



**The Knesset
The Research and
Information Center**

Israeli-Palestinian Cooperation on Water Issues

**Presented to the Internal Affairs
and Environment Committee**

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Introduction

This document was written in preparation for a discussion by the Knesset Internal Affairs and Environment Committee with members of European parliaments on the subject of Israeli-Palestinian cooperation on water issues.

Water is one of the most basic resources and because of the fact that this resource crosses political borders, efficient usage of this natural resource demands cooperation between neighbouring political entities. Without such cooperation, water is likely to become a source of conflict.

The Mountain Aquifer is, in practice, a water resource shared by Israel and the Palestinians. This interdependency between Israel and the Palestinians regarding this shared resource, particularly in light of the regional shortage of water, is the reason that the issue of water has played such an important role in the political process that began with the Madrid Conference in October 1991.

The Oslo Interim Agreement of 1995 sought to regulate water issues, inter alia, by means of a joint Israeli-Palestinian committee – the Joint Water Committee (JWC). This document describes the work of the committee and relates to issues concerning the regulation of the water supply to the Palestinians and the treatment of sewage in the West Bank.

The document presents examples of "bottom up" Israeli-Palestinian cooperation:¹

- A number of NGOs carry out projects with Israeli-Palestinian cooperation in the areas of water and sewage. These organizations promote cooperation between youth, adults and Israeli and Palestinian local authorities. The document includes two examples of such projects.
- Israeli and Palestinian researchers cooperate on scientific research and the document includes examples of this. It should be noted that Palestinian universities do not cooperate with Israeli universities. However, there are Palestinian researchers who do this on an independent basis.

The document begins with some background on the regional water resources, information on the Mountain Aquifer, and a description of the regulation of the issue of water in the political process. It should be noted that the document relates principally to the issue of water resources in the West Bank and not in the Gaza Strip.

The Israeli Water Authority is very critical of the actions of Palestinian parallel organization. The NGO's we spoke with and the World Bank, which carried out a large study of this issue, expressed criticism of both Israel and the Palestinian Authority. In preparing this document we did not make contact with Palestinians involved in water management.

¹ The document includes details on cooperation between Israelis and Palestinians, but does not relate to international programmes where there is Israeli-Palestinian cooperation.

1. The Regional Water Sources

In general, there is not an abundant source of water in the area between the Jordan River and the Mediterranean. The demand for water is constantly growing, while the supply is diminishing. The reasons for this include the following:

- **Increase in population** – In 1893, there were 60,000 Jews in the area between the River Jordan and the Mediterranean Sea and 476,000 Palestinians. Today, in the State of Israel alone there are more than 7 million people.²
- **A rise in living standards** – In principle, as living standards rise there is a parallel increase in water consumption.³
- **The climate in the region** – The local climate is characterized by a high frequency of years of drought, a short rainy season, and by significant losses of water due to evaporation of rain water. Some 70% of rain water evaporates, 25% seeps through to the groundwater and 50% flows into the streams.⁴

Israel has three principal sources of natural fresh water:

- **Lake Kinneret** (Sea of Galilee) – supplies about 20% of Israel's water consumption
- **The Coastal Aquifer**⁵ – supplies about 20% of Israel's water consumption. Most of the water is drinking water quality.
- **The Mountain Aquifer** – supplies about 20% of Israel's water consumption; the water is of high quality.⁶

In addition, Israel is a world leader in the area of use of treated waste water for agricultural irrigation and it desalinates substantial quantities of water.⁷

The Palestinians in the West Bank currently have one principal source of natural fresh water – the Mountain Aquifer. The Palestinian Authority does not currently purify water and does not use treated waste water for agricultural irrigation.

2. The Mountain Aquifer – Geographical Background

As noted, the Mountain Aquifer is an important water source for both Israelis and Palestinians. Its importance is due both to the quantity of freshwater it contains and to its relatively high quality. Following is a map that describes the Aquifers and the directions of their flow.⁸

² Joan Peters, From Time Immemorial: The Origins of the Arab-Jewish Conflict over Palestine, 1984 (the edition referred to was the 2008 Hebrew translation).

³ It should be noted that in Israel there has been a rise in the standard of living, yet water consumption per person has decreased over recent decades.

⁴ The State of Israel is partly affected in the northern region by a Mediterranean climate and in the southern region by desert climate. Water Authority website: <http://www.water.gov.il/Pages/default.aspx> accessed 1 February, 2011.

