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The Impact of the Israeli Occupation on the Strategic Planning Activities of the Water Sector in the West Bank

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DECLARATION

I declare that the content of this thesis is my own research work, unless otherwise referenced. I certify that this thesis does not contain any material published before by another person or has been submitted elsewhere for any degree of qualification.

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DEDICATION

I dedicate this thesis to the spirit of my dear mother, whose I do not complete my happiness without. And to the spirit of my dear child Noah. May Allah have mercy on them.

I also dedicate it to my dear father, may God preserve him

To my dear husband and my beloved sons and daughter, (Adham, Tameem, Dana).

To my brothers and sisters

To all who supported me in my success

To my precious homeland Palestine

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Abstract

This thesis aims to investigate the impact of the Israeli occupation on the implementation of the strategic planning of the Water Sector in the West Bank, and offer possible solutions, where the researcher try to answer the questions of the thesis that revolves around this subject. Methodology by using the descriptive analytical approach, based on interviews with decision makers, previous studies, and data published or unpublished in relevant institutions. The study found that the gap between the quantities of available water and the quantities needed for the Palestinians in the west bank is very large, so the water sector has prepared many strategic plans that contain various water projects, but the implementation of any project goes through complicated procedures that often lead to failure, and water sector suffered of heavy losses due to the Israeli arrogance in the region. Therefore, the strategic planning of the water sector in the West Bank is in great trouble, because the preparation of strategic plans does not guarantee their implementation, which harms the efficiency and effectiveness of the strategic plans, and prevents the achievement of strategic goals, and thus not achieve the vision. In order to alleviate that impasse, the responsible parties must take the necessary measures, such as using international pressure on the Israeli side to give the Palestinians their water rights, and to resort to the International Court of Justice with reports and documents proving Israeli violations and claim compensation for the losses they caused, in addition to supporting popular measures that work to collect part of the stolen water with the presence of control, and new technologies can also be used to collect water all the time.

List of Abbreviations

Abbreviation	Term
EAB	Eastern Aquifer Basin
JWC	Joint Water Committee
l/c/d	liters per capita per day
Mcm	Million cubic meters
Mcm/y	Million cubic meters per year
N-EAB	North-Eastern Aquifer Basin
O & M	Operating and Maintenance
PCBS	Palestinian Central Bureau of Statistics
PSI	Palestinian Standards Institute
PWA	Palestinian Water Authority
PWS	Palestinian Water Sector
WAB	Western Aquifer Basin
WB	West Bank
WBWD	West Bank Water Department
WHO	World Health Organization.

Table of Contents

List of Figures

List of Tables

CHAPTER 1
INTRODUCTION

Water is one of the most important natural resources on the earth, as well as that it is the basis of life and existence of all living things, so we need to know the water situation in the West Bank.

1-1. Back ground of the Study

"Since the establishment of the Palestine Water Authority (PWA) according to the act no.2 of 1996, the PWA has been shouldering the responsibility of building and developing the water sector. Additionally, the PWA has been taking the responsibility of building and rehabilitating the damaged infrastructure through projects funded by donors' community. In addition, the PWA has been providing water and waste water services to the Palestinian citizens; services that they had been deprived of by the occupation for decades". (Water Authority, 2016)

Water is one of the main factors for development in its various concepts (economic development, social development, human development and sustainable development), and the issue of water in the economic development aspect is more than a matter related to its availability, but rather it is the ability to manage and regulate the available water resources and to use them with scientific and economic efficiency. The sustainable and comprehensive development of water resources and management has become an urgent issue in our time to avoid future crises that may arise due to water shortage of both quantity and quality. (Abd Rahman & Abd almajeed, 2014)

Since Palestine is located in the dry and semi-arid climatic range, with low rainfall rates and limited water resources, the strategic importance of water in the region has increased (Salamah, 2008). In view of the importance of water, deep and long-term thinking and planning are needed to optimize the available water resources and to seek other resources, especially in sensitive areas such as Palestine, which has been under Israeli occupation for decades.

"The water sector is one of the most vital sectors for the sustainable development at the national level. The Israeli occupation has deliberately neglected the development of the water sector in Palestine for decades. Thus, this has directly diminished the potentials for true development. Despite of launching the peace process and the establishment of the Palestinian Authority in 1994, the development of the water sector remained restricted due to the obstacles imposed by the Israeli authorities even within the signed agreements between the Palestine Liberation Organization (PLO) and Israel". (PWA, 2016)

So; How the Israeli occupation impact on the implementation of the strategic national planning of the Palestinian Water Sector (PWS) in the West Bank? This is the main question which we aim to answer in this thesis.

1-2. Problem Statement

The Palestinian Water Sector (PWS) organize for implement many water strategic plans and alternatives, which may increase water resources in the West Bank, but how does the Israeli occupation impact that implementation?

1-3. Thesis Questions

1-3-a. Main Question: How can the Palestinians mitigate the impact of the Israeli occupation on the strategic planning activities of the water sector?

1-3-b. Sub - Questions:

1- How does the Israeli occupation impact the strategic planning activities of the Palestinian Water Sector in the West Bank?
2- How much losses have been incurred by the water sector in the West Bank due to the Israeli occupation?

1-4. Thesis Objectives

1-4-a. Main Objective is: Alternatives to mitigate the impact of the Israeli occupation on implementing the strategic planning of the water sector.

1-4-b. Sub. Objectives

1- To study some Israeli practices that impact the strategic planning activities of the Water sector in the West Bank.
2- To study the impact of the Israeli occupation on the strategic planning of the water sector in the West Bank, take in consideration some financial losses to the water sector, due to Israeli hegemony and analyzing the gap between the quantities of available water and the quantities required in the West Bank.

1-5. Thesis Significance

The significance of this thesis will give evaluation to the strategic plan of water sector at the national level. Its significance in assessing the impact of the Israeli occupation on the implementation of the strategic plans of the water sector in the West Bank, and identify some of the losses suffered by the Palestinian Water Sector due to Israeli violations.

1-6. Thesis Limitations

Place borders: The West Bank of occupied Palestine, (borders of the Palestinian National Authority).

Time limits: Since 1996 - 2017, (since the establishment of the Palestinian Water Authority, which is authorized to water management).

1-7. Research Methodology

In this thesis the researcher will use the descriptive, analytical and historical approach, using Excel program to make diagrams and analyze data collected from the relevant authorities, especially the Palestinian Water Authority, In addition to books, journals, research, articles,, newspapers, magazines, websites and interviews with experts.

1-8. Validity and Reliability:

There are many previous studies that illustrate Israeli violations of Palestinian water rights, as well as studies that demonstrate the requirements for successful management and planning, which we will link to clarify the main objective of this study, in addition to data analysis using special programs.

CHAPTER 2
HISTORICAL BACKGROUND AND LITERATURE REVIEW

2-1. Historical Background

This part of the thesis explains responsible bodies of the water sector administration in the West Bank, manifestations of Israeli awareness of the importance of water in the establishment of the state, in addition to some clarifications about water rights of Palestinians in the West Bank.

2-1-1. Water sector institutions in the West Bank

Palestinian Water Authority (PWA): A public institution that works to manage, develop and protect water sources and infrastructure in a fair, integrated and sustainable manner to provide water suitable for different uses in a manner that ensures the protection of the environment and the achievement of the development goals of the Palestinian society.(PWA, 2017)

Water Services Providers: Establishments and interests that provide water and sanitation services directly to citizens.(PWA, 2017)

Water Sector Regulatory Council: Monitor all related to the operational activity of water service providers, including production, transportation, distribution, consumption and sewage management. The Council shall also approve water prices, as well as licensing facilities and operators.(PWA, 2017)

National Water Company (NWC): The company works to supply bulk water to the interests of water, local authorities and joint water services councils. (PWA, 2017)

In this thesis we focus on the Palestinian Water Authority, being a public institution for the management of Palestinian water resources, and to know the impact

of the occupation in achieving its objectives and thus its vision. Especially that the strategic plan of the Water Authority, based on the plans of other institutions of water sector, since; Dr. Sobhi Samhan said in the interview: The Palestinian Water Authority is in contact with other institutions to build its plan and identify priority projects to achieve its strategic objectives. (see Annex3) Therefore, any water project in the West Bank to be implemented must be included in the action plan of the Water Authority.

Vision of the (PWA): Sustainable water sources able to achieve development and basic needs of the Palestinian people.(PWA, 2017)

Mission of the (PWA): A public institution working to manage, develop and protect water sources with integrated and sustainable water supply to citizens valid for different uses and ensure the protection of the environment and the achievement of the development goals of Palestinian society. (PWA, 2017)

Strategic objectives of the PWA :

1- Development and protection of water resources in accordance with the principles of integrated management;
2- Justice in the distribution of water and sanitation services;
3- Active management and consolidate the principles of good governance in the water sector;
4- Investing in institutional building and achieving operational excellence for the water authority. (PWA, 2017)

The Joint Water Committee is part of the governance arrangements established under the Oslo Accords for a five-year interim period, which was due to expire in 1999 but remains in place because of the lack of a permanent agreement. The role of the Joint

Water Committee is to oversee water resources in the West Bank, with the exception of the Jordan River. The Joint Water Committee shall consist of an equal number of delegates representing the Israeli Water Authority and delegates representing the Palestinian Water Authority. Both parties must agree to do most of the activities in the West Bank water sector; however, the parties are not equal in terms of powers and control. Palestinians must obtain the approval of the Joint Water Committee for any project related to water abstraction from mountain water reserves and any other water-related projects, including micro-activities. (Wafa, 2018)

2-1-2. Manifestations of Israeli awareness of the importance of water in the establishment of the state

It is necessary to explain the roots of the Israeli greed for Palestinian water since the start of the planning of the occupation of the Palestinian territories and even after the establishment of the Palestinian National Authority by clarifying the importance of water in Zionist thought. As well as the importance of water in the Jewish doctrine, and the Israeli measures for the acquisition of water in the Palestinian territories since the beginning of the occupation. It is also important to know the extent to which these Israeli practices are legal, in order to identify the remaining Palestinian rights after the peace agreements.

2-1-2-1. Water in Zionist thought

The roots of determination and insistence to own the land and water back to the doctrine of "land and water". This doctrine was crystallized with the first beginnings of the emergence of the Zionist movement, by Theodor Herzl, the founder of Zionism,

who was establishing this conviction in the Jewish intellectual perceptions, to establish the Greater State of Israel. More over on the nature of the borders that Herzl expects, he says in response to the German Emperor: ‘He asked me about the land we want, and its borders, and whether it will extend to the north to Beirut, or beyond, but we will ask for what we need, the area increases with the increase of the number of immigrants, we have to demand from the sea because of the future of our global trade, we need a large area to carry out our modern agriculture on a large scale. The Israel we want is Israel of David and Solomon’.(Zureiq, 1968)

As Herzl said: The real founders of the new-old land are water engineers. Therefore, everything depends on them, starting with drying the swamps in order to water the infertile areas, and reaching for building power plants. (Ruppin, 1929)

David Goron said, in his speech on 1955; the water dimension is the foundation of, Israel's security, maintenance, and existence. (Fares, 1993)

Thus, all previous statements illustrate the awareness of the Zionism founders on the importance of water to establish the Israeli state. Therefore, based on the importance of the Zionism for immigration and settlement, it was important to persuade Jews around the world to immigrate to Palestine and settle in, it linking them to land and water, according to the holiness of the work in the land and planting it, in order to install them in it. they confirmed that through many biblical texts as shown below.

2-1-2-2. Water in the Zionist Doctrine

Zionism worked on developing the Torah in order to serve the aims of the Zionist project, and to persuade the Jewish people that they are obligated to construct the land of Palestine, and to use its natural resources, considering them as the heirs of

Israel's 12 tribes, by the use of the Torah to firm the religious beliefs in the ideology and culture of Israel. Zionism mastered the art of manipulating people's national susceptibility, then used this concept as their logo that was painted on the flag of Israel: (your borders, oh Israel, are from River Nile to Euphrates), also the map on their currency '10 agoras'; this logo aims to create a defined water strategy with the Israeli rapacity of the Arab water sources in general, not only of the Palestinian water. (Al-Adailh, 2005)

Figure (1) illustrates the scope of the Greater Israel to be established on Arab lands, and the Figure (2) represents the same map engraved on an Israeli currency worth ten agoras.

Figure (1): Borders of the Greater State of Israel
Source: (Yinon's, 1982).

Figure (2): '10 agoras'
Source: Taken by the researcher

2-1-2-3. Israeli measures for the acquisition of Palestinian water:

Before the establishment of the State of Israel, the Jews started with a series of activities, movements and water projects that indicate that their interest in the water issue is an early concern, such as: Mavrommatis project in 1922, which aims to transfer

the water of the Yarmouk River to the Tabaria lake, and to construct two channels to irrigate the agricultural land in the eastern bank and the western bank of the Jordan River. And the Walter Clay Milk project in 1942 with the investment of the Jordan River water to irrigate the south of Israel. (Alawna, 2005)

After the establishment of Israel in 1948, it began to control the rsources of water in the framework of implementing the Zionist project on the ground. The Israeli government issued in August of this year, the decision of nationalizing water in Palestine, which considered water as a public property of the State. In mid-1960s, Israel began to divert the water of the north of Jordan River, to the Negev region in south of Palestine. It also began the pumping of water from the Tabaria lake at a rate of 450 million cubic meters of water a year(Mcm/y) in 1964. (Aqali, 1996)

Since Israeli occupation on Palestine in 1967, Israel has worked on preventing the Palestinians from having their water rights through establishing several settlements above the water-rich areas, and adopting these water sources by these Israeli settlements. (PCDI, 2018)

The following map shows the site of an Israeli settlement ‘Halamesh’ near one of the most important Palestinian springs that had been completely taken control over ‘Ein Khaled and Ein Alqaws’, see Figure (3). (United Nations, 2012)

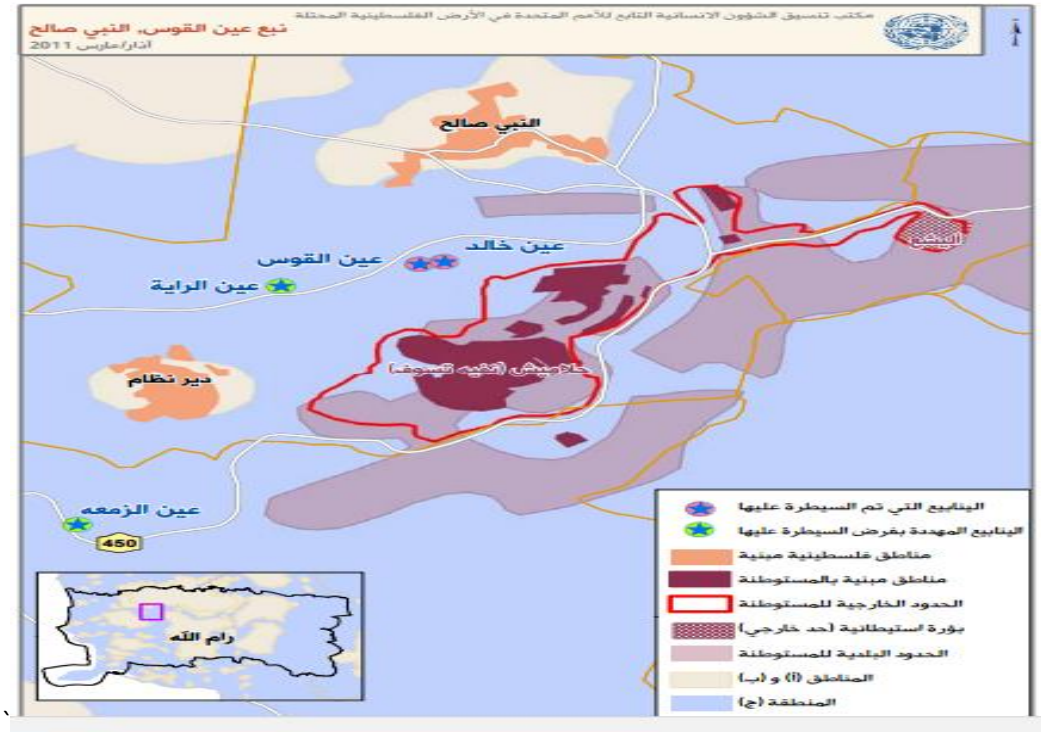

Figure (3): The site of Halamish settlement near the most important water springs in the West Bank.

Source: (United Nations, 2012)

For Israel to take over the Palestinian water, the Israeli occupation authorities issued a number of military orders that will lead to the Israeli control on the Palestinian waters. The following are some of these orders:

- An order on 7 June 1967 that states (all the water in the land that's been taken over again is under the ownership of the state of Israel.);
- Order number 92 on 15 august 1967 that states (it's strictly prohibited to establish any water institution without allowance, and for the officer of water the right to refuse issuing a license, even without giving a reason for it.);
- Order number 158 on 1 October 1967 that states (placing all wells, springs and water projects under the direct control of the Israeli military governor). Even

the water drop that's being drank by Palestinians has to be subjected to the Israeli military governor. (PCDI, 2018)

In order to implement these orders, Israel carried out a number of measures and practices, such as:

- Setting a limit for the amount of water that's allowed to be pumped by wells' owners, in the West Bank (WB) and in the Gaza Strip;
- Preventing the digging of new wells for farming, and forcing restrictions on them;
- Confiscation of wells from the Palestinian farmers, to the benefit of Israeli settlements;
- Specifying the depth of the wells, as Palestinians are prevented to dig deeper than 120-140 meters-wells;
- Completely preventing the Palestinians from having their water rights from the Jordan River;
- Theft of large amounts of Palestinian water through the drilling of many wells in the Israeli settlements on the Palestinian lands occupied 1967;
- Establishing many dams to reserve the surface water to the valleys and to prevent it from reaching to the Palestinian territories. (Shehadeh, 2009)

All these arbitrary measures deprive the Palestinians of their most important rights in the land (water). Here, we are not concerned in the narrative of the Israeli history, but it was necessary to clarify what Israel has done with Palestinian water, in order to compare it later with the granting of powers to the Palestinians after the peace agreements. Before that, we have to know the legality of the measures taken by Israel towards the Palestinian waters.

2-1-3. Water rights of Palestinians in the West Bank

Here; I will study the extent of the legality of the Israeli measures taken towards the Palestinian waters.

2-1-3-1. Palestinian Water in the International Law

Beginning; since Palestine is a state occupied by the Zionist entity, so it applies to the laws of war agreed upon in the Fourth Geneva Convention of 1949, including Article 53 of the Convention, which states: “Any destruction by the Occupying Power of real or personal property belonging individually or collectively to private persons, or to the State, or to other public authorities, or to social or co-operative organizations, is prohibited, except where such destruction is rendered absolutely necessary by military operations”. (Jean, 1958) This law is completely contrary to the military decisions and violations committed by Israel against the Palestinian water, which we mentioned before.

As stated in UN General Assembly Resolution 144/38 in 1983, of natural resources in the Palestinian territories are as follows:

“3. Condemns Israel for its exploitation of the national resources of the occupied Palestinian and other Arab territories;

4. Reaffirms that Convention IV of The Hague of 1907 and the Geneva Convention Relative to the Protection of civilian Persons on Time of War, of 12 August 1949, are Applicable to the occupied Palestinian and other Arab territories;

5. Emphasizes the right of the Palestinian and other Arab people whose territories are under Israeli occupation to full and effective permanent sovereignty and control over their natural and all other resources, wealth and economic activities;

6. Also reaffirms that all measures undertaken by Israel to exploit the human, natural and all other resources, wealth and economic activities in occupied Palestinian and other Arab territories are illegal, and calls upon Israel to desist immediately from such measures;

7. Further reaffirms the right of the Palestinian and other Arab peoples subjected to Israeli aggression and occupation to the restitution of, and full compensation for the exploitation, depletion and loss of and damage to, their natural, human and all other resources, wealth and economic activities, and calls upon Israel to meet their just claims." (UN Library, 2018)

There are many international resolutions of rivers and aquifer, but there is little space for more detail on the legal rights of Palestinians in their land. The legal issue is long and complex, but we have introduced few of these laws to emphasize Palestinian rights, before discussing the details of the situation of Palestinian water in the peace agreements, so that the reader can link the legal facts of the Palestinian water resources, with what they achieved in the peace agreements, between the Palestinian and Israeli sides of Palestinian water.

