle East: a critical review, in: *Water Policy*, 3, 2001.
- Homer-Dixon T., *Environment, scarcity and violence*, Princeton, University Press, 1999.
- Isaac J., The essentials of sustainable water resource management in Israel and Palestine, in: *Arab Studies Quarterly*, 22, 2, 2000.
- Israeli Ministry of Foreign Affairs, *The water law of 1959*, internet, <http://www.mfa.gov.il/>
- Issa S., De Bruijn G., *Water laws and regulations in Palestine*, LAW, 1994.
- Jaber J., Mohsen M., Evaluation of non-conventional water resources supply in Jordan, in: *Desalination*, 136, 2001.
- Jerusalem Post, *Paint it green*, 6/8/2001.
- Kartin A., Factors inhibiting structural changes in Israel's water policy, in: *Political Geography*, 19, 2000.
- Matar I., *Exploitation of land and water resources for Jewish colonies in the Occupies Territories*, in: Playfair E., *International law and die administration of occupied territories. Two decades of Israeli occupation of the West Bank and Gaza Strip*, Oxford, Clarendon Press, 1992.
- Ministry of National Infrastructures – Water Commission, *Long term tasks of the Israeli water sector*, Tel Aviv, 2000.
- Norton B., Constanza R., Bishop R., The evolution of preferences, 'sovereign' preferences may not lead to sustainable policies and what to do about it, in: *Ecological economics*, 24, 1998.
- Palestinian National Authority – Palestinian Water Authority, *Water sector in Palestine. Summary of basic information*, Ramallah, 1998.
- Roberts L., Diminishing standards, in: *War and water*, ICRC, 1998.
- Shuval H., A proposal for an equitable resolution to the conflicts between the Israelis and the Palestinians over the shared water resources of the mountain aquifer, in: *Arab Studies Quarterly*, 2000.

Shuval H., *Approaches to finding an equitable solution to the water resources problems shared by Israelis and the Palestinians over the use of the mountain aquifer*, in: Baskin (G.), *Water, conflict or cooperation*, Jerusalem, IPCRI, 1993.

UN (a), United Nations, *Water resources of the occupied Palestinian territory: prepared for and under the guidance of the Committee on exercise of the inalienable rights of the Palestinian people*, New York, UN, s.d.

UN (b), United Nations, *Permanent sovereignty over national resources in the occupied Palestinian and other Arab territories* (ECOSOC Document E/1984/111; General Assembly Document A/39/111).

US National Academy of Sciences et. al., *Water for the future. The West Bank and Gaza Strip, Israel and Jordan*, Washington, National Academy Press, 1999.

Wolf A., *The impact of scarce water resources on the Arab-Israeli conflict: an interdisciplinary study of water conflict analysis and proposals for the conflict resolution*, Ann Arbor, UMI, 1994.