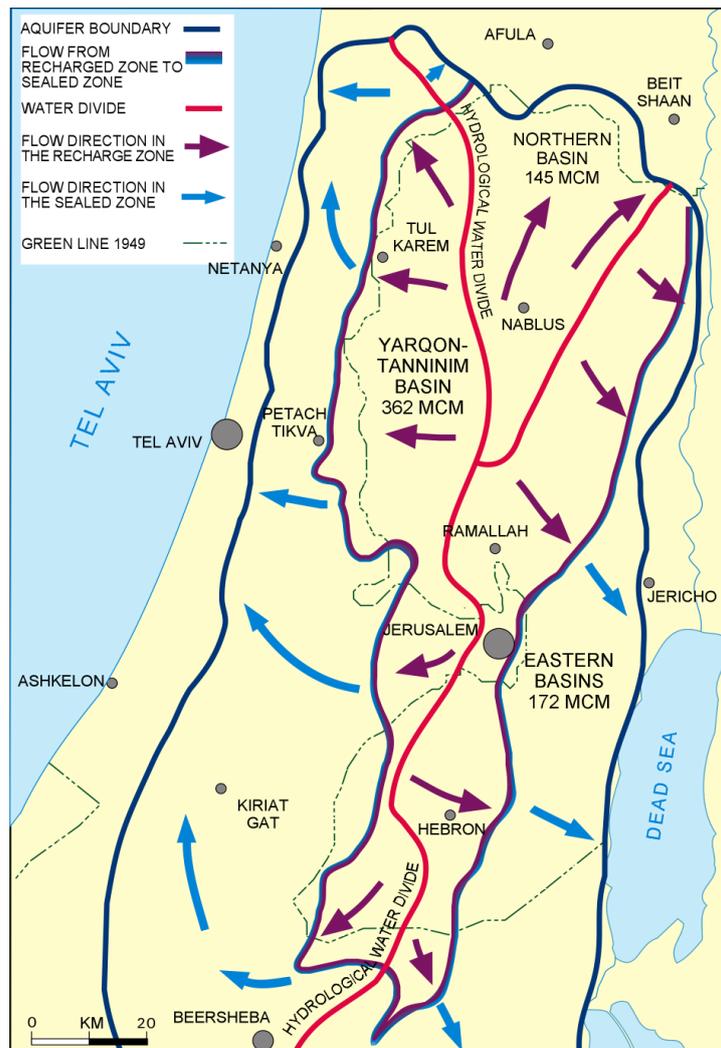
⁵ An aquifer is a reservoir of groundwater, mostly produced through drillings of water-carrying ground layers. In Israel there are some 2,800 drillings of groundwater.

⁶ Water Authority website: <http://www.water.gov.il/Pages/default.aspx> accessed 1 February, 2011.

⁷ About 55 mcm/year (million cubic metres per year) are supplied to Jordan in accordance with the peace settlement signed with Jordan in 1994.

⁸ The map was received from Baruch Nagar, Head of the Water and Sewage Administration in the West Bank at the Water Authority, 6 February 2011.

In regard to the Coastal Aquifer, it should be noted that there is a dispute as to whether the Aquifer continues into the Gaza Strip or whether there are two separate aquifers. In any event, over-pumping or pollution of the aquifer in the Gaza Strip does not adversely affect the Israeli Coastal Aquifer.



The recharge area for the mountain aquifer – the land area where the rainwater seeps from the surface to the underground – is about 1,800 sq. km., and most of it is over the Green Line.⁹ The groundwater flows underground from east to west and from south to north, from the recharge area to the capture area where the water collects. These confined areas are mostly located within the Green Line or in the Jordan Valley. I.e. the rainwater that falls in the West Bank is likely to reach territory within the Green Line and be pumped there.

The Mountain Aquifer consists of three aquifers or basins. For details on the three aquifers and the quantity of water that can be used by each side, as received from the Water Authority, see Appendix.

The two principal problems that threaten the quantity and quality of water in the Mountain Aquifer are unauthorized drilling¹⁰ and pollution due to inadequate treatment of wastewater. Following is more detail regarding the danger of pollution of the Mountain Aquifer by wastewater.

⁹ The total area of the collection basin of the mountain aquifer is about 6,000 sq. km.

¹⁰ According to the Water Authority, since the signing of the second Oslo Agreement, there have been more than 250 unauthorized drillings, most of them in the northern aquifer of the Mountain aquifer, and the Palestinians pump some 10 mcm/year from them. According to Dr. Gershon Baskin, Co-ECO Israel/Palestine Center for Research and Information, not all of the illegal drillings contain suitable drinking water.

2.1. The Danger of Pollution of the Mountain Aquifer by Wastewater

Wastewater that has not been adequately treated in wastewater treatment plants is a potential source of pollution of groundwater. According to the data, about 27% of the wastewater in the West Bank is produced by Israelis and about 73% by Palestinians. Following are data received from the Water Authority regarding the situation of wastewater treatment in the West Bank.

- Wastewater from Israeli towns and villages in the West Bank:¹¹
 - Total – about 19 mcm/year, treated in the following ways:
 - About 85% of the wastewater is treated in wastewater treatment plants.¹² Part of the treated waste water produced through the purification process is used for agriculture.
 - About 15% of the wastewater is not treated at all. Most is directed into cesspits.¹³
- Wastewater from Palestinian towns and villages in the West Bank:
 - Total – about 52 mcm/year¹⁴ treated in the following ways:
 - 62.5% of the wastewater is not treated at all or is directed into cesspits.
 - 32.7% of the wastewater is treated at wastewater treatment plants in Israel, most of it after having first flowed through the streams.
 - 4.8% of the wastewater is treated in the only Palestinian wastewater treatment plant (El Bireh).¹⁵

Treatment plants were built in the past in Jenin, Ramallah, Tul Karem and Hebron, but economic and technical problems led to them being non-operational or inadequately operated which resulted in an inferior level of purification.¹⁶

In addition to the rise in demand for water and the decrease in natural water supplies, an additional threat to the quality of water of the Mountain Aquifer is the lack of treatment or only partial treatment of wastewater in the West Bank. **Some of the streams in the West Bank serve as a "pipeline" carrying raw sewage** and the relatively high concentrations of pollutants within it¹⁷. **Thus sewage seeps into the ground and contaminate the springs and the groundwater.** Such damage to the underground

¹¹ These data do not include 15 mcm/year raw sewage that flow into the Kidron Valley from Jerusalem and from Palestinian towns and villages in the area.