2-1-3-2. Palestinian Water in the Peace Agreements

As a result of the Oslo Accords, the West Bank was divided into Areas A, B and C, where Area A was handed over to the Palestinian National Authority (PNA) for its full administration, constituting 3% of the total West Bank. Area B was administered by the Authority only In the West Bank, constituting 27% of the West Bank, while security control was for Israeli governments, area C is under Israeli control, in addition to the settlement blocs, which have doubled over the years of negotiations. In fact, the Israeli

army controls 97% of the West Bank, while the Palestinians control only 3%, according to the signed agreements. (Ibrahim, 2010)

2-1-3-2-1. Declaration of Principles Agreement on 15/ September/ 1993 in Washington

The agreement aims to establish a Palestinian interim self-government authority in the Gaza Strip and Jericho firstly, for a period of no more than five years, leading to a permanent equalization, the agreement included 16 articles and four annexes, three of articles and Annexes 3 and 4 were talk about Water, in general forms and methods; and unclear or specific, that articles and annexes were talking about: "The establishment of a Palestinian Authority for water management in the autonomous region", "focus on water cooperation", " proposals for studies and plans on water rights" and "Cooperation between the two sides to promote a development program for the region which includes the subject of water". (Al-Adailh, 2005)

2-1-3-2-2. Cairo Agreement "Gaza - Jericho First"

"In 1994, the Oslo II agreement contained provisions on water and sewage that recognized undefined Palestinian water rights, and returned some West Bank water resources and services responsibility to the PA. In the context of the Peace Process, water was referred to as a final status issue, but interim arrangements were made until status could be resolved. Oslo allowed the PA jurisdiction over all affairs in Areas A and B of the West Bank, but restricted PA control over "territory-related" issues, including infrastructure planning and water resource management, in Area C, i.e. over nearly 60% of the West Bank". (The World Bank, 2009)

2-1-3-2-3. Water in Taba Agreement signed in Washington on 28/9/1995

Taba Agreement recognized for the first time clearly and explicitly the Palestinian water rights in the West Bank, which Israel were refused to discuss in absolute terms previously, it always mention" water uses", not "water rights". The first paragraph of Article 40 in Taba agreement states: "Israel recognizes the Palestinian water rights in the West Bank and will be negotiated in permanent status negotiations and settled in a permanent status agreement on multiple water sources." So the Palestinians enabled to extract Israeli recognition of the immediate need for additional urgent water for the transitional phase. Identified about 70-80 million cubic meters (Mcm) per year, and Israel agreed to secure 28.6 million cubic meters of freshwater. (See annex (1) for details.)

Israel has recognized the right of the Palestinians to participate in the management of their water resources in the territories of the Autonomous Region through the establishment of a joint committee of equal number of parties concerned with water issues for the Palestinians without interfering with the water of the settlements. The Convention defines this role and restricts it by giving Israel the right to intervene at any time it considers that its interests are threatened, as agreed to preserve the exploitation of the waters of the West Bank basins and springs, as was the case previously. (Al-Adailh, 2005)

Despite the Israeli recognition of the Palestinian rights with their water resources in the West Bank, but it did not talk about any rights of the Palestinians in the waters of the Jordan River. Moreover, it gives Israel the right to intervene when its interests are under threat, without clearly defining those risks, that allowing Israel to intervene at any

time, under that pretext, and what is the change in the management of resources, if the situation will remain the same as before, with regard to the basins and springs in the West Bank, this item cancels what has been accepted before. It is clear in the agreements that some of the formulas were loose and wide and in some cases contradictory. They allow interpretation in more than one way, the Palestinians understand something and the Israelis mean something else. The agreements show the weak position of the Palestinians and the amount of Israeli control to exploit the Palestinian resources, and indicates that the Peace agreements are not based on the principles of international law, which we explain of them previously.

2-2. Literature Review

"The Middle East is a thirsty region – per capita water provision in several of the region's countries is presented in Table (1). These quantities are supplied for all uses: households, industry, and agriculture. Egypt and Syria have comparatively large quantities thanks to the rivers that flow into their territories from the rainy parts of their drainage basins. The available per capita quantity in the other countries is much smaller; in particular, in Jordan and in the areas of the Palestinian Authority. These quantities do not suffice for food production." (Kislev, 2011)

Table (1): Water in the Middle East, 2007.

The Country	**Cubic meters per capita**
Egypt	937
Syria	814
Lebanon	315
Jordan	158
The Palestinian Authority	104
Israel	282

Source: (Kislev, 2011)

"Water is not a new Issue in the Palestine question. At the end of the nineteenth century, there were no Jewish immigrant in Palestine and all what was is thought on where to establish a homeland for the dispersed Jews of the world. At that time cooperation began between the World Zionist Organization and the British government on the Palestinian water issue. As a result of this cooperation, the Royal Scientific Society in 1873 sent a delegation to Palestine to investigate two issues; the first was the available water resources and the second was the possibility of settling Jews in the southern part of Palestine Al-Naqab. The delegation after it returned reported in 1875 that water to Al- Naqab can be brought from the northern parts of Palestine and Jews can be settled in it". (Labady, 1989)

The West Bank depends mainly on the rainwater that falls on its mountains, as well as on the water falling on its geographical vicinity. Groundwater and its ground reservoirs, the main sources of water exploited, the water potential of the West Bank is estimated at 850 million cubic meters per year, about two-thirds of this quantity is stored in underground aquifers, and about 50 Mcm of this amount is used as surface water. (Saruji, 2003)

The northern region of the West Bank is characterized by a normal climate, rainy weather and a hot and dry summer, while the eastern and southern parts of the West Bank are considered drier, the rainy season is determined in the West Bank between November and May. January is the height of the rain fall, and the rain margins are distributed in the eastern and southern parts. (Saruji, 2003)

In a study of Amnesty International movement entitled: Troubled Waters – Palestinians Denied Fair Access to Water, Israel-Occupied Palestinian Territories, page8, explained that water sources in the West Bank include:

1) Groundwater consisting of mountain aquifers, including: the western basin, the north-eastern basin, and the eastern basin, where water quotas were divided between the Palestinian and Israeli sides according to the Oslo agreement.
2) The resources of surface water, which is represented by the Jordan River, which Israel turned its water to the Negev through the national carrier and the Palestinians and other neighbors do not get any share of it. (Amnesty International, 2009)

In some cases, more than one municipality in the West Bank collaborated to solve drinking water problems in their areas. For example: the Jerusalem District Water Utility - Ramallah Brigade, which serves the cities of Ramallah, Al-Bireh, Beit Hanina, Bir Zeit and Beitunia, as well as 40 villages and refugee camps. These attempts have been subject to interventions and amendments by the Israeli military authorities, which have tried, on more than one occasion, to change the status of these legal departments, as non-profit organizations, by placing them in departments under direct or indirect military administration. About a quarter of the villages in the West Bank have a local board of directors. The Village Council establishes and develops public services in the village, including the provision of potable water, energy and health services. In villages where there is no village council, local committees are formed to look after the general welfare of the village population. (Haddad & Abu Aisha, 1992)

The West Bank Water Department is an extension of the Jordan Natural Resources Authority, which was in service until the 1967 war. It was responsible for the preparation of preliminary studies, the development of designs, the preparation of tender copies and the full supervision of the implementation of all water projects in the West Bank. Currently, this department is under the direct control of the Water Officer in the

so-called Civil Administration of the Israeli Military Government. It collects water bills from municipalities and local councils, and other minor works, while the engineering work on water projects was entrusted to Israeli company Mekorot. (Haddad & Abu Aisha, 1992)

The Palestinian Water Authority has worked since its inception in 1996, to develop the necessary infrastructure for the delivery of water and sanitation services to different communities and sectors, it was not the only one operating in this area, but local authorities and service providers primarily worked to develop water infrastructure, these institutions have worked in direct coordination with the Authority in the field of infrastructure development. The Authority has also contributed to the provision of the necessary financial resources through donor-funded programs and projects, especially those bodies that have not been able to provide adequate resources for the development of infrastructure. Therefore, the role of the Water Authority in the development of infrastructure was essential, and it was adopted by many local bodies and service providers to ensure the delivery of water and sanitation services to citizens and different sectors in their communities. (PWA, 2016)

The Palestinian water policy for water management has many priorities to serve the citizens, the most importantly are:

1. Water resources in Palestine are public property and may not be private property of persons or organizations;
2. To clarify the priority of water distribution for all urban, agricultural, industrial, tourist and other areas;
3. Ensure the availability of water quantities necessary for basic needs and quality assurance;

4. Ensure that main water resources are not contaminated. (PWA, 2013)

The water sector in Palestine has suffered from severe restrictions and obstacles by the Israeli occupation, resulting in a lack of development and the lack of adequate infrastructure for water and sanitation services in general, the strategic plan is a key component and a key requirement in the development and development process of institutions and communities that seek to advance and develop services. Where the importance of this plan is increasing in light of the challenges and difficulties facing Palestine due to the reality of occupation and control over our water resources, and the lack of available financial resources. Hence, these resources must be invested in the best ways and means to reach the main objectives of managing the water sector in Palestine in an efficient and effective manner based on sustainable social and economic foundations. (PWA, 2016)

“The restrictions imposed by Israel on Palestinians’ access to water supplies in the Occupied Palestinian Territories (OPT) are manifested in multiple ways: control of water resources and land, and restrictions on the movement of people and goods make it excessively difficult for Palestinians to access their water resources and to develop and maintain the water and sanitation infrastructure. Furthermore, a complex system of permits which the Palestinians must obtain from the Israeli army and other authorities in order to carry out water-related projects in the OPT has delayed and rendered more costly, and in many cases prevented, the implementation of much needed water and sanitation projects”. (Amnesty International, 2009)

The conflict over Palestinian water is an issue that preceded Israel's establishment. It was an important axis of the Zionist movement. The Zionist movement

sought to strengthen its hegemony over the rich water resources and the fertile land in the north of occupied Palestine, to this end, Israel has completed several water projects, while most of the Palestinian projects were limited to restoration and maintenance only. (Alshaer, 2006)

"Lack of access to adequate, safe, and clean water has been a longstanding problem for the Palestinian population of the Occupied Palestinian Territories (OPT). Though exacerbated in recent years by the impact of drought-induced water scarcity, the problem arises principally because of Israeli water policies and practices which discriminate against the Palestinian population of the OPT. This discrimination has resulted in widespread violations of the right to an adequate standard of living, which includes the human rights to water, to adequate food and housing, and the right to work and to health of the Palestinian population." (Amnesty International, 2009)

"The inequality in access to water between Israelis and Palestinians is striking. Palestinian consumption in the OPT is about 70 liters a day per person – well below the 100 liters per capita daily recommended by the World Health Organization (WHO) – whereas Israeli daily per capita consumption, at about 300 liters, is about four times as much. In some rural communities Palestinians survive on far less than even the average 70 liters, in some cases barely 20 liters per day, the minimum amount recommended by the WHO for emergency situations response". (Amnesty International, 2009)

CHAPTER 3
WATER RESOURCES IN THE WEST BANK

After discussing the Israeli greed in the Palestinian waters, we must recognize the natural resources of the water in the West Bank, some of which the Palestinians are administering the civil affairs for some of resources. Based on the peace agreements signed between the two sides, where natural resources vary in the West Bank, the surface water is represented by the Jordan River and the valleys, and the groundwater is represented by the springs and the groundwater wells to extract the water. However, we do not forget the rain water that feeds these sources annually and specifically in the winter. Therefore, we have to identify these sources and their annual water estimates, in order to analyze the water situation in the West Bank more precisely.

3-1. Rain Water

Rainwater is the main source of fresh water in Palestine, because it is the source that feeds the rest of the natural resources, both temporary surface and underground ones. However, the quantities of rainfall are oscillatory amounts from season to season or year to year, and this is very clear in the Figure (4) & (5), which illustrate the annual rate of rainfall in the West Bank over several years. this is one of the most important things that make long-term planning of water management very difficult and sometimes sensitive.

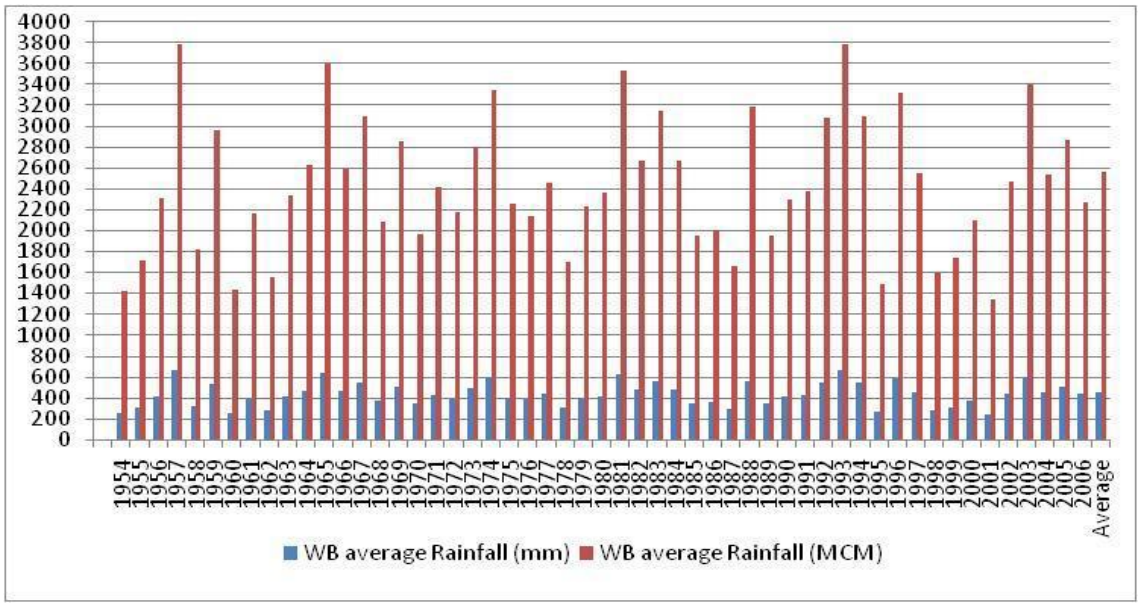

Figure (4): Annual rate of rainfall during the seasons from 1945 to 2006 in the West Bank.

Source: (Yacoubi & Abdel Ghafour, 2011)

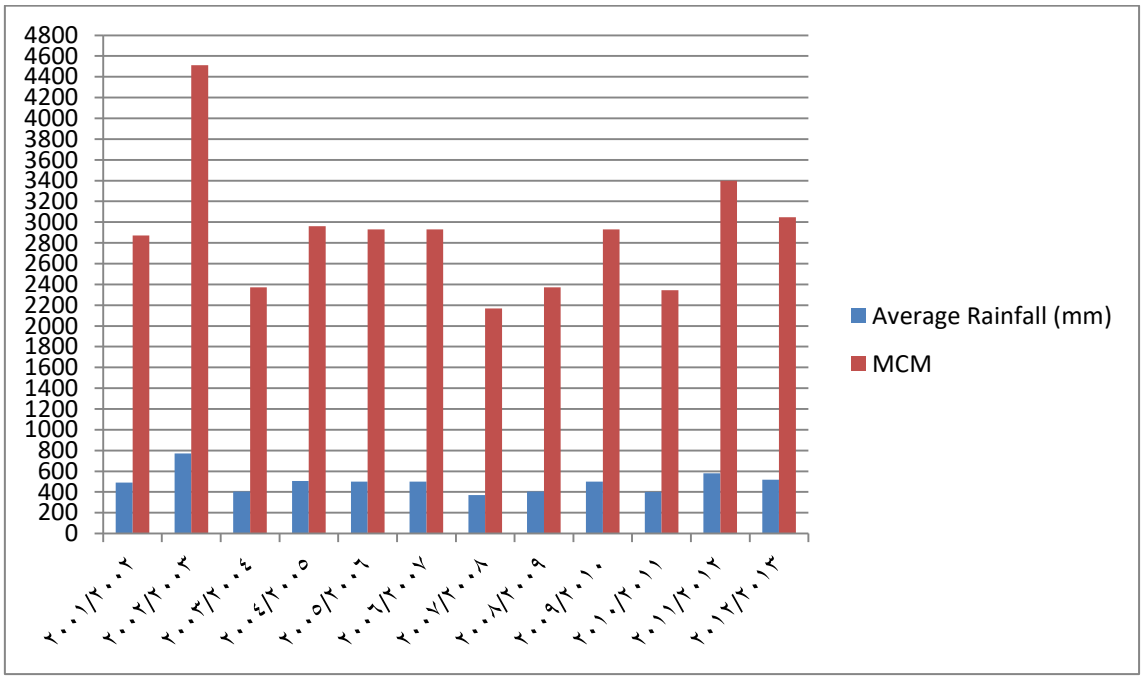

Figure (5): Annual rate of rainfall during the seasons from 2001/2002 to 2012/2013 in the West Bank.

Source: prepared by the researcher. **Data Source**: (Abu Al-Haija, 2013)

3-2. Surface Water

These are the waters that appear in the form of rivers, valleys or lakes. In Palestine there are the Jordan River, many seasonal valleys, and the Tiberia Lake in the north of Palestine beyond the West Bank (the area of the study). Therefore, we will highlight here the water sources which the West Bank has a share of, the most important of which is the Jordan River.

3-2-1. Jordan River

The Jordan River is the only source of permanent surface freshwater in the West Bank. It flows from the far north of Palestine, at an altitude of 2200 meters above sea level, to the Dead Sea at an altitude of 350 meters below sea level (see Figure (6)). It is divided between Palestine, Jordan, Syria, Lebanon, and Israel which exploit most of its water, The Jordan River is the eastern boundary of the West Bank with Jordan. The length of the basin is 350 km. The area of the basin is about 43500 km 2. Its historic drainage rate is estimated at 1400 Mcm. The legal share for the Palestinians is 257 Mcm annually. However the Palestinians do not get a drop of water from it, because of the transfer of its water, through the national carrier to the Negev Desert, as mentioned earlier. (Yacoubi & Abdel Ghafour, 2011) (see Figure (7)).

Figure (6): Jordan River
Source: (Wikipedia, 2018.)