¹² Some of the wastewater treatment plants are located within the Green Line.

¹³ Pits dug into the ground into which wastewater is transferred and collected. The wastewater is absorbed into the ground and may pollute the groundwater.

¹⁴ This is an assessment by the Water Authority based on the following calculation: 90 mcm/year of domestic use x 0.78 water depreciation x 0.75 drinking water that does not flow into the sewage = 52 mcm/year.

¹⁵ The treated waste water from this treatment plant is not currently used for agriculture, but flows into Wadi Qelt.

¹⁶ The environmental Unit of the Nature and Parks Authority, "Monitoring the streams in the West Bank: and evaluation of the situation on the basis of findings from samples in 2006", Ariel Cohen, Avi Zippori and Dina Fayman, May 2008. (in Hebrew) and Captain Husam Dagesh, Public Relations Officer, Coordination Office for Activities in the Territories at the Ministry of Defence, letter, 11 January 2011.

¹⁷ Principally chlorides, nitrogen, phosphorous and heavy metals.

water quality also causes a reduction in the quantity of available water, since in a polluted Aquifer, the quantity of water that can be pumped is reduced.¹⁸

3. The Political Process – Focus on the Water Issue

Following is a brief description of the political process between Israel and the Palestinians, focusing on the issue of water resources.¹⁹

The political negotiations that began in November 1991, immediately following the Madrid Conference, followed two tracks:

1. **The Bilateral Track** – aimed to resolve the conflict of the past, whether through peace settlements with the Arab countries or whether through the establishment of self rule for Palestinians as a first step. Rounds of negotiations took place in Madrid and in Washington.²⁰
2. **The Multilateral Track** – aimed to build relations of confidence to deal with future issues. These talks opened in January 1992 in Moscow and the delegations²¹ were divided into five multilateral working groups that dealt with the following issues: the environment, weapons supervision, refugees, economic development and water resources. Between 1996 and 2000, the activity of the regional working Groups lessened, apart from the Working Group on Water Resources. The Working Group on Water Resources is still continuing its activities.

It should be noted that the distinction between the two tracks is not absolute and there is sometimes overlap between the bilateral and multilateral activity.

3.1 The Regional Working Group on Water Resources in the Multilateral Track

The role of the Regional Working Group on Water Resources was to develop regional cooperation on this issue. For this purpose two principal frameworks were established that still operate:

1. Executive Action Team (EXACT)²² – This organization operates a data bank on water resources and is intended to serve the players in the region. The data bank leads to the adoption of common standards for collecting, storing, and improving the quality of data on water sources to improve communications between the scientific communities in the region.

The organization brings together Israeli, Jordanian and Palestinian experts from water management agencies. EXACT receives technical and budgetary assistance from donor countries such as the United States, Holland, Norway, France, Italy and the European Union. It has no permanent residence and meets twice a year in Europe or in the Middle East. The activity of EXACT has lessened recently, but in general has been operating from the time of its establishment until today.

¹⁸ The environmental Unit of the Nature and Parks Authority, "Monitoring the streams in the West Bank: and evaluation of the situation on the basis of findings from samples in 2006", Ariel Cohen, Avi Zippori and Dina Fayman, May 2008. (in Hebrew)

¹⁹ See <http://www.mfa.gov.il/mfa/peace%20process/guide%20to%20the%20peace%20process/>, accessed, 27 January 2011.

²⁰ Note that until 1993, the Palestinians and the Jordanians were part of a joint delegation.

²¹ Delegations from both the countries of the Middle East and from the international community participated in the talks.

²² See www.exact-me.org

2. The Middle East Desalination Research Centre – (MEDRC) is located in Muscat the capital of Oman, meetings are held twice a year.

The organization has representatives from Israel, Jordan and the Palestinians as well as from donor countries such as the United States, Qatar, Holland, Japan, South Korea, Oman and Spain.²³ The organization awards grants for research project on desalination, particularly to people with advanced academic degrees from the region.

Two years ago it was decided to invest in another area of activity – training courses on sewage and desalination²⁴ for Jordanians and Palestinians. So far two courses have been held:

- a. In August 2010 – course on treating sewage at The Dan Region Wastewater Treatment Plant (Shafdan).²⁵ This course was attended by 18 Palestinians (from the West Bank area and Gaza) and 4 Jordanians.
- b. In October 2010 – A course on desalination was held at a facility of the Ministry of Agriculture near Shefayim. 18 Palestinians (from the West Bank area and Gaza) and 9 Jordanians took part.²⁶

3.2. The Bilateral Track²⁷

The Oslo Accords

The Oslo Accords – the Declaration of Principles (DOP) were signed in September 1993 and related in general terms to the issue of water. It was agreed that there would be cooperation on water resources, and proposals were formulated for research on the subject, for example, studies on the issue of development of water infrastructures and desalination.

The Gaza and Jericho Agreement

The Gaza and Jericho Agreement (the Cairo Agreement) was signed in 1994. In this agreement, the water supply system (management, development and maintenance) in the Gaza Strip was transferred to Palestinian control, excluding the water supply for the Israeli settlements.²⁸

The Second Oslo Accords

An interim agreement (Oslo 2) was signed in Washington on 28 September 1995 for a period of 5 years which includes a long section on the water issue.²⁹ Paragraph 40 of Annex III, defines, among other things, the following:

1. **Rights to water sources** – Israel recognized the water rights of the Palestinians in the West Bank.³⁰

²³ France is in the process of joining.

²⁴ Desalination of sea water and purification of brackish water.

²⁵ Shafdan is the largest and most advanced wastewater treatment plant in Israel. It is located near Rishon LeZion and provides tertiary treatment for about 350,000 cubic meters of wastewater from some 20 local authorities each day.

²⁶ Nadav Cohen, Center for Regional Cooperation on the Water Issue, Ministry of Foreign Affairs, telephone conversation, 27 January 2011.

²⁷ For a review of the peace process see: Ministry of Foreign Affairs, Guide to the Mideast Peace Process, 21 November 2007.

²⁸ Following the Disengagement of summer of 2005, the entire water and sewage system was transferred to Palestinian control.

²⁹ For the text of the agreement, see:

<http://www.mfa.gov.il/mfa/peace%20process/guide%20to%20the%20peace%20process/> , The Israeli-Palestinian Interim Agreement – Annex 111, 28 September 1995.

2. **Defined quantities** – A clear allocation of quantities of water to each party was determined, maintaining existing quantities of usage.
3. **Future needs** – There is a definition of the future needs of each party.³¹

It was also agreed that in the interim period Israel would transfer to the Palestinians, 23.6 mcm/year to the West Bank and 5 mcm/year to the Gaza Strip. The Agreement also emphasized the need to use the eastern basin of the mountain aquifer, the need to develop and produce more water (through purification of wastewater and desalination) and included an agreement not to take any steps that might lead to contamination of the water.

In order to implement their commitment according to the Agreement, Israel and the Palestinian Authority set up a Joint Water Committee. This committee has been functioning since 1995. In addition, that same year another committee, a joint Israeli-Palestinian-American committee, was set up, that deals with policy and encouragement of cooperation on the water issue. Up until 2010, the committee met one a year but recently there has been an increase in the frequency of the meetings. One of the issues discussed by the Committee, for example, was how to accelerate the process for authorizing projects, in general terms, without relating to any specific projects.³²

4. The Joint Water Committee (JWC)

The Joint Water Committee has an equal number of representatives from each side, all decisions must be unanimous, and there are joint supervisory and enforcement teams subject to the Committee.³³ The JWC holds joint meetings, exchanges letters, conversations and daily contacts in order to manage the water issue. The JWC is mandated to deal with all the water and sewage issues in the West Bank, including:³⁴

1. Joint management of water sources and of water and sewage systems;
2. Protection of water sources and sewage;
3. Cooperation, information exchange and resolution of conflicts on the issue;
4. Regulation of the water supply from one side to another.

The JWC has four sub-committees:

1. **The Hydrological Committee** – discusses and authorizes requests for water drilling. There are currently some 500 legal water drillings in the West Bank. The committee has so far authorized the Palestinians to drill about 60 wells for

³⁰ The relevant sections states that: "Israel recognizes the Palestinian water rights in the West Bank. These will be negotiated in the permanent status negotiations and settled in the Permanent Status Agreement relating to the various water resources." The agreement does not specify the rights making only a general statement regarding recognition of the water rights.

The Palestinians demand rights to the water, while Israel focuses on allocation of water and on meeting future needs.

There is no agreement with the Palestinians regarding the definition of common water sources. The Palestinians currently view all the water from the Jordan River to the Mediterranean as common water sources. In any event, in practice, the Palestinians have no contact with Jordan, while the Gaza Strip manages its water sources with very little contact with Israel.

³¹ The future needs of the Palestinians were defined as about 70-80 mcm/year in addition to the 118 mcm/year they were using at the time of the signing of the agreement. The Palestinians regard future needs as referring to the period beyond the interim period, that is, after the year 2000. While Israel believes this refers to needs in the more distant future.

³² Nadav Cohen, Center for Regional Cooperation on the Water Issue, Ministry of Foreign Affairs, telephone conversation, 27 January 2011.

³³ The joint chairmen of the JWC are the Chair of the Government Authority on Water and Sewage, Prof. Uri Shani, and his Palestinian equivalent.

³⁴ See paragraph 12 of the Annex to the Oslo 2 Agreement.

drinking water, 11 wells for agricultural irrigation, and 22 observation wells (wells whose objective is to inspect the level of the groundwater and not for drawing water). The Committee has also authorized the Palestinians to upgrade about 55 old wells. The Water Authority notes that only about half of the authorized drillings have actually been carried out.