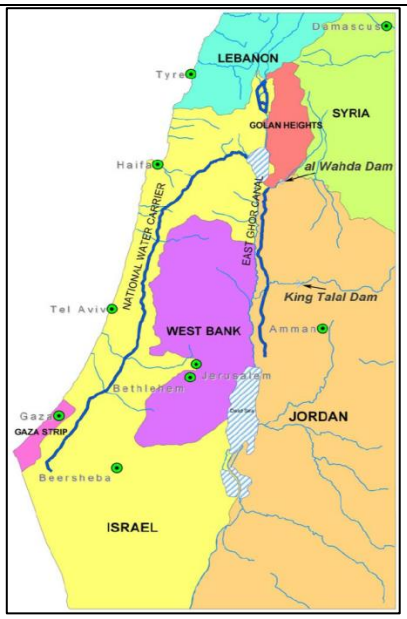

Figure (7): The Israeli National Water Carrier.
Source: (J. David Rogers, 2004)

3-2-2. Valleys and Floods

It is a group of valleys, which are often seasonal and derive their water from the northern and western foothills, and their water flows mainly to the east and west. The number of the main surface basins of these valleys is estimated at more than 30 basins, while the amount of water flowing in these surface basins is about 400 Mcm annually. However, the harvest of flood waters flowing in these valleys is negligible and has not been paid attention to by Palestinians, because it is expensive in general and therefore not exploited. Although some resources support and emphasize on the need to exploit this resource on a larger scale. In addition to the policies of the Israeli occupation, which also negatively affected the lack of use of this source, through the imposition of restrictions on the licensing of construction projects of dams.(Yacoubi & Abdel Ghafour, 2011)

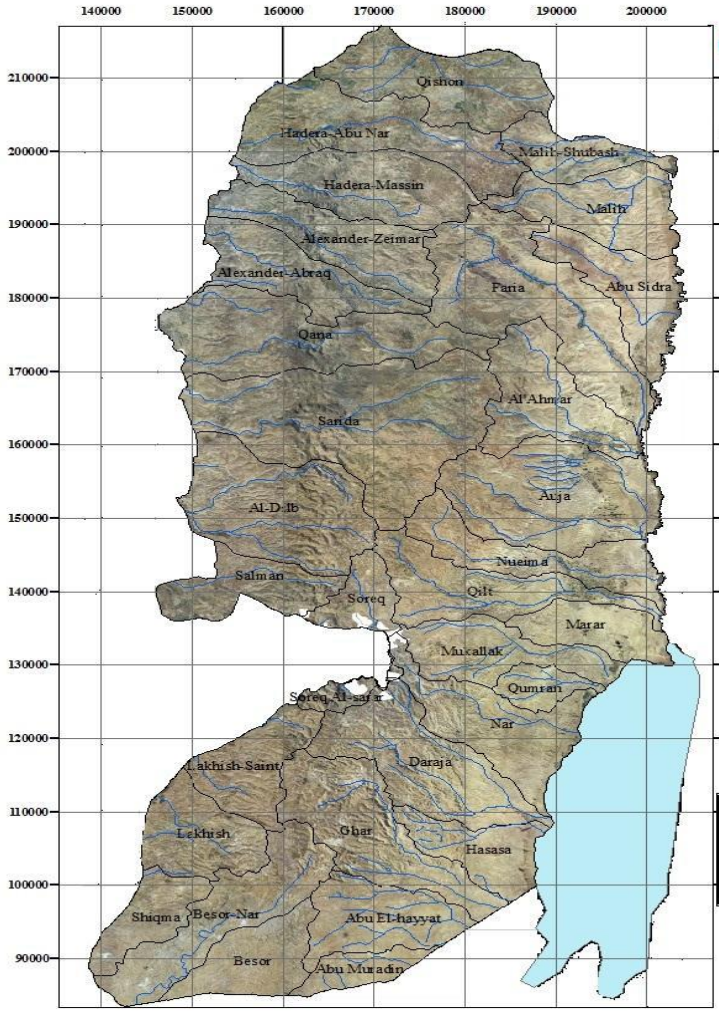

Figure (8): Surface water basins and drainage valleys in the West Bank.

Source: (Yacoubi & Abdel Ghafour, 2011)

3-3. Underground Water (Aquifer Basins)

"The West Bank overlies three groundwater basins jointly known as the Mountain Aquifer Basin: the Eastern Aquifer Basin, the Western Aquifer Basin and the Northeastern Aquifer Basin" . (UNESCO and others, 2005)

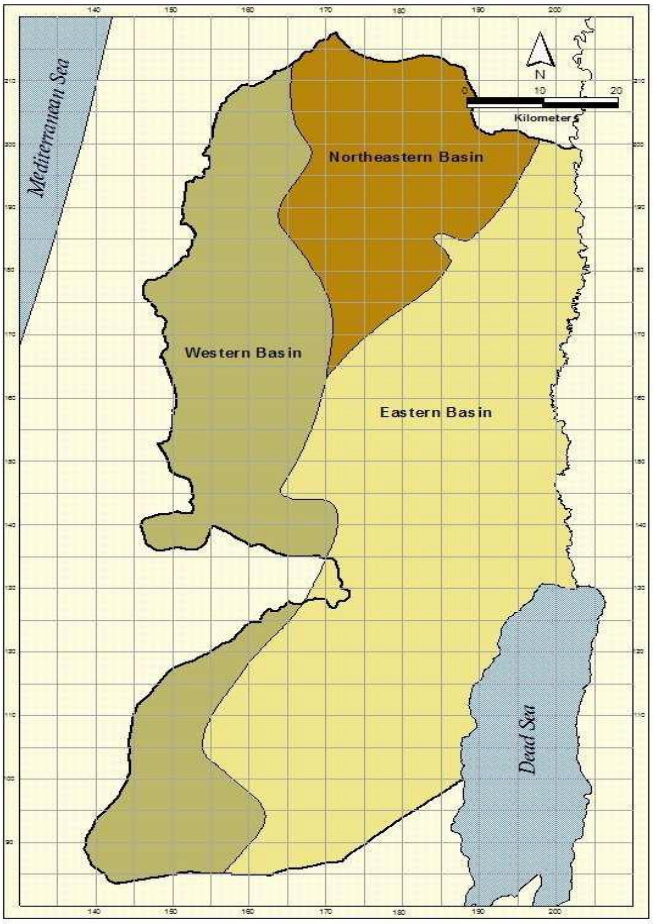

Figure (9): Groundwater aquifer basins in the west bank.

Source: (UNESCO and others, 2005).

"The Mountain Aquifer is a shared Israeli-Palestinian groundwater resource, lying under both Israel and West Bank. It is the sole remaining water resource for the Palestinians and one of the most important groundwater resources for Israel. It is replenished mostly in the West Bank by the infiltration of rainfall and snowfall and flows northwards and westward towards the territory of Israel and towards the Jordan River in the east. It is actually composed of three aquifers (or basins) – the Western, North-Eastern and Eastern aquifers – with a total average yield of 679 (as detailed below). Which used by the Israeli authorities to decide the yearly quantity of water allocated to the Palestinians under the Oslo Accords;

- Western Aquifer 362 Mcm/y;

- North Eastern Aquifer: 145 Mcm/y;

- Eastern Aquifer: 172 Mcm/y;

(Most of the water from the Eastern Aquifer are brackish/ saline)". (Amnesty International, 2009)

3-3-1. Western Aquifer Basin (WAB)

The western basin is considered as one of the most important water basins in the West Bank. It is characterized by its extensive breadth through the historic lands of Palestine. It extends from the mountainous heights of the West Bank in the east to the coastal areas in the west, and from the southern slopes of the Carmel Mountains in the north to the Egyptian border to the south. The area within the West Bank is the main recharge area of the western basin, estimated at 1767.39 square kilometers, it is located within the area of heavy rainfall, and it provides the western basin with at least 73% of its water. The groundwater flow in this basin is directed towards the west and the north-west, where the rock strata, that form it, go with these directions. Recent studies indicate that the recharge of this basin within the geographical boundaries of the West Bank amounts to 318-420 Mcm annually. (Yacoubi & Abdel Ghafour,, 2011)

3-3-2. Eastern Aquifer Basin (EAB)

The basin is mostly located within the boundaries of the West Bank to the east. It covers an area of about 2,900 square kilometers. The basin is divided into three main sections: the mountainous highlands, the eastern slopes, the Jordan Valley and the Dead Sea, The area covered by the basin is characterized by extreme slope, from 900 meters above sea level in the highlands to 396 meters below sea level in the Jordan Valley area. Most of the eastern basin are located in areas characterized by low rainfall in general,

while the western part of it is located in the areas of heavy rain (West Bank Heights), which is a source of recharge for groundwater in the basin, which is estimated at about 125-197 Mcm annually as a general average. The rock strata that make up this basin generally go to the east, which determines the movement of groundwater in this direction. (Yacoubi & Abdel Ghafour, 2011)

3-3-3. North-Eastern Aquifer Basin (N-EAB)

This basin is located in the northern part of the West Bank, as part of its territory extends within the historical boundaries of Palestine. The groundwater flows to the north and north-east of the area within the West Bank, which is 981.08 square kilometers. Therefore, this basin is yearly fed by 135-197 Mcm of water. (Yacoubi & Abdel Ghafour, 2011) To illustrate the direction of water movement in each basin, see Figure(10).

Figure (10): The direction of water movement in the aquifers in the West Bank.

Source: (Ka'ouch, 2013).

From the above, we note that, what is available in the West Bank from fresh water sources is varied, and it provides a total of more than 835 Mcm at least without exploiting the valleys and rain water, but what are the quantities of water that Palestinians receive from these sources?

3-4. The amount of water available in the West Bank

Based on what we have explained above, the Palestinians in the West Bank are entitled to a good quantity of various natural water sources. However, as mentioned earlier, the Palestinians do not receive a drop of water from the Jordan River, which is the only permanent surface resource in the West Bank; meaning that they have been deprived of 257 Mcm of fresh water annually, which is their legal share. There are abuses and some restrictions on the use of the seasonal valleys water, in addition to restricting the Palestinians to limited quantities of groundwater, in accordance with the peace agreements between the Palestinian and Israeli sides.

Israel always claims that there is a general shortage of natural water resources in the West Bank, but this claim is denied. For example, the productivity of the western basin in Oslo agreement, estimated at no more than 362 Mcm. Therefore, the Palestinians cannot dig additional wells in it, even though, Israel has pumped in the drought years 545 Mcm of water, instead of 330 Mcm of this basin in 1999. Contrary to what Israel claims, the digging of wells in the eastern basin is more difficult than in the western basin, due to the natural structure of it, which make water levels deeper and in sub-basins, thus increasing the probability of failure in drilling projects, and the risk of depletion of these sub-basins (Clemens, 2002). Therefore, it is not possible to adopt

Israeli information regarding natural water resources, they deliberately hide the facts, for water robbery and depriving Palestinians of their water rights.

With regard to Palestinian rights in water, the water issue of the Interim Agreement (Oslo II) was dealt with in Annex III, article 40, under which Israel recognized Palestinian water rights in the West Bank; and deferred the understanding on that to final status negotiations. Under this item, the Palestinian side was allocated a total of 118 Mcm of existing resources (springs and wells) in the West Bank; the Palestinian side was supposed to be able to drill wells, adding 80 Mcm to the total of the three West Bank basins. The Palestinian National Authority (PNA) has only been able to drill wells, which have given about 30 Mcm out of 80 Mcm, was supposed to be dug during the transition period (five years of the interim agreement); these 30 Mcm were additional at the expense of existing wells and springs. (Wafa, 2011)

Thus, the total of what was agreed to be granted to the Palestinians is 198 Mcm, yet they received only 148 Mcm, so they did not even get what was agreed upon. Although it is unfair for the Palestinians compared to their legal share of those resources. Moreover when comparing the Israeli side of these basins, it shows that it's more than six times the share of the Palestinians, and to know the difference between the share of the two sides see Table (2).

Table (2): Water Allocation according to Oslo agreement and utilization in 2012

Use	Oslo Agreement (MCM)				Utilization 2012 (MCM)			
	WAB	NEAB	EAB	Total	WAB	NEAB	EAB	Total
Israel	340	130	40	483	411	103	150	664
Palestine	22	42	54	118	28	23	53	104
Additional Quantity for Palestinian development	-	-	78	78	-	-	0	0
Basin Tatal	362	145	172		439	126	203	

Source: (PWA, 2013).

The table shows the, Israeli tyranny over Palestinian water. Israel is not satisfied with the amount allocated to it according to the agreement, but it is reducing what shall be provided to the Palestinians. We mentioned above that Israel gave the Palestinians 148 Mcm out of 196 Mcm, however, the data in the table show that the Palestinians received only 104 Mcm of the shared groundwater; that is, there are acts of Robbery and injustice on the Palestinian side, depriving them of their most basic rights in the Palestinian waters. Moreover, Israel completely controls other water sources and does not allow the Palestinians a drop of its water. Therefore, there are two types of water resources on which Palestinians depend:

3-4-1. Amount of water available from aquifer basins

Palestinians rely mostly on the groundwater, where most of the Palestinian water supply comes from this source either through wells, or through springs. The total available groundwater resources were estimated at about 100 Mcm annually in the West Bank. The Palestinian share of groundwater sources in the West Bank according to the Oslo agreement is 118 Mcm. About 51 Mcm is used of 100 Mcm annually to irrigate 115,000 dunums of land, while 49 Mcm per year is used in household and industrial consumption, with network losses exceeding 35%. In addition to the purchase of about 51 Mcm of the Israeli company Mokorot, of which 4 Mcm for agriculture and 47 Mcm for drinking, the total Palestinian water use in the West Bank will be 151 Mcm by 2012. (PWA, 2016)

We note that the additional quantity estimated at 78 Mcm, which was granted to the Palestinians in the peace agreements, is not mentioned, even if Palestinians do not receive them, it should be mentioned in the strategic plan; to remember the amount of

Israeli looting of Palestinian water. As for the amount of water consumed by Palestinians, they get it from some wells and springs scattered in the West Bank according to the following distribution:

3-4-1-1. Wells

Palestinians pump 18.8 Mcm/y from 197 abstraction wells while Israelis pump 36.7 Mcm/y from only 38 wells in the Eastern Aquifer Basin (EAB). Therefore, the theoretical average yield per Palestinian well is very low when compared to Israeli wells. In the Northeastern Aquifer Basin, 85 Palestinian wells pump around 11.5 Mcm/y (average period 1980-2004) while only 9 Israeli wells pump 13.4 Mcm/y (average for the period 1980- 2004). But in The Western Aquifer Basin (WAB), Palestinians have a marginal share in groundwater pumpage from this basin. Their 151 wells run at a comparably low average pumping rate. Therefore, their average pumpage (20.9 Mcm/y) is as low as 6% of the Israel pumpage. Israel has more than 500 wells just inside and along its borders with the West Bank, in addition to only 5 abstraction wells within the West Bank. The 5 Israeli abstraction wells in the West Bank produce 3.0 Mcm/y on average, less than 1% of the total Israeli usage of the WAB. Almost 94% of the overall pumpage from the WAB comes from within Israel. (UNESCO and others, 2005)

Table (3): Water distribution of groundwater wells in the West Bank (Mcm / year)

Aquifer Basin	West Bank		Israel	
	Wells number	Water quantity	Wells number	Water quantity
Eastern	197	18.8	38	36.7
Northeastern	85	11.5	9	13.4
Western	151	20.9	5	3
Total	433	51.2	52	52.1

Source: The table is prepared by the researcher based on the data mentioned above

If we look at Table (3), we note the significant difference between the number of wells and the quantities of water abstracted from the aquifers, to both the Palestinian and Israeli sides, and that the amount of water flow from Israeli wells is much higher than the Palestinian wells, indicating a close danger of the weakness of Palestinian wells, despite the large numbers of them, which may reach the drought early. But wells are not the only mean of extracting and exploiting underground water, here are many natural springs scattered in the Palestinian territories, that water flow naturally and human has only to exploit them.

3-4-1-2. Springs

"In the Eastern Aquifer Basin (EAB) 66 measured springs under Palestinian control yield 39.9 Mcm/y on average. They are fresh water springs and are distributed all over the Eastern basin. However, in general it can be stated that a great number of Mountain springs have a low to very low discharge rate, while the strong springs are found in the Jordan Valley area. Israel controls a handful of mainly brackish to hyper saline springs along the Dead Sea. They discharge 88.5 Mcm/y; this value is a rough approximation. Hence, Palestinians control the fresh water springs, and Israel controls the main, albeit saline, portion of spring flow. in the Northeastern Aquifer Basin 74 Palestinian springs in the West Bank discharge 14.0 Mcm/yr. The rest of the spring discharge, more than 75 Mcm/y, emerges from springs inside Israel. And in the Western Aquifer Basin, the recorded average spring flow within the West Bank is 2.1 Mcm/y, while springs inside Israel discharge at a 30 year average of 43 Mcm."(UNESCO and others, 2005) See Table(4).

Table (4): Water distribution of springs in the West Bank. (Mcm/y)

Aquifer Basin	West Bank	Israel
Eastern	39.9	88.5
Northeastern	14	75
Western	2.1	43
Total	56.0	206.5

Source: The table is prepared by the researcher based on the data mentioned above

Here, too, the distribution is unfair to the Palestinians, compared to what the Israelis take from Palestinian water, so the Palestinians have sought alternative water resources in an attempt to get more.

3-4-2. Amount of water available from Non-conventional resources

According to the shortage of water resources and the increasing demand for water, the Palestinian Government has already begun to focus on the development of non-traditional water resources in order to reduce the gap between available water supply and demand rates: (PWA, 2017)

• Desalination of brackish groundwater, small pilot desalination projects for brackish water, established by the private sector, mainly in the Jordan Valley, with a total capacity of less than 0.5 Mcm/y and is mainly used for agricultural purposes. A large desalination plant is planned to desalinate the brackish waters of the Dead Sea springs, with a production capacity of at least 22 Mcm/y by 2022, the project will contribute to increasing water supplies for the southern part of the West Bank, its output capacity will eventually be increased to 40 Mcm/y in the future. (PWA, 2014)

• Reuse of treated wastewater: There are many small activities to reuse wastewater treated, such as pilot projects in different areas, especially in the Gaza Strip, with a total

water reuse of about 1 Mcm/y. In the West Bank there are also a few wastewater reuse activities or projects. (PWA, 2017)

Thus, the amount of water available to Palestinians in the West Bank is a very small part of what they are entitled to from the shared water sources with the Israeli side, which is less than 151 Mcm, including the quantity purchased from Israeli company Mekorot. The unconventional resources are still in the experimental phase, therefore, only small quantities of arable water are given. So, will the available quantity be sufficient to meet the basic needs of the Palestinians? This is what we will study in the next chapter of this thesis.

CHAPTER 4
DISCUTION AND RESULTS

We have previously explained the amount of water available to Palestinians in the West Bank, which is 151 Mcm, to find out if it is sufficient for the Palestinian needs, it is necessary to know the amount of demand for water in the West Bank, to compare them, and to analyze the water situation of the Palestinians.

4-1. Water Demand in the West Bank

Water is an essential element for the continuation of life and its development as well, so it is necessary to provide abundant water in excess of the traditional need of human, from drinking and cleaning, to cover all areas of life such as industry, agriculture, health and others, all these areas depend on each other. Moreover, the lack of water for one of them means a decline in other areas. Industry, for example, depends on agriculture; health depends on industry and agriculture; and agriculture depends on industry for high efficiency. Thus, one area of life cannot be separated from the other, all of which are in dire need of water for sustainability and development. Therefore, we will examine the current water needs of the Palestinians according to the population growth and according to the estimates of the World Health Organization for the individual to survive healthy, also according to what is required for the most important sectors in the West Bank, namely domestic, industrial and agricultural use.

4-1-1. Water requirements for Domestic use, based on continuous population growth, and as recommended by the World Health Organization

Population growth is a natural phenomenon all over the world, due to an increase in the birth rate in relation with the mortality rate in any country. In the West Bank, the birth rate in 2016 was approximately 28.5 births per 1000 citizens, while the mortality rate was 3.7 deaths per 1000 citizens. (Wafa, 2016) Table (5) shows the estimates of population growth in the West Bank in the period 1997-2017.

Table (5): Estimates of the West Bank population in the period 1997-2017

Year	Population 1000s
1997	1600.1
2012	2649.0
2013	2719.1
2014	2790.3
2015	2862.5
2016	2935.4
2017	3008.8

Source: (PCBS, 2017).

It is clear from the previous tables that the number of Palestinians in the West Bank is increasing year after year, and has almost doubled from 1997 to 2017. As recommended by the World Health Organization, at least 100 liters of water per person per day should be available for domestic use. (Amnesty International , 2009) So, Palestinians needs for domestic use are shown in Table(6).

Table (6): Water Demand for Domestic Use (Mcm/y)

Year	Population *1000	Domestic demand
2012	2649	95.36
2013	2719.1	97.89
2014	2790.3	100.45
2015	2862.5	103.05

2016	2935.4	105.67
2017	3008.8	108.32

Source: prepared by the researcher

since the amount of water available water to the Palestinians in the West Bank is estimated at 151 Mcm, it exceeds their domestic needs. However, according to the Strategic Plan for the Palestinian Water Sector 2017-2022, the total amount of water consumed per capita in the West Bank is estimated at 72 liters per day (l/c/d) which can be 41 l/p/d in other areas., this is far less than what the World Health Organization recommends, therefore, the PWS seeks to provide more. To determine the actual water requirements in the West Bank, it is necessary to calculate the quantities of water needed for the most water consuming sectors, domestic, industrial and agricultural sector.