2. **Committee on water projects** – The Committee has so far authorized the Palestinians to lay hundreds of kilometers of water pipes, and the building of dozens of reservoirs and of pumping stations. The Committee also authorized the expansion of the water supply systems to Israeli settlements in the West Bank.
3. **The Committee on Sewage** – The Committee authorized the establishment of sewage treatment plants. So far only one sewage treatment facility has been set up (in El Birih).³⁵
4. **The Committee on Water Prices** – The Committee periodically determines the prices of the water that Israel sells to the Palestinians and discusses any problems arising from this issue. According to the Water Authority, the financial arrangements with the Palestinians on this issue are carried out in an orderly manner.

Following are a number of issues relevant to the work of the JWC and to the regulation of water and sewage usage:

- **The JWC – A mechanism for cooperation?** It is sometimes said that the JWC does not deal with managing the mountain aquifer through Israeli-Palestinian cooperation, since its operation is based on a model of distribution without any real joint management.³⁶ The World Bank also believes that the JWC does not operate as an institute for joint management due to the basic asymmetry between Israel and the Palestinian Authority in terms of power, capacity, information and interests.³⁷ It should be noted that the report published by the World Bank on this subject has been criticized by the Ministry of foreign Affairs and the Israel Water Authority.
- **A practical right of veto** – As noted, decisions taken by the JWC must be unanimous. Also, there is no mechanism for solving disputes.
- **Supervision and Enforcement** – In the past, joint Israeli-Palestinian supervision and enforcement teams worked together. Today, the Israeli and Palestinian teams operate separately.³⁸
- **Seems like a zero sum game** – The Israeli Water Authority is very critical of its Palestinian parallel claiming that the Palestinians try to avoid responsibility regarding significant decisions that have been agreed, fail to purify wastewater and to recycle it for agricultural use, create difficulties and seek future solutions that will be at Israel's expense.³⁹

Following is a review of the issue of the supply of water and treatment of wastewater in the towns and villages of the West Bank.

³⁵ The Water Authority, "The Issue of Water between Israel and the Palestinians", March 2009. (in Hebrew)

³⁶ Dr. Gershon Baskin, Co-ECO Israel/Palestine Center for Research and Information, meeting 31 January 2011; Gidon Bromberg, "Friends of Earth - Middle East" Israeli Director, meeting, 30 January 2011.

³⁷ The World Bank, [Assessment of Restriction on Palestinian Water Sector Development](#), April 2009.

³⁸ Baruch Nagar, Head of the Water and Sewage Administration in the West Bank at the Water Authority, meeting, 30 January 2011.

³⁹ The Water Authority, "The Issue of Water between Israel and the Palestinians", March 2009. (in Hebrew)

4.1.1. The Supply of Water to Palestinian towns and villages

According to Mr. Baruch Nagar, Head of the Water and Sewage Administration in the West Bank at the Water Authority, of the 439 Palestinian towns and villages in the West Bank:

- There is water supply system to 372 towns and villages.
- There is no water supply system in 67 villages; this includes a population of 120,000 people who live in very small villages.

According to Dr. Gershon Baskin, Director of the Israel-Palestinian Centre for Research and Information, some-180 Palestinian villages have no water supply.⁴⁰

It should be noted that even in **towns or villages where there is a water supply system, the residents do not necessarily receive a regular supply of water.** There are Palestinian communities, including some relatively large towns, where the residents receive water only once a week.⁴¹ According to Mr. Nagar, the Israeli Water Authority supplies water to the Palestinian Authority at defined locations and it is the job of the Palestinian Authority to supply the water to the Palestinian communities. The Israeli Water Authority does not carry out the internal Palestinian distribution of the water. According to Dr. Baskin and Gidon Bromberg, "Friends of Earth - Middle East" Israeli Director, although it is the Palestinian Authority that carries out the distribution of the water, the supply of water that it is responsible for is not regular because the Israeli Water Authority does not supply the Palestinian Authority with sufficient water.

It should also be noted that in the area of the mountain aquifer, there are a large number of fresh water springs. According to Adv. Bromberg, in the past many Palestinians used the spring water for drinking and for agriculture. Today, due to increased pumping many of these springs have dried up.⁴²

4.1.2. Wastewater Treatment in the West Bank

As noted, some 15% of the sewage from Israeli towns and village and the vast majority of the sewage from Palestinian towns and villages are not treated at sewage treatment plants.⁴³

A document of the Nature and Parks Authority indicates that there is only partial Israeli-Palestinian cooperation on the subject of wastewater treatment. Its recommendation is to take urgent action to prevent the flow of sewage into the streams that may seep through to the groundwater, since **in the near future this is likely to cause fatal damage to the water sources of the Israelis and the Palestinians.** The document also includes the

⁴⁰ Dr. Gershon Baskin, Co-ECO Israel/Palestine Center for Research and Information, meeting, 31 January 2011

⁴¹ Gidon Bromberg, "Friends of Earth - Middle East" Israeli Director, meeting, 30 January 2011.

⁴² For example, residents of the Palestinian village of Ujah, near Jericho, in the past used spring water for drinking and agriculture. Today, Israel supplies the village with drinking water and for about two months a year, the villagers use spring water for agriculture. For the rest of the year, the villagers have no water for agricultural use.