4-1-2. Water demand for Industrial Sector

Industry is one of the most important features of the state's development, and it is a very important source of national income; as through the industrial development, the state can reduce its foreign imports, and increase its exports. Therefore water is an essential element in industrial processes.

In Palestine, "the industrial sector has a limited contribution to the overall economic development. Consequently, the existing situation of the industrial sector in Palestine (which consists mainly of light and small industries) does not represent the actual stable industry that could be achieved in Palestine. This implies that the current industrial water demand cannot be utilized for the projection of the future water demands. According to several studies, it was found that the present industrial water demand in Palestine represents about 8% of the total municipal water demand.

Based on the World Health Organization (WHO) standard that the industrial sector should represent 16% of domestic water demand." (UNESCO and others, 2005)

So Palestinians need for this sector is shown on the table below.

Table (7): Palestinian Water Demand for Industrial Sector (Mcm/y)

Year	Population *1000	Domestic demand	Industrial demand 16% of domestic
2012	2649	95.36	15.26
2013	2719.1	97.89	15.66
2014	2790.3	100.45	16.07
2015	2862.5	103.05	16.49
2016	2935.4	105.67	16.91
2017	3008.8	108.32	17.33

Source: prepared by the researcher

4-1-3. Water demand for Agricultural Sector

The agricultural sector includes two types of production: animal production and plant production, and here we focus on plant production, because it needs large quantities of water. Agriculture plays a vital role in the economy of developing countries, and it is the main source of food, income and employment for a lot of its population. Agricultural development and land use are essential for poverty alleviation, therefore, man always seeks to develop various means of agriculture, and the most important are irrigation methods. Since water is the basis of agriculture, the abundance of water means the possibility of increasing irrigated areas, and thus increases agricultural production.

"The role of agriculture is particularly important in the economy of Palestine due to its high contribution to the Gross Domestic Product (GDP) and its role in employing Palestinian workers. In addition to forming about 30% of the GDP in the

past decades agriculture's contribution to employment has risen from 12.7% in 1995 up to 16% in 2004. Irrigated agriculture contributes to more than 37% of total agricultural production compared to only 24% from rainfed agriculture. Agriculture has a major role in national trade as agricultural products constitute 23% of the national commodities export." (UNESCO and others, 2005)

Looking at the Palestinian statistics for the agricultural year 2010/2011, we find that the agricultural areas are classified by type of crop and irrigation method. It was also found that the area of irrigated land in the West Bank is estimated at 111,234, and Table (8) shows that.

Table (8): Tracts of agricultural land irrigated and non-irrigated in the West Bank / dunum.

Crop type	Irrigated area	Non-irrigated area	Total
Tree horticulture crops	23,893.3	588,755.7	612,649
Vegetable crops	79,142	16,699	95,841
Field Crops	8,199	212,683	220,882
Total	**111,234.3**	818,137.7	929,372

Source: The table is prepared by the researcher. **Data Source**: (PCBS, 2012, pp. 51-61).

While the irrigation water efficiency is measured by the amount of water used for the unit of land (m3 / dunum), estimated at 600 m3 / dunum. (Rahil & Natsheh , 2012) So, 111,234.3 dunums of irrigated land needs about 67 Mcm, while what is mentioned in the strategic plan and action plan of the Palestinian national water sector 2017-2022, that 51 Mcm of available water is used to irrigate 115,000 dunums, while this area requires 69 Mcm of water, for efficient use. However, the amount of water required for agriculture is not only what is used, or what is required for irrigated areas only. In the West Bank, there are large areas of irrigable land (see Table (7)), which is estimated at 612,000 dunums as shown in Table(9), and is not exploited by irrigated agriculture due

to the lack of available water resources, and this area needs 367.2 Mcm for optimum exploitation.

Table (9): Area of irrigable land in West Bank Governorates / dunums.

Governorate	Irrigable land
Jenin	163,000
Tubas	82,000
Tulkarem	27,500
Qalqilia	17,500
Salfit	49,000
Nablus	68,000
Ramallah and Al-Bireh	35,000
Jerusalem	3,000
Jericho and the Jordan Valley	45,000
Bethlehem	12,000
Hebron	110,000
West Bank	**612,000**

Source: (Rahil & Natsheh , 2012).

However, “the required land area to be irrigated will depend on the availability of the natural resources of land and water. The irrigated area of 0.14 dunum per capita is used as the land share that should be irrigated, as it is nearly similar to the Jordanian per capita irrigated area.” (UNESCO and others, 2005)

Thus, the area of land required for irrigation and its requirements of water is shown in the table below.

Table (10): Water Demand for Agricultural Use (Mcm)

Year	Population *1000	Required area (dunums)	Water demand
2012	2649	370860	222.52
2013	2719.1	380674	228.40
2014	2790.3	390642	234.39
2015	2862.5	400750	240.45
2016	2935.4	410956	246.57
2017	3008.8	421232	252.74

Source: prepared by the researcher

Based on that, the quantities of water required for all sectors in the West Bank, are detailed in the following table.

Table (11): Palestinian Water Demand for main Sectors (Mcm)

	Water Demand Mcm			
Year	**Domestic**	**Industrial**	**Agricultural**	**Total Demand**
2012	95.36	15.26	222.52	333.1
2013	97.89	15.66	228.40	342.0
2014	100.45	16.07	234.39	350.9
2015	103.05	16.49	240.45	360.0
2016	105.67	16.91	246.57	369.2
2017	108.32	17.33	252.74	378.4

Source: prepared by the researcher

We note here that the quantities of water required are much higher than the amount agreed upon in the peace agreements which is 196 Mcm as we mentioned earlier, yet Israel does not allow the Palestinians to obtain the agreed quantity. For further clarification follow the next topic.

4-2. The gap between water supply and demand in the West Bank

Comparing the quantities of water available and the quantities required for Palestinians over several years is helpful to analyze the Palestinian situation, and to take the appropriate measures to face the situation. If we look at Table (12), result revealed that the great challenge facing the Palestinian Water Sector is to close the growing gap between supply and demand for water in the West Bank since 2012, not for a year only.

Table (12): Water Supply–Demand Gap in the West Bank (2012-2017)

Water Supplt-Demand Gap (Mcm)			
Year	**Water Avalable Mcm**	**Water Demand Mcm**	**Gap Mcm**
2012	150.6	333.1	182.5
2013	167.1	342.0	174.9

2014	144.1	350.9	206.8
2015	166.7	360.0	193.3
2016	165	369.2	204.2
2017	165	378.4	213.4

Source: The table is prepared by the researcher.

For further clarification, see Figure (11) below.

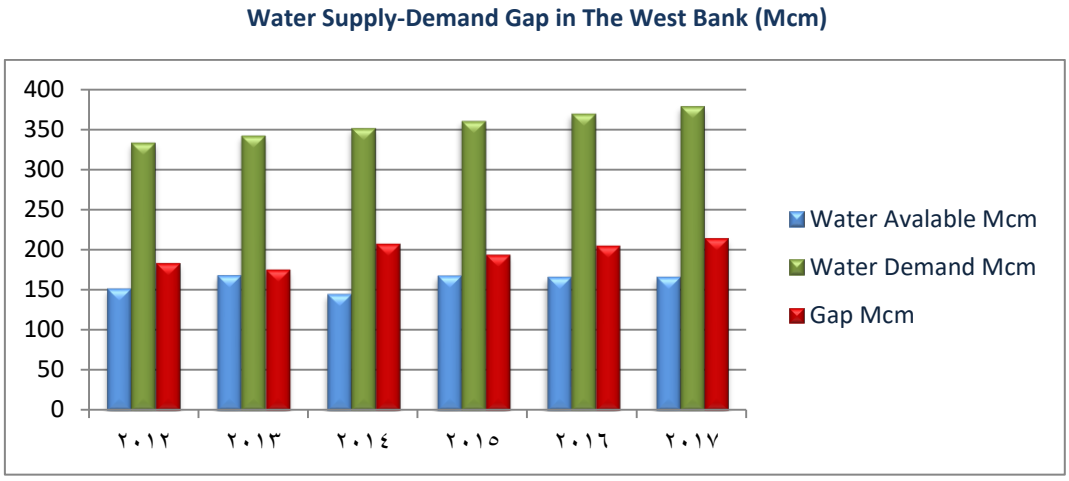

Figure (11): Water supply-demand gap in the West Bank/ 2012-2017

Source: Prepared by the researcher based on the data of Table (12).

In addition, these gaps are not recent, so this data only represents the last six years. However, this gap is inherited over the years and is increasing in many of them. See Figure (12) which presents the water gap between the supply and demand of Palestinians since 2000.

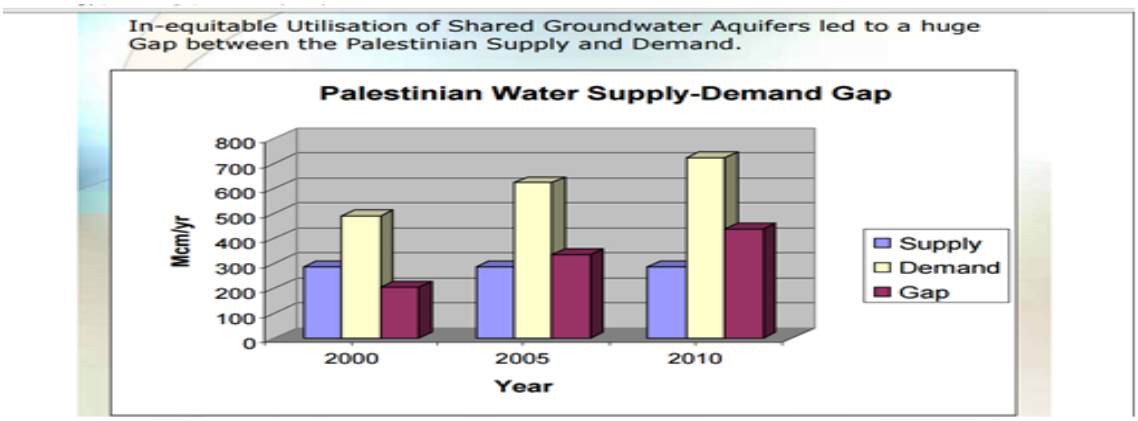

Figure (12): Water supply-demand gap in the West Bank/ 2000-2010.

Source: (Aliewi, 2006).

From here, you can see that the size of the impasse in which the Palestinians are located is very large, where almost twice the available amount of water must be supplied and sometimes more. However, the gap may increase in the coming years, if the situation remains the same, as reported in Tony Blair's report: The demand for water in the West Bank by 2020 is expected to be 390 Mcm, with a gap between supply and demand of 250 Mcm. (Blair, 2012) This is a terrible thing that threatens the lives of the Palestinians and their survival in this country, so they must search for all the ways and means that can provide them with more water in the region, to get them out of the terrible predicament. This is one of the most important responsibilities of the Palestinian Water Sector, which works to manage various water projects in the West Bank, but to implement any project, it must obtain the approval of the Israeli side in the Joint Water Committee. Therefore; has the Water Sector been able to implement all planned projects without the Israeli obstacles? How does the Israeli occupation deal with the plans and projects of the Palestinian Water Sector? This is what we will study at the next part of this thesis.

4-3. Israeli Obstacles and Cases from the West Bank

To study the impact of the Israeli occupation on the implementation of the Palestinian water projects, I have conducted some interviews with decision-makers. In addition to studying some projects in terms of the nature of the Israeli obstacles to their implementation, and the amount of losses that occurred because of those obstacles, because any impediment to the implementation of a project, impede the implementation

of the strategic plan which include that project and prevents the achievement of the general strategic objectives of the water sector.

In an interview with Eng. Omar Zayed, the Director of the Department of Water Studies and Monitoring at the Palestinian Water Authority, he said that the strategic planning of the water sector has started since the establishment of the Palestinian Water Authority. However, they often have to relocate water projects in a plan to the next plan because of Israeli occupation. Recently, they put together the National Strategic Plan 2017-2032; which was prepared in cooperation with the Ministry of Agriculture and the Environment Quality Authority. It is divided into several sub-plans of two years each. On the other hand, the strategic plan includes three scenarios: a- Scenario of the current situation, includes plans and projects that must be implemented in the case of no change in the conditions of the Palestinian Authority. b- Scenario of the transitional situation, which includes the plans and projects that must be implemented in the case of an agreement between Palestinian and Israeli sides, and moved Palestinian Authority to the stage before the establishment of the state officially. c- State scenario, includes plans and projects that must be implemented in the case of the establishment of an independent Palestinian state formally. In other words, the Palestinian Water Authority takes care of several cases in which the Palestinian Authority may pass. The best of which is the establishment of an independent Palestinian state, and the worst is the current situation in which occupation dominates all aspects of life. (See Annex (2))

In order to implement any project related to Palestinian water, it is necessary to obtain the approval of the Joint Water Committee for projects located in Areas A and B of the West Bank. In addition to the approval of the Israeli Civil Administration, for

projects located in Area C, which constitute 60% of the West Bank territory, which is still under full Israeli control (see Figure(13)). (The World Bank, 2009)

Figure(13): Occupied Palestinian Territory, West bank: Area C Map.

Source: (UN, 2011)

Therefore, it was decided to hold periodic meetings of the Joint Water Committee every two months, which was adhered to in the years 1997, 2000 and 2001 only. However, at the start of the second intifada, the meetings began to take place slowly, and became more complicated when Hamas government emerged, so; between 2000 and 2005 meetings were rare between the two parties. When the main meeting was

held in 2007, the Palestinians had 150 water projects awaiting the Israeli approval, only 40 of which were approved. Knowing that; Water Authority has submitted a total of 417 projects to obtain the approval of the Joint Water Committee (JWC) from 1996 until 2008. Only 237 projects (57%) were approved. Of the 97 projects submitted between 2005 and 2008, only 28 were approved, with a delay of approval ranging from two months to 18 months, and 17 of them took a year or more until they received Israeli approval, while the Israeli projects that were submitted in the same period were all approved. (The World Bank, 2009)

In the meeting with Eng. Omar Zayed, he said that the Israeli occupation is the main responsible side for the water problems in the West Bank, as it controls 85% of the renewable water resources, and it prevents development operations and steals water and then sell it. JWC is also a major problem at the decision-making level, especially in Area C of WB, which requires the approval of the Israeli Civil Administration, which consists of 13 offices that must pass the project and take all their approval, Eng. Omar added that papers are often lost in these offices, so Palestinians are forced to submit again, this is a major waste of time and delays for projects. (see Annex (2))

Hence, PWS is in multiple crises, as it has no control over the main water resources in the West Bank and cannot implement any water project on its own land, unless they obtain the Israeli approval. It is restricted to limited quantities, granted by Israeli arrogance, which does never meet the basic Palestinian needs, therefore, the PWS provided many water projects for Israeli approval, though, many of which culminate in failure because of Israel's rejection or restrictions, as it happened in the following cases:

Case 1: Projects of Drilling Wells

The digging of new wells or the restoration of old ones, is the most important projects used to extract groundwater, so the failure of any of them may directly affect the achievement of the first strategic objective of the PWA, which is development and protection of water resources in accordance with the principles of integrated management, which may negatively affect the mission and vision as well, being PWA is the general institution of the PWS management

In this regard, Eng. Omar Zayed said: "of the drilling projects of wells that were approved by the Joint Committee, was the well of Kufert with a depth of 650 m. it was supposed to be in the village of al-Yamoun according to the planning of Palestinian side, but Israel required that it be moved 4 km southward, which made it move to the village of Kufert; on the pretext that the well in Yamoun will be close to Israeli springs, and it will affect its flow, that after 10 years of procrastination and delay. In the same period, Israel agreed to dig a well in Janzur area between Shuhada and Bir al-Basha districts of Jenin district. However, the moving of al-Yamoun well to Kufert, make the wells close together, which will affect their productivity. In order to avoid this, PWA was forced to move Janzur well to Bel'amah area of Jenin City within Area A, (see Figure (13)). When they informed the Israelis of the move, the Israelis threatened the excavator, even though it had reached a depth of 400 meters underground, and forced him to stop working since 2011 until this day. This drilling costs about $ 400,000 dollars without benefiting, in addition to the loss of water expected to be extracted from this well which is 250 cubic meters per hour. (see Annex (2))

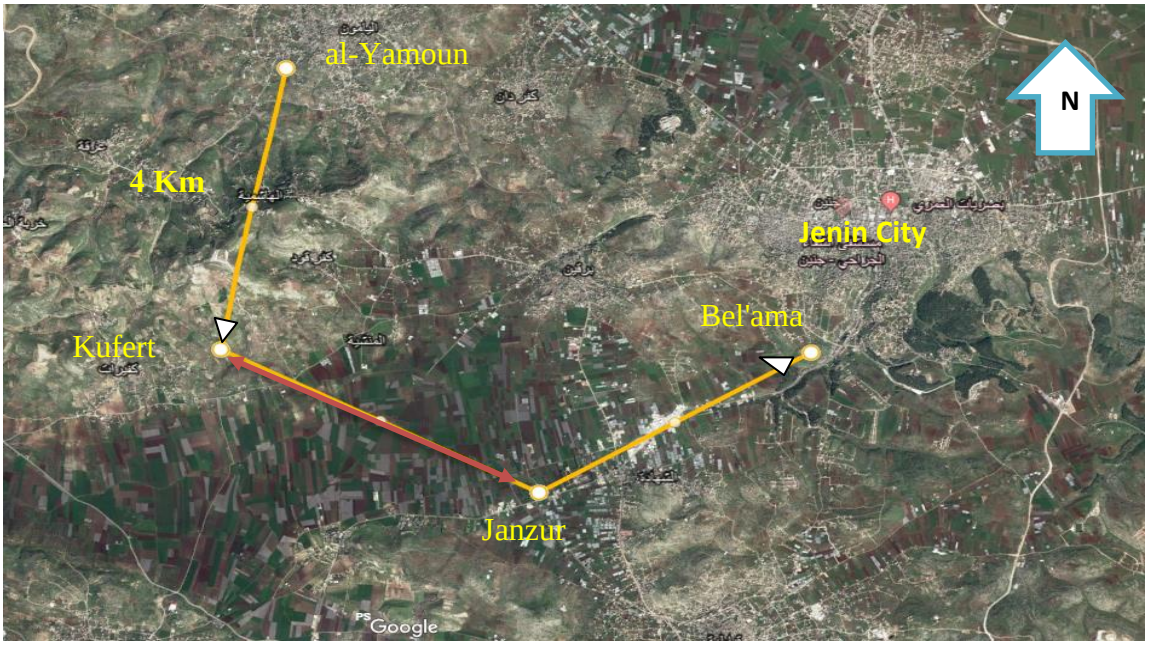

Figure (14): The sites of al-Yamun and Ganzour wells, and the displacement lines for them.

Source: prepared by the researcher, using Google Earth.

In the operational plan 2016-2017, of both the Municipality of Jenin and the Water Authority, a completion project of drilling a new well in Janzur (Belame) – Jenin was re-launched, to be completed during the first three quarters of 2017, but has not been implemented so far. (PWA, 2017-2018)

We observe some manifestations of Israeli arrogance, which lie in delaying the projects, changing their location, and preventing any deviation from what was agreed by the Joint Committee. When I asked Eng. Omar: why did you tell the Israeli side that you transferred the project of the Janzur well to Bel'amah? He replied that the Israelis are conducting periodic monitoring of any project being carried out in the West Bank, using special experts and inspection equipment, so this cannot be hidden. (see Annex(2))

So Bel'amah well is an example of Israel's role in thwarting the development of water resources as planned, in addition to causing heavy financial losses because of the

lack of implementation so far, Based on the (average price per cubic meter of water in the West Bank estimated at NIS 2.7 (PCBS, 2013), you can see total water losses of Bel'amah well in table (13).

Table (13): Losses of Bel'amah well.

Water loss	Quantity	Price x1000 NIS
Per hour	250 cubic meters	0.675
Per day	6000 cubic meters	1.6200
Per year	2.19 Mcm	5913
Since 2011	15.33 Mcm	41391

Source: prepared by the researcher based on previous data.