⁴³ According to the Coordinator of Activities in the West Bank at the Ministry of Defence, 94% of sewage from the Palestinian towns and village are not treated at wastewater treatment plants. For comparison, in Israel, 530 mcm of sewage is created annually. About 75% is recycled, mostly for agriculture.

recommendation to take action to find a solution for excess sewage and treated waste water.⁴⁴

According to the Water Authority, since Israel is situated at the lower ends of the streams and the pollution from untreated sewage reaches its territory, it has a clear interest to promote the issue of the treatment of sewage in the West Bank.⁴⁵ The Water Authority also believes that the sewage should be treated close to where it is created so as to allow the use of the treated wastewater for agricultural irrigation. In regard to the purification of Palestinian sewage in Israel, Israel balances the cost of the treatment of this sewage against monies owed to the Palestinian Authority.

The Betzelem organization defines the treatment of Palestinian sewage in Israel as problematical. This is principally because it postpones the finding of a suitable solution to the treatment of Palestinian wastewater.⁴⁶ According to the organizations, a combination of reasons has led to the situation where, excluding the sewage treatment plant in El-Bireh, no new plants have been built recently. Among the reasons listed by Betzelem for this is the delay in authorizing programmes and a reduced commitment from the donor countries.⁴⁷

4.1.3 The Civil Administration

The Civil Administration is a branch of the Ministry of Defence that administers non-military actions by Israel in the West Bank. Following the authorization of a Palestinian project in the JWC, if the project is in an area under civilian rule by Israel (Area C), the project also requires the authorization of the Civil Administration. Since a significant part of the water and sewage infrastructures naturally lie outside of the areas under the administration of the Palestinian Authority (A and B), the process of approval by the Civil Administration is also required, following that of the JWC.

According to Mr. Baruch Nagar, head of the Water and Sewage Administration in the West Bank at the Water Authority, The Civil Administration almost always approves projects that have been approved by the JWC. According to Dr. Gershon Baskin, Director of the Israel-Palestinian Centre for Research and Information (IPCRI), the approval of the Civil Administration, which does not have any Palestinian representative, is a long bureaucratic process. Betzelem notes that the only Palestinian sewage treatment plant that was built after the establishment of the JWC, was built in Area B, which is under Palestinian civil control, where there is no need for the approval of the Civil Administration.⁴⁸

The World Bank also expresses criticism of the need for additional approval by the Civil Administration after approval by the JWC. According to a World Bank Report on this

⁴⁴ The environmental Unit of the Nature and Parks Authority, "Monitoring the streams in the West Bank: and evaluation of the situation on the basis of findings from samples in 2006", Ariel Cohen, Avi Zippori and Dina Fayman, May 2008. (in Hebrew)

⁴⁵ Baruch Nagar, Head of the Water and Sewage Administration in the West Bank at the Water Authority, meeting, 30 January 2011.

⁴⁶ *Betzelem*, "Sewage without Borders: Neglect of the Treatment of Sewage in the West Bank", June 2009

⁴⁷ *Ibid.*

⁴⁸ *Betzelem*, "Sewage without Borders: Neglect of the Treatment of Sewage in the West Bank", June 2009

subject, the time required for the additional authorization from the Civil Administration is just one of the restrictions that cause difficulties for the Palestinian Authority.⁴⁹

4.1.4 Nature's right to Water

Israel recognizes nature's right to water. In accordance with paragraph 150a of the Water Law, 1959, the Director of the Water Authority delivers an annual report to the Knesset Economic Affairs Committee regarding the quantity of water it has been decided to allocate during that year for the purpose of maintaining the natural landscape – **a flow of water in the streams is necessary in order to maintain their ecological balance.**

According to Adv. Gidon Bromberg, Israeli Director of the NGO "Friends of the Earth – The Middle East", the current mechanism for managing the water resources between Israel and the Palestinians does not relate to this right of nature to water.

5. Cooperative Projects

Following is a description of a number of cooperative Israeli-Palestinian projects regarding water resources, which are not part of the political contacts between Israel and the Palestinian Authority. This document does not seek to list all the activity in this area.

5.1 Projects of NGO's

5.1.1 Friends of the Earth⁵⁰

The organization Friends of the Earth Middle East⁵¹ has been running the Good Water Neighbors project (GWN) since 2001. The project brings together 29 neighbouring communities – Israeli, Palestinian and Jordanian – through an educational process where water becomes the focus for dialogue and cooperation. The project operates at three levels: youth, adults and mayors.⁵²

Youth

For youth aged 14-17 in neighbouring communities. Activities focus on the following areas:

- **Study of Water Resources** – The organization has an employee in each community who organizes groups of Water Trustees in schools. The young people learn about their water resources and those of their neighbours and of the mutually dependent situation between them on the issue of water.
- **Activity in the field** – For example, each group of "Water Trustees" patrol an area, preparing environmental hazard maps and defines how these may adversely affect the groundwater.

⁴⁹ The World Bank, <http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/0,,contentMDK:22145826~menuPK:247611~pagePK:2865106~piPK:2865128~theSitePK:256299,00.html>, April 2009

⁵⁰ Gidon Bromberg, "Friends of Earth - Middle East" Israeli Director, meeting, 30 January 2011.