A loss of 41.391 million shekels ($ 11.28 million), is an abstract loss, because of the lack of access to water originally stolen. But if the Palestinians got that water (15.33 Mcm), they could invest it in agriculture to irrigate 25550 dunums of agricultural land, and thus gain additional profits.

It is noticeable here that the depth of Bel'amah well is more than the exact depth for the Palestinians since the beginning of the Israeli occupation which was 120-140 meters, as we mentioned earlier. When I asked Eng. Omar Zayed about that, he said that after Oslo agreement became available to the Palestinians to exceed this depth, because the surface layers of the aquifers (first layer) are depleted, which are at a depth of 200 meters that is the amount of water is consumed at this depth. And PWS was able to dig wells, up to the upper reservoir of the underground basins (second layer), such as: Jellabon well (250-meter), Al-sa'adeh well (900 meters) and Methlon well (1300 meters). All of these wells in Jenin Governorate, the depth sometimes reaches the bottom reservoir (third layer) of the aquifer, which is deeper.(see Annex (2))

In an interview with Dr. Subhi Samhan, director of research and development at PWA, said that Israel had agreed to dig three wells at a depth of 600-700 meters in some of the southern parts of the WB, such as the Hirudio well in Hebron, which is still weak despite all this depth, because the hydrological structure of these areas does not provide abundant amounts of water at this depth. He added that Israel deliberately dug a series of deep wells in the eastern basin, extending from Marj Nuja in the north to Jericho in the south, which cause the drying up of most of the Palestinian wells and springs in this basin, although this basin is supposed to be a full right for Palestinians according to the Oslo agreement.(see Annex (3))

There are other images of Israeli hegemony, which illustrate the Palestinians' inability to protect available water resources, which is part of the first strategic objective of the water sector, as “Israeli wells in the West Bank have dried up local Palestinian wells and springs such as: At Bardala, in the North Eastern corner of Tubas Governorate, eight Palestinian wells were constructed before 1967 for domestic and agricultural purposes, with depths ranging from 30 to 65 metres. After the 1967 war, Israel constructed two deep wells (Bardala 1 in 1968 and Bardala 2 in 1979) a few hundred metres from the Palestinian wells. The water level in the Palestinian wells dropped at the rate of 2 metres a year, and salinity increased. Now the Palestinian wells are dry, as are most of the local springs used by Palestinian consumers for domestic and agricultural purposes. (The World Bank, 2009)

So the PWS seeks to dig new wells or increase the depth of weak wells, but in terms of drilling new wells in the Palestinian territories, the head of the Palestinian Water Authority, Mazen Ghoneim, says: that according to article 40 of Oslo agreement, there is a joint water committee that approves all projects in the West Bank, but drilling

projects is given approval by Israel, and they dig a well for the settlers for each Palestinian well, which is rejected by PWA. (PWA, 2017)

The Palestinian approval of settlement wells is considered as an acknowledgment of the legitimacy of the settlements on the Palestinian territories, and the depth of the Palestinian well is also limited compared with the Israeli wells that cause the drying up of many Palestinian wells.

Israel has rejected 60 percent of the wells projects, since 1999, for reasons that are too weak. It also imposes additional obstacles when implementing any water project in Area C of the West Bank, as drilling a well may take over 7 years to complete all the procedures of occupation. (Yacoubi & Abdel Ghafour, 2011)

In some cases, the rejection of the project is a retribution of Palestinians, for not bowing to Israeli arrogance, like what happened in the project of digging a well in Rougeib village near Nablus, where: “For reasons bluntly stated as retaliatory “punishment”, the Israeli Civil Administration subsequently refused permission to a Palestinian constructor contracted by the PWA to move a rig through the West Bank to drill the well near Rujeib. Though it was also intended to serve the residents of Madama, the Rujeib well project was subsequently removed from the list of projects considered for funding by USAID, and was never completed. Despite the fact that it had already been granted approval by the Joint Water Committee, having decided to “punish” the PWA for their refusal, to allow a new Israeli well in the Eastern Aquifer Basin, the colonel in charge of ‘humanitarian affairs’ at the Israel Civil Administration refused to allow the drill rig to be established on the Rujeib site. The PWA did not muster enough bargaining power to counter the punishment.” (Zeitoun, 2008)

This indicates the amount of Israeli greed and arrogance towards Palestinian rights, using force, dominance, and de facto imposition. Moreover, Israel does not allow any excesses to its approvals, no matter how long it delays negotiations, and despite the Palestinians' suffering from a crisis in the available water, such as:

"The village of Arrabona lies right on the Separation Barrier and 2000 dunums of its land are in fact on the other side of it. Although the village itself is in Area B, it is surrounded by Area C. The village uses cisterns and tanker water, at a cost of up to $4/m3. The quality is very poor and there is water related disease. For years; villagers tried to get a license to drill a well, but without success. In early 2007, they started to drill an unlicensed well for water supply, when they got to 100m they received a notice from the Civil Administration. They continued drilling. They received a second notice, but continued drilling and reached 274 meters. A villager explains: "The contractor was drilling day and night, but he was afraid. He left, and another came." One morning soon afterwards, a villager states that "40-50 military vehicles came with a bulldozer. The Israel Defense Forces (IDF) surrounded the village and called a curfew. They bulldozed two houses and filled in the well." The villagers have turned the well site into a small play park, with a dry fountain in the middle. They say, "We spent 90,000 shekels for nothing. All we wanted was safe water for our children. Now we have a very expensive play park - and the same contaminated expensive water." (The World Bank, 2009)

In more Israeli control and arrogance, Israel is carrying out some projects for settlements within the WB, without the approval of the JWC, as stated in the following reference: "There is evidence of Israeli breaches of JWC procedure in not bringing all proposals for Israeli water projects inside the West Bank to the table. The construction of the 1,000 cubic meter reservoir for the Israeli settlement of Beit Horon in 2001 and

the laying of the 6” line along the Nablus–Ramallah road to feed the Israeli settlement of Shilo are examples of Israeli projects inside the Palestinian West Bank that were not submitted to the JWC for approval, even at the technical level.” (Zeitoun, 2008)

While Israel is denying all the Palestinian excesses, despite their urgent need for water. Who can hold Israel accountable for its violations and abuses? as only part of the reciprocity? In a reference to Eng. Omar Zayed, he said: Israel has destroyed several wells dug without a license, but in one exceptional case, a citizen dug a well in Ghor area twice after Israeli occupation destroyed it every time, and the citizen returned and dug for the third time, and then became a reality. (see Annex (2)). So that citizen succeeded in gaining his right of water, despite all the financial losses he suffered from. Thus, it is clear that the individual practices have a significant impact on Palestinians gaining their water rights

By the spring of 2001, Israel had agreed to digging 38 wells, but as a result of the second intifada, those projects were barely able to complete their tasks, as Israeli incursions into the West Bank led to a major destruction of water infrastructure that’s worth of $ 7 million in 2002. Despite the existence of an agreement signed by the Israeli side, which states that no harm shall be done to Palestinian water facilities. As a result, many donors have avoided this type of project, thus adding to the Israeli pressure, to allocate donor funds to treat wastewater to protect aquifers. (Clemens, 2002)

Thus, Israel does not limit itself to imposing restrictions and destruction, but also directs donor funds to the projects it wants in a systematic manner, which does not allow the Palestinians to invest as they wish. Here, Eng. Omar Zayed said, on this matter, that during the second intifada, there was a random digging of wells in the area

of Faraa by the citizens, which led to the drying of the spring of Faraa, which is one of the most important springs in the West Bank. Therefore the head of the Water Authority, Dr. Shaddad Al-Atili, decided to grant licenses to those wells, but with limited depths to return the spring, however, citizens did not adhere to the required depth, just as an Israeli has exploited these permits, as a clear proof of condemnation of the Palestinian side in granting licenses without the approval of the Israeli side, which made the water authority face a new issue.(see Annex (2))

We do not forget the impact that; left on the Palestinian waters, by the separation wall; which was built by the Israeli occupation between the West Bank and the Israeli territories in 2002-2005, under the pretext of protecting citizens inside Israel and protecting settlements in the West Bank. 80% of the wall is located inside the West Bank; to annex these settlements within the Israeli borders, and thus isolate many Palestinians from their land. In addition to the early stages of the wall in 2003, that included 25-50 Palestinian wells into the wall, that is to the Israeli border, which estimated the production capacity of those wells at 6.7 Mcm/y of the western basin water. Figure (14) shows part of the wall and its effect on the Palestinian wells, especially in the area around Qalqilya, which is surrounded by the wall from all sides except for a small entrance from the east. (Zeitoun,2008)

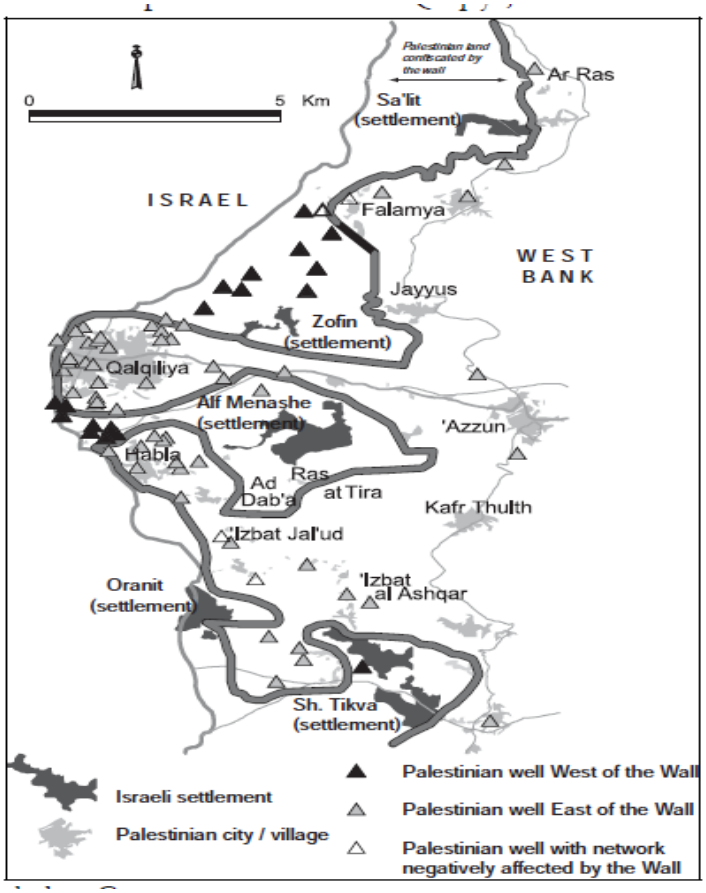

Figure (15): Israel's Separation Wall around Qalqilya

Source: (Zeitoun, 2008).

The quantity of water that was determined for Palestinians from the western basin according to the Oslo agreement was set at 22 Mcm/y. therefore, the Palestinians lost 30% of their legal share in this basin, which increases the water deficit in the West Bank, and increases the burden on the Water Sector. Hence, we see that Israel implements its plans carefully and in proportion to its personal interests without any regard for the Palestinian interests.

"Israel's construction of the Wall inside the West Bank also serves to highlight two other outcomes made possible by power disparity. Once again the futility of the Joint Water Committee's 'Joint Declaration' to keep water out of the 'cycle of violence' is exposed. As with the damages suffered by the water infrastructure throughout the

West Bank. The second outcome is the failure of the Joint Water Committee as a joint decision-making body. Were it structured to resolve or mitigate events that claim up to 30 per cent of one side's allotment of resources, the JWC might prove inherently relevant and resilient to both sides. Unable to deal with the effects of the Wall." (Zeitoun,2008)

In an explanation of the extent of Israeli hegemony over the drilling wells, a World Bank report in 2009 stated that: "Of the 202 well drilling projects submitted, 65 (32%) were approved by the JWC. Of those, only 38 (19%) were implemented, after receiving the additional approval of the Civil Administration." (The World Bank, 2009)

The failure or destruction or delay of all these projects not only affects the first strategic objective of the water sector, but may affect all strategic objectives, and therefore the mission and vision of the sector as well.

Case 2: Wastewater Treatment Projects

The water sector seeks to set up wastewater treatment plants to preserve the environment and to obtain treated water that can be exploited in the agricultural field. Therefore, the failure of any water treatment project may affect the development of water resources and achieve justice in the distribution of water and sanitation service that related to the achievement of the first and second strategic objectives of the water sector. So, we clarify here the role of the Israeli occupation in thwarting this type of the projects.

"In 2007, official Israeli sources estimated that Palestinian communities produce 56 Mcm of wastewater a year, representing 62 percent of all wastewater in the West

Bank. 17.5 Mcm of wastewater is annually produced by Israeli settlements in the West Bank. Jerusalem's wastewater that is channeled east is also estimated by official Israeli sources at 17.5 Mcm/y. This total, of 35 Mcm/y, constitutes 38 percent of all wastewater flowing in the West Bank." (Hareuveni, 2009)

This total 94 Mcm of wastewater pollutes the environment, and may seep into the aquifers; thus make the lives of Palestinians at risk. This quantity is not small, and can be treated and exploited in agriculture, thus reducing the consumption of fresh water used in agriculture, and avoiding the risk of deadly pollution.

Therefore, the international investment in general concentrated on the construction of sewage treatment plants in the West Bank, with increasing interest by donors in the construction of six main stations in West Nablus, Jenin, Jericho, Beira, Ramallah and Tulkarm. However, a large number of these projects have not been fruitful. For example, Salfeet Sewage Treatment Plant received funding in the 1990s, but has never been operational, so the JWC took the project through a bureaucratic labyrinth, starting with changing its location, and ending with the requirement that it be linked to the settlement of Ariel, in order to approve on its operation. Ariel is one of the largest settlement blocs in the West Bank that pumps untreated wastewater into nearby Palestinian villages (see Figure (15)). (Dajani , 2017)

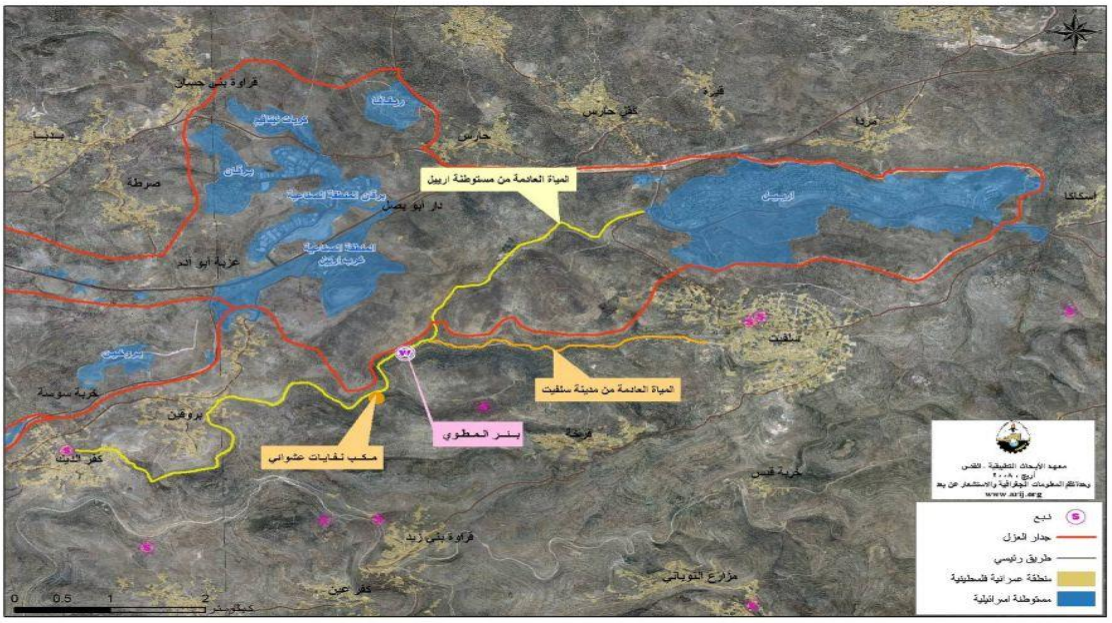

Figure (16): Wastewater flowing from the city of Salfit and Israeli settlements in Wadi al-Matawi to the villages of Burqin and Kafr Deek.

Source: (Areej, 2008).

In an interview with Eng. Saleh Afana, Director of the Water and Sanitation Department in Salfit Municipality, he confirmed that: The project of establishing a wastewater treatment plant for Salfit Governorate was studied in 1994, the financing contract was signed with the German Credit Bank (KFW) in 1995, and with the assistance of a German expert, three sites were identified for the station, we chose one of these sites, which is just 2 km away from Salfit Governorate, because in this site we deserve all the objectives of the project, which is to reduce environmental pollution as much as possible, In addition to access to treated water, it can be used for agriculture, as the surrounding land is suitable for this purpose. (see Annex (4))

Salfit suffers from serious environmental pollution, that destroyed the biodiversity of the region, leading it to become large tracts of land that is unsuitable for agriculture. In addition to the many medicinal and wild plants that disappeared, while harmful plants, rodents and insects caused serious diseases spread. Therefore the highest

prevalence of cancer in WB is in Salfit governorate, and the spread of pigs in the area also harms farms and terrorizes citizens, this is due to the wastewater flowing in Wadi al-Mutawi, which comes from Salfit at 20%, and from the neighboring Israeli settlements at 80%. These Israeli settlements are mostly industrial areas, the largest of which is the settlement of Ariel. Since Salfit is rich in freshwater springs, but it has all been polluted by wastewater. However, one of the most important springs is Al-Fawara spring, which is considered as the main source of water for the village of Kafr Deek, Salfit district, which supplies it with 4500 cubic meters of water per year (cm/y). In addition to al-Mutawi well that provides Salfit and villages with 30% of drinking water, where the well pumps about 350 cubic meters per day, but it also polluted, and became unusable, so the people of the governorate lost the sources of fresh water without any compensation. (Areej, 2008)

Eng. Saleh Afaneh said that the area has 18 Palestinian communities and 24 settlement blocs, including industrial settlements where factories are not allowed to be established in Israel, because of their health risks to humans and the environment, the most important of which is Barkan settlement, which produces non-biodegradable waste such as plastics, processed oils and others. The region is rich in fresh water resources, but most of them became polluted and unusable, which reduced the amount of water available to only 10% of the required quantities, therefore; we have to purchase 90% of our water needs from Israeli company Mekorot. As well as wastewater continues to flow to the villages of Kafr Dik and Bruqin, causing health problems for them. (see Annex (4))

Where 80% of Salfit residents connected to their homes a public sewerage system. The cost of setting up the wastewater treatment plant is estimated at 7 million

euros, with the support of German cooperation KFW, with a production capacity of up to 2000 cubic meters per day. However, Israel had to change the location of the project initially, after that, Israel put a condition for operating the plant, which is to be linked to the wastewater from Ariel settlement. Palestinians ; though' have categorically rejected the waste water from this settlement, because accepting this is a recognition of the legitimacy of Israeli settlements on the West Bank. In addition to that wastewater from the settlements contains industrial waste and toxic substances, which cannot be disposed of at the plant, and Israel do not pay anything for the treatment of that water. (Areej, 2008)

Here, too, Eng. Saleh Afana said: After locating the site, which is 2 km from Salfit, we purchased 36 dunums in the required area, and we did the required procedures, and we got the Israeli approval for the station at that site, but Israel has verbally demanded that we link the plant to the wastewater of the settlement of Ariel, which we rejected for the illegality of settlements on the West Bank, the Germans also rejected this because the project is for Palestinian communities rather than Israelis. Accordingly, we launched the bid, and the tender was awarded to a German company as well. However, in 11/1998 an Israeli order came to stop the project, arguing that the project was built on land in Area C. In 2004, Israel agreed to build the plant, but in another new location, 5 km from Salfit, at first, we refused because the distance was too long and polluted water was flowing along the distance, and the new site was not suitable for the exploitation of treated water in agriculture, but later we had to agree because we had no other option, and we bought 36 dunums more, from the people of Bruqin village. 2004-2006 was a freeze of work from the German side because of the location change, 12/2006 a German delegation visited the site and found that it was

adjacent to the sewage of the settlement of Ariel, therefore, the environmental problem will not be solved, as the treated water from Salfit will be re-pumped into Wadi al-Mutawi, then mixed with Ariel's sewage and polluted again without interest. Where they cannot be invested there, and pumping them into agricultural areas costs a lot. April 30, 2015 A letter from the Israeli side to the Palestinian Water Authority arrives to inform them that the wastewater problem of the settlement of Ariel will be resolved within two years, For this we have revived the Salfit station project again with the Germans, the Germans agreed to set up the plant for Salfit wastewater only, so that the project is in two stages, phase I: 2020-2032, where the environmental problem will be solved only by partial treatment of water, treated water at this stage is not suitable for agricultural use, and the Germans' justification for this, there is no agricultural land in the region, and that total treatment will increase the operational costs of the plant which the municipality will have to pay later, in addition to increasing the cost of construction without additional interest. Phase 2: 2032-2045: At this stage the benefit of the project will be environmental and water for agriculture, where it is expected that there will be associations that purchase water to invest in other areas. So the project was submitted for tender in 2017/2018 with the knowledge that the problem of the streams of Ariel has not been resolved so far. (see Annex (4))

Here we note the size of the tragedy, the people of Salfit and the surrounding villages suffer from, especially the villages of Bruqin and Kafr Deek, as well as the extent of Israeli arrogance in the region, where Israel is imposing its conditions as it wishes, and there is no guarantee from the Israeli side, even if it agrees any project, it can withdraw its approvals at any moment. And do not forget here the amount of the

losses incurred by the people of the region because of their loss of agricultural land, fresh water, which can be summarized in the following table:

Table (14): Fresh Water losses because of Salfit sewage.

Resource	Quantity (cm/y)	Price (NIS)
The spring of Fawwar	4,500	12,150
Al-Mutawee well (350 cubic meters per day)	12,7750	344,925
Total	132,250	357,075
For 20 years	2.65 Mcm	9.142 million

Source: prepared by the researcher based on previous data.

A loss of NIS 9.142 million which is $ 2.492 million, is an abstract loss, because of polluting the freshwater of water resources, But if the Palestinians could invest that water (2.65 Mcm) in agriculture, they would be able to irrigate 4416 dunums of agricultural land, and thus gain additional profits. In addition, the failure to construct the treatment plant causes the loss of 2,000 cubic meters of treated water per day, which can be sold to farmers at a lower price than fresh water, and therefore to achieve higher profits for farmers. Based on (the average price per cubic meter of treated water is NIS 1.6.' (Qadous, 2017)). That losses can be calculated as shown at the following table.

Table (15): Wastewater losses that were supposed to be treated in Salfit plant

Plant capacity	Quantity (Mcm)	Price (NIS)
Per day	0.002	3200
Per year	0.73	1.17 milion
For 20 years	14.6	23.36 milion

Source: prepared by the researcher based on previous data.

about 14.6 Mcm of treated water, could be used to irrigate 24.33 thousand dunums of irrigable land in the area during the past 20 years. While the price per cubic meter of the company Mekorot is 2.7 shekels as we mentioned earlier, Thus, the farmers

can save NIS 1.1 per cubic meter of treated water, which was supposed to increase their profits by NIS 16.1 milion (4.38 million dollars). All these profits have not been realized, and therefore it is a heavy loss due to the Israeli arrogance, also, the cost of setting up the project was 7 million euros ($ 8.15 million), which was wasted, thus, the total losses of the Salfit treatment plant exceeds $ 15.02 million.

But do not forget that ("the cost of treating the cubic meter of wastewater is about NIS 2.2"(Areej, 2008). So It is a higher value than the sale price. However, the PWS is determined to build the plant, because of its many benefits which are:

1- Increase the amount of water available to Palestinians in the West Bank, or reduces the dependence on water purchased from Israeli company Mekorot, and reduces the dependence on Israel.
2- Increases the profits of farmers.
3- provides quantities of fresh water for exploitation for different purposes.
4- Protects the environment from one of the most important biological contaminants.

Salfit plant is not the only treatment plant that has been exposed to Israeli arrogance. "At Azmuth village, the Dar al Khaled wastewater facility was not operating for three years. The leather factory in the nearby settlement was producing highly toxic effluent and noxious odors. Palestinian protests produced no response from Israeli authorities. Only when the Israeli NGO complained and publicized the problem was the facility repaired." (The World Bank, 2009)

Here too, wastewater from the settlements is so dangerous that treatment plants may not be able to get rid of the toxins they contain. Not only that, but there are many

projects, which have been subject to procrastination, from the Israeli side, perhaps for several years until they agreed on setting them up. Such as: a plan to build a facility in West Ramallah, submitted to the JWC in July 1999, was approved, the Civil Administration demanded a change in location, on grounds that it was located along the planned route of the Separation Barrier. In September 2008, the head of the Civil Administration approved construction of the plant but required the Palestinians to connect the Beit Horon settlement to it. The plan for the facility has not yet been submitted to the Civil Administration for approval. (Hareuveni, 2009)

In another image of Israeli arrogance, Dr. Sobhi Samhan said that the majority of the wastewater of Nablus flows in valley Alzumr, which extends to the city of Tulkarem in the west (see Figure (16)). Wells around this valley are contaminated and unsuitable for human use. However, PWA never despair, of the attempts to establish a treatment plant for that wastewater, until it got approval from the Israeli side, after 12 years of negotiating on the project (since 1997 to 2008), and the Civil Administration demanded a change in location twice. The cost of construction was 40 million Euro, with a capacity of 9,000 cubic meters per day. But the nature of Nablus's mountainous terrain, led to the non-exploitation of treated water in agriculture, and forcing them to re-pump this water in the valley without any exploitation. Though, it reduced environmental pollution only, and treated water runs until it reaches Anabta area of Tulkarm district, where it mixes with the wastewater of that area, then the mixed water reaches the Israeli side, and they are treating them at the Eme Khefer plant west of

Tulkarem. On the other hand, the Israeli side is taking huge sums in return of the West Bank for the treatment of those waters and others, that reaches up to 550 million shekels annually (about $149.8 million), deducted from the revenues of the Palestinian Authority from taxes and others. Despite the disapproval of the Palestinian side, while Israel has diverted wastewater from the settlement of Pisgut to the water treatment plant in the Palestinian city of Al-Bireh without any payment. (see Annex (3))

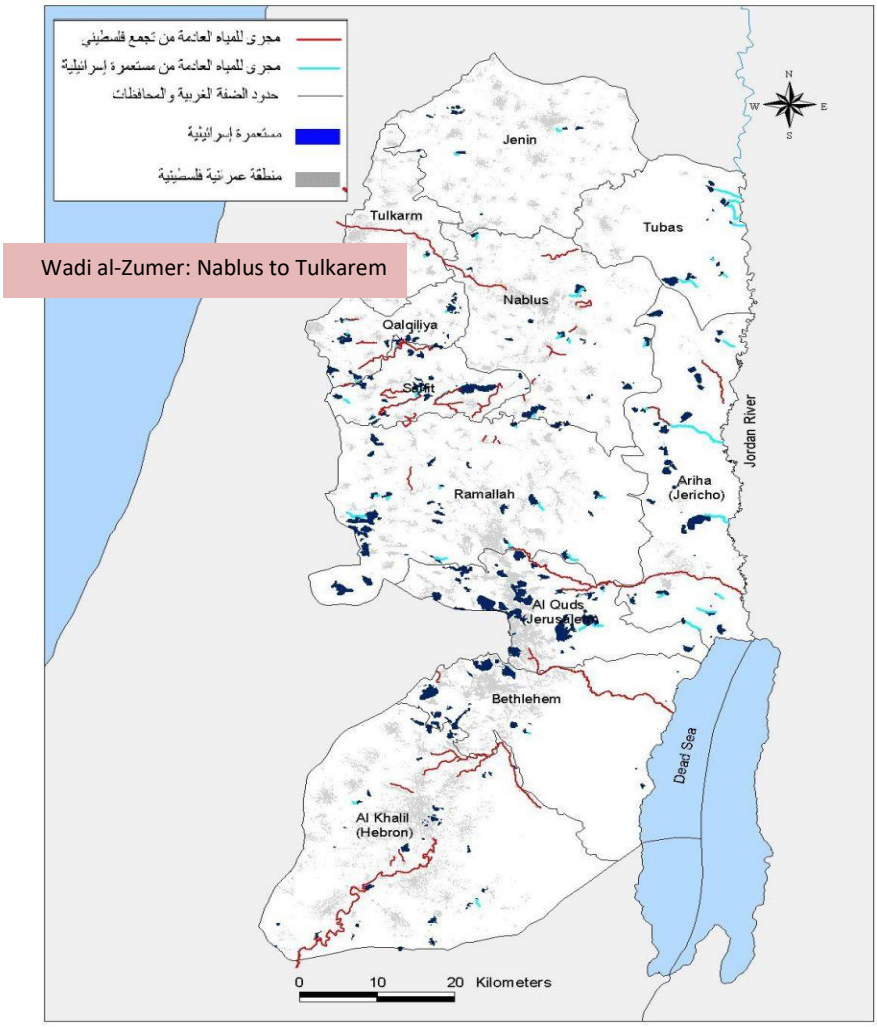

Figure (17): (Wadi Al-Zumer), the wastewater stream of Nablus city, which extends to the city of Tulkarem in the west.

Source: (POICA, 2008).

In response to a question, why do not the residents of Tulkarem invest treated water when it arrive, instead of re-polluting it? Dr. Subhi said that Tulkarem is one of the most water-rich areas because it is located in the western basin. So if they dispense with part of the fresh water, it goes in favor of Israel, because it cannot be transferred to other provinces.(see Annex (3))

It is clear here that, the Israeli policy of imposing a fait accompli forces Palestinians to treat the water of some settlements with a zero bill, yet costing Palestinians expensive bills to treat wastewater of some areas in the WB, it is deducted forcibly and without discussion. This is the summit of tyranny and control over the Palestinian side, and do not forget the mismanagement of the water department and agriculture, which led to the wasting water without interest, because of the amount of treated water in the West Nablus plant is 9000 cubic meters which is 3.5 Mcm/y, which can be exploited in the cultivation of 5400 dunums per year, all this is a heavy loss to the Palestinian sector.

As if it was not enough for Israel to postpone projects or to set conditions for the benefit of settlements, it would also interfere in the details of some projects and their specifications, which leads to raising their costs and thus to their failure. as “The proposal for the Euro 45 million Hebron wastewater treatment plant was submitted to the JWC in 1999 and approved. The Civil Administration required a series of modifications, including increase of effluent quality to “10:10” standards, entailing a 60% cost escalation to Euros 75 million. PWA and the donor have been unable to proceed with a project that has such a high capital cost and the risk that subsequent O&M will be unaffordable.” (The World Bank, 2009)

Israel does not leave any chance to steal Palestinians and rob them of their rights. “The wastewater treatment facility at Soret Junction treats since 2008 the wastewater flowing in Hebron and Kiryat Arba'. The facility is built near the green line, about 5.7 Mcm/y of wastewater flows into the Hebron Valley (Wadi Es-Samin), some of this wastewater is toxic industrial wastewater. The wastewater treatment facility costs about 30 million Shekels, but, Israel charged the Palestinian Authority 40.7 million Shekels (more than the cost of the facility), because: The share of the Palestinians is expected to be higher, and higher organic load coming from the Palestinian communities. It is not clear if the communities inside Israel have to pay.” (PWA, 2012)

Thus, in order to reduce the environmental pollution and to have access to the agricultural water, Israel does not leave any way for Palestinians to invest freely inside the Palestinian territories, using all methods of arrogance on Palestinian side, on the other hand, Israel acts like it needs no negotiations or taking into consideration the rights of the Palestinians in the West Bank. Israel knows the importance of water for life and development, and this is what it does not want for the Palestinians.

Case 3: Water harvesting projects

The subject of the statement here is the rainwater that falls in the winter every year, there is an opportunity to collect the largest amount of water in several ways, especially by constructing dams in the most important valleys in the West Bank, as Israel cannot prevent rain falling on the Palestinian territories in the West Bank but it can prevent the exploitation projects, which will affect the achievement of the first strategic objective. So how will Israel deal with these projects?

“Earth dams are above-grade structures built on intermittent streams or wadi channels in semi-arid regions, and designed to capture and retain storm runoff for the purpose of artificial recharge, as well as direct water supply for domestic use, cattle or irrigation. There are many wadis in the West Bank where dams can be built like Wadi Quilt, Wadi Faraa, and Wadi Zumar.” (UNESCO and others, 2005)

however, in addition to the Israeli exploitation of water and groundwater resources, and depriving the Palestinians of developing their water resources, by preventing Palestinians from exploiting the waters of valleys and floods, the Israelis built a dam and a lake near the Jordan River at the end of Wadi al-Fara'a (the Terza Reservoir), with storage capacity of about 4 million cubic meters, with preventing Palestinians from establishing such facilities. (Yacoubi & Abdel Ghafour, 2011) Though this does not prevent the Palestinian Water Authority, from always seeking to exploit the rain water, which flows in the slopes and valleys are located in the West Bank border, and their interest is clear in the Palestinian National Water Plan 2012-2032 projects as follows:

The long-term strategic objective of building dams is to collect approximately 45 Mcm/y (Table (9), noting that the numbers are estimated) of the main valleys in the West Bank for various purposes, including artificial recharge of groundwater and irrigation. Water will be collected in the West Bank through small and large-scale infrastructure in the main valleys. (Palestine State, 2014)

Table (16): Estimation of available quantities of different wadis in the West Bank

Valley	Quantity of harvest proposed Mcm/y	Purposes
al-Qalt	3.0	Domestic and agricultural
Auja	3.5	Household and artificial nutrition
Fara’a	5.0	Household and artificial nutrition
Al-malaki	3.0	Domestic and agricultural
Khdera	9.0	Domestic and agricultural

Cana	9.0	Domestic and agricultural
Srida	9.0	Domestic and agricultural
Al-Mqata’	3.0	Domestic and agricultural

Source: (Palestine State, 2014).

So, there is a plan to build many dams, despite the Israeli challenges, hoping to implement even only a part of it.

It is worth noting that the first Palestinian dam was built in Palestinian Auja area with a storage capacity of 1.6 million cubic meters annually, and the cost of up to $ 2 million. It has been established to collect rainwater, and surplus water from the spring of Auja, which used to produce about 2000 cubic meters per hour. But Israeli occupation has dug many of the deep wells around the spring and diverting the water of these wells for the benefit of the Israeli settlements in that area, which led to the spring drought, and the people of the village of Auja no longer benefit from the spring water. Therefore, the dam project was an attempt to provide water for the villagers to cultivate their unused land due to lack of water. However, the Israeli acquisition of the spring water completely did not give the villagers the opportunity to invest all available lands, especially that the amounts of rainwater collected from the valleys in this dam was not enough to irrigate the crops they planted based on the quantities of water expected to be collected. In addition to the speed of water leakage into the ground especially that the dam is a small dirt rubble and rocks. (Ma'an News, 2014)

Thus, Israel worked to thwart the dam project indirectly, the dryness of the spring led to a loss of 17.5 Mcm/y. However, it was supposed to collect part of spring water behind the dam, but the Palestinians did not get a drop of water of it, and the fluctuation of rainfall in the West Bank does not allow farmers to guarantee the season.

Thus, if Israel does not oppose a project, it is working on its failure in any way, which negatively affects the achievement of the strategic objective of that project.

On the other hand, Eng. Omar Zayed said that one of the most important dam that was established, is Al Fara’a Dam, which was a unique and very useful experience. Artificial feeding of groundwater was the main objective of its construction, with a storage capacity of 30-40 thousand cubic meters, and the cost of construction is 250 thousand dollars, but the lack of experience among the Palestinians, made a defect in the body of the dam, which led to the leakage of water through it, and then to the inability to collect the required quantities. In addition to that the sewage of the Fara’a camp was mixed with dams’ water, so PWA extended channels to divert sewage from it, but one day the Village Council of Al-Fara'a carried out maintenance operations in the area, led to the destruction of those channels, and the water of the dam returned to the pollution. (see Annex (2)) . This is another indication of the challenges of the integrated planning of the water sector, as if each entity works alone without any coordination with others.

But dams are not the only way to harvest rainwater. Household wells and agricultural ponds can be used too. Although they do not harvest much water, the Palestinians need every drop that can be obtained in any way. In this regard, Mr. Omar Zayed said that the (PWA) often implements agricultural wells projects, whether near houses or not, the (PWA) also cooperates with competent authorities to provide a well to collect rainwater for each house, by not granting building permits for homes, excepting case it has a well within its plans, which has been implemented in Ramallah. While the Israeli side, tried to impose the requirement of its approval in this aspect and in the construction of agricultural ponds, it was completely rejected by the Palestinian side, even though these wells and ponds can be built individually by citizens, Israel

sometimes demolishes many agricultural ponds in different parts of the West Bank. (see Annex (2))

Case 4: Management and exploitation of springs

The springs are one of the most important natural resources for extracting groundwater. Therefore, their exploitation and development helps in achieving the strategic objectives of the water sector, especially the development and protection of water resources, and perhaps achieving justice in the distribution of water services, as well as effective management of water resources. Therefore, the loss of any of them leads to impeding the achievement of strategic objectives of PWS.

Springs are the largest source of irrigation water in the West Bank; it is considered as one of the most important mechanisms of steadfastness and adaptation, especially for populations not connected to water networks, or who are not adequately supplied with water. In the past few years, settlement activity in the West Bank has hindered Palestinian access to most of the springs, according to a survey conducted by the United Nations Office for the Coordination of Humanitarian Affairs in the occupied Palestinian territories in 2011. A total of 56 of these springs were identified, 93% in Area C, in plots of land registered with the Israeli Civil Administration, as land privately owned by Palestinians, 30 of the springs under full control of the settlers; Palestinians are prevented to reach around 22 of these springs, because of the Israeli settlers' acts of intimidation, threats and violence, perpetrated. (United Nations, 2012)

The remaining eight springs are under full Israeli control, so Palestinians were denied access, because of physical obstacles, such as fencing the spring area, and de

facto annexation of the spring to the settlement, or exclude the area of the spring from the territory of the West Bank by the wall, thus being classified as a closed military zone. While the remaining 26 springs face the risk of being seized by the settlers, where it has become the target of regular "tours" of settlers, and / or a target for patrols of security coordinators of settlements, as well as the cancellation or reduction of Palestinian access. In 40 of the 56 springs identified in the survey, Israeli settlers began to develop the surrounding area to turn it into a "tourist area", where they built or renovated a pool of water, set up tables and umbrellas for the use of tourists, paved the roads leading to the spring, and hang of signs bearing a Hebrew name for the spring. (United Nations, 2012) (see Figure(17))

Figure (18): Ain al-Kabeer spring near the village of Deir al-Hatab in the district of Nablus after being taken over by the settlers, and changing its name to Ein Kefir in Hebrew language.

Source: United Nations, 2012.

From here, the extent of Israeli hegemony over the most important natural water resources in the West Bank is clear, in terrorizing and illegal manners, thus violating all the international laws, in order to impose a de facto policy on the Palestinians. As it seems that the choice of settlement sites was not randomly taken. Therefore, the PWS

has not been able to achieve the most important strategic objective in this field, which aims to develop and protect water resources, because it does not have the power to retrieve anything, but it works hard to keep what is available. In a meeting with Dr. Sobhi Samhan; he said: The spring of Ein Samia is one of the most important issues faced by the Water Authority, as the cost of pumping its water to the city of Ramallah is much more than the cost of purchasing the same quantity from the Israeli company Mekorot. However, PWA insists on using this spring and pumping its water into the city by a Palestinian national decision, in order to preserve their water rights in this spring. (see Annex (3))

Case 5: Desalination Projects

The West Bank is a landlocked area, only a small part of the tiny Dead Sea is located on its borders, which is characterized by high degree of salinity that prevents living organisms from living in it. Therefore, it is difficult to desalinate such water, in addition to Israeli taking control over it. As a result, the desalination projects can only be implemented through Israel, which controls the Mediterranean coast of the occupied Palestinian territories in 1948, which are outside the territory of the Palestinian Authority according to the Oslo Accords.