⁵¹ See FoEME website, http://foeme.org/www/?module=projects&project_id=32, accessed 31 January 2011. FoEME is a joint Israeli-Palestinian-Jordanian environmental organization founded in December 1994 that promotes joint environmental projects while encouraging peaceful relations.

⁵² The organization's funding sources are not regional governments, but foundations from the US, the European Union, UK, Belgium, Germany and others.

- **Joint Meetings** – youth from both sides meet⁵³ to discuss water issues, and study, among other things, how the environmental hazards they mapped may adversely affect both parties.
- **Environmental study centres** – the organization operates environmental study centres which teach a range of subjects including: greywater, rainwater harvesting, and wetlands.

Adults

Community Defender – In each community local activists study the issue of water and visit the neighbouring community. They then choose a relevant issue which they work on together with local decision makers.

Neighbours Paths – In selected communities a path is set up with about five stations that teach about the water situation of that community. One of the stations faces the neighbouring community, its goal being to teach about the water situation in that community. Over the past 3 years, some 15,000 people have toured these paths.

Mayors

With the aid of the organization, pairs of mayors from neighbouring communities made contact and held joint tours. The mayors also signed memoranda of understanding to solve their shared environmental problems, particularly in the field of water and sewage.

5.1.2 The Peres Centre for Peace

The Peres Centre for Peace was set up in 1997 as an apolitical group funded by donations. The Centre works on the principle that without relation to political negotiations, cooperation should be encouraged between the parties in areas such as medicine, environment and business.

On the subject of water, two recent projects could be mentioned:

Streams that Cross Borders – The project began in 2009. In cooperation with a Palestinian environmental NGO and professionals and planners from both sides who operate under a steering committee from the Peres Centre for Peace, the organization has located six streams (wadis) that cross borders.⁵⁴ Israeli and Palestinian teams worked in cooperation and prepared master plans for the rehabilitation of the drainage basin of each stream. Rehabilitation of the drainage basin comprises a number of social and ecological processes. For example a Master Plan was recently completed for the rehabilitation of the Kidron Valley (Wadi Nar) basin.⁵⁵ The Master Plan recommends setting up a sewage treatment plan and to use the treated wastewater for irrigation. It also deals with issues of tourism, solid waste, environmental education and rehabilitation of roads in the area of the Kidron's drainage area.

The next stage of the project is to promote the Master Plan among the decision makers so that it can be turned into a statutory programme that will require the Jerusalem Municipality, for example, to institute the appropriate sewage treatment.

Nanotechnology in the Service of Peace – this project began in 2005. The Peres Centre sponsors Israeli, Jordanian and Palestinian research institutions that do research

⁵³ Due to security limitations, the youth meet either in Israel or in Jordan, not in the Palestinian Authority.

⁵⁴ Streams whose source is in Palestinian areas that flow into areas within the Green Line and vice versa.

⁵⁵ The stream of the Kidron Valley today contains raw sewage that flows towards the Dead Sea.

on using nano-technology in water treatment. The Centre is responsible for management, funding and knowledge transfer between the research groups.

The goal of the research is to create new water sources by developing new technologies in this area in order, for example, to reduce the costs of desalination.⁵⁶

5.2. Academic Cooperation

Since the outbreak of the first intifada in December 1987, there has been an academic boycott by Palestinian universities regarding official cooperation with Israeli universities. Palestinian researchers can cooperate with Israeli researchers but without the sponsorship of their universities and without using the university's name.⁵⁷

According to Prof. Eran Feitelsson from the Geography Department of the Hebrew University of Jerusalem, there have been a large number of cooperative projects with Palestinian researchers in the fields of geo-hydrology, water engineering and water policy over the past twenty years.

Following are examples of Israeli-Palestinian academic cooperation in the field of water.

5.2.1. The Israeli Palestinian Science Organization (IPSO)

The IPSO was founded in 2005.⁵⁸ The organization has both an Israeli and a Palestinian director and the managing committee is the International Scientific Council⁵⁹ which has both Israeli and Palestinian representatives among its members.

The objective of the organization is to promote Israeli-Palestinian cooperation in all branches of science: the social sciences, the humanities and the natural sciences. The activity of the IPSO primarily focuses on finding research grants for projects and overseeing their management. I.e. the organization gives funding assistance to cooperative research in many areas, an important condition being that each research project will employ at least one Israeli researcher and one Palestinian researcher. It should be noted that the IPSO does not usually work with individual researchers but rather with research institutes, mainly universities.

According to Dr. Dan Bitan, the Israeli Co-Director of IPSO, **there are many joint Israeli-Palestinian academic research projects in the area of water research.**

Following are two examples of research studies currently being managed by IPSO in the field of water research:

1. Studies on water history– The IPSO is managing 6 studies on water history, for example, the history of water-related legislation during the British Mandate

⁵⁶ Oren Blonder, Director of the Agriculture, Water and Environment Department at the Peres Centre for Peace, telephone conversation, 27 January 2011.

⁵⁷ Until two years ago, the El Quds University was the only one that officially cooperated with Israeli universities. Two years ago, the Council on Higher Education in Israel decided not to recognize the degrees of teachers employed in Jerusalem obtained El Quds University and the University then stopped its cooperation with parallel Israeli institutions.

Dr. Gershon Baskin, Co-ECO Israel/Palestine Center for Research and Information, meeting 31 January 2011.

⁵⁸ In order not to be identified either with Israel or with the Palestinian Authority, the organization is registered in Belgium.

⁵⁹ The International Scientific Council comprises 18 senior scientists, including Nobel Prize laureates.

period, the development of water legislation, and the history of aqueducts.⁶⁰ Two of these studies are being carried out by joint Israeli-Palestinian teams.⁶¹

2. Research on water purification – about six months ago a project was begun by an Israeli researcher and research assistant with a Palestinian researcher and research assistant, on the quality of small water purification facilities that might serve Palestinian villages that do not have access to the regional water supply system. The researchers are testing the quality of the water in Palestinian water purification facilities and how this water might be re-used.

The researchers in the IPSO joint teams participate in international conferences in joint delegations. In June 2001, for example, Israeli and Palestinian researchers appeared together at two sessions of a conference on water history.⁶²

5.2.2. The Van Leer Institute

About 4 years ago the Van Leer Institute in Jerusalem⁶³ instituted joint Israeli-Palestinian academic discussions. Some ten discussion groups of 15-20 researchers have taken part in this activity, about half of them Palestinian and about half Israeli. The discussions were held on a variety of subjects such as environment and peace and regional sustainability. The issue of water has also been raised in these debates.

According to Dr. Sarah Ozacky-Lazar, head of the Van Leer Institute's Forum on Regional Environment and Sustainability, the Institute publishes a large number of joint Israeli-Palestinian studies, but most are not on the subject of water. Van Leer focuses less on the water issue, she said, since there is already widespread academic Israeli-Palestinian cooperation in this field. A more pioneering area which her forum does deal with is the field of water history research and the Institute cooperates with the IPSO on this subject.

An additional academic activity organized by the Forum is joint study by 26 students, about half Palestinian half Israeli, on environmental subjects. The Israeli students are from the Environmental Studies programme at Tel Aviv University and the Palestinian students are from a number of universities. The students hold tours, in Jericho for example, and study environmental subjects, including water. Some of the lecturers in the programme are Palestinian researchers.⁶⁴

5.2.3 Friends of the Earth

In addition to the above information on the educational activities by Friends of the Earth Middle East, the organization also published professional articles on the subjects of water and sewage, some of them written by employees and some by research from the

⁶⁰ Prof. Eran Feitelsson, Geography Department of the Hebrew University of Jerusalem, telephone conversation, 30 January 2011

⁶¹ In the other projects, Israeli and Palestinian researchers coordinate the studies and help each other wherever necessary.

⁶² Dr. Dan Bitan, Israeli Co-Director of IPSO, telephone conversation, 31 January 2011

⁶³ The Van Leer Institute was founded in Jerusalem by the Van Leer family for the purpose of promoting human knowledge in the fields of philosophy, society and culture. The Institute has been operating since 1959 as a centre for advanced study and an intellectual public dialogue.

⁶⁴ Dr. Sarah Ozacky-Lazar, head of the Van Leer Institute's Forum on Regional Environment and Sustainability, telephone conversation, 1 February 2011. See The Van Leer Jerusalem Institute, <http://www.vanleer.org.il/eng/content.asp?id=300>, accessed 1 February 2011.

academic world. The common denominator of all these studies is that **they are carried out and written by Israelis and Palestinian working together.**⁶⁵

⁶⁵ Gidon Bromberg, "Friends of Earth - Middle East" Israeli Director, meeting, 30 January 2011.

Appendix – Basins of the Mountain Aquifer

The table gives details of the three Aquifers and the quantity of water that may be used by each side, as received from the Israeli Water Authority.⁶⁶

Name	Additional name	Total of water that can be used annually ⁶⁷	Quantity of water Israel has the right to use per year	Quantity of water the Palestinian Authority has the right to use per year	Comments
The Yarkon-Teninim Basin	The Western Aquifer	362 mcm/year	340 mcm/year	22 mcm/year	The principal water production from the Mountain Aquifer is from here
The Shechem-Gilboa Basin	The Northern Aquifer	145 mcm/year	103 mcm/year	42 mcm/year	
The Eastern Mountain Basin	The Eastern Aquifer	172 mcm/year	40 mcm/year	132 mcm/year	Israel claims that the Palestinians deliberately do not pump from this Aquifer, despite the option to do so. On the other hand, there are claims that this Aquifer contains less water than the amount Israel claims it contains.
Total		679 mcm/year	483 mcm/year	196 mcm/year	

⁶⁶ Data received from Baruch Nagar, Head of Water and Sewage Administration in the West Bank, The Water Authority, meeting, 30 January 2011.

⁶⁷ These quantities were determined more than a decade ago as part of the agreement on water between Israel and the Palestinian Authority. It should be noted that since then there have been 6 consecutive years of drought and it is doubtful if the aquifers are filling at the same rate. It is possible that today this aquifer supplies less than 600 mcm/year on average.