"On 27 August 1998, Meir Rabin, head of the Israeli delegation to the Joint High Committee on Water, stated that there was no possibility for the Palestinians to obtain additional quantities of water as stipulated in the agreements, and called on the Palestinian side to seriously consider from now on the search for water resources

Others, such as relying on desalinating sea water or importing water from Israel." (Wafa, 2011)

This shows the Israeli pressure on the Palestinians regarding water, as Israel directed Palestinian water projects to suit its own interests. The establishment of desalination plants for sea water within the Israeli border will be funded by donor countries to the Palestinian Authority, under the Israeli administration and control, thus, the Palestinians remain at the mercy of the Israeli dropper.

"The case of the proposed project of 'Hadera–Tulkarem', which was proposed by the Israeli side, that a desalination plant shall serve both Israelis and Palestinians, and it shall be built at Hadera on the Israeli coast. Desalinated water would be sent from the coast to the demand centers in the West Bank, to meet the Palestinian needs not rights. The proposal suggests that the residents of Barta'a in WB, for example, pay for desalinated seawater arriving from the West, while the readily exploitable water under their feet is taken by Israeli pumps for Israelis in the East. The idea was promoted to the PWA by the USAID office in Tel Aviv, but anonymous sources in the PWA state that the project was initially accepted on the condition that control of the plant is not in the hands of the Israelis and that it would "not compromise the Palestinian water rights. The project had still not been implemented by January 2006. And the opinion of the then highest-ranking resident water official at USAID towards the concerns raised by the PWA about the project is telling: We think it's a great idea since:

a) Donors will fund it;

b) It's easy to build (since it's mostly in Israel) and;

c) The land is not an issue (we may deem the parts of the project running through Israeli sovereign territory as US property). and then we'll build it anyway." (Zeitoun, 2008)

We note here that the US administration, supports the Israeli projects and trends, regardless of the Palestinian view point, thereby, it causes the increasing Israeli hegemony on the Palestinian side, especially as the Palestinians rely heavily on external support, like the support of the USAID. This leads them to full under the de facto policy, which Israel has always imposed, this time with the US support also. Dr. Subhi Samhan confirmed that the Hadera plant was already established. In answer to the question: Of whether Palestinians buy water from this station or not. He said that the Palestinians purchase water through the water network belonging to the Israeli company ,Mekorot, which is connected to several water sources, and the station must also be connected to it. Therefore, Dr. Subhi Samhan said that the desalination projects of the sea do not the Palestinian Water Authority seek to establish it, and we do not agree with these projects, because the main source of water for it (the Mediterranean Sea) is under the Israeli control, therefore the desalination plant will be under their control also, therefore, it will keep the Palestinians at the mercy of the occupation. But we want independent resources under full Palestinian administration, so we try to reach some brackish springs in area C, for the establishment of desalination plants for them, thus obtaining a special water resource, out of Israeli control. He added: One of the most important of these springs is al-Fashkha, which provides 60 Mcm of brackish water, we cannot reach it because of Israeli control on Area C of the West Bank despite it located within the PNA Juristic area according to Oslo agreement. (see Annex (3))

Saline desalination is one of the modern technologies used to obtain fresh water. This type of project has not escaped Israeli control, causing loss of new water resources to the Palestinians, thereby impeding the achievement of the objective of developing and protecting water resources.

Case 6: Water Networks

Water networks are among the most important projects that the water sector seeks to implement in order to achieve justice in the distribution of water services in the West Bank and to achieve effective management in accordance with the principles of good governance. So the failure of a project means failure to achieve its objectives, especially justice.

A third of communities, comprising about 10% of the population across the West Bank, still lack network services. Coping mechanisms for the unconnected are typically accessing springs, cisterns and tankers. Unconnected communities pay very high prices for often poor quality water (typically four times more than network water)". (The World Bank, 2009)

This and other factors have led to disparity of water distribution in the West Bank. Eng. Omar Zayed said that the rate of water per capita in the WB is 72 liters per day, and in some areas does not exceed 15 liters per capita per day (l/c/d). Despite the urgent need to connect many Palestinians with drinking water systems, but the PWS was facing several problems in implementing that. (see Annex (2))

Dr. Jan Selby of the international relations department at Britain's University of Sussex claims it would be incorrect to read the projects the PA submitted for the committee's approval as independent and practical ones that were proposed in line with the population's needs. The PA selected them and submitted the requests on the basis of previous knowledge, anticipating what was likely to be rejected, and what had a better chance of being accepted. In the knowledge that a small-diameter pipe had a greater chance of gaining approval, for instance, a proposed project was "tailored" in accordance with that assumption and did not necessarily reflect the objective needs of the society and its natural growth in the future". (HAARETZ, 2013)

So even in the extension of the water networks, Israel did not approve establishing high quality water networks, thus, the water authority was forced to choose pipes with small diameters, to get a greater chance of approving any network project.

But when the JWC resumed its work in January 2017 after a six-year freeze due to a conditional arrangement, that requires the approval of the Israeli settlement projects, in order to take the Palestinian projects into consideration. Palestinians have been allowed to extend pipelines and networks without waiting for the committee's approval, but it gives Israel the same thing, this means that Israel can build water networks for settlements, without the approval of the JWC. Although the Palestinians now will are independently establishing of water networks, they will not get any additional water to pump in - unless Israeli approves on it. (Dajani, 2017)

All these pressures and practices are in favor of the Israeli settlements, because that represents the recognition of the legitimacy of these settlements on the Palestinian territories. We have already mentioned the loss of water networks in the West Bank that

was estimated at 35% of available water. It is imperative that the Israeli occupation has an impact on this, and what had happened in the city of Tulkarem and others is a clear evidence of this, where:

The municipality of Tulkarem owns six wells with a production capacity of about 1125 m3 / hour, including the main water carriers, many sub-lines and the home links in Tulkarem was exposed to the destruction that's done several times by the Israeli occupation, because of the construction of the Apartheid Wall, which results in a considerable damage to the population and loss of large amounts of water. Wells that feed these lines have also been shut down several times for a long time, there were also large losses in the wells themselves from breaking the pumps and stopping the wells from working completely. That forces the municipality to incur heavy costs in buying new pumps, and purchase water from private wells in order to meet the water needs of the population of these areas. The cost of water purchased from private wells was about JD 198 thousand, and the cost of maintenance of the lines after the destruction was about one million and 151 thousand shekels. According to recent statistics, the per capita consumption of Jews is currently nine times higher than that of the Palestinians. (Massoud, 2017) that mean 198 thousand dinars (nearly 1 million shekels) and one million and 151 thousand shekels, make a total losses of 2.151 million shekels, which is equivalent to 597.5 thousand dollars.

All this destruction and these losses are considered simple compared to others. The destruction of Jenin city and its camp in 2002 was more terrible and destructive, as a devastating military incursion has resulted in heavy losses in several facilities, including the water infrastructure, which the losses of estimated at 2.1 million US dollars. the destruction was summarized as follow:

- “The 14-inch transmission line from the PWA well was dug up and damaged over a length of 60 metres;
- The 10-inch transmission line near the Telecom Centre (Haifa St.) was dug up and damaged over a length of 60 metres;
- The 6-inch mainline at the bottom of the Refugee Camp was dug up in at least one location;
- The 6-inch mainline near Dahliya Square was dug up and damaged over a length of 60 metres;
- The 3-inch mainline on the eastern edge of the Camp was dug up in several locations;
- The 4-inch mainline near al Sharkye and the Abu Snan chamber was damaged over a length of 180 metres;
- 2-inch lines were dug up in several locations (Haifa St., Al Sharqiya, Al Orme) over a total length of 3,000 metres in the City and 7,400 metres in the Refugee Camp;
- ¾-inch and ½-inch distribution lines and house connections were damaged at numerous locations over a total estimated length of 3,600 meters in the City and 8,000 meters in the Camp." (Zeitoun, 2008)

What kind of planning and infrastructure was in that area? That would be destroyed in a terrible way, with aircraft, tanks, and other heavy military equipment, which neither the citizens nor the Palestinian Authority as a government can confront. How can the water sector ensure the safety of its facilities and projects, which may be destroyed in a moment without a ruler or sergeant? What kind of management can Palestinians use for facilities that do not guarantee their protection? Thus, the Palestinian water systems are

not protected from Israeli arrogance, which does not hesitate for a moment to destroy any project that takes care of the Israeli interests.

Regarding the water networks, Dr. Subhi Samhan said that the abundance of water varies in different areas of the West Bank, thus, water varies per capita per day from region to region. Therefore, the PWA suggested the Trunk Line project, around the entire West Bank, to transport water from abundant areas to water-poor areas, to achieve justice in the distribution of the Palestinian water. Unfortunately, the project was rejected by the Israeli side. Because this project will pass pipelines in Area C of the West Bank, which is still under Israeli control, therefore, it requires the approval of the Joint Water Committee and the Israeli Civil Administration for its implementation. (see Annex (3)) Here, it is clear the Israeli roll in failing the strategic objective of the PWS, which is Justice in the distribution of water, which is reflected negatively on the achievement of mission and vision as well.

Case 7: Purchase of additional quantities from Israeli company Mekorot

Mekorot is an Israeli company, it controls the flows for those water transmission lines inside of the West Bank that supply both Palestinian villages and Israeli settlements." (Zeitoun, 2008)

As previously mentioned, there was agreement between the Palestinian and Israeli sides that Palestinians would buy water from the Israeli company Mekorot when needed, and importing water from Israel was one of the proposed solutions. While Meir Rabin previously said that in order to fill the water shortage of the Palestinians, even in

this case, it requires the submission of the purchase request for the Joint Water Committee, to obtain a purchase permit for limited quantities if approved.

One of the most difficult things for a man is to be forced to buy what is stolen from him, but from the previous it is clear that the Palestinians did not receive their water rights, and they have a significant shortage of available water against the quantities required, Thus, the water sector in the West Bank is forced to offer projects to buy water from the Israeli side, in an effort to reduce the gap, and to achieve justice in the distribution of water services as one of the strategic objectives.

"The long-time director of the West Bank Water Department (WBWD) recounts the refusal in 2000, for instance, of the request made through the JWC to deliver water to the village of Burqa, northwest of Nablus. The Palestinian proposal was for five cubic metres per day – enough to provide water for roughly 40 people with the standard 130 litres per person per day. The suggested source was a Mekorot controlled line linking the Israeli settlements of Sheve Shamron and Homesh. The request was refused by the Israeli side at the JWC for technical reasons, stated as "there is not enough water". The Palestinian side had no choice but to accept the outcome of the effective Israeli veto at the JWC, and the inhabitants of Burqa remain without water services to this day, unable to tap into the Israeli water main that crosses the gates of their village." (Zeitoun, 2008)

So, even when Palestinians try to buy water, which is often a stolen Palestinian right, the Israeli domination and arrogance over Palestinian are evident through using more pressure and oppression, leading to the failure of one of the strategic objectives of the water sector. Regarding this matter, Waleed Abu Mohsen (GIS expert from PWA) wrote: Israel is forcing the Palestinian citizens to deal with the de facto policy, through the purchase of water from the Israeli company (Mekorot) and in a limited amounts as

well, which pumps water from wells located within the occupied West Bank, and the number of these wells is 40, pumping more than 50 Mcm out of them, which is almost the same amount purchased by the Palestinians from the Israeli company annually. (Abu Mohsen, 2018)

Thus, Israel is actually withdrawing the Palestinian water from the West Bank and then reselling it to them, thereby causing a double loss to the Palestinian water sector. While Palestinian water right is 196Mcm according to the Oslo agreement, but they get only 100 Mcm, so they lost 96 Mcm in addition to the purchase of 50 Mcm, which costs them 396.9 million shekels per year based on (average price per cubic meter of water in the West Bank estimated at NIS 2.7 (PCBS, 2013). That equivalent to 110.3 million US dollars, if we calculated that since the Palestinian took over the Authority in 1994 until this day; their losses reach to 2.646 billion dollars see Table (10), Israel did not pay them a penny of it, all these losses are due to looting compulsions process practiced by Israel without a deterrent.

4-4. Total financial losses due to Israeli violations

The failure or obstruction of the implementation of all these Palestinian projects and others, leads to the failure of the most important objective of the strategic plans for the water sector, which is: development and protection of water resources in accordance with the principles of integrated management, leading to a lack of achievement justice in the distribution of water and sanitation services; and weakness of achievement the active management and consolidate the principles of good governance in the water sector; thus weakening of investing in institutional building and achieving operational

excellence for the water authority, all of which leads to the failure of the mission and thus impossible to achieve the vision. this is very evident in the inability of Palestinians to collect more than 100 million cubic meters of groundwater in the West Bank since the establishment of the Palestinian Authority until now, as evidenced by the size of the gap between the quantities of water required and available water, which is still large so far. In addition to the heavy losses incurred by the Palestinian water sector in these projects, which are summarized below:

Table (17): Financial losses due to the Israeli arrogance

The form of arrogance	Clarification	Costs	Total (million $)
Losses due to operations of looting ground water	Looting 96 Mcm/y then selling 51 Mcm/y, since 1994.	$2.646 billion	2646
Losses of vandalism and destruction	water networks in Tulkarm	$597.5 thousand	7.89
	the second Intifada	$7 million	
	Arbouna well	$25 thousand	
Losses due to the hegemonic polices	Bel'ama well stopped	$400 thousand	167.82
	Wastewater treatment costs Deducted from Palestinians	$ 149.8 million/y	
	Salfit plant	$ 15.02 million	
	Cost difference of Wadi Samman's plant	$3 million	
Total			**$ 2.822 billion**

Source: Prepared by the researcher, based on the cases described previously.

This table summarizes part of the Palestinians' losses of the water sector in the West Bank, because of the Israeli violations and exploitation of the Israeli hegemony on the region. Thus, the devastating impact on the strategic planning for the Palestinian Water Authority clearly shows that Palestinians are not allowed to implement any project without the Israeli authoritarian intervention, and they do not leave any chance for the Palestinians to develop and live freely.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5-1.Conclusions

1- Israel uses many hegemonic methods at three levels: Political level (T), Institutional level (I) and Technical level (T), to obstruct or thwart the Palestinian water strategic objective, such as:

- Rejecting the project without a reason (P);
- Neglecting the application, or delaying it for several years (P);
- Establishing settlement conditions to accept the project (P);
- Changing the specifications and location of the project (T);
- Preventing the implementation of the project after the approval of its construction because there is no guarantee of Israeli approval; its decisions may change at any moment in line with its own interests (P);
- Destructing of the project sometimes (P);
- Trying to channel donor funds to what it wants of projects (I);
- Deducting what it wants from the Palestinian money (I).

2- The preparation of strategic plans for the water sector, does not guarantee its implementation with the existence of the Israeli occupation, which prevents the achievement of strategic objectives and thus not achieve the vision, thereby harms the efficiency and effectiveness of the strategic plans.

3- Israel prevents any attempt to increase the amount of water available, and causes heavy losses to the water sector, thus preventing the development of the Palestinian life (T).

4- Despite all the Israeli obstacles, the rebellious measures (individual or organized) have a good role in the collection of Palestinian water rights, but with the existence of monitoring (P).
5- With all that; there is a flaw in the management and planning of the water sector in the West Bank, or there is no real integrated management of the water sector with the all competent authorities (T).

5-2. Recommendations

Based on the conclusions of this thesis, all relevant parties in the West Bank, must cooperate to take some measures, to get rid of the Israeli arrogance in the West Bank: such as:

1- Trying to amend the international agreements between the Palestinian and Israeli sides regarding water, especially the Oslo agreement, article 40, because it was unfair to the Palestinians. (Responsibility of the PWA).
2- Using the international pressure to support the Palestinian rights, in an attempt to collect the largest amount of Palestinian water stolen (Responsibility of NGOs and Ministry of Justice).
3- Preparing detailed periodic reports of Israeli violations, to use it in international courts, particularly the High Court of Justice (Responsibility of NGOs and Ministry of Justice).
4- Supporting and monitoring the individual and the organized water projects, such as the drilling of private wells, house wells and agricultural ponds to harvest rain

or to build small dams in private lands (Responsibility of the PWA and Ministry of Agriculture).

5- Preparing and monitoring the implementation of real integrated plans to avoid potential mistakes (Responsibility of the PWA).

6- Claiming financial compensation for losses caused by the Israeli occupation of the water sector.

7- Searching for new technologies, which collect water from wet air and store it in special tanks, even if in small quantities it will fill part of the need.

8- Establishing profitable projects, in an attempt to reduce dependence on external financing (Responsibility of Council of Ministers and Donners).

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ANNEXES

Annex (1): Source*:* The World Bank, ASSESSMENT OF RESTRICTIONS ON PALESTINIAN WATER SECTOR DEVELOPMENT, Report No. 47657-GZ, 2009, p7

Summary of Article 40

Water rights and management principles: "Israel recognizes the Palestinian water rights in the West Bank, to be negotiated in the permanent status negotiations". Additional resources are to be developed. In the interim, management of water and sewage is to be coordinated, according to the following principles:

- Maintain existing levels of resource use
- Water to be managed sustainably
- Use to be adjusted in case of climatic or hydrological variations
- Harm to the resource to be prevented
- Sewage to be properly treated and reused
- Harm from sewage to be prevented

Yields and extraction: A total estimated recharge of 679 MCM of the three shared aquifers is allocated between Palestinians and Israeli users (within Israel and in the West Bank)

Additional water: Future Palestinian needs are estimated at 70-80 MCM a year.

Immediate needs: An extra 28.6 MCM annually will be made available to meet Palestinian needs during the interim period.

Transfer of authority: PA is to have responsibility for water and sewage management for the Palestinian population. Ownership of infrastructure will be addressed in the permanent status negotiations.

Governance and pricing: A Joint Water Committee (JWC) will be established to deal with all water and sewage related issues in the West Bank, to coordinate management of water resources, monitor the resource, oversee the joint supervision and enforcement mechanism, licence wells and approve water resource systems . Joint Supervision and Enforcement Teams (JSETs) will supervise and enforce decisions of the JWC. Water purchases will be at supply cost at the point of delivery.

Annex (2): An Interview with Mr. Omar Zayed

Date: Saturday: 7/ 7/ 2018

Mr. Omar Zayed is Director of the Department of Water Studies and Monitoring at Palestinian Water Authority.

Q1- First, when did the strategic planning for the water sector in the West Bank begin?

The strategic planning of the water sector has started since the establishment of the Palestinian Water Authority, but they often have to relocate water projects in a plan to the next plan because of Israeli occupation. Recently, they prepared the National Strategic Plan 2017-2032, which prepared in cooperation with the Ministry of Agriculture and the Environment Quality Authority, it is divided into several sub-plans of two years each, and the strategic plan includes three scenarios: a- Scenario of the current situation, includes plans and projects that must be implemented in the case of no change in the conditions of the Palestinian Authority. b- Scenario of the transitional situation, which includes the plans and projects that must be implemented in the case of an agreement between Palestinian and Israeli sides, and moved Palestinian Authority to the stage before the establishment of the state officially. c- State scenario, and includes plans and projects that must be implemented in the case of the establishment of an independent Palestinian state formally. In other words, the Palestinian Water Authority takes care of several cases in which the Palestinian Authority may pass, the best of which is the establishment of an independent Palestinian state, The worst is the current situation in which occupation dominates all aspects of life.

Q2- How does the Israeli occupation affect the strategic planning of the water sector?

He replied that in the water issue, the occupation has a great role in controlling the sources and our inability to manage them. Even in strategic planning, it also has a great role, whereas:

a- The occupation controls 85% of renewable Palestinian sources. The quantities available to us are only 15%, about 118 million cubic meters per year, used for

agriculture, industry and all fields, and often we do not get all the quantity, and this quantity is not enough, forcing us to buy additional quantities of Israel, which takes away our groundwater and then returns to sell it. Where Israel controls wells and springs within the West Bank and steals its waters.

b- On the other hand, the Joint Water Committee is a big problem. It is a Palestinian-Israeli committee composed of experts and technicians, in which there are people at the decision-making level. Any project to be established for the Palestinians must first be submitted to the joint committee, so that we can take a permit to hold it, especially if it is in Area C, which constitutes 60% of the area of the West Bank, if the project in this area, approved by the Joint Commission, is also required to be approved by the Civil Administration, further complicating the matter, Because the Civil Administration has 13 offices and each of them has to approve the project, the papers are often lost in these offices, and we return to submit them more than once, which causes delays for projects that may last for ten years or more. This has already happened with a well that is currently in Kufert and was supposed to be in Yamoun as planned by the Palestinians, But Israel required the transfer of the well 4 km to the south, making it in the territory of the town of Kufert, after 10 years of procrastination and delay. In the same period, it approved the project of drilling a well in the area of Janzur between the town of Shuhada and Bir al-Basha, the transferring of the well of Al Yamun to Kufert soon brought it to the Janzur well, so we suggested that the Ganzur well be transferred to the area of Bal'ama in Jenin within the Area A, so that each well does not affect the flow of the other. We told the Israeli side what we did, but the they contacted the contractor who was digging Bal'ama well, and threatened him not to facilitate any treatment if he did not stop the drilling, they forced him to stop drilling, although it has reached a depth of 400 meters, it was supposed to reach a depth of 650-700 meters, according to the project plan, the project is still suspended since 2011 so far, and has cost drilling about 400 thousand dollars, we are trying to pressure Israel through the Americans, so that we can finish digging.

Annex (3): An Interview with Dr. Subhi Samhan

Date: Tuesday: 5/ 6/ 2018

Dr. Subhi Samhan is Director of Research and Development at Palestinian Water Authority.

Q1: How the Israeli occupation affects the strategic planning of the water authority, in each of the following cases:

Q1-a) Drilling wells

Dr. Subhi said that Israel deliberately dug a series of deep wells in the eastern basin, extending from Marj Nuja in the north to Jericho in the south, which cause the drying up of most of the Palestinian wells and springs in this basin, although this basin is supposed to be a full right for Palestinians according to the Oslo agreement.

Q- Does Israel agree to dig wells deeper than 140 meters for Palestinians?

Sometimes, Israel had agreed to dig three wells at a depth of 600-700 meters in some of the southern parts of WB, such as the Hirudio well in Hebron, which is weak despite all this depth, because the hydrological structure of these areas does not provide abundant amounts of water at this depth.

Q1-b) Wastewater Treatment Projects?

He said that the majority of the wastewater of Nablus acted in valley Alzumr, which extends to the city of Tulkarem in the west, wells around this valley are contaminated and unsuitable for human use, PWA never despair, of the attempts to establish a treatment plant for that wastewater, until it got approval from the Israeli side, after 12 years of negotiating the project, the cost of construction was 200 million shekels, with a capacity of 9,000 cubic meters per day. But the nature of Nablus's mountainous terrain, led to the non-exploitation of treated water in agriculture, and forcing them to re-pump this water in the valley without any exploitation, but it reduced environmental pollution only, treated water runs until it reaches Anabta area of Tulkarm district, where it mixes with the wastewater of that area, then the mixed water reaches the Israeli side, and they

are treating them at the Eme Khefer plant west of Tulkarem, in contrast, the Israeli side is taking huge sums, in return for the treatment of those waters and other West Bank, up to 450 million shekels annually, deducted from the revenues of the Palestinian Authority from taxes and others, without the approval or consultation of Palestinian side, while Israel has diverted wastewater from the settlement of Pisgut, to the water treatment plant in the Palestinian city of Al-Bireh without any payment.

Q- why do not the residents of Tulkarem invest treated water when it arrive, instead of re-polluting it?

Dr. Subhi said that Tulkarem is one of the most water-rich areas because it is located in the western basin. So if they dispense with part of the fresh water, it goes in favor of Israel, because it cannot be transferred to other provinces.

Q1-c) Desalination projects.

The desalination projects of the sea do not the Palestinian Water Authority seek to establish it, and we do not agree with them, because the main source of water for it (the Mediterranean Sea) is under Israeli control, and therefore the desalination plant will be under their control also, therefore, it will keep the Palestinians at the mercy of the occupation. But we want independent resources under full Palestinian administration, so we try to reach some brackish springs in area c, for the establishment of desalination plants for it, thus obtaining a special water resource, out of Israeli control. He added: One of the most important of these springs, al-Fashkha, which gives 60 Mcm of brackish water, we cannot reach it because of Israeli control of Area C of the West Bank.

Q- Has the Hadera plant been established?

Dr. Sobhi Samhan confirmed that the Hadera plant was already established.

Q- Do Palestinians buy water from this plant?

He Said that the water purchased by the Palestinians reach them through the water network belonging to the Israeli company Mekorot, which is connected to several

water sources, and the station must also be connected to it. Therefore, Dr. Subhi Samhan said:

Q1-d) Water networks

Dr. Sobhi Samhan said: The abundance of water varies in different areas of the West Bank, thus, per capita water per day varies from region to region, therefore, PWA suggested the Trunk Line project, around the entire West Bank, to transport water from abundant areas to water-poor areas, for justice in the distribution of Palestinian water. Unfortunately, the project was rejected by the Israeli side. Because this project will pass pipelines in Area C of the West Bank, which is still under Israeli control, and therefore requires the approval of the Joint Water Committee and the Israeli Civil Administration for its implementation

Q1-e) Fresh springs

The best fresh springs are controlled by the Israeli occupation, but the Water Authority is firmly adhering to what is available, such as the spring of Ein Samia is one of the most important dilemmas faced by the Water Authority, which the cost of pumping its water to the city of Ramallah, much more than the cost of purchasing the same quantity from the Israeli company Microot, but PWA insists on using this spring and pumping its water into the city, by a Palestinian national decision, in order to preserve their water rights in this spring.

Annex (4): An Interview with Eng. Saleh Afana

Date: Saturday: 27/10/2018.

Engineer Saleh Afaneh, Director of Water and Sanitation Department in Salfit Municipality.

Q1) First, What is the general situation of water in Salfit Governorate?

Salfit is one of the most Palestinian cities that suffer from Israeli settlement, it is surrounded by settlement blocs that are trying to swallow all the lands, Using all means and methods, the area has 18 Palestinian communities and 24 settlement blocs, including industrial settlements where factories are not allowed to be established in Israel, because of their health risks to humans and the environment, the most important of which is Barkan settlement, which produces non-biodegradable waste such as plastics, processed oils and others. The region is rich in fresh water resources, but most of them became polluted and unusable, which reduced the amount of water available to only 10% of the required quantities, therefore; we have to purchase 90% of our water needs from Israeli company Mekorot. As well as wastewater continues to flow to the villages of Kafr Dik and Burqin, causing health problems for them.

Q2) What projects have you undertaken to mitigate this situation?

- Due to the objections and complaints of the residents of Bruqin and Kafr Deek villages, we have extended a sewage conveyor line that cuts through the town of Bruqin to Kafr El Deek at a cost of 1.8 million NIS.

- Since 1998, we have submitted 13 times to dig a well in the area, but it has always been rejected. Since 1967, Israel has not allowed a well to be dug in the area because it lies above the western basin.

- A project to construct a sewage treatment plant for the Salfit sewage capacity of 2000 m 3 daily, since 1994 but it has not been done yet.

Q3) Why has not the treatment plant been set up yet?

The project was studied in 1994, the financing contract was signed with the German Credit Bank (KFW) in 1995, and with the assistance of a German expert, three sites were identified for the station, we chose one of these sites, which is just 2 km away from Salfit Governorate.

Q4) Why did you choose this particular location and not others?

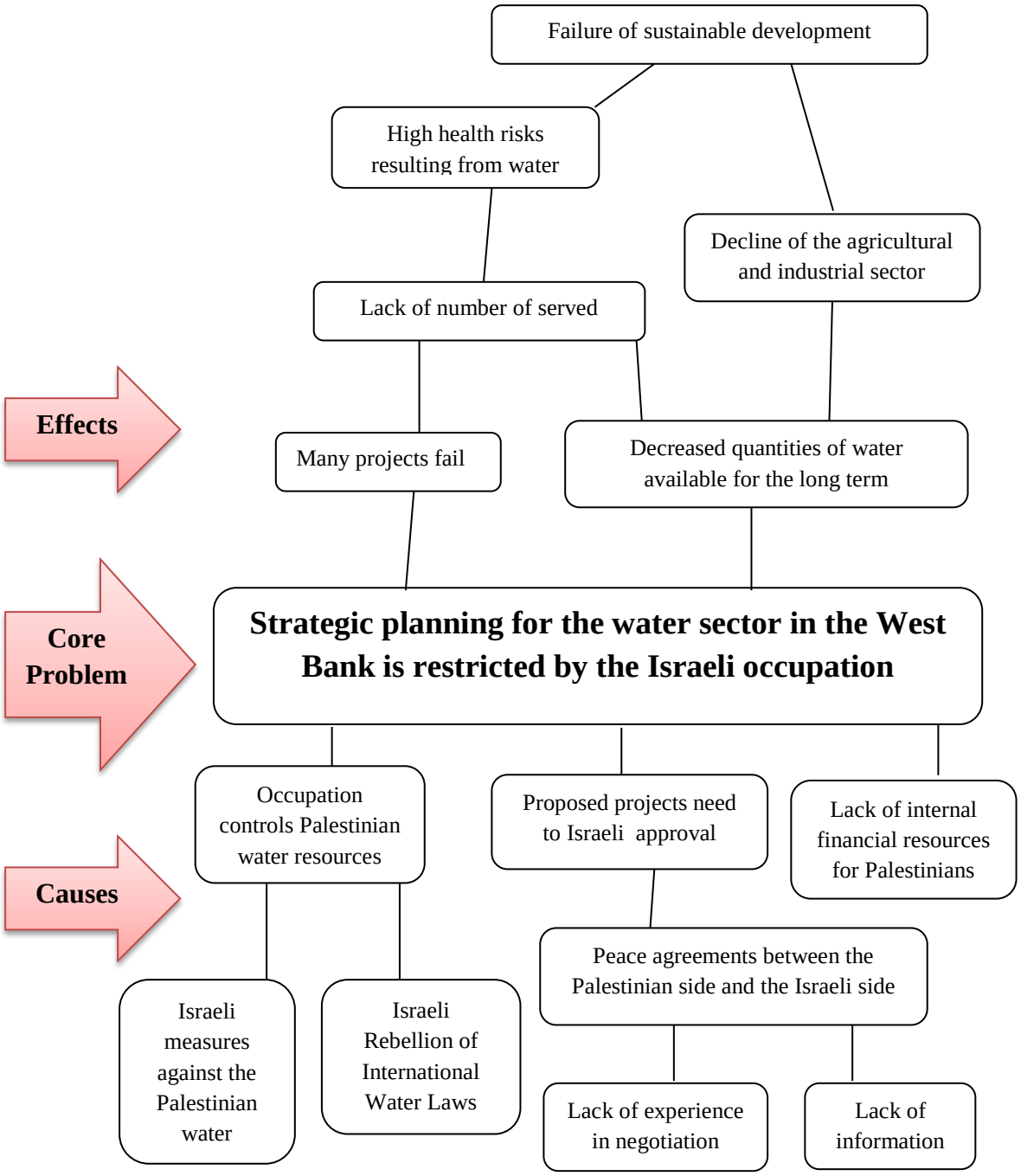
Because in this site we deserve all the objectives of the project, which is to reduce environmental pollution as much as possible, In addition to access to treated water, it can be used for agriculture, as the surrounding land is suitable for this purpose.

Q5) And then, what happened?

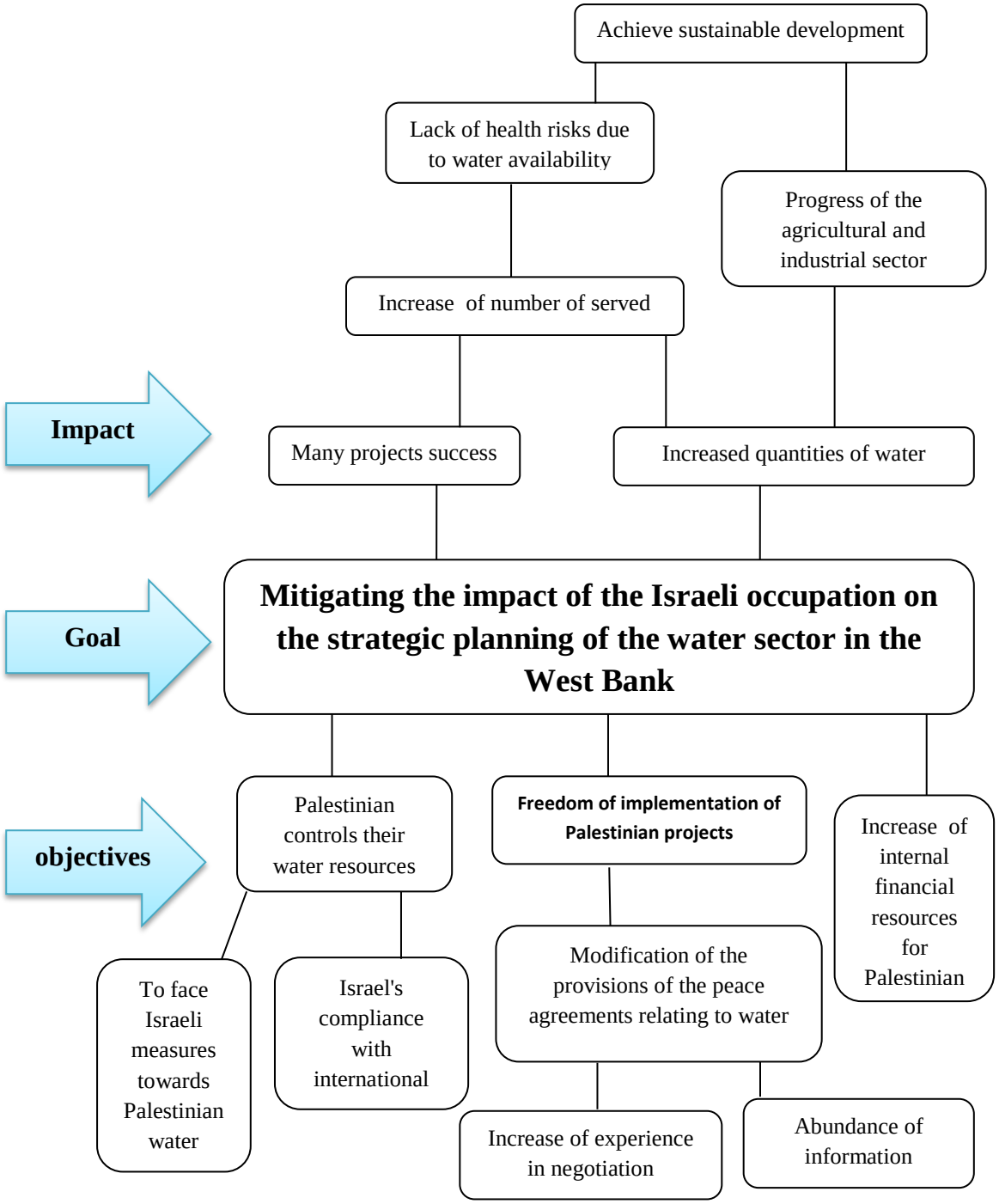
After locating the site, which is 2 km from Salfit, we purchased 36 dunums in the required area, and we did the required procedures, and we got the Israeli approval for the station at that site, but Israel has verbally demanded that we link the plant to the wastewater of the settlement of Ariel, which we rejected for the illegality of settlements on the West Bank, the Germans also rejected this because the project is for Palestinian communities rather than Israelis. Accordingly, we launched the bid, and the tender was awarded to a German company as well. However, in 11/1998 an Israeli order came to stop the project, arguing that the project was built on land in Area C. So we went to the decision makers to put pressure on Israel. The result was that for the first and last time, that Israel paid compensation, it paid to the Germans, it was estimated at 375,000 dollars, but the Germans gave it to the municipality of Salfit. In 2004, Israel agreed to build the plant, but in another new location, 5 km from Salfit, at first, we refused because the distance was too long and polluted water was flowing along the distance,

and the new site was not suitable for the exploitation of treated water in agriculture, but later we had to agree because we had no other option, and we bought 36 dunums more, from the people of Bruqin village. 2004-2006 was a freeze of work from the German side because of the location change, 12/2006 a German delegation visited the site and found that it was adjacent to the sewage of the settlement of Ariel, therefore, the environmental problem will not be solved, as the treated water from Salfit will be re-pumped into Wadi al-Mutawi, then mixed with Ariel's sewage and polluted again without interest. Where they cannot be invested there, and pumping them into agricultural areas costs a lot. April 30, 2015 A letter from the Israeli side to the Palestinian Water Authority arrives to inform them that the wastewater problem of the settlement of Ariel will be resolved within two years, For this we have revived the Salfit station project again with the Germans, the Germans agreed to set up the plant for Salfit wastewater only, so that the project is in two stages, phase I: 2020-2032, where the environmental problem will be solved only by partial treatment of water, treated water at this stage is not suitable for agricultural use, and the Germans' justification for this, there is no agricultural land in the region, and that total treatment will increase the operational costs of the plant which the municipality will have to pay later, in addition to increasing the cost of construction without additional interest. Phase 2: 2032-2045: At this stage the benefit of the project will be environmental and water for agriculture, where it is expected that there will be associations that purchase water to invest in other areas. So the project was submitted for tender in 2017/2018 with the knowledge that the problem of the streams of Ariel has not been resolved so far.

Annex (5): Problem Tree



Annex (6): Objective Tree



الملخص باللغة العربية

تهدف هذه الاطروحة الى البحث في اثر الاحتلال الاسرائيلي على تنفيذ الخطط الاستراتيجية لقطاع المياه في الضفة الغربية، وطرح حلول محتملة، حيث يحاول الباحث الإجابة عن اسئلة الاطروحة التي تتمحور حول هذا الموضوع، مستخدما المنهج الوصفي التحليلي، معتمدا في ذلك على المقابلات مع صناع القرار، والعديد من الدراسات السابقة، والبيانات المنشورة او غير المنشورة في المؤسسات ذات العلاقة. وقد تبين في هذه الدراسة ان الفجوة بين كميات المياه المتاحة والكميات المطلوبة للفلسطينيين كبيرة جدا، وقد اعد قطاع المياه العديد من الخطط الاستراتيجية التي تحوي مشاريع مائية متنوعة، ولكن تنفيذ أي مشروع، يمر في اجراءات احتلالية معقدة غالبا ما تؤدي في النهاية الى الفشل، كما ان قطاع المياه في الضفة الغربية تكبد خسائر باهظة بسبب الغطرسة الاسرائيلية في المنطقة. لذلك فان التخطيط الاستراتيجي لقطاع المياه في الضفة الغربية يقع في مأزق كبير، لان اعداد الخطط الاستراتيجية لا يضمن تنفيذها، مما يضر في كفاءتها وفعاليتها، ومما يمنع تحقيق الاهداف الاستراتيجية وبالتالي عدم تحقيق الرؤيا. ولتخفيف ذلك المأزق، يتوجب على الجهات المسؤولة اتخاذ التدابير اللازمة، كاستغلال الضغط الدولي على الجانب الاسرائيلي لإعطاء الفلسطينيين حقوقهم المائية، واللجوء الى محكمة العدل الدولية مع التقارير والوثائق التي تثبت الانتهاكات الاسرائيلية والمطالبة بتعويضات للخسائر التي تسببوا بها، بالاضافة الى دعم الاجراءات الشعبية سواء الفردية او المنظمة التي تعمل على تحصيل جزء من المياه المسلوبة مع وجود الرقابة عليها، كما يمكن البحث عن تقنيات حديثة تقوم بتجميع المياه في كل الاوقات.